SIEMENS

# Industrial Controls Product Catalog

usa.siemens.com/controls

July
2025
Edition

# Index


| | | |
|---|---|---|
| | Things to Know About the Catalog<br>Product Overview | |
| **SIRIUS Control**<br>IEC Power Control | **MSPs** – 3RV10, 3RV20, 3RV21 Motor Starter Protectors<br>3RV27, 3RV28 Circuit Breakers<br>3RA19/29 & 3RV19/29 Accessories | 1 |
| | **Contactors** – 3RT, 3TF, 3TC Contactors<br>3RA23 Reversing Contactors, 3RA24 Wye-Delta Starters<br>3RH Control Relays; 3RA19/28/29 & 3RT19/29 Accessories | 2 |
| | **Overload Relays** – 3RU Thermal Overload Relays<br>3RB Solid State Overload Relays<br>3UF SIMOCODE pro Intelligent Motor Protection | 3 |
| | **Starters** – 3RA2 Combination Starters<br>3RA6 Compact Combination Starters<br>3RE4 Enclosed HP Rated Starters | 4 |
| | **Power Distribution Systems** –<br>8US Fast Bus Busbar Power Distribution System | 5 |
| **SIRIUS Hybrid**<br>Solid State Control | **Hybrid Motor Starters** – 3RM1 Motor Starters<br>ET 200SP & ET 200pro Motor Starters<br>M200D Motor Starters | 6 |
| | **Soft Starters** – 3RW30, 3RW40, 3RW50, 3RW52 & 3RW55 Soft Starters<br>3RE47 Enclosed Soft Starters<br>**Drives** – SINAMICS G120X Drives, 6SL32 | 7 |
| | **Solid-State Relays & Contactors** –<br>3RF20 45mm Relays; 3RF21 22.5mm Relays; 3RF22 3-Phase Relays;<br>3RF23 Contactors; 3RF24 & 34 3-Phase Contactors; 3RF29 Modules | 8 |
| **General Purpose Control** | Manual Starters & Switches; NEMA Contactors & Starters;<br>Overload relays; Duplex Controllers; Pump Panels; DP Contactors;<br>Lighting Contactors; Transformers | 9 |
| **SIRIUS Command & SIRIUS Monitor**<br>Control Circuit Components | **Pilot Devices** – 3SB2, 3SU1, 52 Pushbuttons, Selector Switches,<br>Pilot Lights & Stations; 8WD Signal Columns | 10 |
| | **Function Relays** – 3RN Thermistor Motor Protection; 3RP & 7PV Timers;<br>3RS Temperature Monitoring Relays & Converters; 3RQ Coupling Relays;<br>3UG Monitoring Relays; 3TG Power Relays; 3TX71 & LZS Plug-in Relays | 11 |
| | **Industrial Surge Protection Devices (ISPD)** –<br>AC Power Protection; DC Power Protection — 24VDC and PV Solar;<br>Signal Line Protection | 12 |
| | **Limit Switches** – 3SE5 (IEC) & 3SE03 (NEMA)<br>**Safety** – 3SE5 Hinge & Interlock, 3SE6 Magnet, and 3SE7<br>Cable-operated Switches; 3SK & 3TK28 Safety Relays; 3RK3 MSS | 13 |
| | **AS-Interface** – 6GK7 Masters; 3RK Slaves, I/O Modules, & Safety<br>Modules; 3SF2 Cable Pull, 3SF1 Limit & Interlock Switches<br>**IO-Link** – 6ES7 Masters; 3RK Input Modules | 14 |
| | **Programmable Relays** – LOGO! 6ED Modular Relays<br>**Power Supplies** – SITOP 6EP Power Supplies<br>**Ethernet Switches** – 6GK Unmanaged Ethernet Switches | 15 |
| **Control Circuit Protection** | 5SJ4 Miniature Circuit Breakers to UL 489<br>5SP & 5SY Supplementary Protectors to UL 1077<br>3NW7 Fuse Holders to UL 512 | 16 |
| **Circuit Breakers** | 120/240 V Lug In/Lug Out and DIN Rail Breakers<br>15 to 3200A Molded Case Circuit Breakers | 17 |
| **Switches** | **Safety Switches** – VBII<br>**Enclosed Switches** – VBII & 3LD2<br>**Disconnect Switches** – 3LD, CFS, CNFS, MCS & VBII | 18 |
| **Appendix - General Information** | UL and CSA File & Guide Numbers; On-line References;<br>General Information; Spring-Loaded Terminal Overview;<br>ICE Quick Reference List | 19 |

# Index

## Things you should know about the Industrial Catalog

This Catalog contains all selection and order-relevant data.

More information can be found on the on-line version of this catalog at usa.siemens.com/iccatalog

**Navigation**

All page references are linked. Click on the page number to navigate to that page.

For accessories, see page 2/66.

Clicking on the Page Number square at the bottom of each page will return you to the Table of Contents for that section.

2/34

Clicking on the Catalog Reference at the bottom of a page will return you to the Table of Contents for the Catalog.

Siemens Industry Inc., Industrial Control Catalog

**Delivery time (DT) or Standard delivery time (SD)**

| | |
|---|---|
| ► | Preferred type |
| A | 9 to 10 working days |
| B | 11 to 13 working days |
| C | 14 to 23 working days |
| D | 24 to 38 working days |
| X | On request |

Normal quantities of the products are usually delivered within the specified time following receipt of an order.

In exceptional cases, the actual delivery time may differ from that specified.

The delivery times specified here represent the state as of 10/2020. For up-to-the-minute information, please visit our Industry Mall website at www.usa.siemens.com/industrymall

Note: Delivery times do not appear on all selection pages due to space constraints or coil voltage variations.

**Price units (PU)**

The price unit defines the number of units, sets or lengths to which the price and weight apply.

**Packaging sizes (PS)**

The packaging size defines the number of units, sets or length, for outer packaging. Only the quantity defined by the packaging size or a multiple thereof can be ordered.

## Symbols

On many selection pages in this catalog, you will find these symbols to aid in the quick identification of critical product features.

| | |
|---|---|
| **Connections** | Combicon connection |
| | Insulation piercing method |
| | Fast Connect |
| | Spring-type terminals |
| | Flat connectors |
| | Solder pin connections |
| | Ring terminal lug connections |
| | Screw terminals |
| **Types of coordination** | Type of coordination "1" |
| | Type of coordination "2" |
| **Distinguishing between units** | Complete units |
| | Modular system |
| **Support function** | Configurator available in the Industry Mall |

# Index

## IEC Motor Starter Protectors — Section 1

SIRIUS 3RV Motor Starter Protectors (MSPs) are built for a wide range of applications and meet the requirements of control users worldwide. Each MSP features a manual ON/OFF switch, a Class 10 adjustable bimetallic overload relay (Class 20 available in the two largest frame sizes), and magnetic trip elements for short circuit protection.

**3RV20** MSPs can be used in a variety of applications:
* Manual Motor Starter
* Manual Self-Protected Combination Motor Controller, Type E
* Combination Motor Controller Type F when combined with a 3RT contactor
* IEC Circuit Breaker for export applications

**3RV21** MSPs with overload relay function (automatic RESET)
**3RV27** are UL listed as a Circuit Breaker for branch circuit protection of both motor and non-motor loads
**3RV28** is UL listed as a Circuit Breaker for transformer protection
**3RV29** is an infeed system for quick installation of MSP and contactor assemblies

## IEC Contactors — Section 2

High contact reliability, a narrow design, long life time, and the ability to operate under extreme conditions (up to 60° C), ensure that SIRIUS 3RT Contactors are suited for almost any application. A large array of easily installed, standard accessories may be used to customize the contactors for different applications.

**3RT*0** – 3 Pole Standard
**3RT12** – 3 Pole Vacuum
**3RT*3** – 4 Pole with 4 normally open poles for switching Resistive loads (AC-1)
**3RT*4** – 3 Pole for switching Resistive loads (AC-1)
**3RT25** – 4 Pole with 2 normally open & 2 normally closed poles
**3RT26** – 3 Pole for switching capacitors
**3RA*9** – Contactor Accessories
**3RA23** – Reversing contactor assemblies
**3RH2** – Coupling Relays
**3TC** – 2 Pole for switching DC loads
**3TF6** – 3 Pole Vacuum, 630 & 700A

## IEC Overload Relays — Section 3

Complete motor protection can be achieved through the SIRIUS family of overload relays (OLR's).

**3RU21** – Thermal OLR's, up to 100 A, are ambient compensated bimetallic in Trip Class 10
**3RB30 / 20** – Solid State OLR's, up to 630 A, with an internal power supply and 4:1 FLA adjustment range in Trip Class 10 or 20
**3RB31 / 21** – Features of the 3RB30 / 20 plus adjustable Trip Class 5 to 30, ground fault detection, and remote reset
**3RB22 / 23** – Features of the 3RB31 / 21 plus status LED's and external power supply
**3RB24** – Features of the 3RB23 plus communication via IO-Link
**3UF7** – SIMOCODE pro intelligent motor protection is more than just a programmable overload relay. By linking the motor and automated control circuits, SIMOCODE allows for predictive and conditional maintenance on critical systems.

# Index

## Section 4 — IEC Starters

The SIRIUS 3RA1/2 Combination Starters consist of a pre-wired and mechanically connected 3RV MSP and 3RT contactor, allowing for quick installation of a complete branch circuit. The Non-Reversing or Reversing assemblies come on a Fast Bus mounting shoe or as a Panel Mount version.

The SIRIUS 3RA6 Compact Starters provide the functionality of an MSP, Contactor and Electronic Overload Relay in one easy to install housing, saving wiring and installation time. The SIRIUS 3RA6 Infeed system further saves line side wiring in multiple motor panels.

The 3RE4 enclosed IEC family includes contactors and starters in NEMA 1, 3/3R/4/12 or 4X enclosures.

**3RA2** – Combination Starters
**3RA6** – Compact Non-Reversing & Reversing Combination Starters
**3RE4** – Enclosed HP Rated Starters & Contactors

## Section 5 — Fast Bus Power Distribution System

The UL508A Fast Bus Multi-Motor Control System is a 3 phase insulated busbar system used to reduce wire connections and hole drilling when building control panels. Quickly mount Sirius 3RA combination starters and/or Siemens circuit breaker assemblies.

The Siemens Fast Bus system uses standard off-the-shelf components, with both domestic and international approvals, to allow for economical installation, compact panel designs, touch safe equipment, that allow for easy expansion and maintenance.

**FB** – Installation kits for quick ordering & installation
**FBCB** – Circuit breakers pre-assembled on Fast Bus adapter shoes
**3RA** – Combination starters for Fast Bus mounting (see section 4)
**8US** – Fast Bus components for Field assembly

## Section 6 — Hybrid Motor Starters

Hybrid technology provides reduced size, lower heat losses and longer service life in motor starter applications by combining relay contacts, power semiconductors and a solid-state overload relay.

The SIRIUS 3RM motor starters are compact, 22.5mm wide devices for mounting in the control cabinet. The failsafe versions eliminate the need for redundant controllers in safety applications. The ET 200SP motor starters are an integral part of the ET 200SP I/O system and mount directly to the rack.

The ET 200pro and SIRIUS M200D are enclosed controllers that connect to a variety of communication protocols.

**3RM** – Non-reversing starters
**3RK1308** – ET 200SP motor starters
**3RK1304** – ET 200pro enclosed motor starters
**3RK13*5** – SIRIUS M200D enclosed motor starters

# Index


## Solid State Soft Starters & Variable Frequency Drives — Section 7

SIRIUS Soft Starters and SINAMICS Drives are designed to ramp up your efficiency at every turn. Easy to specify, integrate, operate, and maintain, our controls fulfill your need for more thoughtful system-wide solutions.

3RW30 – Basic performance Soft Starters up to 75HP with built-in bypass contacts.
3RW40 – Basic performance Soft Starters up to 75HP with overload protection and device self protection
3RW50 – Basic performance Soft Starters from 100 to 400 HP with soft torque and communication options
3RW52 – General performance Soft starters from 100 to 400 HP with options for plug-in HMI and communication modules
3RW55 – High performance Soft starters from 7.5 to 1000 HP with HMI, autoparameterization and plug-in communication modules
3RE47 – Enclosed soft starters
6SL32 – SINAMICS G120X Variable Frequency Drives

## Solid State Switching Devices — Section 8

Designed for high operating switching frequency the Sirius Solid State Relays and Contactors feature a long lifespan of rugged reliability in adverse conditions, quiet operation, compact size, and snap on function modules for convenient flexible use.

3RF20 – 1-Phase Relays in a 45mm wide “hockey-puck” design
3RF21 – 1-Phase Relays in a 22.5mm narrow width design
3RF22 – 3-Phase Relays in a 45mm wide design
3RF23 – 1-Phase Contactors, a 22.5mm wide relay mounted to a heat sink
3RF24 – 3-Phase Contactors, a 45mm wide relay mounted to a heat sink
3RF29 – Function Modules, such as, converters, load monitors and power controllers
3RF34 – 3-Phase non-reversing and reversing Contactors for switching

## General Purpose Control — Section 9

Siemens NEMA controls are built rugged to withstand the most severe and demanding industrial and continuous duty commercial applications. Siemens offers the most complete and diverse product line in the world of NEMA. This includes standard full NEMA sizes and motor matched half sizes exclusive to Siemens. All are available as open or enclosed devices with a wide selection of accessories and spare parts.

Manual Starters & Switches
Non-Reversing & Reversing Starters & Contactors
Combination Starters
Duplex and Multi-Speed
Pump Controllers
Solid State Overload Relays
Current Sensitive Relays
Definite Purpose Contactors
Lighting Contactors
Control Power Transformers

## Section 10 Pilot Devices

Siemens offers an extensive array of Pilot Devices and Signal Columns for a wide variety of applications.

**3SB2** – 16mm SIRIUS Pilot Devices for applications where panel space is a premium
**3SU1** – 22mm SIRIUS ACT Pilot Devices offer maximum flexibility, industry best time install savings and environmental ratings in round-metal and round-plastic versions
**Class 52** – 30mm is the classic pushbutton design for the NEMA markets offering both standard die cast metal and the ultra rugged BLACK MAX for corrosion resistant applications
**8WD** – Signal Columns offer twist and connect technology in both 50mm and 70mm diameter styles. Single element signal beacons add additional options for OEMs and panel builders

## Section 11 Function Relays

The SIRIUS family of compact, DIN rail mountable function relays offers complete solutions for monitoring, switching, interfacing and timing applications.

**3RN** – Thermistor Motor Protection
**3RP / 7PV** – Solid State Timing with single or multiple timing functions
**3RS1 / 2** – Temperature Monitoring in solid, liquid and gaseous media
**3RQ** – Coupling Relays and Interfaces
**3RS18** – Relay Interfaces
**3RS70** – Interface Converters
**3TG10** – Compact Power Relays/Contactors
**3TX71 & LZS** – Plug-in Relays & Timers
**3UG4** – Line Monitoring of voltage and insulation or load monitoring of Current & Cos Phi, Level Monitoring of conductive liquids, and under speed monitoring

## Section 12 Industrial Surge Protection Devices (ISPD)

Siemens Industrial Surge Protective Devices (ISPDs) offer a reliable DIN-Rail mountable solution for increasing NEC requirements to safeguard your critical equipment and safety circuits. Our complete portfolio protects your AC power, DC power, and signal line communications, covering all industrial applications.

**AC** Power Protection
**DC** Power Protection — 24VDC and PV Solar
**Signal Line** Protection

# Index

## Safety Systems — Section 13

Siemens Switches and Machine Safety devices provide the means for protecting workers and equipment where hazardous conditions exist. Compliance with NEMA, OSHA and international standards (IEC) are a critical requirement for machine OEMs and end users. Siemens has provided safety relay and contactor products to the international community for almost 50 years.

**3SB38** – Two-Hand Control Stations
**3SE03** – North American (NEMA) Limit Switches
**3SE5** – International (IEC) Limit Switches
**3SE5 / 3SE2** – Interlock Switches & Hinge Switches
**3SE6** – RFID Non-Contact Safety Switches & Magnetic Monitoring Systems
**3SE7** – Cable-Operated Switches
**3SK** – Modular Safety Relays
**3TK28** – Safety Relays with special functions.
**3RK3** – Modular Safety System (MSS)

## AS-Interface & IO-Link Systems — Section 14

**Actuator-Sensor Interface** is the simple and effective networking system for the field level. It is extremely rugged even under the toughest of conditions. With compatible safety components, AS-Interface offers safety applications according to Safety Category 4. AS-Interface is easily linked to higher-level networks for a complete automation solution — simple, safe and fast in the field.

**IO-Link** is an open communication standard based on point-to-point connection between a Master and up to 4 devices. For an OEM wiring multiple motor starters, IO-Link technology can greatly reduce control cabinet wiring for motor starters while increasing diagnostics. For End Users, IO-Link provides a cost effective way in to monitor common analog values such as motor current, power consumption, temperature and voltage without adding an additional network.

## Programmable Relays & Power Supplies — Section 15

The LOGO! Programmable Relay is a compact, easy to use and low cost solution for simple control tasks. Functions can be changed at the touch of a button through the integrated operator panel or remote display.

SITOP offers a broad offering of compact single- and 3-phase switched mode power supplies and 24VDC power security components, which provide reliable solutions for the most common power interruptions, helping to minimize downtimes and increase the efficiency of production.

SCALENCE Managed and Unmanaged Industrial Ethernet Switches with up to eight RJ45 ports.

**6ED1** – LOGO! Programmable Relays
**6EP1** – SITOP Power Supplies and Power Security Components
**6GK5** – SCALENCE Industrial Ethernet Switches

# Index

## Section 16 Control Circuit Protection

Siemens UL 489 miniature circuit breakers and accessories are designed to provide branch circuit and feeder protection.

Siemens UL 1077 Supplementary Protectors are designed to provide additional protection where branch circuit protection is already provided or, not required at all. Since Siemens Supplementary protectors are made to trip faster than other components, they are able to provide additional protection for more sensitive devices inside a panel.

**5SJ4** – Miniature Circuit Breakers up to 480Y / 277 VAC, 63A
**5SY** – High feature Supplementary Protectors from 0.3 to 63A
**5SP** – High amperage Supplementary Protectors from 80 to 125A
**3NW7** – Cylindrical Fuse Holders meeting UL 512 and IEC 60269-1, -2, -3

## Section 17 Circuit Breakers

Siemens offers a full line of interchangeable and non-interchangeable thermal-magnetic trip circuit breakers with a wide variety of interrupting ratings from 10KAIC to 200KAIC. These circuit breakers are available with multi-functional internal accessories, which are field installable on most breakers, and a full line of external accessories. Electronic trip circuit breakers are available for 150A through 1600A breakers.

Molded Case Circuit Breakers
**3VA** – 600VAC Breakers
**BQ and QR** – 240VAC Breakers
**CQD** – 480VAC Breakers
**GG, Sentron, and VL** – 600VAC Breakers

## Section 18 Switches

Siemens offers a complete line of both enclosed and open style switches to meet a wide range of applications.

**HF & HNF** – Heavy Duty Safety Switches with Side Mounted Operating Handle
**3LD2** – UL508 Open & Enclosed Rotary Switches (16-250A)
**3LD3** – UL508 Compact Open Rotary Switches (16-63A)
**3LD5** – UL489 Compact Open Rotary Switches (30-150A)
**VBF & VBNF** – Open Switches with Flange Mounted Operating Handle
**MCS** – Open Switches with Flange or Rotary Operating Handle
**CFS** – Open Compact Fusible Switches with Rotary Operating Handle
**CNFS** – Open Compact Non-fusible Switches with Rotary Operating Handle

## contents


**Section Overview** 1/2 – 1/3

**Motor Starter Protectors**
3RV20 MSP, Class 10/20 1/4 – 1/5
3RV21 MSP, Class 10 1/6 – 1/7
3RV10 MSP, Class 10 1/8
3RV23 MSP NEW 1/9 – 1/11

**Circuit Breakers**
3RV27, 3RV28 Circuit Breaker UL 489 1/12

**Accessories**
Auxiliary Switches 1/13
Auxiliary Releases 1/13
Busbars 1/15
Mounting Accessories 1/16 – 1/19
Rotary Operating Mechanisms 1/20 – 1/21
3RV29 Infeed System 1/24 – 1/27

**General Data for Motor Starter Protectors**
Manual Motor Starter Ratings 1/28
Group Installation Ratings 1/29
Combination Motor Controller Ratings 1/30
3RV27 and 3RV28 Circuit Breaker Ratings 1/31
Export Application Ratings 1/32 – 1/33
Rules for Mounting 1/34
Technical Data 1/35 – 1/38
Overview of MSP Functions & Applications 1/39
Application as a Combination Motor Controller 1/40
Application in DC Switching 1/41
Design 1/41
Characteristics 1/42
Circuit Diagrams 1/42
Dimensions 1/43 – 1/46

**General Data for Accessories**
Mountable Accessories
Overview 1/47 – 1/48
Circuit Diagrams 1/49 – 1/47
Dimensions 1/50
Busbar Accessories
Overview 1/51
Dimensions 1/52 – 1/53
Operating Mechanisms
Overview 1/54
Circuit Diagrams 1/55
Dimensions 1/55 – 1/56
Enclosures & Front Plates
Overview 1/57
Dimensions 1/58
Spring Terminal Infeed System
Design 1/59
Technical Data 1/59
Dimensions 1/60

## contents


### SIRIUS 3RV motor starter protectors up to 100 A

Size S00, S0

**For motor protection CLASS 10**

Selection and ordering data

| Size | Rated Current | Page |
|---|---|---|
| S00 | up to 16 A | 1/4 |
| S0 | up to 40 A | 1/4 |
| S2 | up to 65 A | 1/5 |
| S3 | up to 100 A | 1/5 |

**For motor protection CLASS 20**

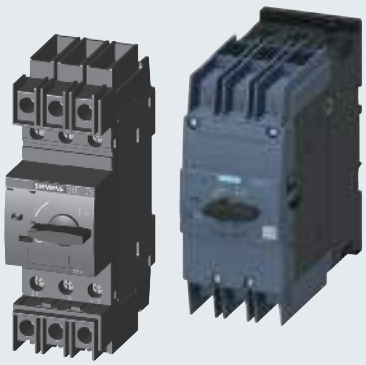
Selection and ordering data

| Size | Rated Current | Page |
|---|---|---|
| S2 | up to 65 A | 1/5 |
| S3 | up to 100 A | 1/5 |

**General data for SIRIUS motor starter protectors**

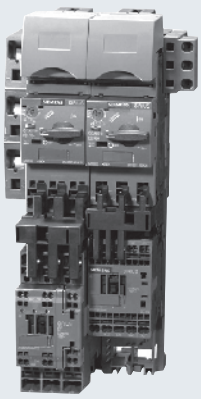
| | Page |
|---|---|
| Technical data | 1/28 |
| Overview | 1/38 |
| Characteristics | 1/42 |
| Circuit diagrams | 1/42 |
| Dimension drawings | 1/43 |

### Circuit Breakers 3RV27, 3RV28



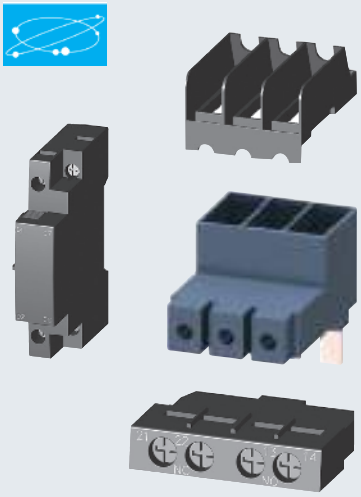
| | Page |
|---|---|
| Selection and ordering data | 1/12 |
| Dimension drawings | 1/46 |

### SIRIUS 3RV29 infeed system



| | Page |
|---|---|
| Selection and ordering data | 1/26-1/27 |
| Technical data | 1/59 |
| Overview | 1/14-1/25 |
| Dimension drawings | 1/60 |

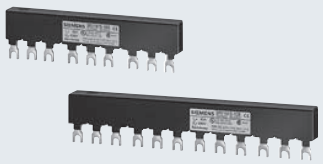
### 3RV MSP auxiliaries and accessories



| | Page |
|---|---|
| Selection and ordering data | 1/13-1/15 |
| Technical data | 1/37 |
| Overview | 1/47 |
| Circuit diagrams | 1/49 |
| Dimension drawings | 1/50 |

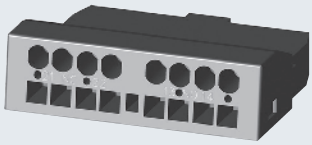
## contents

### 3RV busbar and accessories




| | Page |
|---|---|
| Selection and ordering data | 1/15 |
| Overview | 1/51 |
| Technical data | 1/52 |


### Accessories for motor starter protectors with Spring-Type terminals




| | Page |
|---|---|
| Selection and ordering data | 1/13 |
| Technical data | 1/38 |


### Mounting Accessories

| | Page |
|---|---|
| Selection and ordering data | 1/16 -1/19 |
| Overview | 1/48 |
| Technical data | 1/50 |


### Rotary operating mechanisms

| | Page |
|---|---|
| Selection and ordering data | 1/21 |
| Technical data | 1/38 |
| Overview | 1/54 |
| Circuit diagrams | 1/55 |
| Dimension drawings | 1/55 |


### Enclosures and front plates

| | Page |
|---|---|
| Selection and ordering data | 1/22 |
| Overview | 1/57 |
| Dimension drawings | 1/58 |

## Description

The 3RV20x MSPs are UL approved as Self Protected Combination Motor Controllers which are also called Type E. In this application, all the required functions for a motor branch are provided in one device: disconnect, short circuit protection, motor control and overload protection. A type E terminal adaptor is required for ***screw terminal*** versions. 3RV20x MSPs with ***spring terminal*** can only be applied as Type E when used in the 3RV29 Infeed System. . The 3RV20x MSPs are also approved for use as follows:

– Manual Motor Controller: Motor starter, motor disconnect, control and overload— protection.
– Group Installation: Motor starter only, motor disconnect, control and overload protection.
– Tap conductor Protection in Group Installation acc. NEC: Motor starter only; motor disconnect, control and overload protection.

When the 3RV20x is used with one of the 3 above mentioned approvals, the 3RV20x can be installed downstream of one circuit breaker or fuse set.

For more detailed application information and rules how to apply, size and rate the 3RV20x in control panels in general, in group installations or in accordance to international IEC standards visit our website: www.usa.siemens.com/controlpaneldesign

## Ordering Information

- ON/OFF rotary handle with lockout and visible trip indication.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 13 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Terminal versions: screw, spring, ring lug.
- Auxiliaries and Accessories see pages 1/13–1/27.
- General Information see pages 1/39–1/42.
- Technical Data see pages 1/28–1/38.
- Dimensions see page 1/43–1/46.

Note: **Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.**

| Illustration | FLA Adjustment Range [A] | Single-Phase HP Ratings 115V | Single-Phase HP Ratings 230V | Three-Phase HP Ratings[1] 200V | Three-Phase HP Ratings[1] 230V | Three-Phase HP Ratings[1] 460V | Three-Phase HP Ratings[1] 575V | Instantaneous short circuit release [A] | UL short-circuit breaking capacity @ 277V/480V [kA] | **Size S00** [2) 4)] Order Number | **Size S0** [2) 4)] Order Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.11-0.16 | — | — | — | — | — | — | 2.1 | 65 | **3RV2011-0AA●●** | **3RV2021-0AA●●** |
| | 0.14-0.2 | — | — | — | — | — | — | 2.6 | 65 | **3RV2011-0BA●●** | **3RV2021-0BA●●** |
| | 0.18-0.25 | — | — | — | — | — | — | 3.3 | 65 | **3RV2011-0CA●●** | **3RV2021-0CA●●** |
| | 0.22-0.32 | — | — | — | — | — | — | 4.2 | 65 | **3RV2011-0DA●●** | **3RV2021-0DA●●** |
| | 0.28-0.4 | — | — | — | — | — | — | 5.2 | 65 | **3RV2011-0EA●●** | **3RV2021-0EA●●** |
| | 0.35-0.5 | — | — | — | — | — | — | 6.5 | 65 | **3RV2011-0FA●●** | **3RV2021-0FA●●** |
| | 0.45-0.63 | — | — | — | — | — | — | 8.2 | 65 | **3RV2011-0GA●●** | **3RV2021-0GA●●** |
| | 0.55-0.8 | — | — | — | — | — | — | 10 | 65 | **3RV2011-0HA●●** | **3RV2021-0HA●●** |
| | 0.7-1 | — | — | — | — | — | ½ | 13 | 65 | **3RV2011-0JA●●** | **3RV2021-0JA●●** |
| | 0.9-1.25 | — | — | — | — | ½ | ½ | 16 | 65 | **3RV2011-0KA●●** | **3RV2021-0KA●●** |
| | 1.1-1.6 | — | 1/10 | — | — | ¾ | ¾ | 21 | 65 | **3RV2011-1AA●●** | **3RV2021-1AA●●** |
| | 1.4-2 | — | ⅛ | — | — | ¾ | 1 | 26 | 65 | **3RV2011-1BA●●** | **3RV2021-1BA●●** |
| | 1.8-2.5 | — | ⅛ | ½ | ½ | 1 | 1 ½ | 33 | 65 | **3RV2011-1CA●●** | **3RV2021-1CA●●** |
| | 2.2-3.2 | 1/10 | ¼ | ½ | ¾ | 1 ½ | 2 | 42 | 65 | **3RV2011-1DA●●** | **3RV2021-1DA●●** |
| | 2.8-4 | ⅛ | ⅓ | ¾ | ¾ | 2 | 3 | 52 | 65 | **3RV2011-1EA●●** | **3RV2021-1EA●●** |
| | 3.5-5 | ⅙ | ½ | 1 | 1 | 3 | 3 | 65 | 65 | **3RV2011-1FA●●** | **3RV2021-1FA●●** |
| | 4.5-6.3 | ¼ | ½ | 1 | 1 ½ | 3 | 5 | 82 | 65 | **3RV2011-1GA●●** | **3RV2021-1GA●●** |
| | 5.5-8 | ⅓ | 1 | 2 | 2 | 5 | 5 | 104 | 65 | **3RV2011-1HA●●** | **3RV2021-1HA●●** |
| | 7-10 | ½ | 1 ½ | 2 | 3 | 5 | 7 ½ | 130 | 65 | **3RV2011-1JA●●** | **3RV2021-1JA●●** |
| | 9-12.5 | ½ | 2 | 3 | 3 | 7 ½ | 10 | 163 | 65 | **3RV2011-1KA●●** | **3RV2021-1KA●●** |
| | 10-16 | 1 | 2 | 3 | 5 | 10 | — | 208 | 65 | **3RV2011-4AA●●** | **3RV2021-4AA●●** |
| | 13-20 | 1 ½ | 3 | 5 | 5 | 10 | — | 260 | 65 | — | **3RV2021-4BA●●** |
| | 16-22 | 1 ½ | 3 | 5 | 7 ½ | 15 | — | 286 | 65 | — | **3RV2021-4CA●●** |
| | 18-25 | 2 | 3 | 5 | 7 ½ | 15 | — | 325 | 65 | — | **3RV2021-4DA●●** |
| | 23-28 | 2 | 5 | 7 ½ | 10 | 20 | — | 364 | 50 | — | **3RV2021-4NA●●** |
| | 27-32 | 2 | 5 | 7 ½ | 10 | 20 | — | 400 | 50 | — | **3RV2021-4EA●●** |
| | 30-36 [3)] | 3 | 5 | 10 | 10 | 25 | — | 432 | 12 | — | **3RV2021-4PA●●**[5)] |
| | 34-40 [3)] | 3 | 7 ½ | 10 | 10 | 30 | — | 480 | 12 | — | **3RV2021-4FA●●**[5)] |

Screw terminals, no auxiliary: ●● = 10
Screw Terminals, with 1NO/1NC Aux:●● = 15
Spring terminals, no auxiliary: ●● = 20
Spring Terminals, with 1NO/1NC Aux: ●● = 25
Ring Lug Terminals, no Auxiliary: ●● = 40

1) Select motor starter protector by motor full load amps. Horsepower ratings for reference only.
2) The motor starter protectors rated up to 32 A can be used as manual motor controllers or as Type E combination motor controllers. For use as a Type E combination motor controller, a Type E terminal is required. See accessories page 1/10.
3) These products are NOT certified as Type E combination motor controllers. They can only be used as manual motor controllers.
4) 3RV2 MSPs can only be used with Innovations contactors and accessories
5) Spring and Ring Lug terminals are not available

## Description

The 3RV203/204 MSPs are UL approved as Self Protected Combination Motor Controllers which are also called Type E. In this application, all the required functions for a motor branch are provided in one device: disconnect, short circuit protection, motor control and overload protection. A type E terminal adaptor is required for all ***screw terminal*** version S2 frame 3RV2031 above 45A and all S2 frame 3RV2032 as well as for all S3 frame motor starter protectors. ***Spring terminal*** MSPs can only be applied as Type E when used in the 3RV29 Infeed System.

The 3RV203/204 MSPs are also approved for use as follows:
– Manual Motor Controller: Motor starter, motor disconnect, control and overload protection.
– Group Installation: Motor starter only, motor disconnect, control and overload protection.
– Tap conductor Protection in Group Installation acc. NEC: Motor starter only; motor disconnect, control and overload protection.

When the 3RV203/204 is used with one of the 3 above mentioned approvals, they can be installed downstream of one circuit breaker or fuse set.

For more detailed application information and rules how to apply, size and rate these MSPs in control panels in general, in group installations or in accordance to international IEC standards visit our website: www.usa.siemens.com/controlpaneldesign

## Ordering Information

- ON/OFF rotary handle with lockout and visible trip indication.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 13 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Auxiliaries and Accessories see pages 1/13–1/27.
- General Information see pages 1/39–1/42.
- Technical Data see pages 1/28–1/38.
- Dimensions see page 1/43–1/46.

Note: **Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.**

| Illustration | FLA Adjustment Range [A] | Single Phase HP rating [1] | | 3 Phase HP Rating [1] | | | | Inst. Short-Circuit Release [A] | UL short-circuit breaking capacity @ 277V/ 480V [kA] [6] | Trip Class 10 Order Number[4] | Trip Class 20 Order Number[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 115V | 240V | 200V | 230V | 460V | 575V | | | | |
| | **3RV203 Frame Size S2** | | | | | | | | | | |
| | 9.5 - 14 | 1.5 | 3 | 5 | 5 | 10 | 15 | 208 | 65 | **3RV2031-4SA10** | **3RV2031-4SB10** |
| | 12 - 17 | 1.5 | 3 | 5 | 7.5 | 15 | 15 | 260 | 65 | **3RV2031-4TA10** | **3RV2031-4TB10** |
| | 14 - 20 | 1.5 | 3 | 7.5 | 7.5 | 15 | 20 | 260 | 65 | **3RV2031-4BA10** | **3RV2031-4BB10** |
| | 18 - 25 | 2 | 5 | 7.5 | 10 | 20 | 25 | 325 | 65 | **3RV2031-4DA10** | **3RV2031-4DB10** |
| | 22 - 32 | 3 | 5 | 10 | 10 | 25 | 30 | 416 | 65 | **3RV2031-4EA10** | **3RV2031-4EB10** |
| | 28 - 36 | 3 | 7.5 | 15 | 15 | 30 | 40 | 520 | 65 | **3RV2031-4PA10** | **3RV2031-4PB10** |
| | 32 - 40 | 3 | 7.5 | 15 | 15 | 30 | 40 | 585 | 65 | **3RV2031-4UA10** | **3RV2031-4UB10** |
| | 35 - 45 | 3 | 10 | 15 | 15 | 40 | 50 | 650 | 65 | **3RV2031-4VA10** | **3RV2031-4VB10** |
| | 42 - 52 | 5 | 10 | 15 | 20 | 40 | 50 | 741 | 65 | **3RV2031-4WA10** | **3RV2031-4WB10** |
| | 49 - 59 | 5 | 15 | 20 | 25 | 50 | 60 | 845 | 30 | **3RV2031-4XA10** | **3RV2031-4XB10** |
| | 54 - 65 | 5 | 15 | 20 | 25 | 50 | 60 | 845 | 30 | **3RV2031-4JA10** | **3RV2031-4JB10** |
| | 62 - 73 | 7.5 | 15 | 25 | 30 | 60 | 75 | 949 | 30 | **3RV2031-4KA10** | **3RV2031-4KB10** |
| | 70 - 80 [7] | 7.5 | 15 | 25 | 30 | 60 | 75 | 1040 | 30 | **3RV2032-4RA10** | **3RV2032-4RB10** |
| | **3RV204 Frame Size S3** | | | | | | | | | | |
| | 28 - 40 | 3 | 7.5 | 15 | 15 | 30 | 40 | 520A | 65 | **3RV2041-4FA10** | **3RV2042-4FB10** |
| | 36 - 50 | 5 | 10 | 15 | 20 | 40 | 50 | 650A | 65 | **3RV2041-4HA10** | **3RV2042-4HB10** |
| | 45 - 63 | 5 | 15 | 20 | 25 | 50 | 60 | 819A | 65 | **3RV2041-4JA10** | **3RV2042-4JB10** |
| | 57 - 75 | 7.5 | 15 | 25 | 25 | 60 | 75 | 975A | 65 | **3RV2041-4KA10** | **3RV2042-4KB10** |
| | 65 - 84 | 7.5 | 15 | 25 | 30 | 60 | 75 | 1170A | 65 | **3RV2041-4RA10** | **3RV2042-4RB10** |
| | 75 - 93 | 7.5 | 20 | 30 | 40 | 75 | 100 [3] | 1300A | 65 | **3RV2041-4YA10** | **3RV2042-4YB10** |
| | 80 - 100 | 10 | 25 | 40 | 40 | 75 | 100 [3] | 1300A | 65 | **3RV2041-4MA10** | **3RV2042-4MB10** |

1) Select motor starter protector by motor full load amps. Horsepower ratings for reference only.
2) Size S2 and S3 are listed as type E combination motor controllers. For required Type E terminals see page 1/17. 3RV2031 MSPs with a current setting limit of 45A or less do not require a type E terminal and fulfill the spacing requirements of UL508.
3) Shaded ratings apply for group installation only. These ratings do not apply as UL listed manual combination starters.
4) Pre-assembled motor starter protector and transverse auxiliary switch with 1NO + 1NC is available. Replace the last digit of the order no. with a "5".
5) 3RV1 MSPs can only be used with 3RT1 contactors and accessories. 3RV2 MSPs can only be used with 3RT2 contactors and accessories.
6) For 100kA SCCR rated MSPs, change the part number from 3RV2031 to 3RV2032. (applies to S2 frame only through 65A).
7) Suitable for use with IE3/IE4 motors up to a starting current of 720A. For higher starting currents use size S3.

Refer to pages 1/28 to 1/30 when using an MSP in a Manual Motor Starter or a Manual Self-Protected Combination Motor Controller.

# 3RV2 Motor Starter Protectors/Circuit Breakers

SIRIUS

## 3RV21 Class 10 – up to 32A with overload relay function (automatic RESET) *IE3/IE4* ready



### Description

The 3RV21x MSPs are UL approved as Self Protected Combination Motor Controllers which are also called Type E. In this application, all the required functions for a motor branch are provided in one device: disconnect, short circuit protection, motor control and overload protection. A type E terminal adaptor is required for ***screw terminal*** versions. 3RV20x MSPs with ***spring terminal*** can only be applied as Type E when used in the 3RV29 Infeed System. The 3RV21x MSPs are also approved for use as follows:

– Manual Motor Controller: Motor starter, motor disconnect, control and overload protection.
– Group Installation: Motor starter only, motor disconnect, control and overload protection.
– Tap conductor Protection in Group Installation acc. NEC: Motor starter only; motor disconnect, control and overload protection.

When the 3RV21x is used with one of the 3 above mentioned approvals, the 3RV21x can be installed downstream of one circuit breaker or fuse set.

For more detailed application information and rules how to apply, size and rate the 3RV21x in control panels in general, in group installations or in accordance to international IEC standards visit our website: www.usa.siemens.com/controlpaneldesign

### Ordering Information

- ON/OFF rotary handle with lockout and visible trip indication.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 13 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Terminal versions: screw only.
- Auxiliaries and Accessories see pages 1/13–1/27.
- General Information see pages 1/39–1/42.
- Technical Data see pages 1/28–1/38.
- Dimensions see page 1/43–1/46.

Note: **Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.**

| Illustration | Setting range for thermal overload release | Single-Phase HP Ratings | | Three-Phase HP Ratings[1] | | | | Instantaneous electronic release [A] | UL short-circuit breaking capacity @ 480V [kA] | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 115V | 230V | 200V | 230V | 460V | 575V | | | |
| | **Size S00[2] [3]** | | | | | | | | | |
| | 0.11 ... 0.16 | — | — | — | — | — | — | 2.1 | 100 | **3RV2111-0AA10** |
| | 0.14 ... 0.2 | — | — | — | — | — | — | 2.6 | 100 | **3RV2111-0BA10** |
| | 0.18 ... 0.25 | — | — | — | — | — | — | 3.3 | 100 | **3RV2111-0CA10** |
| | 0.22 ... 0.32 | — | — | — | — | — | — | 4.2 | 100 | **3RV2111-0DA10** |
| | 0.28 ... 0.4 | — | — | — | — | — | — | 5.2 | 100 | **3RV2111-0EA10** |
| | 0.35 ... 0.5 | — | — | — | — | — | — | 6.5 | 100 | **3RV2111-0FA10** |
| | 0.45 ... 0.63 | — | — | — | — | — | — | 8.2 | 100 | **3RV2111-0GA10** |
| | 0.55 ... 0.8 | — | — | — | — | — | — | 10 | 100 | **3RV2111-0HA10** |
| | 0.7 ... 1 | — | — | — | — | — | ½ | 13 | 100 | **3RV2111-0JA10** |
| | 0.9 ... 1.25 | — | — | — | — | ½ | ½ | 16 | 100 | **3RV2111-0KA10** |
| | 1.1 ... 1.6 | — | 1/10 | — | — | ¾ | ¾ | 21 | 100 | **3RV2111-1AA10** |
| 3RV2111-4FA10 | 1.4 ... 2 | — | ⅛ | — | — | ¾ | 1 | 26 | 100 | **3RV2111-1BA10** |
| | 1.8 ... 2.5 | — | ⅙ | ½ | ½ | 1 | 1 ½ | 33 | 100 | **3RV2111-1CA10** |
| | 2.2 ... 3.2 | 1/10 | ¼ | ½ | ¾ | 1 ½ | 2 | 42 | 100 | **3RV2111-1DA10** |
| | 2.8 ... 4 | ⅛ | ⅓ | ¾ | ¾ | 2 | 3 | 52 | 100 | **3RV2111-1EA10** |
| | 3.5 ... 5 | ⅙ | ½ | 1 | 1 | 3 | 3 | 65 | 100 | **3RV2111-1FA10** |
| | 4.5 ... 6.3 | ¼ | ½ | 1 | 1 ½ | 3 | 5 | 82 | 100 | **3RV2111-1GA10** |
| | 5.5 ... 8 | ⅓ | 1 | 2 | 2 | 5 | 5 | 104 | 100 | **3RV2111-1HA10** |
| | 7 ... 10 | ½ | 1 ½ | 2 | 3 | 5 | 7 ½ | 130 | 100 | **3RV2111-1JA10** |
| | 9 ... 12.5 | ½ | 2 | 3 | 3 | 7 ½ | 10 | 163 | 100 | **3RV2111-1KA10** |
| | 10[5] ... 16 | 1 | 2 | 3 | 5 | 10 | — | 208 | 55 | **3RV2111-4AA10** |
| | **Size S0[2] [3]** | | | | | | | | | |
| 3RV2111-0BA10 | 10[5] ... 16 | 1 ½ | 3 | 5 | 5 | 10 | — | 208 | 55 | **3RV2121-4AA10** |
| | 13[5] ... 20 | 1 ½ | 3 | 5 | 7 ½ | 15 | — | 260 | 55 | **3RV2121-4BA10** |
| | 16[5] ... 22 | 2 | 3 | 5 | 7 ½ | 15 | — | 286 | 55 | **3RV2121-4CA10** |
| | 18[5] ... 25 | 2 | 5 | 7 ½ | 10 | 20 | — | 325 | 55 | **3RV2121-4DA10** |
| | 23 ... 28[4] | 3 | 5 | 10 | 10 | 25 | — | 364 | 55 | **3RV2121-4NA10** |
| | 27 ... 32[4] [5] [6] | 3 | 7 ½ | 10 | 10 | 30 | — | 400 | 55 | **3RV2121-4EA10** |

1) Select motor starter protector by motor full load amps. Horsepower ratings are for reference only.
2) Accessories for mounting on the right and 3RV2915 three-phase busbars cannot be used. Accessories can be ordered separately.
3) The motor starter protectors rated up to 32 A can be used as manual motor controllers or as Type E combination motor controllers. For use as a Type E combination motor controller, a Type E terminal is required. See accessories page 1/13.
4) These products are NOT certified as Type E combination motor controllers. They can only be used as manual motor controllers.
5) The setting range of the thermal overload releases has been extended.
6) Suitable for use with IE3/IE4 motors up to a starting current of 256 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S2.
7) 3RV2 MSPs can only be used with Innovations contactors and accessories.

# 3RV2 Motor Starter Protectors/Circuit Breakers



## 3RV21 Class 10 – up to 100A with overload relay function (automatic RESET)

### Description

The 3RV2131/2142 MSPs are UL approved as Self Protected Combination Motor Controllers which are also called Type E. In this application, all the required functions for a motor branch are provided in one device: disconnect, short circuit protection, motor control and overload protection. A type E terminal adaptor is required for all ***screw terminal*** version S2 frame 3RV2131 above 45A as well as for all S3 frame motor starter protectors. ***Spring terminal*** MSPs can only be applied as Type E when used in the 3RV29 Infeed System.

The 3RV2131/2142 MSPs are also approved for use as follows:
– Manual Motor Controller: Motor starter, motor disconnect, control and overload protection.
– Group Installation: Motor starter only, motor disconnect, control and overload protection.
– Tap conductor Protection in Group Installation acc. NEC: Motor starter only; motor disconnect, control and overload protection.

When the 3RV2131/2142 is used with one of the 3 above mentioned approvals, they can be installed downstream of one circuit breaker or fuse set.

For more detailed application information and rules how to apply, size and rate these MSPs in control panels in general, in group installations or in accordance to international IEC standards visit our website: www.usa.siemens.com/controlpaneldesign

### Ordering Information

- ON/OFF rotary handle with lockout and visible trip indication.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 13 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Terminal versions: screw only.
- Auxiliaries and Accessories see pages 1/13–1/27.
- General Information see pages 1/39–1/42.
- Technical Data see pages 1/28–1/38.
- Dimensions see page 1/43–1/46.

Note: **Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.**

| Illustration | Setting range for thermal overload release | Single-Phase HP Ratings | | Three-Phase HP Ratings[1] | | | | Instantaneous electronic release [A] | UL short-circuit breaking capacity @ 480V [kA] | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 115V | 230V | 200V | 230V | 460V | 575V | | | |
| | **Size S2[2]** | | | | | | | | | |
| 3RV2131-4WB10 | 9.5 ... 14 | 1.5 | 3 | 5 | 5 | 10 | 15 | 208 | 65 | **3RV2131-4SA10** |
| | 12 ... 17 | 1.5 | 3 | 5 | 7.5 | 15 | 15 | 260 | 65 | **3RV2131-4TA10** |
| | 14 ... 20 | 1.5 | 3 | 7.5 | 7.5 | 15 | 20 | 260 | 65 | **3RV2131-4BA10** |
| | 18 ... 25 | 2 | 5 | 7.5 | 10 | 20 | 25 | 325 | 65 | **3RV2131-4DA10** |
| | 22 ... 32 | 3 | 5 | 10 | 10 | 25 | 30 | 416 | 65 | **3RV2131-4EA10** |
| | 28 ... 36 | 3 | 7.5 | 15 | 15 | 30 | 40 | 520 | 65 | **3RV2131-4PA10** |
| | 32 ... 40 | 3 | 7.5 | 15 | 15 | 30 | 40 | 585 | 65 | **3RV2131-4UA10** |
| | 35 ... 45 | 3 | 10 | 15 | 15 | 40 | 50 | 650 | 65 | **3RV2131-4VA10** |
| | 42 ... 52 | 5 | 10 | 15 | 20 | 40 | 50 | 741 | 65 | **3RV2131-4WA10** |
| | 49 ... 59 | 5 | 15 | 20 | 25 | 50 | 60 | 845 | 65 | **3RV2131-4XA10** |
| | 54 ... 65 | 5 | 15 | 20 | 25 | 50 | 60 | 845 | 65 | **3RV2131-4JA10** |
| | 62 ... 73 | 7.5 | 15 | 25 | 30 | 60 | 75 | 949 | 65 | **3RV2131-4KA10** |
| | 70 ... 80[4] | 7.5 | 15 | 25 | 30 | 60 | 75 | 1040 | 65 | **3RV2131-4RA10** |
| | **Size S3 with increased switching capacity[2]** | | | | | | | | | |
| 3RV2142-4FA10 | 28 ... 40 | 3 | 7.5 | 15 | 15 | 30 | 40 | 520 | 55 | **3RV2142-4FA10** |
| | 36 ... 50 | 5 | 10 | 15 | 20 | 40 | 50 | 650 | 55 | **3RV2142-4HA10** |
| | 45 ... 63 | 5 | 15 | 20 | 25 | 50 | 60 | 819 | 55 | **3RV2142-4JA10** |
| | 57 ... 75 | 7.5 | 15 | 25 | 25 | 60 | 75 | 975 | 55 | **3RV2142-4KA10** |
| | 65 ... 84 | 7.5 | 15 | 25 | 30 | 60 | 75 | 1170 | 55 | **3RV2142-4RA10** |
| | 75 ... 93 | 7.5 | 20 | 30 | 40 | 75 | 100 [3] | 1300 | 55 | **3RV2142-4YA10** |
| | 80 ... 100[5] | 10 | 25 | 40 | 40 | 75 | 100 [3] | 1300 | 55 | **3RV2142-4MA10** |

1) Select motor starter protector by motor full load amps. Horsepower ratings are for reference only.
2) Accessories for mounting on the right and 3RV2915 three-phase busbars cannot be used. Accessories can be ordered separately.
3) Shaded ratings apply for group installation only. These ratings do not apply as UL listed manual combination starters.
4) Suitable for use with IE3/IE4 motors up to a starting current of 720 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S3.
5) Suitable for use with IE3/IE4 motors up to a starting current of 780 A. For higher starting currents we recommend using 3VA circuit breakers.
6) Size S2 and S3 are listed as type E combination motor controllers. For required Type E terminals see page 1/10. 3RV2031 MSPs with a current setting limit of 45A or less do not require a type E terminal and fulfill the spacing requirements of UL508.
7) 3RV2 MSPs can only be used with 3RT2 contactors and accessories.

## Description

The 3RV101 MSP's, can be used as components in Group Installation per NEC 430-53(C) to turn motors on and off. Each device has built-in heater elements that provide overload protection and magnetic trip elements to protect the motor. When the 3RV101 is used as a component in Group Installation, multiple MSP's can be installed below one circuit breaker to protect its own motor. A contactor can be mounted to the MSP to provide a remotely operated starter.

## Ordering Information

- ON/OFF rocker mechanism with lockout.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 12 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Cage Clamp version.
- Terminal versions: screw, spring, ring lug.
- Auxiliaries and Accessories see pages 1/13–1/27.
- General Information see pages 1/39–1/42.
- Technical Data see pages 1/28–1/38.
- Dimensions see page 1/43–1/46.

Note: **Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.**

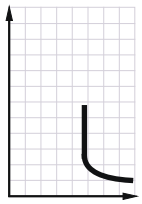
| Illustration | FLA Adjustment Range [A] | Single-Phase HP Ratings | | Three-Phase HP Ratings[1] | | | | Instantaneous short circuit release [A] | UL short-circuit breaking capacity @ 480V [kA] | **Screw connection** Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 115V | 230V | 200V | 230V | 460V | 575V | | | |
| | **3RV101 Frame Size S00[2]** | | | | | | | | | |
| | 0.11–0.16 | — | — | — | — | — | —[4] | 2.1 | 65 | **3RV1011-0AA10** |
| | 0.14–0.2 | — | — | — | — | — | — | 2.6 | 65 | **3RV1011-0BA10** |
| | 0.18–0.25 | — | — | — | — | — | — | 3.3 | 65 | **3RV1011-0CA10** |
| | 0.22–0.32 | — | — | — | — | — | — | 4.2 | 65 | **3RV1011-0DA10** |
| | 0.28–0.4 | — | — | — | — | — | — | 5.2 | 65 | **3RV1011-0EA10** |
| | 0.35–0.5 | — | — | — | — | — | — | 6.5 | 65 | **3RV1011-0FA10** |
| | 0.45–0.63 | — | — | — | — | — | ¼ | 8.2 | 65 | **3RV1011-0GA10** |
| | 0.55–0.8 | — | — | — | — | ¼ | ½ | 10 | 65 | **3RV1011-0HA10** |
| | 0.7–1 | — | — | — | — | ½ | ½ | 13 | 65 | **3RV1011-0JA10** |
| | 0.9–1.25 | — | — | — | ¼ | ¾ | ¾ | 16 | 65 | **3RV1011-0KA10** |
| | 1.1–1.6 | — | 1/10 | ¼ | 1/3 | ¾ | 1 | 21 | 65 | **3RV1011-1AA10** |
| | 1.4–2 | — | ⅛ | 1/3 | ½ | 1 | 1 ½ | 26 | 65 | **3RV1011-1BA10** |
| | 1.8–2.5 | — | 1/6 | ½ | ½ | 1 ½ | 1 ½ | 33 | 65 | **3RV1011-1CA10** |
| | 2.2–3.2 | 1/10 | ¼ | ¾ | ¾ | 1 ½ | 2 | 42 | 65 | **3RV1011-1DA10** |
| | 2.8–4 | ⅛ | 1/3 | ¾ | 1 | 2 | 3 | 52 | 65 | **3RV1011-1EA10** |
| | 3.5–5 | 1/6 | ½ | 1 | 1 | 3 | 3 | 65 | 65 | **3RV1011-1FA10** |
| | 4.5–6.3 | ¼ | ¾ | 1 ½ | 1 ½ | 5 | 5 | 82 | 65 | **3RV1011-1GA10** |
| | 5.5–8 | 1/3 | 1 | 2 | 2 | 5 | 5 | 104 | 65 | **3RV1011-1HA10** |
| | 7–10 | ½ | 1 ½ | 3 | 3 | 7 ½ | 10[4] | 130 | 65 | **3RV1011-1JA10** |
| | 9–12 | ½ | 2 | 3 | 3 | 7 ½ | 10 | 156 | 65 | **3RV1011-1KA10** |
| | **Accessories** | | | | | | | | | |
| | Transverse auxiliary switch[3] 1 NO + 1 NC separately | | | | | | | Approx. weight .02 kg | | **3RV29011E** |

1) Select MSP by motor full load amps. Horse power ratings for reference only.
2) Size S00 MSP are listed for group installation only.
3) Shaded ratings apply for group installation only. These ratings do not apply as UL listed manual combination starters.

## Selection and ordering data

### *Without auxiliary switches*

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E



3RV2321-..C10

3RV2311-..C20,
3RV2311-4AC20-0BA0

| Rated current | Single-Phase HP Ratings | | Three-Phase HP Ratings[1] | | | | Thermal overload release[2] | Instant-aneous electronic release | UL short-circuit breaking capacity @ 277V/ 480V | Screw terminals | | Spring-loaded terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $I_n$ | | | | | | | | I > | | Article No. | Price per PU | Article No. | Price per PU |
| A | 115V | 230V | 200V | 230V | 460V | 575V | A | A | k A | | | | |
| **Size S00** | | | | | | | | | | | | | |
| 0.16 | — | — | — | — | — | — | Without | 2.1 | 65 | **3RV2311-0AC10** | | **3RV2311-0AC20** | |
| 0.2 | — | — | — | — | — | — | Without | 2.6 | 65 | **3RV2311-0BC10** | | **3RV2311-0BC20** | |
| 0.25 | — | — | — | — | — | — | Without | 3.3 | 65 | **3RV2311-0CC10** | | **3RV2311-0CC20** | |
| 0.32 | — | — | — | — | — | — | Without | 4.2 | 65 | **3RV2311-0DC10** | | **3RV2311-0DC20** | |
| 0.4 | — | — | — | — | — | — | Without | 5.2 | 65 | **3RV2311-0EC10** | | **3RV2311-0EC20** | |
| 0.5 | — | — | — | — | — | — | Without | 6.5 | 65 | **3RV2311-0FC10** | | **3RV2311-0FC20** | |
| 0.63 | — | — | — | — | — | — | Without | 8.2 | 65 | **3RV2311-0GC10** | | **3RV2311-0GC20** | |
| 0.8 | — | — | — | — | — | — | Without | 10 | 65 | **3RV2311-0HC10** | | **3RV2311-0HC20** | |
| 1 | — | — | — | — | — | ½ | Without | 13 | 65 | **3RV2311-0JC10** | | **3RV2311-0JC20** | |
| 1.25 | — | — | — | — | ½ | ½ | Without | 16 | 65 | **3RV2311-0KC10** | | **3RV2311-0KC20** | |
| 1.6 | — | 1/10 | — | — | ¾ | ¾ | Without | 21 | 65 | **3RV2311-1AC10** | | **3RV2311-1AC20** | |
| 2 | — | ⅛ | — | — | ¾ | 1 | Without | 26 | 65 | **3RV2311-1BC10** | | **3RV2311-1BC20** | |
| 2.5 | — | ⅙ | ½ | ½ | 1 | 1½ | Without | 33 | 65 | **3RV2311-1CC10** | | **3RV2311-1CC20** | |
| 3.2 | 1/10 | ¼ | ½ | ¾ | 1½ | 2 | Without | 42 | 65 | **3RV2311-1DC10** | | **3RV2311-1DC20** | |
| 4 | ⅛ | ⅓ | ¾ | ¾ | 2 | 3 | Without | 52 | 65 | **3RV2311-1EC10** | | **3RV2311-1EC20** | |
| 5 | ⅙ | ½ | 1 | 1 | 3 | 3 | Without | 65 | 65 | **3RV2311-1FC10** | | **3RV2311-1FC20** | |
| 6.3 | ¼ | ½ | 1 | 1½ | 3 | 5 | Without | 82 | 65 | **3RV2311-1GC10** | | **3RV2311-1GC20** | |
| 8 | ⅓ | 1 | 2 | 2 | 5 | 5 | Without | 104 | 65 | **3RV2311-1HC10** | | **3RV2311-1HC20** | |
| 10 | ½ | 1½ | 2 | 3 | 5 | 7½ | Without | 130 | 65 | **3RV2311-1JC10** | | **3RV2311-1JC20** | |
| 12.5 | ½ | 2 | 3 | 3 | 7½ | 10 | Without | 163 | 65 | **3RV2311-1KC10** | | **3RV2311-1KC20** | |
| 16 | 1 | 2 | 3 | 5 | 10 | — | Without | 208 | 65 | **3RV2311-4AC10** | | **3RV2311-4AC20** | |
| ***For special operating conditions down to -50 °C*[3][4] | | | | | | | | | | | | | |
| 16 | 1 | 2 | 3 | 5 | 10 | — | Without | 208 | 65 | **—** | | **3RV2311-4AC20-0BA0** | |

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] For overload protection of the motors, appropriate overload relays must be used.

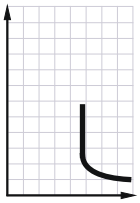
[3] The 3RV2311-.....-0BA0 motor starter protectors have a mechanical endurance of 500 operating cycles.

[4] The motor starter protectors do not have UL/CSA approval and are not certified either according to the European Explosion Protection Directive ATEX or according to the International Explosion Protection Standard (IECEx).

Auxiliary switches and other accessories can be ordered separately (see page 7/47 onwards).

### *Without auxiliary switches*

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E



3RV2321-..C10

3RV2321-..C20,
3RV2321-4AC20-0BA0

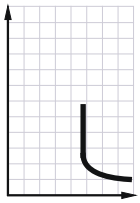
| Rated current | Single-Phase HP Ratings | | Three-Phase HP Ratings[1] | | | | Thermal overload release[2] | Instant-aneous electronic release | UL short-circuit breaking capacity @ 277V/ 480V | **Screw terminals** | | **Spring-loaded terminals** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $I_n$ | | | | | | | | $I >$ | | Article No. | Price per PU | Article No. | Price per PU |
| A | 115V | 230V | 200V | 230V | 460V | 575V | A | A | kA | | | | |
| **Size S0** | | | | | | | | | | | | | |
| 1.6 | — | 1/10 | — | — | ½ | ½ | Without | 21 | 65 | **3RV2321-1AC10** | | **3RV2321-1AC20** | |
| 2 | — | ⅛ | — | — | ¾ | ¾ | Without | 26 | 65 | **3RV2321-1BC10** | | **3RV2321-1BC20** | |
| 2.5 | — | ⅛ | ½ | ½ | 1 | 1½ | Without | 33 | 65 | **3RV2321-1CC10** | | **3RV2321-1CC20** | |
| 3.2 | 1/10 | ¼ | ½ | ¾ | 1½ | 2 | Without | 42 | 65 | **3RV2321-1DC10** | | **3RV2321-1DC20** | |
| 4 | ⅛ | ⅓ | ¾ | ¾ | 2 | 3 | Without | 52 | 65 | **3RV2321-1EC10** | | **3RV2321-1EC20** | |
| 5 | ⅙ | ½ | 1 | 1 | 3 | 3 | Without | 65 | 65 | **3RV2321-1FC10** | | **3RV2321-1FC20** | |
| 6.3 | ¼ | ½ | 1 | 1½ | 3 | 5 | Without | 82 | 65 | **3RV2321-1GC10** | | **3RV2321-1GC20** | |
| 8 | ⅓ | 1 | 2 | 2 | 5 | 5 | Without | 104 | 65 | **3RV2321-1HC10** | | **3RV2321-1HC20** | |
| 10 | ½ | 1½ | 2 | 3 | 7 | 7½ | Without | 130 | 65 | **3RV2321-1JC10** | | **3RV2321-1JC20** | |
| 12.5 | ½ | 2 | 3 | 3 | 7½ | 10 | Without | 163 | 65 | **3RV2321-1KC10** | | **3RV2321-1KC20** | |
| 16 | 1 | 2 | 3 | 5 | 10 | — | Without | 208 | 65 | **3RV2321-4AC10** | | **3RV2321-4AC20** | |
| 20 | 1½ | 3 | 5 | 5 | 10 | — | Without | 260 | 65 | **3RV2321-4BC10** | | **3RV2321-4BC20** | |
| 22 | 1½ | 3 | 5 | 7½ | 15 | — | Without | 286 | 65 | **3RV2321-4CC10** | | **3RV2321-4CC20** | |
| 25 | 2 | 3 | 5 | 7½ | 15 | — | Without | 325 | 65 | **3RV2321-4DC10** | | **3RV2321-4DC20** | |
| 28 | 2 | 5 | 7½ | 10 | 20 | — | Without | 364 | 65 | **3RV2321-4NC10** | | **3RV2321-4NC20** | |
| 32[3] | 2 | 5 | 7½ | 10 | 20 | — | Without | 400 | 65 | **3RV2321-4EC10** | | **3RV2321-4EC20** | |
| 36[4] | 3 | 5 | 10 | 10 | 25 | — | Without | 432 | 65 | **3RV2321-4PC10** | | — | |
| 40[4] | 3 | 7½ | 10 | 10 | 30 | — | Without | 480 | 65 | **3RV2321-4FC10** | | — | |
| ***For special operating conditions down to -50 °C***[5][6] | | | | | | | | | | | | | |
| 16 | 1 | 2 | 3 | 5 | 10 | — | Without | 208 | 65 | — | | **3RV2321-4AC20-0BA0** | |

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.
2) For overload protection of the motors, appropriate overload relays must be used.
3) Suitable for use with IE3 and IE4 motors up to a starting current of 256 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S2.
4) The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required. For use with IE3 and IE4 motors we recommend using 3RV2 motor starter protectors size S2.
5) The 3RV2321-.....-0BA0 motor starter protectors have a mechanical endurance of 500 operating cycles.
6) The motor starter protectors do not have UL/CSA approval and are not certified either according to the European Explosion Protection Directive ATEX or according to the International Explosion Protection Standard (IECEx).

Auxiliary switches and other accessories can be ordered separately (see page 7/47 onwards).

## 3RV23 motor starter protectors/circuit breakers *IE3/IE4* ready AC-3e

### *Without auxiliary switches*



3RV2331-4.C10, 14 to 45 A

3RV2331-4.C10, 52 to 80 A

3RV2332-4.C10, 14 to 45 A

3RV2332-4.C10, 52 to 80 A

3RV234.-4.C10, 40 to 100 A

| Rated current | Single-Phase HP Ratings | | Three-Phase HP Ratings[1] | | | | Thermal overload release[2] | Instant-aneous electronic release | UL short-circuit breaking capacity @ 277V/ 480V | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $I_n$ | | | | | | | | $I >$ | | Article No. | Price per PU | | |
| A | 115V | 230V | 200V | 230V | 460V | 575V | A | A | k A | | | | |
| **Size S2** | | | | | | | | | | | | | |
| 14 | 1.5 | 3 | 5 | 5 | 10 | 15 | Without | 208 | 65 | **3RV2331-4SC10** | | 1 | 1 unit |
| 17 | 1.5 | 3 | 5 | 7½ | 15 | 15 | Without | 260 | 65 | **3RV2331-4TC10** | | 1 | 1 unit |
| 20 | 1.5 | 3 | 7½ | 7½ | 15 | 20 | Without | 260 | 65 | **3RV2331-4BC10** | | 1 | 1 unit |
| 25 | 2 | 5 | 7½ | 10 | 20 | 25 | Without | 325 | 65 | **3RV2331-4DC10** | | 1 | 1 unit |
| 32 | 3 | 5 | 10 | 10 | 25 | 30 | Without | 416 | 65 | **3RV2331-4EC10** | | 1 | 1 unit |
| 36 | 3 | 7½ | 15 | 15 | 30 | 40 | Without | 520 | 65 | **3RV2331-4PC10** | | 1 | 1 unit |
| 40 | 3 | 7½ | 15 | 15 | 30 | 40 | Without | 585 | 65 | **3RV2331-4UC10** | | 1 | 1 unit |
| 45 | 3 | 10 | 15 | 15 | 40 | 50 | Without | 650 | 65 | **3RV2331-4VC10** | | 1 | 1 unit |
| 52 | 5 | 10 | 15 | 20 | 40 | 50 | Without | 741 | 65 | **3RV2331-4WC10** | | 1 | 1 unit |
| 59 | 5 | 15 | 20 | 25 | 50 | 60 | Without | 845 | 65 | **3RV2331-4XC10** | | 1 | 1 unit |
| 65 | 5 | 15 | 20 | 25 | 50 | 60 | Without | 845 | 65 | **3RV2331-4JC10** | | 1 | 1 unit |
| 73 | 7½ | 15 | 25 | 30 | 60 | 75 | Without | 949 | 65 | **3RV2331-4KC10** | | 1 | 1 unit |
| 80[3] | 7½ | 15 | 25 | 30 | 60 | 75 | Without | 1040 | 65 | **3RV2331-4RC10** | | 1 | 1 unit |
| **Size S3** | | | | | | | | | | | | | |
| 40 | 3 | 7½ | 15 | 15 | 30 | 40 | Without | 520 | 65 | **3RV2341-4FC10** | | 1 | 1 unit |
| 50 | 5 | 10 | 15 | 20 | 40 | 50 | Without | 650 | 65 | **3RV2341-4HC10** | | 1 | 1 unit |
| 63 | 5 | 15 | 20 | 25 | 50 | 60 | Without | 819 | 65 | **3RV2341-4JC10** | | 1 | 1 unit |
| 75 | 7½ | 15 | 25 | 25 | 60 | 75 | Without | 975 | 65 | **3RV2341-4KC10** | | 1 | 1 unit |
| 84 | 7½ | 15 | 25 | 30 | 60 | 75 | Without | 1170 | 65 | **3RV2341-4RC10** | | 1 | 1 unit |
| 93 | 7½ | 20 | 30 | 40 | 75 | 100 | Without | 1300 | 65 | **3RV2341-4YC10** | | 1 | 1 unit |
| 100[4] | 10 | 25 | 40 | 40 | 75 | 100 | Without | 1300 | 65 | **3RV2341-4MC10** | | 1 | 1 unit |

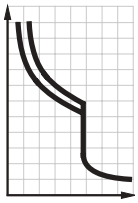
[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] For overload protection of the motors, appropriate overload relays must be used.

[3] Suitable for use with IE3 and IE4 motors up to a starting current of 720 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S3.

[4] Suitable for use with IE3 and IE4 motors up to a starting current of 780 A. For higher starting currents we recommend using 3VA circuit breakers (see Catalog LV 10).

## Selection and ordering data



| Rated Current[1] [A] | Thermal overload release (non-adjustable) [A] | Short Circuit breaking capacity [kA] 480 VAC | 480Y/277VAC | 600Y/347VAC | For Motor Protection[2] Instantaneous Over Current Release [A] | Order Number (Screw Terminals) | Weight [kg] | For Transformer Protection[3] Instantaneous Over Current Release [A] | Order Number (Screw Terminals) | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|---|
| **Innovations Frame Size S00[4]** | | | | | | | | | | |
| 0.16 | 0.16 | — | 65 | 10 | 2.1 | **3RV2711-0AD10** | 0.390 | 3.3 | **3RV2811-0AD10** | 0.390 |
| 0.2 | 0.2 | — | 65 | 10 | 2.6 | **3RV2711-0BD10** | 0.390 | 4.2 | **3RV2811-0BD10** | 0.390 |
| 0.25 | 0.25 | — | 65 | 10 | 3.3 | **3RV2711-0CD10** | 0.390 | 5.2 | **3RV2811-0CD10** | 0.390 |
| 0.32 | 0.32 | — | 65 | 10 | 4.2 | **3RV2711-0DD10** | 0.390 | 6.5 | **3RV2811-0DD10** | 0.390 |
| 0.4 | 0.4 | — | 65 | 10 | 5.2 | **3RV2711-0ED10** | 0.390 | 8.2 | **3RV2811-0ED10** | 0.390 |
| 0.5 | 0.5 | — | 65 | 10 | 6.5 | **3RV2711-0FD10** | 0.390 | 10 | **3RV2811-0FD10** | 0.390 |
| 0.63 | 0.63 | — | 65 | 10 | 8.2 | **3RV2711-0GD10** | 0.390 | 13 | **3RV2811-0GD10** | 0.400 |
| 0.8 | 0.8 | — | 65 | 10 | 10 | **3RV2711-0HD10** | 0.390 | 16 | **3RV2811-0HD10** | 0.450 |
| 1 | 1 | — | 65 | 10 | 13 | **3RV2711-0JD10** | 0.450 | 21 | **3RV2811-0JD10** | 0.450 |
| 1.25 | 1.25 | — | 65 | 10 | 16 | **3RV2711-0KD10** | 0.450 | 26 | **3RV2811-0KD10** | 0.460 |
| 1.6 | 1.6 | — | 65 | 10 | 21 | **3RV2711-1AD10** | 0.460 | 33 | **3RV2811-1AD10** | 0.460 |
| 2 | 2 | — | 65 | 10 | 26 | **3RV2711-1BD10** | 0.460 | 42 | **3RV2811-1BD10** | 0.460 |
| 2.5 | 2.5 | — | 65 | 10 | 33 | **3RV2711-1CD10** | 0.460 | 52 | **3RV2811-1CD10** | 0.460 |
| 3.2 | 3.2 | — | 65 | 10 | 42 | **3RV2711-1DD10** | 0.460 | 65 | **3RV2811-1DD10** | 0.460 |
| 4 | 4 | — | 65 | 10 | 52 | **3RV2711-1ED10** | 0.450 | 82 | **3RV2811-1ED10** | 0.460 |
| 5 | 5 | — | 65 | 10 | 65 | **3RV2711-1FD10** | 0.460 | 104 | **3RV2811-1FD10** | 0.460 |
| 6.3 | 6.3 | — | 65 | 10 | 82 | **3RV2711-1GD10** | 0.460 | 130 | **3RV2811-1GD10** | 0.460 |
| 8 | 8 | — | 65 | 10 | 104 | **3RV2711-1HD10** | 0.460 | 163 | **3RV2811-1HD10** | 0.460 |
| 10 | 10 | — | 65 | 10 | 130 | **3RV2711-1JD10** | 0.460 | 208 | **3RV2811-1JD10** | 0.460 |
| 12.5 | 12.5 | — | 65 | 10 | 163 | **3RV2711-1KD10** | 0.460 | 260 | **3RV2811-1KD10** | 0.460 |
| 15 | 15 | — | 65 | — | 208 | **3RV2711-4AD10** | 0.470 | 286 | **3RV2811-4AD10** | 0.470 |
| **Innovations Frame Size S0[4]** | | | | | | | | | | |
| 20 | 20 | — | 50 | — | 260 | **3RV2721-4BD10** | 0.514 | 325 | **3RV2821-4BD10** | 0.516 |
| 22 | 22 | — | 50 | — | 286 | **3RV2721-4CD10** | 0.516 | 364 | **3RV2821-4CD10** | 0.528 |
| **Innovations Frame Size S3[5]** | | | | | | | | | | |
| 10 | 10 | 65 | — | 20 | 150 | **3RV2742-5AD10** | 0.460 | — | — | — |
| 15 | 15 | 65 | — | 20 | 225 | **3RV2742-5BD10** | 0.460 | — | — | — |
| 20 | 20 | 65 | — | 20 | 260 | **3RV2742-5CD10** | 0.460 | — | — | — |
| 25 | 25 | 65 | — | 20 | 325 | **3RV2742-5DD10** | 0.460 | — | — | — |
| 30 | 30 | 65 | — | 20 | 390 | **3RV2742-5ED10** | 0.460 | — | — | — |
| 35 | 35 | — | 65 | 20 | 455 | **3RV2742-5FD10** | 0.460 | — | — | — |
| 40 | 40 | — | 65 | 20 | 520 | **3RV2742-5GD10** | 0.460 | — | — | — |
| 45 | 45 | — | 65 | 20 | 585 | **3RV2742-5HD10** | 0.460 | — | — | — |
| 50 | 50 | — | 65 | 20 | 650 | **3RV2742-5JD10** | 0.460 | — | — | — |
| 60 | 60 | — | 65 | 20 | 780 | **3RV2742-5LD10** | 0.460 | — | — | — |
| 70 | 70 | — | 65 | 10 | 910 | **3RV2742-5QD10** | 0.460 | — | — | — |

1) 100 % rated value acc. to UL 489 and IEC 60947-2 (100 % rated breaker).
2) Circuit breakers for system protection of motor and non-motor loads. Requires use of separate overload protection for motor applications.
3) Circuit breakers for system and transformer protection according to UL/CSA. Specially designed for transformers with high inrush current.
4) Transverse and lateral auxiliary switches can be ordered separately (see "Mountable accessories").
5) Transverse auxiliary switches must not be mounted. Lateral auxiliary switches can be ordered separately (see "Mountable accessories").
6) Siemens now has UL/CSA approvals for using the 3RV27 and 3RV28 UL489 Circuit Breakers with the 3RV2917 Infeed System and with the 3RV1915 combbusbars. Up until now it was limited to standard 3RV20 MSPs. These new approvals will greatly enhance application flexibility for customers. Not only can they use the bus systems to feed motor loads, they can now feed non-motor loads which should allow the bus systems to feed complete control panel applications. Customers will need to remove the line side terminals on any 3RV27 or 28s that will be fed by the bus system. Contact your Siemens representative for more information.

Refer to page 1/31 when using as upstream protection of a Manual Motor Controller or a Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations.

## Selection and ordering data

| | Type | Version | Width | Innovations: Fits 3RV2 Frame Size | Innovations: Screw Connection Order No. |
|---|---|---|---|---|---|
| **Auxiliary switches**[3] | | | mm | | Innovations |
| 3RV2901-1E | **Transverse auxiliary switches** | 1 CO<br>1 NO + 1 NC<br>2 NO | | S00, S0, S2, S3 | **3RV2901-1D**<br>1), 2) **3RV2901-1E**<br>1) **3RV2901-1F** |
| 3RV2901-1G | **Solid-state compatible, transverse auxiliary switches for use in dusty atmosphere** and in electronic circuits with low operating currents | 1 CO | | S00, S0, S2, S3 | **3RV2901-1G** |
| 3RV2901-1A | **Covering caps for transverse auxiliary switch slots** (pack of 10) | | | S00, S0, S2, S3 | **3RV2901-0H** |
| | **Lateral auxiliary switches** (side mount)<br>Width = 9 mm | 1 NO + 1 NC<br>2 NO<br>2 NC<br>2 NO + 2 NC | 9<br>9<br>9<br>18 | S00, S0, S2, S3 | 1), 2) **3RV2901-1A**<br>1) **3RV2901-1B**<br>1) **3RV2901-1C**<br>**3RV2901-1J** |
| **Auxiliary releases** [4] | | | | | Innovations |
| 3RV2902-1AB4 | **Undervoltage releases** (side mount)<br>Width = 18 mm | **DC**<br>24 V | | S00, S0, S2, S3 | **3RV2902-1AB4** |
| | | **AC 50 Hz**<br>24 V<br>110 V<br>—<br>230 V<br>400 V<br>415 V<br>500 V | **AC 60 Hz**<br>—<br>120 V<br>208 V<br>240 V<br>440 V<br>480 V<br>600 V | S00, S0, S2, S3 | **3RV2902-1AB0**<br>**3RV2902-1AF0**<br>1), 2) **3RV2902-1AM1**<br>1), 2) **3RV2902-1AP0**<br>**3RV2902-1AV0**<br>**3RV2902-1AV1**<br>**3RV2902-1AS0** |
| | **Undervoltage releases with leading auxiliary contacts 2 NO** (side mount)<br>Width = 18 mm | 24V<br>230 V<br>400 V<br>415 V | 24V<br>240 V<br>440 V<br>480 V | S00, S0, S2, S3 | **3RV2922-1CB0**<br>1) **3RV2922-1CP0**<br>1) **3RV2922-1CV0**<br>1), 2) **3RV2922-1CV1** |
| | **Shunt releases** (side mount)<br>Width = 18 mm | **AC 50/60 Hz 100% ON**[5]<br>20-24 V<br>90-110 V<br>210-240 V<br>350-415 V<br>500 V | **AC 50/60 Hz 5 sec ON**[6]<br>20-70 V<br>70-190 V<br>190-330 V<br>330-500 V<br>500 V | S00, S0, S2, S3 | 1), 2) **3RV2902-1DB0**<br>1), 2) **3RV2902-1DF0**<br>1) **3RV2902-1DP0**<br>**3RV2902-1DV0**<br>**3RV2902-1DS0** |

1) This product is also available with spring terminals. The order no. must be changed in the 8th position to a "2":e.g. 3RV1901-2E or 3RV2901-2E

2) This product is also available with ring lug terminals. The order no. must be changed in the 8th position to a "4": e.g. 3RV2901-4E

3) Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch 2 NO + 2 NC is used without transverse auxiliary switch.

4) One auxiliary release can be mounted at the right of each MSP. motor starter protector.

5) The response voltage at the lower limit of the voltage range at 0.85 (Tu=60°C) is valid for 100% (infinite)

6) The response voltage at the lower limit of the voltage range at 0.9 (Tu=60°C) applies for a duty cycle of 5 seconds at AC 50/60 Hz and DC.

## Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41E

| | Version | For motor starter protectors/ circuit breakers Size | Screw terminals Article No. | Price per PU | Spring-loaded terminals Article No. | Price per PU |
|---|---|---|---|---|---|---|
| **Signaling switches**[1] | | | | | | |
| 3RV2921-1M 3RV2921-2M | **Signaling switches** One signaling switch can be mounted on the left per motor starter protector. Separate tripped and short-circuit alarms, 1 NO + 1 NC each | S00[2] ... S3 | **3RV2921-1M** | | **3RV2921-2M** | |
| 3RV2921-5M | **3RV2 COM wireless auxiliary and signaling switch** NEW One wireless auxiliary and signaling switch can be mounted on the left per motor starter protector. The motor starter protector status is signaled by radio. 24 V DC supply voltage | S00[2] ... S3 | -- | | **3RV2921-5M** | |

[1] This accessory cannot be used for the 3RV27 and 3RV28 circuit breakers (sizes S00, S0, S3).
[2] Not for 3RV1011 motor starter protectors.

## Selection and ordering data

| | Modular spacing | Number of motor starter protectors that can be connected: Without lateral accessories | Incl. lateral auxiliary switch | With auxiliary trip unit | Rated current $I_n$ at 690 V | For motor starter protectors Size | Order No. | Order quantity | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|
| | mm | | | | A | | | | kg |
| **Three-phase busbar systems for Classic and Innovations** | | | | | | | | | |
| 3RV19 15-1AB | For feeding several motor starter protectors with screw terminals, mounted side-by-side on standard mounting rails, insulated, with touch protection. | | | | | | | | |
| | 45 | 2 | -- | -- | 63 | S00, S0[1)2)] | **3RV19 15-1AB** | 1 unit | 0.044 |
| | | 3 | | | | S00, S0[1)2)] | **3RV19 15-1BB** | 1 unit | 0.071 |
| 3RV19 15-1BB | | 4 | | | | S00, S0[1)2)] | **3RV19 15-1CB** | 1 unit | 0.099 |
| | | 5 | | | | S00, S0[1)2)] | **3RV19 15-1DB** | 1 unit | 0.124 |
| | 55 | -- | 2 | -- | 63 | S00, S0[1)2)] | **3RV19 15-2AB** | 1 unit | 0.048 |
| | | | 3 | | | S00, S0[1)2)] | **3RV19 15-2BB** | 1 unit | 0.079 |
| 3RV19 15-1CB | | | 4 | | | S00, S0[1)2)] | **3RV19 15-2CB** | 1 unit | 0.111 |
| | | | 5 | | | S00, S0[1)2)] | **3RV19 15-2DB** | 1 unit | 0.140 |
| | 63 | -- | -- | 2 | 63 | S00, S0[1)2)] | **3RV19 15-3AB** | 1 unit | 0.052 |
| | | | | 4 | | S00, S0[1)2)] | **3RV19 15-3CB** | 1 unit | 0.120 |
| 3RV19 15-1DB | 55 | 2 | -- | -- | 108 | S2[3)] | **3RV19 35-1A** | 1 unit | 0.150 |
| | | 3 | | | | S2[3)] | **3RV19 35-1B** | 1 unit | 0.214 |
| | | 4 | | | | S2[3)] | **3RV19 35-1C** | 1 unit | 0.295 |
| | 75 | -- | 2 | 2 | 108 | S2 | **3RV19 35-3A** | 1 unit | 0.161 |
| | | | 3 | 3 | | S2 | **3RV19 35-3B** | 1 unit | 0.262 |
| | | | 4 | 4 | | S2 | **3RV19 35-3C** | 1 unit | 0.369 |

1) Not suitable for 3RV21 motor starter protectors with overload relay function. The 3RV1915-5DB connecting piece is available for connecting motor starter protectors from size S0 to size S00.

2) Not suitable for 3RV UL 489 circuit breakers.

3) Auxiliary trip units and lateral auxiliary switches cannot be used in combination.

| | Version | Modular spacing | For motor starter protectors Size | Order No. | Order quantity | Weight approx. |
|---|---|---|---|---|---|---|
| | | mm | | | | kg |
| **Connecting pieces for three-phase busbars** | | | | **For Innovations** | | |
| 3RV19 15-5DB | For connecting three-phase busbars for motor starter protectors of size S0 (left) to size S00 (right) | 45 | S00, S0 | **3RV19 15-5DB** | 1 unit | 0.042 |

| | Conductor cross-section, AWG cables, solid or stranded: For **3RV1** MSP | For **3RV2** MSP | Tightening torque | For motor starter protector size | **3RV2 Innovations** [2)] Order No. |
|---|---|---|---|---|---|
| | AWG | AWG | Nm | | |
| **Three-phase feeder terminals for constructing "Type E Starters"** | | | | | **Innovations** |
| 3RV2935-5E | **Connection from top** | | | | |
| | — | 10…4 | 3-4 | S00 | **3RV2925-5EB** |
| | — | 10…4 | 3-4 | S0 | **3RV2925-5EB** |
| | 8...0 | 10...2/0 | 4.5-6 | S2 | **3RV2935-5E** |
| **Three-phase feeder terminals** | | | | | |
| 3RV29 25-5AB | **Connection from top** | | | | |
| | — | 10…4 | 3…4 | S00 | **3RV2925-5AB** |
| | — | 10…4 | 3…4 | S0 | **3RV2925-5AB** |
| 3RV2915-5B | **Connection from below**[3)] | | | | |
| | — | 10…4 | Input: 4, Output: 2 ... 2.5 | S00, S0 | **3RV2915-5B** |
| 3RV2935-5A | **Connection from top** | | | | |
| | 14...0 | -- | 4-6 | S2 | **3RV2935-5A** |

1) Do not mix 3RV1 Classic Accessories with 3RV2 Innovations MSPs

2) Do not mix 3RV2 Innovations Accessories with 3RV1 Classic MSPs

3) This terminal is connected in place of a switch, please take the space requirement into account.

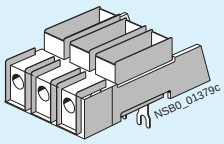
## Overview

### *Accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508/UL 60947-4-1*

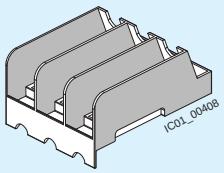
The 3RV20 motor starter protectors ***with screw terminals*** are approved according to UL 508/UL 60947-4-1 as "Self-Protected Combination Motor Controllers (Type E)".

This requires increased clearance and creepage distances (1 inch and 2 inches respectively) at the input side of the device, which are achieved by mounting a terminal block or a phase barrier.

3RV20 motor starter protectors ***with spring terminals*** can only be used as Type E when used in the 3RV29 Infeed System.




SIRIUS 3RV2928-1H terminal block*




SIRIUS 3RV2938-1K phase barrier*

* These accessories are only for screw terminals and mount on top of MSPs and are not for use on spring terminals which are located on the front of MSPs.

If screw terminal MSPs and spring terminal contactors are preferred, a hybrid link module can be utilized. See note 3.

| Motor starter protectors/ circuit breakers | Size | Essential accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508/UL 60947-4-1 |
|---|---|---|
| 3RV201., 3RV202. | S00/S0 | 3RV2928-1H terminal block or 3RV2928-1K phase barrier |
| 3RV2031-4B1., 3RV2031-4D.1., 3RV2031-4E1., 3RV2031-4P.1., 3RV2031-4S.1., 3RV2031-4T.1., 3RV2031-4U.1., 3RV2031-4V.1. | S2 | -- |
| 3RV2031-4J.1., 3RV2031-4K.1., 3RV2031-4R.1., 3RV2031-4W.1., 3RV2031-4X.1., 3RV2032 | S2 | 3RV2938-1K phase barrier |
| 3RV204 | S3 | 3RT2946-4GA07 terminal block |

-- No accessories needed

Special 3-phase infeed terminals are required for constructing "Type E Starters" with an insulated 3-phase busbar system (see page 1/15). These infeed terminals are only available for 3RV20 motor starter protectors ***with screw terminals***.

The 3RV29 infeed system also enables the assembly of "Type E Starters", see page 1/24 onwards.

Note:

According to CSA, these terminal blocks and the phase barriers can be omitted when the device is used as a "Self-Protected Combination Motor Controller (Type E)".

### *Link modules*

Feeders can be easily assembled from single devices with the help of the link modules. The following table shows the different combination options for devices with screw or spring-type terminals.

| Combination devices | 3RV2 motor starter protec-tors/ circuit breakers Size | 3RT2 contactors; 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors Size | Link modules Screw terminals | Spring-type terminals |
|---|---|---|---|---|
| **Link modules for connecting switching devices to 3RV2 motor starter protectors/circuit breakers[1)]** | | | | |
| 3RT2 contac-tors with AC or DC coil | S00 | S00 | 3RA1921-1DA00 | 3RA2911-2AA00 |
| | S0 | S00 | | -- |
| | S2 | S2 | 3RA2931-1AA00 | -- |
| 3RT2 contac-tors with AC coil | S0 | S0 | 3RA2921-1AA00 | 3RA2921-2AA00 |
| | S00 | S0 | | -- |
| 3RT2 contac-tors with DC coil | S0 | S0 | 3RA2921-1BA00 | 3RA2921-2AA00 |
| | S00 | S0 | | -- |
| 3RW30 soft starters | S00 | S00 | 3RA2921-1BA00 | 3RA2911-2GA00 |
| | S0 | S00 | | -- |
| 3RW30/ 3RW40 soft starters | S0 | S0 | 3RA2921-1BA00 | 3RA2921-2GA00 |
| | S00 | S0 | | -- |
| | S2[2)] | S2[2)] | 3RA2931-1AA00 | -- |
| 3RF34 solid-state contac-tors | S00/S0 | S00 | 3RA2921-1BA00 | -- |
| **Hybrid link modules for connecting contactors with spring-type terminals to 3RV2 motor starter protectors/circuit breakers with screw terminals[3)]** | | | | |
| 3RT2 contac-tors with AC or DC coil | S00 | S00 | 3RA2911-2FA00 | -- |
| | S0 | S0 | 3RA2921-2FA00 | -- |

-- Version not possible

1) The link modules cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV2.31-4K.1., 3RV2.31-4R.1., 3RV2.32-4K.1., 3RV2.32-4R.1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

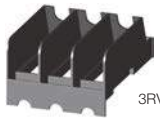
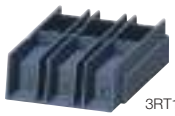
2) To assemble the feeder between a motor starter protector and a soft starter in size S2, the 3RA2932-1AC00 standard mounting rail adapter must be used.

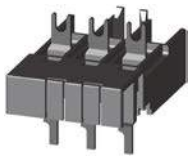
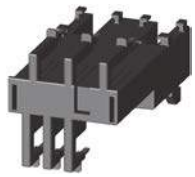
3) The motor starter protector to contactor hybrid link modules cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers. They are only suitable for constructing direct-on-line starters.

Note:

- Link modules can be used in
  - Sizes S00 and S0: up to max. 32 A
  - Size S2: up to max. 65 A
- Hybrid link modules can be used in
  - Sizes S00 and S0: up to max. 32 A

## Selection and ordering data

| Version | For motor starter protector size | Innovations 3RV2/3RT2 Order No. | Order Quantity |
|---|---|---|---|
| **Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508 / UL 60947-4-1** | | | |
| 3RV29 28-1H | Note: *UL 508 / UL 60947-4-1 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E".* The following terminal blocks or phase barriers must be used on 3RV motor starter protectors. The terminal blocks or phase barriers cannot be used in combination with the 3RV19 .5 three-phase busbars. *For construction with three-phase busbars, see "Accessories for busbar"* | | |
|  3RV29 28-1K | **Terminal blocks type E** | | |
| | For extended clearance and creepage distances (1 and 2 inch) S00, S0 | **3RV29 28-1H** | 1 unit |
| | S0 | — | 1 unit |
| | S2 | **3RV29 35-5E** | 1 unit |
| | S3 | **3RT2946-4GA07** [1] | 1 unit |
|  3RT1946-4GA07 | **Phase barriers** | | |
| | For extended clearance and creepage distances (1 and 2 inch) S00, S0 | **3RV29 28-1K** | 1 unit |
| | S2 | **3RV29 38-1K** | 1 unit |
| **Terminal covers for box terminals on 3RV2742 and Type E terminal block 3RT2946-4GA07** | | | |
| 3RV2948-1LAA00 | Additional touch protection to be fitted at the box terminals 3RV2742 (2 units required per device) and at Type E terminal block 3RT2946-4GA07 | | |
| | • Main current level S3 | **3RV2948-1LA00** | 1 unit |

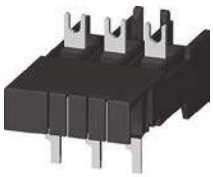
| Actuating voltage of contactor | Size 3RT contactor | 3RV motor starter protector | Innovations 3RV2/3RT2 Order No. | Order Quantity |
|---|---|---|---|---|
| **Link modules for motor starter protector to contactor** [2] | | | | |
|  3RA29 21-1AA00 | For mechanical and electrical connection between motor starter protector and contactor with screw terminals. | | **Screw Terminals** | |
| | **Single-unit packaging** | | | |
| AC/DC | S00 | S00/S0 | **3RA19 21-1DA00** | 1 unit |
| AC | S0 | S00/S0 | **3RA29 21-1AA00** | 1 unit |
| AC | S2 | S2 | **3RA29 31-1AA00** | 1 unit |
| AC | S3 | S3 | **3RA19 41-1AA00** | 1 unit |
| DC | S0 | S00/S0 | **3RA29 21-1BA00** | 1 unit |
| DC | S2 | S2 | **3RA29 31-1AA00** | 1 unit |
| DC | S3 | S3 | **3RA19 41-1AA00** | 1 unit |
| | **Multi-unit packaging** | | | |
| AC/DC | S00 | S00/S0 | **3RA19 21-1D** | 10 units |
| AC | S0 | S00/S0 | **3RA29 21-1A** | 10 units |
| DC | S0 | S00/S0 | **3RA29 21-1B** | 10 units |
| AC/DC | S2 | S2 | **3RA29 31-1A** | 5 units |
| AC/DC | S3 | S3 | **3RA19 41-1A** | 5 units |
|  3RA29 11-2AA00 | For mechanical and electrical connection between motor starter protector and contactor with spring-type terminals. | | **Spring-type Terminals** | |
| | **Single-unit packaging** | | | |
| AC/DC | S00 | S00 | **3RA29 11-2AA00** | 1 unit |
| AC [3] | S0 | S0 | **3RA29 21-2AA00** | 1 unit |
| DC | S0 | S0 | **3RA29 21-2AA00** | 1 unit |
| | **Multi-unit packaging** | | | |
| AC/DC | S00 | S00 | **3RA29 11-2A** | 10 units |
| AC [3] | S0 | S0 | **3RA29 21-2A** | 10 units |
| DC | S0 | S0 | **3RA29 21-2A** | 10 units |
| | **Spacers** | | | |
| | For compensating height on AC contactors | | | |
| Single-unit packaging | S0 | S0 | **3RA29 11-1CA00** | 1 unit |
| Multi-unit packaging | S0 | S0 | **3RA29 11-1C** | 5 units |

1) Transverse auxiliary switches cannot be installed when using this terminal block
2) The link modules for motor starter protector to contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 motor starter protectors
3) A spacer for height compensation on AC contactors size S0 is optionally available

*Note*
*Size S0 link modules can be used up to max. 32 A.*
*Size S2 link modules can be used up to 65A max.*

## Selection and ordering data

| Size: 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors | Size: 3RV2 motor starter protectors | Order No. | PU (UNIT, SET, M) | PS* | Weight approx. kg |
|---|---|---|---|---|---|
| **Link modules for motor starter protector to soft starter[1) 3)] and motor starter protector to solid-state contactor** | | | | | |
| Connection between motor starter protector and soft starter / solid-state contactor with screw terminals | | **Screw terminals** | | | |
| **Single-unit packaging** | | | | | |
| S00 | S00/S0 | **3RA29 21-1BA00** | 1 | 1 unit | 0.068 |
| S0 | S00/S0 | **3RA29 21-1BA00** | 1 | 1 unit | 0.068 |
| S2[3)] | S2 | **3RA29 31-1AA00** | 1 | 1 unit | 0.104 |
| S3[4)] | S3 | **3RA19 41-1AA00** | 1 | 1 unit | 0.104 |
| **Multi-unit packaging** | | | | | |
| S00 | S00/S0 | **3RA29 21-1B** | 1 | 10 units | 0.068 |
| S0 | S00/S0 | **3RA29 21-1B** | 1 | 10 units | 0.068 |
| S2[3)] | S2 | **3RA29 31-1A** | 1 | 5 units | 0.104 |
| S3[4)] | S2 | **3RA19 41-1A** | 1 | 5 units | 0.104 |


3RA29 21-1BA00

| Connection between motor starter protector and soft starter with spring-type terminals | | **Spring-type terminals** | | | |
|---|---|---|---|---|---|
| **Single-unit packaging** | | | | | |
| S00 | S00 | **3RA29 11-2GA00** | 1 | 1 unit | 0.038 |
| S0 | S0 | **3RA29 21-2GA00** | 1 | 1 unit | 0.072 |
| **Multi-unit packaging** | | | | | |
| S00 | S00 | **3RA29 11-2G** | 1 | 10 units | 0.380 |
| S0 | S0 | **3RA29 21-2G** | 1 | 10 units | 0.720 |

3RA29 21-2GA00

1) The link modules for motor starter protector to soft starter and for motor starter protector to solid-state contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 motor starter protectors.

*Note:*
*S0 link modules can be used up to max. 32 A.*
*S2 link modules can be used up to max. 65 A.*

| Actuating voltage of contactor | Size: 3RT2 contactors | Size: 3RV2 motor starter protectors | Order No. | PU (UNIT, SET, M) | PS* | Weight approx. kg |
|---|---|---|---|---|---|---|
| **Hybrid link modules for motor starter protector to contactor[1)]** | | | | | | |
| For mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals | | | | | | |
| **Single-unit packaging** | | | | | | |
| AC/DC | S00 | S00 | **3RA29 11-2FA00** | 1 | 1 unit | 0.029 |
| AC[2)]/DC | S0 | S0 | **3RA29 21-2FA00** | 1 | 1 unit | 0.056 |

3RA29 11-2FA00

| **Multi-unit packaging** | | | | | | |
|---|---|---|---|---|---|---|
| AC/DC | S00 | S00 | **3RA29 11-2F** | 1 | 10 units | 0.290 |
| AC[2)]/DC | S0 | S0 | **3RA29 21-2F** | 1 | 10 units | 0.560 |
| **Spacers[2)]** for compensating the height on AC contactors | | | | | | |
| Single-unit packaging | S0 | S0 | **3RA29 11-1CA00** | 1 | 1 unit | 0.001 |
| Multi-unit packaging | S0 | S0 | **3RA29 11-1C** | 1 | 5 units | 0.001 |

3RA29 21-2FA00

1) The hybrid link modules for motor starter protector to contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 motor starter protectors or reversing starters.

2) A spacer for height compensation on AC contactors size S0 is optionally available. See 3RA2911-1CA00

3) To assemble the starter between a motor starter protector and a soft starter in size S2, the 3RA2932-1AC00 standard mounting rail adapter must be used.

4) It is only permissible to assemble the feeder between the motor starter protector and the soft starter in Size S3 on a mounting plate.

*Note:*
*Hybrid link modules can be used up to max. 32 A.*

## Selection and ordering data

| | Type | Design | For SIRIUS MSP size | Order No. | Order Quantity | Weight approx. (kg) |
|---|---|---|---|---|---|---|
| **Isolator module** [1] | | | | | | |
| 3RV2938-1A without padlock 3RV29 28-1A without padlock | | Visible isolating distance for isolating individual motor starter protectors from the network, lockable in isolating position. | S00, S0 | **3RV29 28-1A** | 1 unit | 0.132 |
| | | | S2 [1] | **3RV29 38-1A** | 1 unit | 0.368 |
| **Auxiliary terminal, 3 pole** | | | | | | |
| 3RT19 46-4F | | For connection of auxiliary and control cables to the main conductor connections | S3 | **3RT29 46-4F** | 1 unit | 0.10 |
| **Covers** | | | | | | |
| 3RV1 (size S3) with 3RT19 46-4EA1 | **Terminal cover** for box terminals | Additional touch guard to be fitted at the box terminals (2 units can be mounted per MSP) | S2 | **3RT29 36-4EA2** | 1 unit | 0.014 |
| | | | S3 | **3RT29 46-4EA2** | 1 unit | 0.019 |
| 3RV29 28-4AA00 | **Terminal cover** for cable lug and bar connection | For maintaining the required voltage clearance and as protection against the equipment being touched if distant box terminals are used (2 units can be mounted per MSP) | S3 | **3RT19 46-4EA1** | 1 unit | 0.03 |
| 3RV29 08-4AA10 | **Terminal cover** for devices with ring lug terminal connection | • Main current level | S00, S0 [2] | **3RV29 28-4AA00** | 1 unit | 0.01 |
| | | • For transverse auxiliary switches | S00, S0 [2] | **3RV29 08-4AA10** | 1 unit | 0.01 |
| 3RV29 08-0P | **Scale cover** | For covering the current setting scale. Packing unit: Bag with 10 scale covers. | S00, S0, S2 [3] | **3RV29 08-0P** | 10 units | |
| | | | S3 | **3RV19 08-0P** | 10 units | |
| **Fixing Material** | | | | | | |
| 3RB1900-0B | **Push-in lugs** For screwing the motor starter protector onto mounting plates. | Two units are required for each motor starter protector. | S00 | **3RB19 00-0B** | 10 units | 0.10 |
| **Tools for opening spring-type terminals by hand** | | | | | | |
| 3RA29 08-1A | **Screwdriver** For all SIRIUS devices with spring terminals | Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black partially insulated | S00, S0, S2 | **3RA29 08-1A** | 1 unit | 0.045 |

1) The isolator module for size S2 can be used only with 3RV2 motor starter protectors/circuit breakers up to max. 65 A. Similarly, it cannot be used with the transverse auxiliary switch or three-phase busbars.

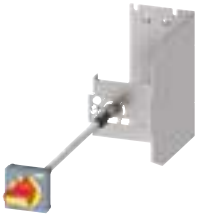
2) Compatible with 3RV20 motor starter protectors.

3) Compatible with 3RV20, 3RV21, and 3RV24 motor starter protectors.

## Selection and ordering data

| Version | Color of actuator | Version of extension shaft | For motor starter protectors/circuit breakers | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | Size | d | | | | | |
| **Door-coupling rotary operating mechanisms** | | | | | | | | | |
| 3RV2926-1B | | | | | | | | | |
| The door-coupling rotary operating mechanisms consist of a actuator, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm).<br>The door-coupling rotary operating mechanisms are dimensioned for degree of protection IP64. For UL/CSA applications, they are approved for Enclosure Types 1, 3R and 12. The door interlocking prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to three padlocks.<br>With the optional 3RV2926-0Q tolerance compensation, an offset can be compensated when installing the door-coupling rotary operating mechanism. | | | | | | | | | |
| **Door-coupling rotary operating mechanisms** | Gray | 130 | S00[1] ... S3 | X | **3RV2926-1B** | | 1 | 1 unit | 41E |
| | | 330 | S00[1] ... S3 | X | **3RV2926-1K** | | 1 | 1 unit | 41E |
| 3RV2926-1C | | | | | | | | | |
| **EMERGENCY OFF door-coupling rotary operating mechanisms** | Red/ yellow | 130 | S00[1] ... S3 | X | **3RV2926-1C** | | 1 | 1 unit | 41E |
| | | 330 | S00[1] ... S3 | X | **3RV2926-1L** | | 1 | 1 unit | 41E |
| ***Optional accessories*** | | | | | | | | | |
| 3RV2926-0Q | | | | | | | | | |
| **Tolerance compensation** | -- | -- | -- | X | **3RV2926-0Q** | | 1 | 1 unit | 41E |

[1] Not for 3RV1011 motor starter protectors.

| Version | Color of actuator | Version of extension shaft | For motor starter protectors/circuit breakers | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | Size | d | | | | | |
| **Door-coupling rotary operating mechanisms for harsh conditions** | | | | | | | | | |
| The door-coupling rotary operating mechanisms consist of a actuator, a coupling driver, an extension shaft of 300 mm in length (8 mm x 8 mm), a spacer and two metal brackets into which the motor starter protector/circuit breaker is inserted.<br>The door-coupling rotary operating mechanisms are designed to degree of protection IP65. For UL/CSA applications, they are approved for Enclosure Types 1, 3R and 12. The door interlocking reliably prevents opening of the control cabinet door in the ON position of the motor starter protector/circuit breaker. The OFF position can be locked with up to three padlocks.<br>Laterally mountable auxiliary releases and 2-pole auxiliary switches can be used.<br>The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.<br>With the optional 3RV2926-2Q tolerance compensation, an offset can be compensated when installing the door-coupling rotary operating mechanism for harsh conditions. | | | | | | | | | |
| <br>3RV2946-3B | | | | | | | | | |
| **Door-coupling rotary operating mechanisms** | Gray | 300 | S00[1], S0 | X | **3RV2926-3B** | | 1 | 1 unit | 41E |
| | | | S2 | X | **3RV2936-3B** | | 1 | 1 unit | 41E |
| | | | S3 | X | **3RV2946-3B** | | 1 | 1 unit | 41E |
|  <br>3RV2946-3C | | | | | | | | | |
| **EMERGENCY OFF door-coupling rotary operating mechanisms** | Red/ yellow | 300 | S00[1], S0 | X | **3RV2926-3C** | | 1 | 1 unit | 41E |
| | | | S2 | X | **3RV2936-3C** | | 1 | 1 unit | 41E |
| | | | S3 | X | **3RV2946-3C** | | 1 | 1 unit | 41E |
| ***Optional accessories*** | | | | | | | | | |
| <br>3RV2926-2Q | | | | | | | | | |
| **Tolerance compensation** | -- | -- | S00 ... S3 | X | **3RV2926-2Q** | | 1 | 1 unit | 41E |
| ***Necessary accessories for mounting one main switch in size S3 according to UL 508A and NFPA 79*** *(see also page 7/55)* | | | | | | | | | |
| <br>3RV2926-0P | | | | | | | | | |
| **Shaft supports** | -- | -- | S3 | X | **3RV2926-0P** | | 1 | 1 unit | 41E |
| **Supplementary handles** | | | | | | | | | |
| <br>3VA9137-0GC01 | | | | | | | | | |
| • Standard | Gray | -- | S3 | 2 | **3VA9137-0GC01** | | 1 | 1 unit | 12P |
| <br>3VA9137-0GC05 | | | | | | | | | |
| • EMERGENCY OFF | Red/ yellow | -- | S3 | 2 | **3VA9137-0GC05** | | 1 | 1 unit | 12P |

[1] Not for 3RV1011 motor starter protectors.

## Selection and ordering data

| | Version | Degree of protection | Integrated terminals | Width | For 3RV20 to 3RV24 motor starter protectors | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | mm | Size | | | | |
| **Molded-plastic enclosures for surface mounting[1]** | | | | | | | | | |
| 3RV1933-1DA00 | **With rotary operating mechanism,** lockable in 0 position | IP55 | N and PE | 54 (for motor starter protector + lateral auxiliary switch) | S00[3], S0 | **3RV1923-1CA00** | | 1 | 1 unit |
| | | | | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[3], S0 | **3RV1923-1DA00** | | 1 | 1 unit |
| | | | | 82 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S2 | **3RV1933-1DA00** | | 1 | 1 unit |
| 3RV1923-1FA00, 3RV1933-1GA00 | **With EMERGENCY OFF rotary operating mechanism,** lockable in 0 position | IP55 | N and PE | 54 (for motor starter protector + lateral auxiliary switch) | S00[3], S0 | **3RV1923-1FA00** | | 1 | 1 unit |
| | | | | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[3], S0 | **3RV1923-1GA00** | | 1 | 1 unit |
| | | | | 82 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S2 | **3RV1933-1GA00** | | 1 | 1 unit |
| **Cast aluminum enclosures for surface mounting[1]** | | | | | | | | | |
| 3RV1923-1DA01 | **With rotary operating mechanism,** lockable in 0 position | IP65 | PE[4] | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[3], S0 | **3RV1923-1DA01** | | 1 | 1 unit |
| | **With EMERGENCY OFF rotary operating mechanism,** lockable in 0 position | IP65 | PE[4] | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[3], S0 | **3RV1923-1GA01** | | 1 | 1 unit |
| **Molded-plastic enclosures for flush mounting[5]** | | | | | | | | | |
| 3RV1923-2DA00 | **With rotary operating mechanism,** lockable in 0 position | IP55 (front side) | N and PE | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[3], S0 | **3RV1923-2DA00** | | 1 | 1 unit |
| | **With EMERGENCY OFF rotary operating mechanism,** lockable in 0 position | IP55 (front side) | N and PE | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[3], S0 | **3RV1923-2GA00** | | 1 | 1 unit |
| 3RV1913-2DA00 | **With actuator diaphragm** | IP55 (front side) | N and PE | 72 (for motor starter protector + lateral auxiliary switch[2] + auxiliary release) | S00[6] | **3RV1913-2DA00** | | 1 | 1 unit |
| **Molded-plastic enclosures for surface mounting** | | | | | | | | | |
| 3RV1913-1CA00 | **With actuator diaphragm** | IP55 | N and PE | 85 | S00[6] | **3RV1913-1CA00** | | 1 | 1 unit |
| | | | | 105 | S00[6] | **3RV1913-1DA00** | | 1 | 1 unit |

1) The rear cable bushings cannot be used on 3RV2.11-...2. and 3RV2.21-...2. devices with spring-loaded terminals.
2) Only valid for lateral auxiliary switches with two auxiliary contacts.
3) Not for 3RV1011 motor starter protectors.
4) If required, an additional N terminal can be mounted (e.g. 8WA1011-1BG11).
5) Not suitable for 3RV2.11-...2. and 3RV2.21-...2. devices with spring-loaded terminals.
6) Only for 3RV1011 motor starter protectors.

| | Version | Degree of protection | For 3RV20 to 3RV24 motor starter protectors | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | Size | | | | |
| **Front plates**[1] | | | | | | | |
| 3RV1923-4B + 3RV1923-4G | **Molded-plastic front plates with rotary operating mechanism,** lockable in 0 position<br>For actuation of 3RV2 motor starter protectors in any enclosure | IP55 (front side) | S00[2] up to S3 | **3RV1923-4B** | | 1 | 1 unit |
| | **Molded-plastic front plates with EMERGENCY OFF rotary operating mechanism, red/yellow,** lockable in 0 position<br>EMERGENCY OFF actuation of 3RV2 motor starter protectors in any enclosure | IP55 (front side) | S00[2] up to S3 | **3RV1923-4E** | | 1 | 1 unit |
| | **Holders for front plates**<br>Holder is mounted on front plate, motor starter protector with and without accessories is snapped in. | -- | S00[2], S0 | **3RV1923-4G** | | 1 | 1 unit |

[1] It is not possible to use a signaling switch or 4-pole auxiliary switch with front plates.
[2] Not for 3RV1011 motor starter protectors.

| | Version | Rated control supply voltage $U_s$ | For 3RV20 to 3RV24 motor starter protectors | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | V | Size | | | | |
| **Indicator lights** | | | | | | | |
| 3RV1903-5B | **Indicator lights**<br>For all enclosures and front plates<br>• With LED lamp for versions 110 ... 120 V, with glow lamp for versions 220 ... 500 V<br>• With colored lenses red, green, yellow-orange and clear | 110 ... 120<br>220 ... 240<br>380 ... 415<br>480 ... 500 | S00 to S3 | **3RV1903-5B**<br>**3RV1903-5C**<br>**3RV1903-5E**<br>**3RV1903-5G** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |

## Overview

The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete motor starters with a screw or spring-type connection in sizes S00 and S0 (exception: this system cannot be used for the 3RV21).

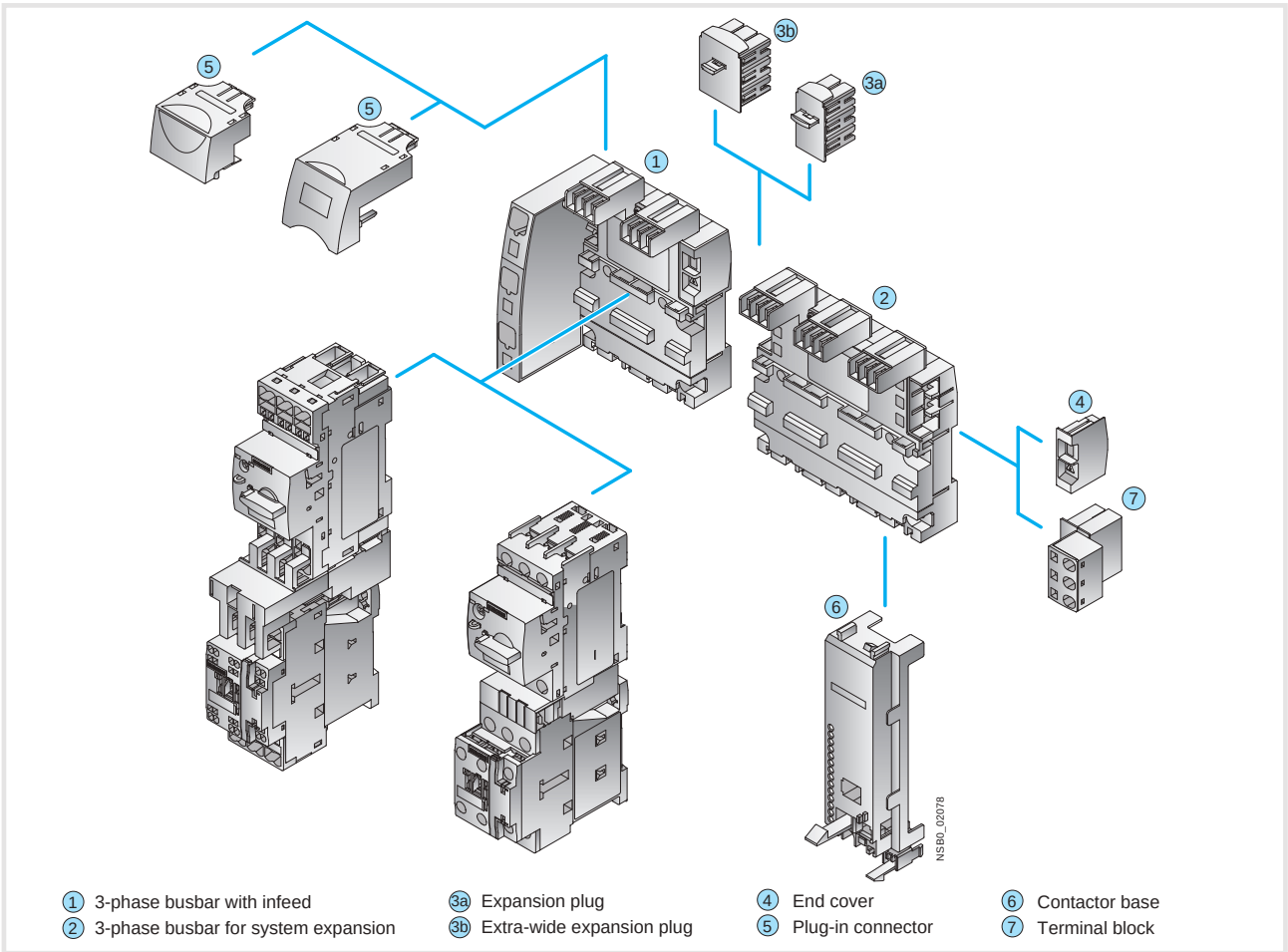
Siemens now has UL/CSA approvals for using the 3RV27 and 3RV28 UL489 Circuit Breakers with the 3RV2917 Infeed System and with the 3RV1915 comb-busbars. Up until now it was limited to standard 3RV20 MSPs. These new approvals will greatly enhance application flexibility for customers. Not only can they use the bus systems to feed motor loads, they can now feed non-motor loads which should allow the bus systems to feed complete control panel applications. Customers will need to remove the line side terminals on any 3RV27 or 28s that will be fed by the bus system.

The 3RV29 infeed system is approved in accordance with IEC to 500V. It is also UL approved and authorized for “Self-Protected Combination Motor Controller” (Type E starter) as well as for Type F starter (Type E starter + contactor). The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed). This infeed with spring-type terminals is mounted on the right or left depending on the version and can be supplied with a maximum conductor cross-section of 4 AWG (with end sleeve). A basic module has two sockets onto each of which a motor starter protector can be snapped.

Expansion modules are available for extending the system (three-phase busbars for system expansion). The individual modules are connected through an expansion plug.

The electrical connection between the three-phase busbars and the motor starter protectors is implemented through plug-in connectors. The complete system can be mounted on a TH 35 standard mounting rail to EN 60715 and can be expanded as required up to a maximum current carrying capacity of 63 A.

The system is mounted extremely quickly and easily thanks to the simple plug-in technique. Thanks to the lateral infeed, the system also saves space in the control cabinet. The additional overall height required for the infeed unit is only 30 mm. The alternative infeed possibilities on each side offer a high degree of flexibility for configuring the control cabinet: Infeed on left-hand or right-hand side as well as infeed on one side and out-feed on the other side to supply further loads are all possible. A terminal block with spring-type connections in combination with a standard mounting rail enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components such as 5SY miniature circuit breakers or SIRIUS relay components.




3RV29 infeed system

### ① *Three-phase busbars with infeed*

A three-phase busbar with infeed unit is required for connecting the energy supply. This module comprises one infeed module and 2 sockets which each accept one motor starter protector. A choice of two versions with infeed on the left or right is available. The infeed is connected using spring-type terminals. The spring-type terminals permit conductor cross-sections of up to 25 $mm^2$ with end sleeves. An end cover is supplied with each module.

### ② *Three-phase busbars for system expansion*

The three-phase busbars for system expansion allow the system to be expanded. There is a choice of modules with 2 or 3 sockets. The system can be expanded as required up to a maximum current carrying capacity of 63 A. An expansion plug is supplied with each module.

### ③a *Expansion plug*

The expansion plug is used for electrical connection of adjacent three-phase busbars. The current carrying capacity of this plug equals 63 A. One expansion plug is supplied with each three-phase busbar for system expansion. Additional expansion plugs are therefore only required as spare parts.

### ③b *Extra-wide expansion plug*

The wide expansion plug makes the electrical connection between two three-phase busbars, thus performing the same function as the 3RV29 17-5BA00 expansion plug; the electrical characteristics (e.g. a current carrying capacity of 63 A) are identical.

The 3RV29 17-5E expansion plug is 10 mm wider than the 3RV29 17-5BA00 expansion plug, hence in the plugged state there is a distance of 10 mm between the connected three-phase busbars. This distance can be used to lay the auxiliary current and control current wiring ("wiring duct"). The motor starter protector and contactor can be wired from underneath, which means that the complete cable duct above the system can be omitted.

### ④ *End cover*

The end cover is used to cover the three-phase busbar at the open end of the system. This cover is therefore only required once for each system. An end cover is supplied with each three-phase busbar system with infeed. Further end covers are therefore only required as spare parts.

### ⑤ *Plug-in connector*

The plug-in connector is used for the electrical connection between the three-phase busbar and the 3RV2 motor starter protector. These plug-in connectors are available in versions for screw or spring-type terminals.

### ⑥ *Contactor base*

Motor starters can be assembled in the system using the contactor base. The contactor bases are suitable for contactors sizes S00 and S0 with spring-type and screw terminals and are simply snapped onto the three-phase busbars. Direct-on-line starters and reversing starters are possible. One contactor base is required for direct-on-line starters and two are required for reversing starters.

To assemble motor starters for reversing starters, the contactor bases can be arranged alongside each other (90 mm overall width). In this case the mechanical interlocking of the contactors is possible. The contactor bases are also suitable for soft starters size S00 and S0 with screw connection.

The infeed system is designed for mounting on a 35 mm standard mounting rail with 7.5 mm overall depth. This standard mounting rail gives the contactor base a stable mounting surface to sit on. If standard mounting rails with a depth of 15 mm are used, the spacer connected to the bottom of the contactor base must be knocked out and plugged into the mating piece that is also on the underside. Then the contactor base also has a stable mounting surface. When standard mounting rails with a depth of 7.5 mm are used, the spacer has no function and can be removed.

The link modules are used for direct start motor starters, in which case the use of a contactor base is not absolutely necessary. Motor starter protector and contactor assemblies can then be directly snapped onto the sockets of the three-phase busbars. For starters of size S00 and S0, the corresponding 3RA19 21-1...., 3RA29 11-2...., 3RA29 21-1.... or 3RA29 21-2.... link modules should generally be used.

### ⑦ *Terminal block*

The 3RV29 17-5D terminal block enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components. Using the terminal block the 3 phases can be fed out of the system; which means that single-phase loads can also be integrated in the system. The terminal block is plugged into the slot of the expansion plug and thus enables outfeeding from the middle or end of the infeed system. The terminal block can be rotated through 180° and be locked to the support modules of the infeed system. The 3RV19 17-7B 45 mm standard mounting rail for screwing onto the support plate is available in addition in order to be able to plug the single-phase, 2-phase and 3-phase components onto the infeed system.

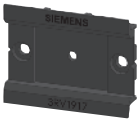
## Selection and ordering data

| | Type | Version | For 3RV20, 3RV23, 3RV24 motor starter protectors<br>Size | Order No. | Standard Pack Quantity | Weight approx.<br>kg |
|---|---|---|---|---|---|---|
| **Three-phase busbars with infeed** | | | | | | |
| <br>3RV29 17-1A | **3-phase busbars with infeed**<br>incl. end cover 3RV29 17-6A | For 2 motor starter protectors with screw connection or spring-type terminals | | | | |
| | | • With infeed on the left | S00, S0 | **3RV29 17-1A** | 1 unit | 0.369 |
| | | • With infeed on the right | S00, S0 | **3RV29 17-1E** | 1 unit | 0.369 |
| **Three-phase busbars for system expansion** | | | | | | |
| <br>3RV29 17-4A | **Three-phase busbars**<br>incl. 3RV29 17-5BA00 expansion plug | For motor starter protectors with screw connection or spring-type terminals | | | | |
| | | • For 2 motor starter protectors | S00, S0 | **3RV29 17-4A** | 1 unit | 0.229 |
| | | • For 3 motor starter protectors | S00, S0 | **3RV29 17-4B** | 1 unit | 0.328 |
| **Plug-in connectors** | | | | | | |
| <br>3RV29 17-5AA00 | **Plug-in connectors**<br>to make contact with the motor starter protectors | • For spring-type terminals | | **Spring-type terminals** | | |
| | | - Single-unit packaging | S00[1]<br>S0[2] | **3RV29 17-5AA00**<br>**3RV29 27-5AA00** | 1 unit<br>1 unit | 0.046<br>0.059 |
| | | - Multi-unit packaging | S00[1]<br>S0[2] | **3RV29 17-5A**<br>**3RV29 27-5A** | 10 units<br>10 units | 0.046<br>0.059 |
| <br>3RV29 17-5CA00 | | • For screw terminals | | **Screw terminals** | | |
| | | - Single-unit packaging | S00[1]<br>S0[2] | **3RV29 17-5CA00**<br>**3RV19 27-5AA00** | 1 unit<br>1 unit | 0.029<br>0.040 |
| | | - Multi-unit packaging | S00[1]<br>S0[2] | **3RV29 17-5C**<br>**3RV19 27-5A** | 10 units<br>10 units | 0.029<br>0.036 |

| | Type | Version | For contactors<br>Size | Order No. | Standard Pack Quantity | Weight approx.<br>kg |
|---|---|---|---|---|---|---|
| **Contactor bases** | | | | | | |
| <br>3RV29 27-7AA00 | **Contactor bases**<br>for mounting direct-on-line or reversing starters | Single-unit packaging | S00 | **3RV29 17-7AA00** | 1 unit | 0.042 |
| | | | S00, S0 | **3RV29 27-7AA00** | 1 unit | 0.050 |

[1] *I* > 14 A, note derating; see the system manual "SIRIUS Innovations", Chapter "Motor Starter Protectors".

[2] *I* > 16 A, note derating; see the system manual "SIRIUS Innovations", Chapter "Motor Starter Protectors".

| | Type | Version | Order No. | Standard Pack Quantity | Weight approx. kg |
|---|---|---|---|---|---|
| **Terminal blocks** | | | | | |
| 3RV29 17-5D | **Terminal blocks** For integration of single-phase, two-phase and three-phase components | Single-unit packaging | **3RV29 17-5D** | 1 unit | 0.049 |
| **45 mm standard mounting rails** | | | | | |
|  3RV19 17-7B | **45 mm standard mounting rails** for mounting onto bus bar adapters | Single-unit packaging | **3RV19 17-7B** | 1 unit | 0.261 |
| **Extra-wide expansion plugs** | | | | | |
| 3RV29 17-5E | **Extra-wide expansion plugs as accessory** | Single-unit packaging | **3RV29 17-5E** | 1 unit | 0.037 |
| **Expansion plugs** | | | | | |
| 3RV29 17-5BA00 | **Expansion plugs**[1] as spare part | Single-unit packaging | **3RV29 17-5BA00** | 1 unit | 0.026 |
| **End covers** | | | | | |
| 3RV29 17-6A | **End covers**[2] as spare part | Multi-unit packaging | **3RV29 17-6A** | 10 units | 0.005 |
| **Terminal blocks for device infeed** | | | | | |
| 3RV29 17-FA00 | **Terminal blocks for device infeed** | Single-unit packaging | **3RV29 17-5FA00** | 1 unit | 0.010 |

1) The expansion plug is included in the scope of supply of the 3RV29 17-4 three-phase busbars for system expansion.

2) The end cover is included in the scope of supply of the 3RV29 17-1 three-phase busbars with infeed system.

## *Permissible rated data of devices approved for North America (UL/CSA)*

Motor starter protectors of the 3RV2 series are approved for UL/CSA, and according to UL508/UL 60947-4-1 and CSA C22.2 No. 14/CSA C22.2 No. 60947-4-1 they can be used on their own or as load feeders in combination with a contactor.

These motor starter protectors can be used as "Manual Motor Controllers" for "Group Installations", as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" and as "Self-Protected Combination Motor Controllers" (Type E).

### 3RV motor starter protectors as "Manual Motor Controllers"

If used as a "Manual Motor Controller", the motor starter protector is always operated in combination with an upstream short-circuit protection device. Approved fuses or a circuit breaker according to UL 489/CSA C22.2 No. 5 can be used. These devices must be dimensioned according to the National Electrical Code (UL) or Canadian Electrical Code (CSA).

Approval of the 3RV as a Manual Motor Controller can be found under the following file numbers:

- UL File No. 47705, CCN: NLRV,
- CSA Master Contract 165071, Product Class: 3211 05.

| **Motor starter protectors** | | **hp rating[1] for FLA[2] max.** | | **Rated current $I_n$** | **240 V AC** UL/CSA $I_{bc}$[3] | **480 V AC** UL/CSA $I_{bc}$[3] | **600 V AC** UL/CSA $I_{bc}$[3] |
|---|---|---|---|---|---|---|---|
| Type | V | 1-phase | 3-phase | A | kA | kA | kA |
| **Size S00** | | | | | | | |
| **3RV2011, 3RV2111, 3RV2311, 3RV2411** | | | | 0.16 ... 2 | 65 | 65 | 30 |
| | | | | 2.5 | 65 | 65 | 30 |
| FLA[2] max. | 115 | 1 | 2 | 3.2 | 65 | 65 | 30 |
| 16 A,480 V | 200 | 2 | 3 | 4 | 65 | 65 | 30 |
| 12.5 A, 600 V | 230 | 2 | 5 | 5 | 65 | 65 | 30 |
| | 460 | -- | 10 | 6.3 | 65 | 65 | 30 |
| | 575/600 | -- | 10 | 8 | 65 | 65 | 30 |
| | | | | 10 | 65 | 65 | 30 |
| | | | | 12.5 | 65 | 65 | 30 |
| | | | | 16 | 65 | 65 | — |
| **Size S0** | | | | | | | |
| **3RV2021, 3RV2121, 3RV2321, 3RV2421** | | | | 0.16 ... 12.5 | 65 | 65 | 30 |
| | | | | 16 ... 25 | 65 | 65 | --/(30)[4] |
| FLA[2] max. | 115 | 3 | 5 | 28, 32 | 65 | 50 | -- |
| 40 A, 480 V | 200 | 5 | 10 | 36, 40 | 65 | 12 | -- |
| | 230 | 7 1/2 | 10 | | | | |
| | 460 | -- | 30 | | | | |
| | 575/600 | -- | -- | | | | |

| **Size S2** | | | | | **3RV2031** | **3RV2032** | **3RV2031** | **3RV2032** | **3RV2031** | **3RV2032** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 14 | 65 | 100 | 65 | 100 | 25 | 25 |
| **3RV2031, 3RV2131, 3RV2331, 3RV2032, 3RV2332** | | | | 17 | 65 | 100 | 65 | 100 | 25 | 25 |
| | | | | 20 | 65 | 100 | 65 | 100 | 25 | 25 |
| FLA [2] MAX. 65A | 115/120 | 5 | 10 | 25 | 65 | 100 | 65 | 100 | 25 | 25 |
| 600V | 200/208 | 10 | 20 | 32 | 65 | 100 | 65 | 100 | 25 | 25 |
| NEMA size 2 | 230/240 | 15 | 25 | 36 | 65 | 100 | 65 | 100 | 25 | 25 |
| | 460/480 | — | 50 | 40 | 65 | 100 | 65 | 100 | 22 | 22 |
| | 575/600 | — | 60 | 45 | 65 | 100 | 65 | 100 | 22 | 22 |
| | | | | 52 | 65 | 100 | 65 | 100 | 22 | 22 |
| | | | | 59 | 65 [a] | 100 [a] | 65 [a] | 100 [a] | 20 [a] | 25 [a] |
| | | | | 65 | 65 [b] | 100 [b] | 65 [b] | 100 [b] | 20 [b] | 25 [b] |

a) with max 225A Class J fuse
b) with max 250A Class J fuse

| **Size S3** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 16 | 65 | | 65 | | 30 | |
| **3RV20 41/3RV20 42, 3RV21 42, 3RV23 41/3RV23 42** | | | | 20 | 65 | | 65 | | 30 | |
| | | | | 25 | 65 | | 65 | | 30 | |
| FLA[2] max. 99 A, | 115 | 7 1/2 | -- | 32 | 65 | | 65 | | 30 | |
| 600 V | 200 | 20 | 30 | 40 | 65 | | 65 | | 30 | |
| NEMA size 3 | 230 | 20 | 40 | 50 | 65 | | 65 | | 30 | |
| | 460 | -- | 75 | 63 | 65 | | 65 | | 30 | |
| | 575/600 | -- | 100 | 75 | 65 | | 65 | | 30 | |
| | | | | 90 | 65 | | 65 | | 10 | |
| | | | | 100 | 65 | | 65 | | 10 | |

[1] HP rating = Power rating in horse power (maximum motor rating).
[2] FLA = Full Load Amps/Motor full load current.
[3] Corresponds to "short-circuit breaking capacity" according to UL/CSA.
[4] The values in brackets only apply to 3RV2.23 motor starter protectors.

3RV motor starter protectors as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations"

The application as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" is only available from UL.
CSA does not recognize this approval! When the motor starter protector is used as a "Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations", it must always be combined with upstream short-circuit protection. As short-circuit-protection device, approved fuses or a motor starter protector according to UL 489 can be used.
These devices must be dimensioned according to the National Electrical Code.

The 3RV motor starter protectors are approved as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" under the following file number:

- UL File No. 47705, CCN: NLRV.

| Motor starter protectors | | hp rating[1] for FLA[2] max. | | Rated current $I_n$ | 240 V AC UL $I_{bc}$[3] | | Up to 480Y/277V AC UL $I_{bc}$[3] | | Up to 600Y/347V AC UL $I_{bc}$[3] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | V | 1-phase | 3-phase | A | kA | | kA | | kA | |
| **Size S00** | | | | | | | | | | |
| **3RV20 11** | | | | 0.16 ... 0.8 | 65 | | 65 | | 30 | |
| | | | | 1 | 65 | | 65 | | 30 | |
| FLA[2] max.16 A, 480 Y / 277 V | 115/120 | 1 | 2 | 1.25 | 65 | | 65 | | 30 | |
| | 200/208 | 2 | 3 | 2 | 65 | | 65 | | 30 | |
| NEMA size 0 | 230/240 | 2 | 5 | 2.5 | 65 | | 65 | | 30 | |
| | 460/480 | -- | 10 | 3.2 | 65 | | 65 | | 30 | |
| | 575/600 | -- | 10 | 4 | 65 | | 65 | | 30 | |
| | | | | 5 | 65 | | 65 | | 30 | |
| | | | | 6.3 | 65 | | 65 | | 30 | |
| | | | | 8 | 65 | | 65 | | 30 | |
| | | | | 16 | 65 | | 65 | | — | |
| **Size S0** | | | | | | | | | | |
| **3RV20 21** | | | | 0.63 ... 1.6 | 65 | | 65 | | 30 | |
| | | | | 2 | 65 | | 65 | | 30 | |
| FLA[2] max. | 115/120 | 2 | 5 | 2.5 | 65 | | 65 | | 30 | |
| 25 A, 480 Y / 277 V | 200/208 | 3 | 7.5 | 3.2 | 65 | | 65 | | 30 | |
| 12.5 A, 600 V | 230/240 | 3 | 10 | 4 | 65 | | 65 | | 30 | |
| | 460/480 | 3 | 20 | 5 | 65 | | 65 | | 30 | |
| NEMA size 1 | 575/600 | — | — | 6.3 | 65 | | 65 | | 30 | |
| | | | | 8 | 65 | | 65 | | 30 | |
| | | | | 10 | 65 | | 65 | | 30 | |
| | | | | 12.5 | 65 | | 65 | | 30 | |
| | | | | 25 | 65 | | 65 | | — | |
| | | | | 32 | 50 | | 50 | | — | |
| **Size S2** | | | | | **3RV2031** | **3RV2032** | **3RV2031** | **3RV2032** | **3RV2031** | **3RV2032** |
| **3RV2031, 3RV2032, 3RV2431** | | | | 14 | 65 | 100 | 65 | 100 | 25 | 25 |
| | | | | 17 | 65 | 100 | 65 | 100 | 25 | 25 |
| | | | | 20 | 65 | 100 | 65 | 100 | 25 | 25 |
| FLA [2] MAX. 65A | 115/120 | 5 | 10 | 25 | 65 | 100 | 65 | 100 | 25 | 25 |
| 600V | 200/208 | 10 | 20 | 32 | 65 | 100 | 65 | 100 | 25 | 25 |
| NEMA size 2 | 230/240 | 15 | 25 | 36 | 65 | 100 | 65 | 100 | 25 | 25 |
| | 460/480 | — | 50 | 40 | 65 | 100 | 65 | 100 | 22 | 22 |
| | 575/600 | — | 60 | 45 | 65 | 100 | 65 | 100 | 22 | 22 |
| | | | | 52 | 65 | 100 | 65 | 100 | 22 | 22 |
| | | | | 59 | 65 | 100 | 30 | 42 | -- | -- |
| | | | | 65 | 65 | 100 | 30 | 42 | -- | -- |
| **Size S3** | | | | | | | | | | |
| **3RV20 4.** | | | | 16 | 65 | | 65 | | 30 | |
| | | | | 20 | 65 | | 65 | | 30 | |
| FLA[2] max. | 115/120 | 7 1/2 | -- | 25 | 65 | | 65 | | 30 | |
| 100 A, 480 V | 200/208 | 20 | 30 | 32 | 65 | | 65 | | 30 | |
| 75 A, 600 V | 230/240 | 20 | 40 | 40 | 65 | | 65 | | 30 | |
| | 460/480 | -- | 75 | 50 | 65 | | 65 | | 30 | |
| NEMA size 3 | 575/600 | -- | 75 | 63 | 65 | | 65 | | 30 | |
| | | | | 75 | 65 | | 65 | | 30 | |
| | | | | 90 | 65 | | 65 | | -- | |
| | | | | 100 | 65 | | 65 | | -- | |

[1] HP rating = Power rating in horse power (maximum motor rating).
[2] FLA = Full Load Amps/Motor full load current.
[3] Complies with "short-circuit breaking capacity" according to UL.

3RV motor starter protectors as "Self-Protected Combination Motor Controllers (Type E)"

UL 508/UL 60947-4-1 approval demands 1-inch clearance and 2-inch creepage distance at line side for "Self-Protected Combination Motor Controller Type E".

Therefore, 3RV20 motor starter protectors of sizes S00 to S2 are approved according to UL 508/UL 60947-4-1 in combination with the terminal blocks listed below.

CSA does not require these extended clearances and creepage distances. According to CSA, these terminal blocks can be omitted when the device is used as a "Self-Protected Combination Motor Controller".

The 3RV20 motor starter protectors are approved as "Self-Protected Combination Motor Controllers" under the following file numbers:

- UL File No. E156943, CCN: NKJH
- CSA Master Contract 165071, Product Class: 3211 08

| Motor starter protectors | | hp rating[1] for FLA[2] max. | | Rated current $I_n$ | Up to 240 V AC UL/CSA $I_{bc}$[3] | Up to 480 Y/277 V AC UL/CSA $I_{bc}$[3] | Up to 600 Y/347 V AC UL/CSA $I_{bc}$[3] |
|---|---|---|---|---|---|---|---|
| Type | V | 1-phase | 3-phase | A | kA | kA | kA |
| **Size S00** | | | | | | | |
| **3RV2011 + 3RV29 28-1H[4] [5]** | | | | 0.16 ... 12.5 | 65 | 65 | 30 |
| | | | | 16 | 65 | 65 | — |
| FLA[2] max. 16 A | 115 | 1 | 2 | | | | |
| 480 V | 200 | 2 | 3 | | | | |
| NEMA size 0 | 230 | 2 | 5 | | | | |
| | 230 | — | 10 | | | | |
| | 575/600 | — | 10 | | | | |
| **Size S0** | | | | | | | |
| **3RV2021 + 3RV29 28-1H[4] [5]** | | | | 0.63 ... 1.6 | 65 | 65 | 30 |
| | | | | 2 | 65 | 65 | 30 |
| | | | | 2.5 | 65 | 65 | 30 |
| FLA[2] max. | 115 | 2 | 5 | 3.2 | 65 | 65 | 30 |
| 25 A, 480 V | 200 | 3 | 7.5 | 4 | 65 | 65 | 30 |
| 12.5 A, 600 V | 230 | 3 | 10 | 5 | 65 | 65 | 30 |
| | 460 | — | 20 | 6.3 | 65 | 65 | 30 |
| NEMA size 1 | 575/600 | — | — | 8 | 65 | 65 | 30 |
| | | | | 10 | 65 | 65 | 30 |
| | | | | 12.5 | 65 | 65 | 30 |
| | | | | 16 | 65 | 65 | — |
| | | | | 20 | 65 | 65 | — |
| | | | | 22 | 65 | 65 | — |
| | | | | 25 | 65 | 65 | — |
| | | | | 32 | 50 | 50 | — |
| **Size S2** | | | | | 3RV2031 / 3RV2032 | 3RV2031 / 3RV2032 | 3RV2031 / 3RV2032 |
| **3RV2031/3RV2032 + 3RV2938-1K[4]** | | | | 14 | 65 / 100 | 65 / 100 | 25 / 25 |
| | | | | 17 | 65 / 100 | 65 / 100 | 25 / 25 |
| | | | | 20 | 65 / 100 | 65 / 100 | 25 / 25 |
| FLA [2] MAX. 65A | 115/120 | 5 | 10 | 25 | 65 / 100 | 65 / 100 | 25 / 25 |
| 600V | 200/208 | 10 | 20 | 32 | 65 / 100 | 65 / 100 | 25 / 25 |
| NEMA size 2 | 230/240 | 15 | 25 | 36 | 65 / 100 | 65 / 100 | 25 / 25 |
| | 460/480 | — | 50 | 40 | 65 / 100 | 65 / 100 | 22 / 22 |
| | 575/600 | — | 60 | 45 | 65 / 100 | 65 / 100 | 22 / 22 |
| | | | | 52 | 65 / 100 | 65 / 100 | 22 / 22 |
| | | | | 59 | 65 / 100 | 20 / 30 | — / — |
| | | | | 65 | 65 / 100 | 20 / 30 | — / — |
| **Size S3** | | | | | | | |
| **3RV2041 + 3RT2946-4GA07[4]** | | | | 16 | 65 | 65 | 30 |
| | | | | 20 | 65 | 65 | 30 |
| | | | | 25 | 65 | 65 | 30 |
| FLA[2] max. | 115 | 10 | -- | 32 | 65 | 65 | 30 |
| 100 A, 480 V | 200 | 20 | 30 | 40 | 65 | 65 | 30 |
| 75 A, 600 V | 230 | 20 | 40 | 50 | 65 | 65 | 30 |
| | 460 | -- | 75 | 63 | 65 | 65 | 30 |
| NEMA size 3 | 575/600 | -- | 75 | 75 | 65 | 65 | 30 |
| | | | | 90 | 65 | 65 | — |
| | | | | 100 | 65 | 65 | — |

| Ratings of the auxiliary switches and alarm switches | | | Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC and signalling switch | Transverse auxiliary switch with 1 changeover contact | Transverse auxiliary switch with 1 NO + 1 NC, 2 NO |
|---|---|---|---|---|---|
| Max. rated voltage | • to NEMA Ⓤ | AC V | 600 | | 250 |
| | • to NEMA Ⓒ | AC V | 600 | | 250 |
| Uninterrupted current | | A | 10 | 5 | 2.5 |
| Breaking capacity | | | A600 | B600 | C300 |
| | | | Q300 | R300 | R300 |

1) HP rating = Power rating in horse power (maximum motor rating).
2) FLA = Full Load Amps/Motor full load current.
3) Corresponds to "short-circuit breaking capacity" according to UL/CSA.
4) Not required for CSA.
5) Alternatively, the 3RV2928-1K phase barrier can also be used.

## 3RV27/28 circuit breakers

These circuit breakers are approved according to UL 489 and CSA C22.2 No. 5-02 for 100 % rated current (100 % rated breaker). They can be used therefore as upstream short-circuit protective devices for "Manual Motor Controllers" and "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations".

The 3RV27/28 circuit breakers are approved under the following file numbers:

- UL File No. E235044, CCN: DIVQ,
- CSA Master Contract 165071, Product Class: 1432 01.

| **Circuit breakers**<br>Type | **Rated current $I_n$**<br>A | **240 V AC**<br>UL/CSA<br>$I_{bc}$ [1] kA | **480 Y/277 V AC**<br>UL/CSA<br>$I_{bc}$ [1] kA | **480 V AC**<br>UL/CSA<br>$I_{bc}$ [1] kA | **600 Y/347 V AC**<br>UL/CSA<br>$I_{bc}$ [1] kA |
|---|---|---|---|---|---|
| **Size S00/S0** | | | | | |
| **3RV27 11 / 3RV28 11**<br>**3RV27 21 / 3RV28 21** | 0.16 … 1.25 | 65 | 65 | — | 10 |
| | 1.6 | 65 | 65 | — | 10 |
| | 2 | 65 | 65 | — | 10 |
| | 2.5 | 65 | 65 | — | 10 |
| | 3.2 | 65 | 65 | — | 10 |
| | 4 | 65 | 65 | — | 10 |
| | 5 | 65 | 65 | — | 10 |
| | 6.3 | 65 | 65 | — | 10 |
| | 8 | 65 | 65 | — | 10 |
| | 10 | 65 | 65 | — | 10 |
| | 12.5 | 65 | 65 | — | 10 |
| | 15 | 65 | 65 | — | -- |
| | 20 | 50 | 50 | — | -- |
| | 22 | 50 | 50 | — | -- |
| **Size S3** | | | | | |
| **3RV27 42** | 10 | 65 | 65 | 65 | 20 |
| | 15 | 65 | 65 | 65 | 20 |
| | 20 | 65 | 65 | 65 | 20 |
| | 25 | 65 | 65 | 65 | 20 |
| | 30 | 65 | 65 | 65 | 20 |
| | 35 | 65 | 65 | — | 20 |
| | 40 | 65 | 65 | — | 20 |
| | 45 | 65 | 65 | — | 20 |
| | 50 | 65 | 65 | — | 20 |
| | 60 | 65 | 65 | — | 20 |
| | 70 | 65 | 65 | — | 10 |

[1] Complies with "short-circuit breaking capacity" according to UL.

## Technical specifications

### *Short-circuit breaking capacity $I_{cu}$, $I_{cs}$ acc. to IEC 60947-2*

This table shows the rated ultimate short-circuit breaking capacity $I_{cu}$ and the rated service short-circuit breaking capacity $I_{cs}$ of the 3RV2 motor starter protectors/circuit breakers with different inception voltages dependent of the rated current $I_n$ of the motor starter protectors/circuit breakers.

Power can be supplied to the motor starter protectors/circuit breakers via the terminals at the top or at the bottom without restricting the rated data. If the short-circuit current at the place of installation exceeds the rated short-circuit breaking capacity of the motor starter protector/circuit breaker as specified in the table, a back-up fuse is required. It is also possible to install an upstream motor starter protector/circuit breaker with a limiter function.

The maximum rated current for the back-up fuse is specified in the tables. The rated ultimate short-circuit breaking capacity then applies as specified on the fuse.

### *Fuseless construction*

Motor starter protector contactor combinations for short-circuit currents up to 150 kA can be ordered in the form of fuseless load feeders according to Chapter 6.

| Motor starter protectors/circuit breakers | Rated current $I_n$ | Up to 240 V AC[1] | | | Up to 400 V[1]/415 V AC[2] | | | Up to 440 V[1]/460 V AC[2] | | | Up to 500 V[1]/525 V AC[2] | | | Up to 690 V AC[1] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (these values do not apply to 3RV17 42 circuit breakers) | | | | | | | | | | | | | | |
| | | $I_{cu}$ | $I_{cs}$ | Max. fuse (gL/gG) | $I_{cu}$ | $I_{cs}$ | Max. fuse (gL/gG)[3] | $I_{cu}$ | $I_{cs}$ | Max. fuse (gL/gG)[3] | $I_{cu}$ | $I_{cs}$ | Max. fuse (gL/gG)[3] | $I_{cu}$ | $I_{cs}$ | Max. fuse (gL/gG)[3][4] |
| Type | A | kA | kA | A | kA | kA | A | kA | kA | A | kA | kA | A | kA | kA | A |
| **Size S00** | | | | | | | | | | | | | | | | |
| **3RV2.11** | 0.16 ... 1 | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° |
| | 1.25; 1.6 | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° |
| | 2; 2.5 | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° | 100 | 100 | ° | 10 | 10 | 25 |
| | 3.2; 4 | 100 | 100 | ° | 100 | 100 | ° | 50 | 10 | ° | 100 | 100 | ° | 10; 6 | 10; 4 | 32 |
| | 5; 6.3 | 100 | 100 | ° | 100 | 100 | ° | 50 | 10 | ° | 100 | 100 | ° | 6 | 4 | 32 |
| | 8 | 100 | 100 | ° | 50 | 12.5 | ° | 50 | 50 | 63 | 42 | 42 | 63 | 6 | 4 | 50 |
| | 10 | 100 | 100 | ° | 50 | 12.5 | ° | 50 | 50 | 80 | 42 | 42 | 63 | 6 | 4 | 50 |
| | 12 | 100 | 100 | ° | 50 | 12.5 | ° | 50 | 50 | 80 | 42 | 42 | 80 | 4 | 4 | 63 |
| | 16 | 100 | 100 | ° | 55 | 30 | 100 | 50 | 10 | 80 | 10 | 5 | 80 | 4 | 4 | 63 |
| **Size S0** | | | | | | | | | | | | | | | | |
| **3RV2.21** | 16 | 100 | 100 | ° | 55 | 25 | 100 | 50 | 10 | 80 | 10 | 5 | 80 | 4 | 2 | 63 |
| | 20 | 100 | 100 | ° | 55 | 25 | 125 | 50 | 10 | 80 | 10 | 5 | 80 | 4 | 2 | 63 |
| | 22 | 100 | 100 | ° | 55 | 25 | 125 | 50 | 10 | 100 | 10 | 5 | 80 | 4 | 2 | 63 |
| | 25 | 100 | 100 | ° | 55 | 25 | 125 | 50 | 10 | 100 | 10 | 5 | 80 | 4 | 2 | 63 |
| | 28 | 100 | 100 | ° | 55 | 25 | 125 | 30 | 10 | 125 | 10 | 5 | 100 | 4 | 2 | 100 |
| | 32 | 100 | 100 | ° | 55 | 25 | 125 | 30 | 10 | 125 | 10 | 5 | 100 | 4 | 2 | 100 |
| | 36 | 100 | 100 | ° | 20 | 10 | 125 | 12 | 8 | 125 | 6 | 3 | 100 | 3 | 2 | 100 |
| | 40 | 100 | 100 | ° | 20 | 10 | 125 | 12 | 8 | 125 | 6 | 3 | 100 | 3 | 2 | 100 |
| **Size S2** | | | | | | | | | | | | | | | | |
| **3RV2.31** | 14; 17 | 100 | 100 | ° | 65 | 30 | 100 | 50 | 25 | 100 | 12 | 6 | 63 | 5 | 3 | 63 |
| | 20 | 100 | 100 | ° | 65 | 30 | 100 | 50 | 25 | 100 | 12 | 6 | 80 | 5 | 3 | 80 |
| | 25 | 100 | 100 | ° | 65 | 30 | 100 | 50 | 15 | 100 | 12 | 6 | 80 | 5 | 3 | 80 |
| | 32; 36 | 100 | 100 | ° | 65 | 30 | 125 | 50 | 15 | 125 | 10 | 5 | 100 | 4 | 2 | 100 |
| | 40; 45 | 100 | 100 | ° | 65 | 30 | 160 | 50 | 15 | 125 | 10 | 5 | 100 | 4 | 2 | 100 |
| | 52 | 100 | 100 | ° | 65 | 30 | 160 | 50 | 15 | 125 | 10 | 5 | 125 | 4 | 2 | 125 |
| | 59 ... 80 | Values on request | | | | | | | | | | | | | | |
| **Size S2, with increased switching capacity** | | | | | | | | | | | | | | | | |
| **3RV2.32** | 14; 17 | 100 | 100 | ° | 100 | 50 | ° | 65 | 30 | 100 | 18 | 10 | 63 | 8 | 5 | 63 |
| | 20; 25 | 100 | 100 | ° | 100 | 50 | ° | 65 | 30 | 100 | 18 | 10 | 80 | 8 | 5 | 80 |
| | 32 ... 45 | 100 | 100 | ° | 100 | 50 | ° | 65 | 30 | 125 | 15 | 8 | 100 | 6 | 4 | 100 |
| | 52 | 100 | 100 | ° | 100 | 50 | ° | 65 | 30 | 125 | 15 | 8 | 125 | 6 | 4 | 125 |
| | 59 ... 80 | Values on request | | | | | | | | | | | | | | |
| **Size S3** | | | | | | | | | | | | | | | | |
| **3RV2. 41** | 40 | 100 | 100 | ° | 50 | 25 | 125 | 50 | 20 | 125 | 12 | 6 | 100 | 6 | 3 | 63 |
| | 50 | 100 | 100 | ° | 50 | 25 | 125 | 50 | 20 | 125 | 12 | 6 | 100 | 6 | 3 | 80 |
| | 63 | 100 | 100 | ° | 50 | 25 | 160 | 50 | 20 | 160 | 12 | 6 | 100 | 6 | 3 | 80 |
| | 75 | 100 | 100 | ° | 50 | 25 | 160 | 50 | 20 | 160 | 8 | 4 | 125 | 5 | 3 | 100 |
| | 90; 100 | 100 | 100 | ° | 50 | 25 | 160 | 50 | 20 | 160 | 8 | 4 | 125 | 5 | 3 | 125 |

Short-circuit resistant up to at least 50 kA

° No back-up fuse required, since short-circuit resistant up to 100 kA

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Back-up fuse only required if the short-circuit current at the place of installation > $I_{cu}$.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

### *Short-circuit breaking capacity $I_{cuIT}$ in the IT system (IT network) according to IEC 60947-2*

3RV motor starter protectors are suitable for operation in IT systems. Values valid for triple-pole short-circuit are $I_{cu}$ up to $I_{cs}$. In case of double ground fault on different phases at the input and output side of a motor starter protector, the special short-circuit breaking capacity $I_{cuIT}$ applies. The specifications in the table below apply to 3RV motor starter protectors.

In the colored areas, $I_{cuIT}$ is 100 kA, or in some ranges it is 50 kA. Therefore the motor starter protectors are short-circuit resistant in these ranges.

If the short-circuit current at the place of installation exceeds the rated short-circuit breaking capacity of the motor starter protector as specified in the table, a back-up fuse is required. The maximum rated current for the back-up fuse is specified in the tables. The rated short-circuit breaking capacity then applies as specified on the fuse.

| Motor starter protectors | Rated current $I_n$ | Up to 240 V AC[1] | | Up to 400 V[1]/415 V AC[2] | | Up to 500 V[1]/525 V AC[2] | | Up to 690 V AC[1] [5] | |
|---|---|---|---|---|---|---|---|---|---|
| | | $I_{cuIT}$ | Max. fuse (gL/gG)[3] | $I_{cuIT}$ | Max. fuse (gL/gG)[3][4] | $I_{cuIT}$ | Max. fuse (gL/gG)[3] | $I_{cuIT}$ | Max. fuse (gL/gG)[3] |
| Type | A | kA | A | kA | A | kA | A | kA | A |
| **Size S00** | | | | | | | | | |
| **3RV20, 3RV26 11-0BD10** | 0.16 ... 0.63 | 100 | ° | 100 | ° | On request | On request | On request | On request |
| | 0.8; 1 | 100 | ° | 100 | ° | | | | |
| | 1.25; 1.6 | 100 | ° | 100 | ° | | | | |
| | 2; 2.5 | 100 | ° | 8 | 25 | | | | |
| | 3.2; 4 | 100 | ° | 8;4 | 32 | | | | |
| | 5; 6.3 | 100 | ° | 4 | 32:50 | | | | |
| | 8; 10 | 100 | ° | 4 | 50 | | | | |
| | 12.5 | 100 | ° | 4 | 63 | | | | |
| | 16 | 55 | 80 | 4 | 63 | | | | |
| **Size S0** | | | | | | | | | |
| **3RV2.21** | 16 | 55 | 80 | 4 | 63 | 2 | 50 | 1.5 | 40 |
| | 20 | 55 | 80 | 4 | 63 | 2 | 50 | 1.5 | 50 |
| | 22 | 55 | 80 | 4 | 63 | 2 | 50 | 1.5 | 50 |
| | 25 | 55 | 80 | 4 | 63 | 2 | 50 | 1.5 | 50 |
| | 28 | 55 | 80 | 2 | 63 | 2 | 63 | 1.5 | 63 |
| | 32 | 55 | 80 | 2 | 63 | 2 | 63 | 1.5 | 63 |
| | 36 | 20 | 80 | 2 | 63 | 2 | 63 | 1.5 | 63 |
| | 40 | 20 | 80 | 2 | 63 | 2 | 63 | 1.5 | 63 |
| **Size S2** | | | | | | | | | |
| **3RV2.31** | 14...25 | 100 | ° | 8 | 100 | 6 | 80 | 4 | 63 |
| | 32...45 | 100 | ° | 6 | 125 | 4 | 100 | 3 | 80 |
| | 52 | 100 | ° | 4 | 160 | 3 | 125 | 2 | 100 |
| | 59 ... 80 | Values on request | | | | | | | |
| **Size S2, with increased switching capacity** | | | | | | | | | |
| **3RV2.32** | 14 ... 25 | 100 | ° | 8 | 100 | 6 | 80 | 4 | 63 |
| | 32 ... 45 | 100 | ° | 6 | 125 | 6 | 100 | 4 | 80 |
| | 52 | 100 | ° | 6 | 160 | 6 | 125 | 4 | 100 |
| | 59 ... 80 | Values on request | | | | | | | |
| **Size S3** | | | | | | | | | |
| **3RV2. 41** | 40 | 50 | 125 | 10 | 63 | 5 | 50 | 5 | 50 |
| | 50 | 50 | 125 | 8 | 80 | 3 | 63 | 3 | 63 |
| | 63 | 50 | 160 | 6 | 80 | 3 | 63 | 3 | 63 |
| | 75 | 50 | 160 | 5 | 100 | 2 | 80 | 2 | 80 |
| | 90; 100 | 50 | 160 | 5 | 125 | 2 | 100 | 2 | 100 |

Short-circuit resistant up to at least 50 kA

° No back-up fuse required, since short-circuit resistant up to 100 kA

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Back-up fuse only required, if short-circuit current at the place of installation > $I_{cuIT}$.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

5) Over-voltage category II applies for applications on IT systems > 600V

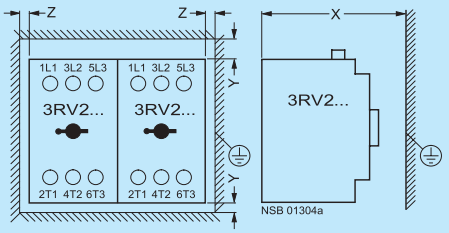
## Technical data

### *Rules for mounting motor starter protectors/circuit breakers*

When mounting MSPs, the following clearance must be maintained to grounded or live parts.

| SIRIUS MSP | | | Clearance to grounded or live parts | | |
|---|---|---|---|---|---|
| | | | Y | X | at the side Z |
| Type | size | | mm | mm | mm |
| 3RV2.1 | S00 | up to 690 V | 30 | 70 | 9 |
| 3RV2. 2 | S0 [2] | up to 500 V | 30 | 90 | 9 |
| | | up to 690 V | 50 [1] | 90 | 30 |
| 3RV2. 3 | S2 | up to 690 V | 50 | — | 10 |
| 3RV2. 4 | S3 | up to 240 V | 50 | 167 | 10 |
| | | up to 440 V | 70 | 167 | 10 |
| | | up to 500 V | 110 | 167 | 10 |
| | | up to 690 V | 150 | 167 | 30 |
| 3RV27 42 | S3 | up to 240 V | 90 | 167 | 10 |
| | | up to 400 V | 90 | 167 | 10 |

Minimum clearance between MSPs and grounded or live parts




1) Up to and including the setting range of 32 A. For the 36/40 A setting range the clearance is 70 mm.
2) In conjunction with the type E terminal block 3RV2928-1H the applicable lateral clearance is 30 mm for all voltages.

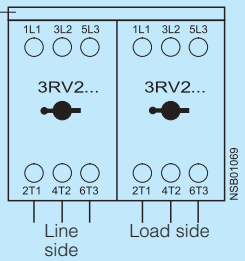
Standard mounting for S0, S2 and S3

Wiring module

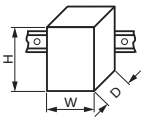
Size S0: 3RV19 15-1AB

Size S2: 3RV19 35-1A

Size S3: 3RA19 43-3D
(Caution: The wiring module demands 10 mm spacing between the MSPs)

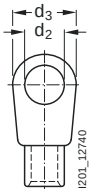


## General data

| | | | | | | |
|---|---|---|---|---|---|---|
| **Type** |  | | **3RV2.1.** | **3RV2.2.** | **3RV2.3.** | **3RV27, 3RV28** |
| Size | | | S00 | S0 | S2 | S00, S0 |
| Dimensions (W x H x D) | | | | | | |
| • Screw terminals | | mm | 45 x 97 x 91 | 45 x 97 x 91 | 55 x 140 x 149 | 45 x 144 x 92 |
| • Spring-type terminals | | mm | 45 x 106 x 91 | 45 x 119 x 91 | -- | -- |
| **Standards** | | | | | | |
| • IEC 60947-1, EN 60947-1 (VDE 0660 Part 100) | | | Yes | | | |
| • IEC 60947-2, EN 60947-2 (VDE 0660 Part 101) | | | Yes | | | |
| • IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102) | | | Yes | Yes | Yes | -- |
| • UL 508/UL 60947-4-1, CSA C22.2 No. 14/CSA C22.2 No. 60947-4-1 | | | Yes | Yes | Yes | -- |
| • UL 489, CSA C22.2 No. 5 | | | -- | -- | -- | Yes |
| **Number of poles** | | | 3 | | | |
| **Max. rated current $I_{n\ max}$ (= max. rated operational current $I_e$)** | | A | 16 | 40 | 80 | 22 |
| **Permissible ambient temperature** | | | | | | |
| • Storage/transport | | °C | –50 ... +80 | | | |
| • Operation | $I_n$: 0.16 ... 32 A | °C | –20 ... +70 (current reduction above +60 °C) | | -- | |
| | $I_n$: 36 ... 40 A | °C | -- | –20 ... +40 (the devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.) | -- | |
| | $I_n$: 14 ... 80 A | °C | -- | | –20 ... +70 (current reduction above +60 °C) | -- |
| **Permissible rated current at inside temperature of control cabinet** | | | | | | |
| • +60 °C | | % | 100 | | | |
| • +70 °C | | % | 87 | | | |
| **Permissible rated current at ambient temperature of enclosure (applies for motor starter protector/circuit breaker inside enclosure ≤ 32 A)** | | | | | | |
| • +35 °C | | % | 100 | | On | 100 |
| • +60 °C | | % | 87 | | request | 87 |
| **Rated operational voltage $U_e$** | | | | | | |
| • Acc. to IEC | | V AC | 690 (when a molded-plastic enclosure is used only 500 V) | | | |
| • Acc. to UL/CSA | | V AC | 600 | | | |
| **Rated frequency** | | Hz | 50/60 | | | |
| **Rated insulation voltage $U_i$** | | V | 690 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | | |
| **Utilization category** | | | | | | |
| • IEC 60947-2 (motor starter protector/circuit breaker) | | | A | | | |
| • IEC 60947-4-1 (motor starter) | | | AC-3 | | | |
| **Trip class CLASS** | Acc. to IEC 60947-4-1 | | 10 | | 10/20 | -- |
| **DC short-circuit breaking capacity** (time constant $t$ = 5 ms) | | | | | | |
| • 1 conducting path 150 V DC | | kA | 10 | | On | 10 |
| • 2 conducting paths in series 300 V DC | | kA | 10 | | request | 10 |
| • 3 conducting paths in series 450 V DC | | kA | 10 | | | 10 |
| **Power loss $P_V$ for each motor starter protector/circuit breaker** Dependent on the rated current $I_n$ (upper setting range) $R_{per\ conducting\ path} = \frac{P}{I^2 \times 3}$ | $I_n$: 0.16 ... 0.63 A | W | 5 | | -- | 5 |
| | $I_n$: 0.8 ... 6.3 A | W | 6 | | -- | 6 |
| | $I_n$: 8 ... 16 A | W | 7 | | -- | 7 |
| | $I_n$: 16 A | W | -- | 7 | 10 | 7 |
| | $I_n$: 17 ... 25 A | W | -- | 8 | 12 | 8 |
| | $I_n$: 28 ... 32 A | W | -- | 11 | 14 | -- |
| | $I_n$: 36 ... 40 A | W | -- | 14 | 15 | -- |
| | $I_n$: 45 ... 52 A | W | -- | -- | 17 | -- |
| | $I_n$: ... 80 A | W | -- | -- | On request | -- |
| **Shock resistance** | Acc. to IEC 60068-2-27 | *g*/ms | 25/11 (square and sine pulse) | | | |
| **Protection class IP on the front** | Acc. to IEC 60529 | | IP20 | | | |
| **Touch protection** | Acc. to EN 50274 | | Finger-safe for vertical contact from the front | | | |
| **Temperature compensation** | Acc. to IEC 60947-4-1 | °C | –20 ... +60 | | | |
| **Phase failure sensitivity** | Acc. to IEC 60947-4-1 | | Yes (only for 3RV23 motor starter protectors) | | | No |
| **Explosion protection – Safe operation of motors with "increased safety" type of protection** | | | Yes (only for 3RV20 motor starter protectors) | | | |
| EC type test certificate number according to directive 94/9/EC (ATEX) | | | DMT 02 ATEX F 001 Ex II (2) GD | | On request | No |

## Conductor cross-sections of main circuit

| Type | | 3RV2.11 | 3RV2.21 | 3RV2.31-4B1., 3RV2.31-4D.1., 3RV2.31-4E.1., 3RV2.31-4P.1., 3RV2.31-4S.1., 3RV2.31-4T.1., 3RV2.31-4U.1., 3RV2.31-4V.1. | 3RV2.31-4J.1., 3RV2.31-4K.1., 3RV2.31-4R.1., 3RV2.31-4W.1., 3RV2.31-4X.1., 3RV2431-4VA1., 3RV2.32 | 3RV27, 3RV28 |
|---|---|---|---|---|---|---|
| Size | | S00 | S0 | S2 | | S00, S0 |
| **Connection type** | | **Screw terminals** | | | | |
| **Terminal screw** | | M3, Pozidriv size 2 | M4, Pozidriv size 2 | M6, Pozidriv size 2 | | M4, Pozidriv size 2 |
| **Operating devices** | mm | ⌀ 5 ... 6 | ⌀ 5 ... 6 | ⌀ 5 ... 6 | | ⌀ 5 ... 6 |
| **Prescribed tightening torque** | Nm | 0.8 ... 1.2 | 2 ... 2.5 | 3.0 ... 4.5 | | 2.5 ... 3 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | | | | | |
| • Solid or stranded | $mm^2$ | 2 x (0.75 ... 2.5)[1], 2 x 4 | 2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1] | 2 x (1 ... 25)[1], 1 x (1 ... 35)[1] | 2 x (1 ... 35)[1], 1 x (1 ... 50)[1] | 2 x (1 ... 10)[1], max. 1 x 25 |
| • Finely stranded with end sleeve (DIN 46228-1) | $mm^2$ | 2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1] | 2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1], 1 x 10 | 2 x (1 ... 16)[1], 1 x (1 ... 25)[1] | 2 x (1 ... 25)[1], 1 x (1 ... 35)[1] | 1 x (1 ... 16), max. 6 + 16 |
| • AWG cables, solid or stranded | AWG | 2 x (20 ... 16)[1], 2 x (18 ... 12)[1] | 2 x (16 ... 12)[1], 2 x (14 ... 8)[1] | 2 x (18 ... 3)[1], 1 x (18 ... 2)[1] | 2 x (18 ... 2)[1], 1 x (18 ... 1)[1] | 2 x (14 ... 10) |
| **Connection type** | | **Spring-type terminals** | | | | |
| **Operating devices** | mm | 3.0 x 0.5 and 3.5 x 0.5 | | | | |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | | | | | |
| • Solid or stranded | $mm^2$ | 2 x (0.5 ... 4) | 2 x (1 ... 10) | -- | | |
| • Finely stranded without end sleeve | $mm^2$ | 2 x (0.5 ... 2.5) | 2 x (1 ... 6) | -- | | |
| • Finely stranded with end sleeve (DIN 46228-11) | $mm^2$ | 2 x (0.5 ... 2.5) | 2 x (1 ... 6) | -- | | |
| • AWG cables, solid or stranded | AWG | 2 x (20 ... 12) | 2 x (18 ... 8) | -- | | |
| Max. external diameter of the conductor insulation | mm | 3.6 | 3.6 | -- | | |
| **Connection type** | | **Ring terminal lug connections** | | | | |
| **Terminal screw** | | M3, Pozidriv size 2 | M4, Pozidriv size 2 | -- | | |
| **Operating devices** | mm | ⌀ 5 ... 6 | ⌀ 5 ... 6 | -- | | |
| **Prescribed tightening torque** | Nm | 0.8 ... 1.2 | 2 ... 2.5 | -- | | |
| **Usable ring terminal lugs** • DIN 46234 without insulation sleeve • DIN 46225 without insulation sleeve • DIN 46237 with insulation sleeve • JIS C2805 Type R without insulation sleeve • JIS C2805 Type RAV with insulation sleeve • JIS C2805 Type RAP with insulation sleeve | mm | $d_2$ = min. 3.2, $d_3$ = max. 7.5 | $d_2$ = min. 4.3, $d_3$ = max. 12.2 | -- | | |

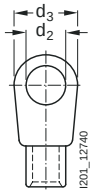



[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

| | | | 3RV2.1. S00 | 3RV2.2. S0 | 3RV2.3. S2 | 3RV27, 3RV28 S00, S0 |
|---|---|---|---|---|---|---|
| **Front transverse auxiliary switches** | | | | | | |
| | | | **Switching capacity for different voltages** | | | |
| | | | **1 CO** | | **1 NO + 1 NC, 2 NO** | |
| **Rated operational current $I_e$** | | | | | | |
| • At AC-15, alternating voltage | | | | | | |
| - 24 V | | A | 4 | | 2 | |
| - 230 V | | A | 3 | | 0.5 | |
| • At AC-12 = $I_{th}$, alternating voltage | | | | | | |
| - 24 V | | A | 10 | | 2.5 | |
| - 230 V | | A | 10 | | 2.5 | |
| • At DC-13, direct voltage *L/R* 200 ms | | | | | | |
| - 24 V | | A | 1 | | 1 | |
| - 48 V | | A | -- | | 0.3 | |
| - 60 V | | A | -- | | 0.15 | |
| - 110 V | | A | 0.22 | | -- | |
| - 220 V | | A | 0.1 | | -- | |
| **Minimum load capacity** | | V | 17 | | | |
| | | mA | 1 | | | |
| **Front transverse solid-state compatible auxiliary switches** | | | | | | |
| | | | **Switching capacity for different voltages** | | | |
| | | | **1 CO** | | | |
| **Rated operational voltage $U_e$** | Alternating voltage | V | 125 | | | |
| **Rated operational current $I_e$/AC-14** | at $U_e$ = 125 V | A | 0.1 | | | |
| **Rated operational voltage $U_e$** | Direct voltage *L/R* 200 ms | V | 60 | | | |
| **Rated operational current $I_e$/DC-13** | at $U_e$ = 60 V | A | 0.3 | | | |
| **Minimum load capacity** | | V | 5 | | | |
| | | mA | 1 | | | |
| **Lateral auxiliary switches with signaling switch** | | | | | | |
| | | | **Switching capacity for different voltages: Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC Signaling switch** | | | |
| **Rated operational current $I_e$** | | | | | | |
| • At AC-15, alternating voltage | | | | | | |
| - 24 V | | A | 6 | | | |
| - 230 V | | A | 4 | | | |
| - 400 V | | A | 3 | | | |
| - 690 V | | A | 1 | | | |
| • At AC-12 = $I_{th}$, alternating voltage | | | | | | |
| - 24 V | | A | 10 | | | |
| - 230 V | | A | 10 | | | |
| - 400 V | | A | 10 | | | |
| - 690 V | | A | 10 | | | |
| • At DC-13, direct voltage *L/R* 200 ms | | | | | | |
| - 24 V | | A | 2 | | | |
| - 110 V | | A | 0.5 | | | |
| - 220 V | | A | 0.25 | | | |
| - 440 V | | A | 0.1 | | | |
| **Minimum load capacity** | | V | 17 | | | |
| | | mA | 1 | | | |
| **Auxiliary releases** | | | | | | |
| | | | **Undervoltage releases** | | **Shunt releases** | |
| **Power consumption** | | | | | | |
| • During pick-up | | | | | | |
| - AC voltages | | VA/W | 20.2/13 | | 20.2/13 | |
| - DC voltages | | W | 20 | | 13 ... 80 | |
| • During uninterrupted duty | | | | | | |
| - AC voltages | | VA/W | 7.2/2.4 | | -- | |
| - DC voltages | | W | 2.1 | | -- | |
| **Response voltage** | | | | | | |
| • Tripping | | V | 0.35 ... 0.7 x $U_s$ | | 0.7 ... 1.1 x $U_s$ | |
| • Pick-up | | V | 0.85 ... 1.1 x $U_s$ | | -- | |
| **Opening time maximum** | | ms | 20 | | | |
| **Short-circuit protection for auxiliary and control circuits** | | | | | | |
| **Melting fuses** operational class gG | | A | 10 | | | |
| **Miniature circuit breakers** C characteristic | | A | 6 (prospective short-circuit current < 0.4 kA) | | | |

## Conductor cross-sections for auxiliary and control circuits

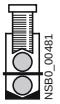
| Type | | 3RV2.11 | 3RV2.21 | 3RV2.31, 3RV2.32 | 3RV27, 3RV28 |
|---|---|---|---|---|---|
| Size | | S00 | S0 | S2 | S00, S0 |
| **Connection type** | | **Screw terminals** | | | |
| **Terminal screw** | | M3, Pozidriv size 2 | | | |
| **Operating devices** | mm | ⌀ 5 ... 6 | | | |
| **Prescribed tightening torque** | Nm | 0.8 ... 1.2 | | | |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | | | | |
| • Solid or stranded | $mm^2$ | 2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1] | | | |
| • Finely stranded with end sleeve (DIN 46228-1) | $mm^2$ | 2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1] | | | |
| • AWG cables, solid or stranded | AWG | 2 x (18 ... 14)[1], 2 x (20 ... 16)[1] | | | |
| **Connection type** | | **Spring-type terminals** | | | |
| **Operating devices** | mm | 3.0 x 0.5 and 3.5 x 0.5 | | | |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | | | | |
| • Solid or stranded | $mm^2$ | 2 x (0.5 ... 2.5) | | | |
| • Finely stranded without end sleeve | $mm^2$ | 2 x (0.5 ... 2.5) | | | |
| • Finely stranded with end sleeve (DIN 46228-1) | $mm^2$ | 2 x (0.5 ... 1.5) | | | |
| • AWG cables, solid or stranded | AWG | 2 x (20 ... 14) | | | |
| Max. external diameter of the conductor insulation | mm | 3.6 | | | |
| **Connection type** | | **Ring terminal lug connections** | | | |
| **Terminal screw** | | M3, Pozidriv size 2 | | | |
| **Operating devices** | mm | ⌀ 5 ... 6 | | | |
| **Tightening torque** | Nm | 0.8 ... 1.2 | | | |
| **Usable ring terminal lugs** | mm | $d_2$ = min. 3.2, $d_3$ = max. 7.5 | | | |
| • DIN 46234 without insulation sleeve | | | | | |
| • DIN 46225 without insulation sleeve | | | | | |
| • DIN 46237 with insulation sleeve | | | | | |
| • JIS C2805 Type R without insulation sleeve | | | | | |
| • JIS C2805 Type RAV with insulation sleeve | | | | | |
| • JIS C2805 Type RAP with insulation sleeve | | | | | |




[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

## Terminals for "Self-Protected Combination Motor Controllers (Type E) according to UL 508/UL 60947-4-1"

| Type | | 3RV2928-1H |
|---|---|---|
| **Prescribed tightening torque** | Nm | 2.5 ... 3 |
| **Conductor cross-sections** | | |
| • Front clamping point connected | | |
| - Solid | $mm^2$ | 1 ... 10 |
| - Finely stranded with end sleeve | $mm^2$ | 1 ... 16 |
| - Stranded | $mm^2$ | 2.5 ... 25 |
| - AWG cables, solid or stranded | AWG | 14 ... 3 |
| - Terminal screw | | M4 |
| • Rear clamping point connected | | |
| - Solid | $mm^2$ | 1 ... 10 |
| - Finely stranded with end sleeve | $mm^2$ | 1 ... 16 |
| - Stranded | $mm^2$ | 1.5 ... 25 |
| - AWG cables, solid or stranded | AWG | 14 ... 6 |
| - Terminal screw | | M4 |
| • Both clamping points connected | | |
| - Front clamping point: | | |
| Solid | $mm^2$ | 1 ... 10 |
| Finely stranded with end sleeve | $mm^2$ | 1 ... 10[1], 1 ... 6[1] |
| Stranded | $mm^2$ | 2.5 ... 10 |
| AWG cables, solid or stranded | AWG | 14 ... 6 |
| Terminal screw | | M4 |
| - Rear clamping point: | | |
| Solid | $mm^2$ | 1 ... 10 |
| Finely stranded with end sleeve | $mm^2$ | 1 ... 10[1], 1 ... 16[1] |
| Stranded | $mm^2$ | 2.5 ... 10 |
| AWG cables, solid or stranded | AWG | 16 ... 3 |
| Terminal screw | | M4 |




[1] The following can be connected when both clamping points are connected:
- Front 1 ... 10 $mm^2$ and rear 1 ... 10 $mm^2$
- Front 1 ... 6 $mm^2$ and rear 1 ... 16 $mm^2$

## Overview

**S00 MSP with laterally mounted undervoltage release with leading auxiliary switch**

3RV Motor Starter Protectors (MSPs) are built for a world of applications while meeting the requirements of control users worldwide. Each MSP features a manual ON/OFF switch, a Class 10 adjustable bimetallic overload relay (Class 20 available in the two largest frame sizes), and magnetic trip elements for short circuit protection.

### *Construction*

The motor starter protectors are available in four sizes:

- Size S00 - 3RV201
  Maximum rated current is 16 Amps. Suitable for motors up to 10 HP at 600V. Available in both screw terminal and spring-type terminal versions.
- Size S0 - 3RV202
  Maximum rated current is 40 Amps. Suitable for motors up to 20 HP at 600V. Available in both screw terminal and spring-type terminal verisons.
- Size S2 - 3RV203
  Maximum rated current is 50 Amps. Suitable for motors up to 50 HP at 600V.
- Size S3 - 3RV204
  Maximum rated current is 100 Amps. Suitable for motors up to 100 HP at 600V.

## Functions

### *Releases*

3RV motor starter protectors are equipped with bimetallic-based, inverse-time delayed overload releases - electromagnetic short-circuit releases.

The overload releases can be set in accordance with the load current. The overcurrent releases are permanently set to a value 13 times the rated current and thus enable trouble-free start-up of motors.

The scale cover can be sealed to prevent unauthorized adjustments to the set current.

### *Release classes*

The release classes of thermally delayed releases are based on the tripping time ($t_A$) at 7.2 times the operational current in cold state (excerpt from IEC 60 947-4):

- CLASS 10 A 2 s < $t_A$ < 10 s
- CLASS 10 4 s < $t_A$ < 10 s
- CLASS 20 6 s < $t_A$ < 20 s
- CLASS 30 9 s < $t_A$ < 30 s

The release must trip within this time!

### *Operating mechanisms*

S00, S0, S2 and S3 MSPs are actuated via a rotary operating mechanism. If the MSP trips, the rotary operating mechanism switches to the tripped position to indicate this. Before the MSP is reclosed, the rotary operating mechanism must be reset manually to 0 position, in order to prevent the former from closing by mistake before the fault has been cleared.

In the case of MSPs with rotary operating mechanisms, an electrical signal can be output via a signalling switch to indicate that the MSP has tripped.

All operating mechanisms can be locked in 0 position with a padlock (shackle diameter 3.5 to 4.5 mm).

## Application

### *Operating conditions*

3RV MSPs are suitable for use in any climate. They are designed for operation in closed rooms under normal conditions (e.g. no dust, corrosive vapours or harmful gases). Suitable enclosures must be provided for installation in dusty or damp rooms.

### *Motor Protection*

3RV MSPs use bimetallic heater elements to provide class 10 or 20 overcurrent protection for both AC and DC motors. The bimetallic heaters sense the motor current directly, so the overloads are insensitive to high frequencies, harmonic waves and sinusoidal currents and voltages.

Each MSP has a fourth bimetallic strip that reacts only to the ambient temperature inside the control panel. This ambient compensation prevents the MSP from nuisance tripping when the panel temperature is higher than the ambient temperature of the motor.

A built-in differential trip bar causes the MSP to trip faster on a phase loss condition, to help reduce motor damage from phase loss.

Magnetic trip elements in each MSP take the device off line when it senses currents of 13 times the maximum FLA dial setting.

| 3RT2 | 0 | 1 | 1 | - | 0 | A | A | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|
| **SIRIUS MSP or Circuit Breaker** | Application<br>0 = Motor Protection<br>7 = UL 489 | Frame Size<br>3 = S2<br>4 = S3 | Standard | | Amperage Range<br>Possible choices listed below see page 1/4-1/7 for an entire listing<br>0, 1, 4 | B through K | Class<br>A = 10 | Terminal Type<br>1 = Screw<br>2 = Spring Loaded<br>4 = Ring Lug | Auxiliary Switch |
| **3RV2** | **0** | **1** | **1** | **-** | **0** | **A** | **A** | **1** | **0** |
| **SIRIUS Innovations MSP or Circuit Breaker** | Application<br>0 = Motor Protection<br>7 = UL 489 | Frame Size<br>1 = S00<br>2 = S0<br>3 = S2<br>4 = S3 | Standard | | Amperage Range<br>Possible choices listed below see page 1/4-1/7 for an entire listing<br>0, 1, 4 | B through K | Class<br>A = 10<br>B = 20 | Terminal Type<br>1 = Screw<br>2 = Spring Loaded<br>4 = Ring Lug | Auxiliary Switch |

**Note:** MPSs and Contactors of the same frame size are made to easily fit together with the use of a link module.

## Applications:

***The 3RV MSPs can be used in a variety of applications:***

### *As a manual starter*

All 3RV MSPs are UL listed as Manual Motor Controllers per UL508. This makes them ideal for applications requiring simple manual starting and stopping of motors. A separate short circuit protective device, such as a circuit breaker or fuses, is still required ahead of the MSP. This up-stream protective device should be sized per NEC code, not to exceed 400% of the maximum FLA adjustment dial setting.

### *As a component in a group installation*

A group motor installation indicates multiple motor controllers under one short circuit protective device, such as a circuit breaker. 3RV MSPs have a group installation short-circuit current rating of 65 kA at 480V and up to 30kA at 600V. By using a link module, a 3RT contactor can be directly mounted to the load side of the MSP.

3RV MSPs have been UL tested with and without 3RT contactors for group installation.

### *As a Self-protected manual combination starter, Type E.*

Most 3RV MSPs have also been UL listed as UL508 Type E, Self-protected Manual Combination Starters. This UL listing allows the MSP to be mounted in a manually operated machine without having to add separate short circuit protection upstream.

These devices have a short circuit current rating of 65 kA @ 240V, 480Y/277V and up to 30kA @ 600Y/347V.

### *As part of a Combination Motor Contoller, Type F*

When a 3RT contactor is connected to the load side of a 3RV device that is rated as a "Manual Self-protected Combination Motor Controller, Type E", the assembly can be applied as a "Combination Motor Controller, Type F". This versions allows for remote starting and stopping of the motor load.

These assemblies have a short circuit current rating of 65 kA @ 240V, 480Y/277V and up to 30 kA @ 600Y/347V.

### *As a circuit breaker for export*

When exporting to many countries outside of the U.S. and North America, the 3RV can be applied as a thermal magnetic circuit breaker for use in motor branch circuits.

3RV29 28-1K

3RV29 38-1K

### *Terminals for "Combination Motor Controller Type E" to UL 508*

The 3RV MSP for motor protection is approved according to UL 508 as "Combination Motor Controller Type E".

As of July, 2001, UL 508 demands at line-side of the device used for this purpose an increased clearance and creepage distance (1" or 2").

Here, the terminal block 3RV29 28-1H must be used for size S0. The block is simply screwed to the basic unit.

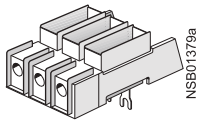
Basic units of size S2 are already compliant with new clearance and creepage distance requirements.

The terminal block 3RT29 46-4GA07 must be used for size S3. The standard box terminal is to be replaced by this terminal block.

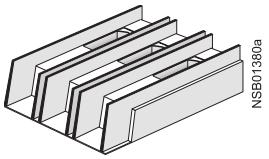
According to CSA, these terminal blocks can be omitted when the device is used as "Combination Motor Controller Type E".

By using a link module, a 3RT contactor can be directly mounted to the load side of a 3RV MSP. This assembly of a 3RV and a 3RT provides a complete, remotely operated, combination starter, Type F.

3RV29 28-1H

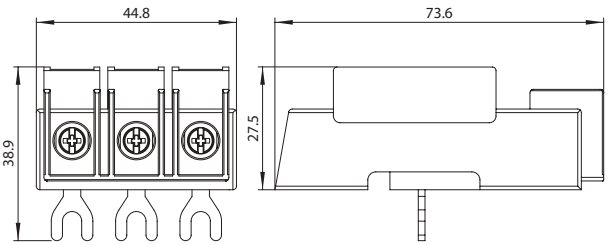



3RT29 46-4GA07

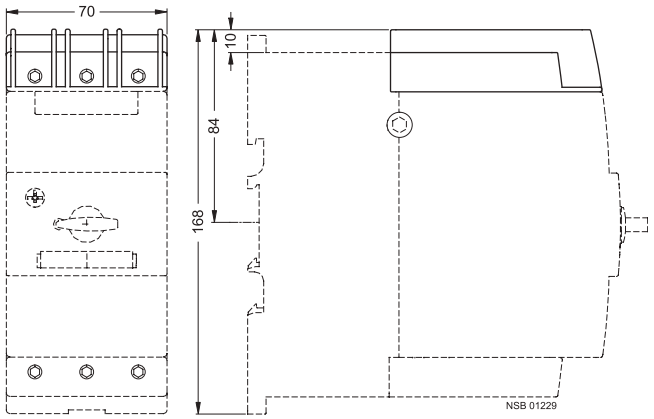



### *Terminals for "Combination Motor Controller Type E" to UL 508*

3RV29 28-1H




3RT29 46-4GA07



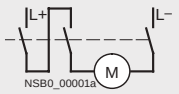
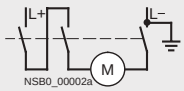
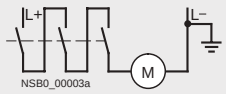
### *Switching of direct current*

3RV motor starter protectors fo r alternating currents are also suitable for DC switching.

The maximum permissible DC voltage per conducting path must, however, be adhered to. Higher voltages require a series connection with 2 or 3 conducting paths.

The response values of the overload release remain unchanged; the response values of a short-circuit release increase by approximately 30 % for DC. The example circuits for DC switching can be seen in the table below.

Example circuit for size S00 to S3 3RV motor starter protectors

| Example circuit for size S00 to S3 3RV motor starter protectors | Maximum permitted DC voltage $U_e$ | Notes |
|---|---|---|
|  | 150 V DC | Three-pole switching, non-grounded system[1)]<br>If there is no possibility of a ground fault, or if every ground fault is rectified immediately (ground-fault monitoring), then the maximum permitted DC voltage can be tripled. |
|  | 300 V DC | Two-pole switching, grounded system<br>The grounded pole is always assigned to the individual conducting path, so that there are always 2 conducting paths in series in the event of a ground fault. |
|  | 450 V DC | Single-pole switching, grounded system<br>3 conducting paths in series. The grounded pole is assigned to the unconnected conducting path. |

1) It is assumed that this circuit always provides safe disconnection even in the event of a double ground fault that bridges two contacts.

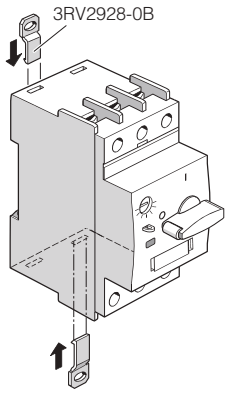
## Design

### *Mounting*

The motor starter protectors are secured in position by snapping them onto 35 mm standard mounting rails according to DIN EN 50 022. A mounting rail with a height of 15 mm is required for S3 MSPs. A 75-mm mounting rail can be used as an alternative here.

S2 and S3 MSPs can also be screwed directly onto a baseplate.

The push-in lugs 3RV29 28-0B are available for screw mounting of S00 and S0 MSPs.




### *Screw connection*

3RV MSPs of sizes S00 and S0 are fitted with terminals with captive screws and clamping pieces, allowing the connection of 2 conductors with different cross-sections.

The box terminals of the S2 and S3 MSPs also enable 2 conductors with different cross-sections to be connected. With the exception of S3 MSPs which are equipped with 4 mm hexagon socket terminal screws, all terminal screws are tightened with a Pozidriv screwdriver size 2.

The box terminals of the S3 MSPs can be removed in order to connect conductors with cable lugs or connecting bars. A terminal cover is available to help prevent contact with shock protection and to ensure that the required clearances and creepage distances are maintained if the box terminals are removed.

### *Spring-type connection* 2)

As an alternative to screw terminals, S00 and S0 devices are also available with Spring-type terminal connection.

This screwless Spring-type terminal technique, as known for modular terminal blocks, offers shock-proof and vibration proof connection of conductors.

Devices with Spring-type connection allow independent connection of two conductors per terminal.

**MSP with Spring-type terminal connection**

1) It is assumed that this circuit always provides safe cut-out, even in the event of a double earth fault that bridges two contacts.
2) For notes on Spring-type terminal connection, see section 19.

## Characteristics

The time/current characteristic, the current limiting characteristics and the $I^2t$ characteristics were determined in accordance with DIN VDE 0660 or IEC 60 947.

The tripping characteristic of the **inverse-time delayed overload releases** (thermal overload releases or 'A' releases) for DC and AC with a frequency of 0 to 400 Hz also apply to the time/current characteristic.

The characteristics apply to the cold state. At operating temperature, the tripping times of the thermal releases are reduced to approximately 25 %.

Under normal operating conditions, all three poles of the device must be loaded. The three main conducting paths must be connected in series in order to protect single-phase or DC loads.

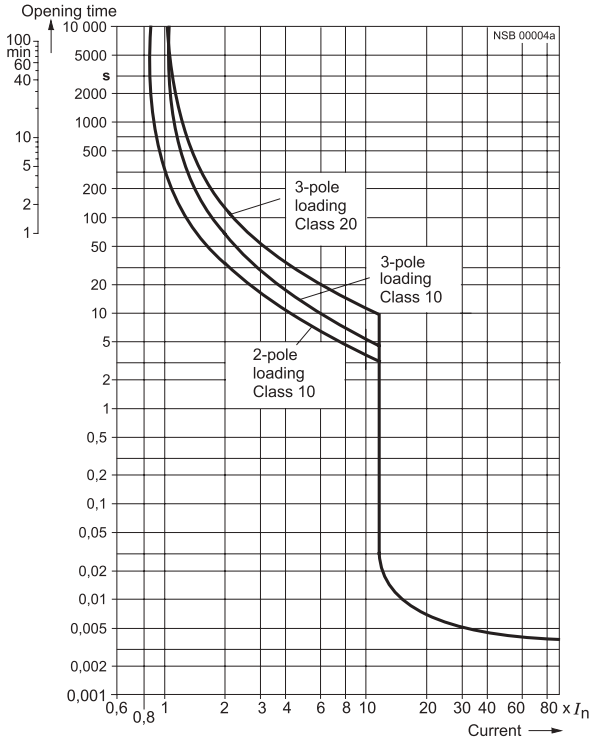
With 2-pole and 3-pole loading, the maximum deviation in the tripping time for 3 times the setting current and upwards is ± 20 % and thus in accordance with DIN VDE 0165.

The tripping characteristics for the instantaneous, electromagnetic overcurrent releases (short-circuit releases, 'N' releases) are based on the rated current $I_n$ that represents the maximum value of the setting range for MSPs with adjustable overload releases. If the current is set to a lower value, the tripping current of the 'N' release is increased by a corresponding factor.

The characteristics of the electromagnetic overcurrent releases apply to frequencies of 50/60 Hz. Appropriate correction factors must be used for lower frequencies up to 16 $^2/_3$ Hz, for higher frequencies up to 400 Hz and for DC.

The printed characteristic curve determined for the MSP relates to a specific setting range. It is, however, also valid as a schematic representation of MSPs with other current ranges.

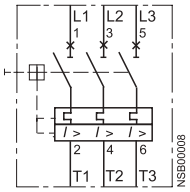
**Typical time/current characteristic of 3RV**




## Circuit diagrams

### *Internal connections*

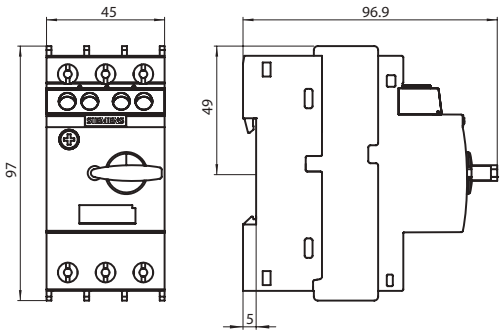
**Motor starter protectors 3RV.**



## Dimension drawings

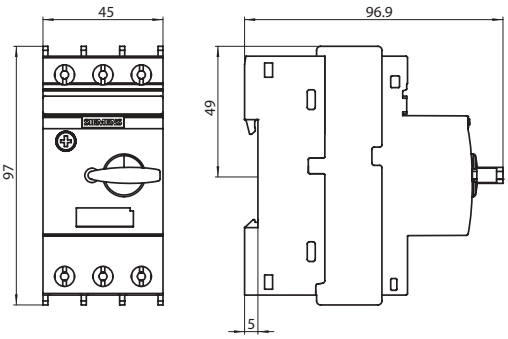
### *3RV2 MSP, size S00*

**3RV20 11**

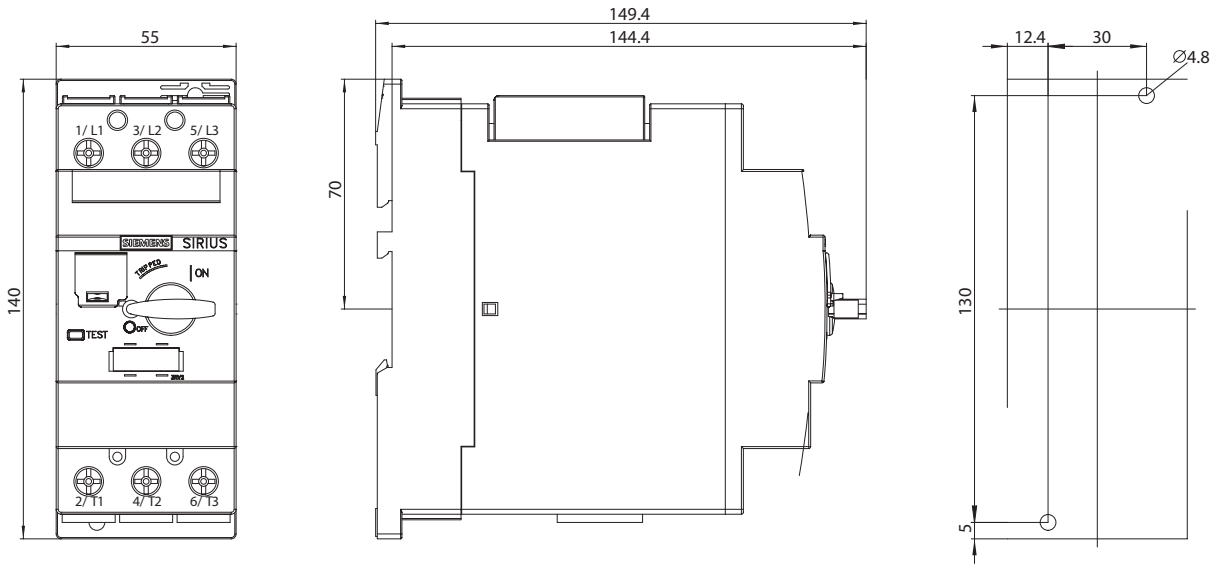



### *3RV2 MSP, size S0*

**3RV20 21**

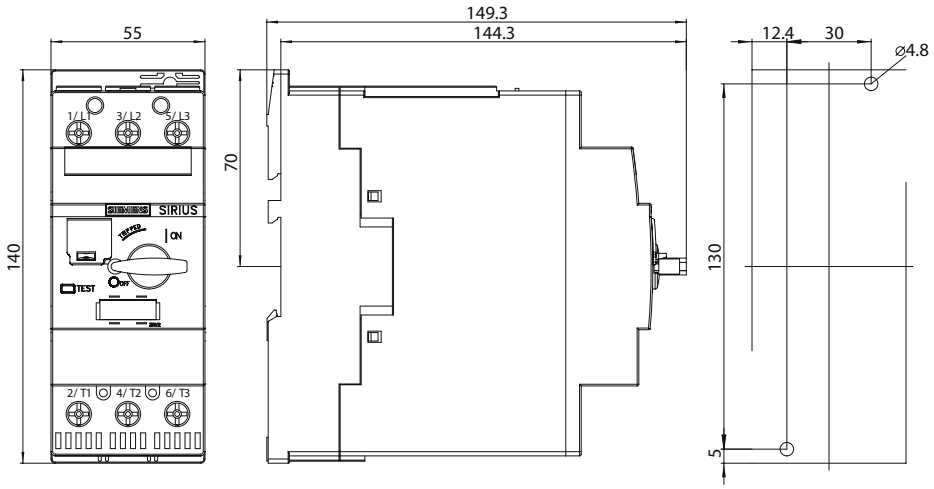



### *3RV2 MSP, size S2*

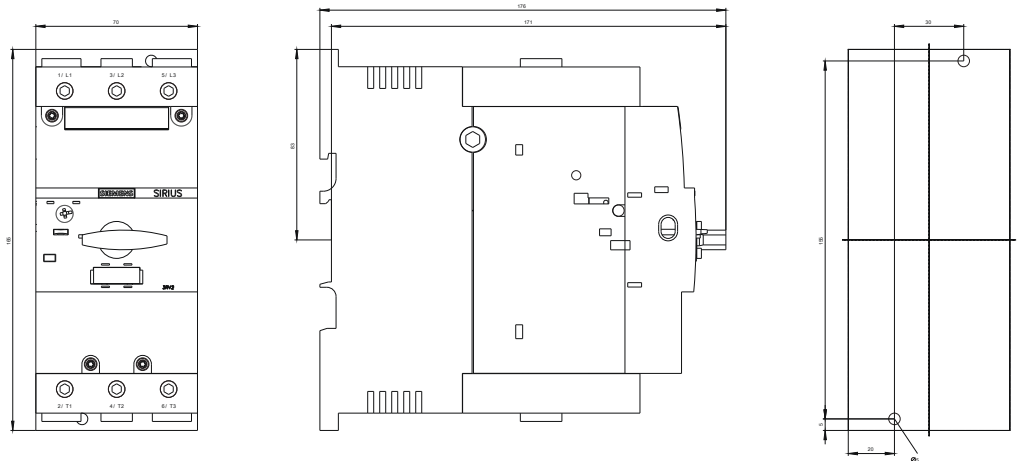



3RV2.31 motor starter protector (<= 45A)

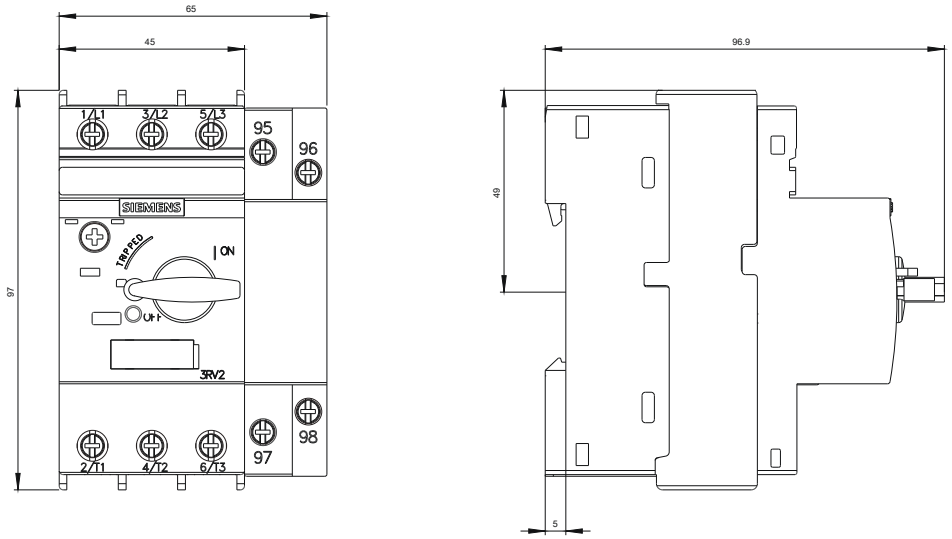
### 3RV2.32 MSP, size S2



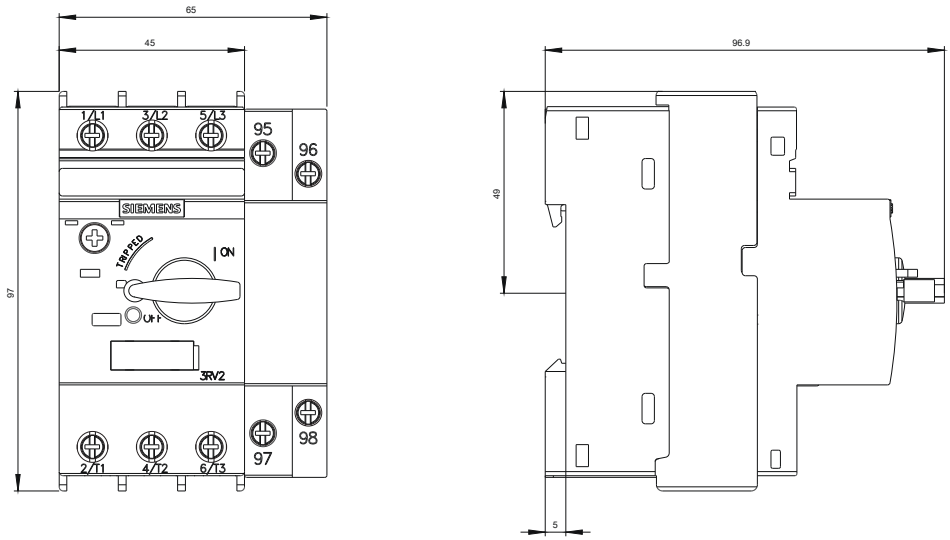

### 3RV2.4 size S3



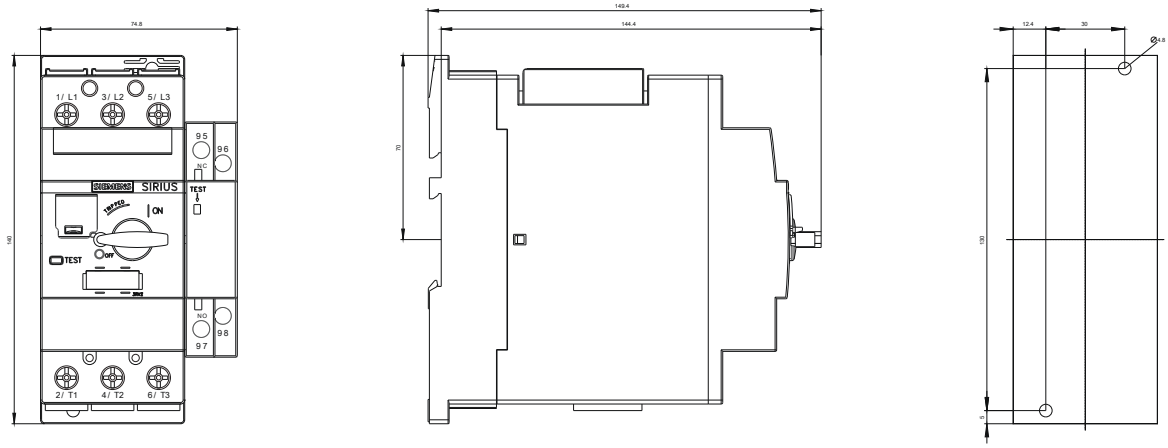

### 3RV2 MSP, size S00, 3RV2111



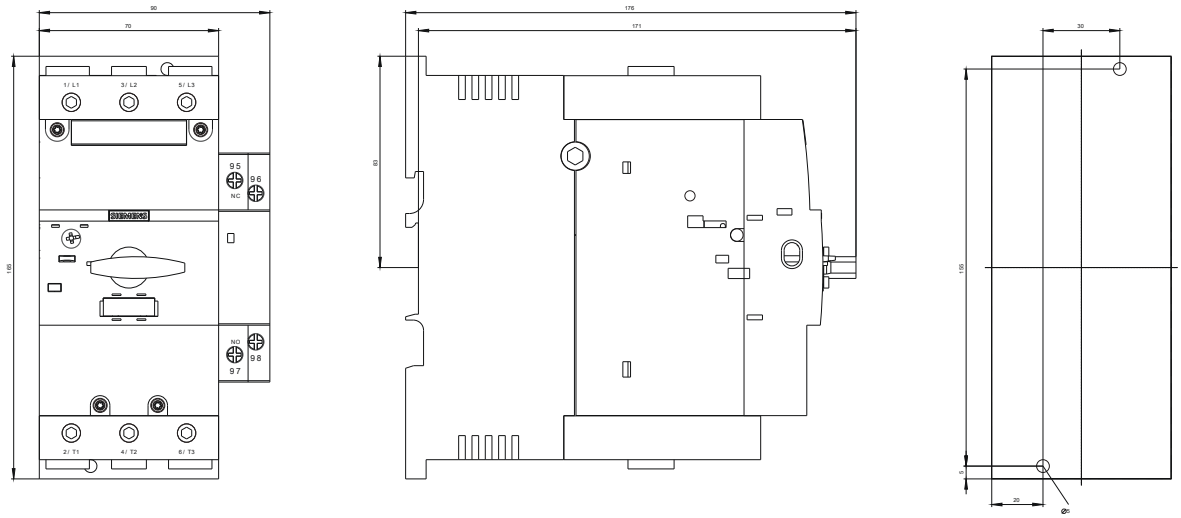
### 3RV2 MSP, size S0 , 3RV2121



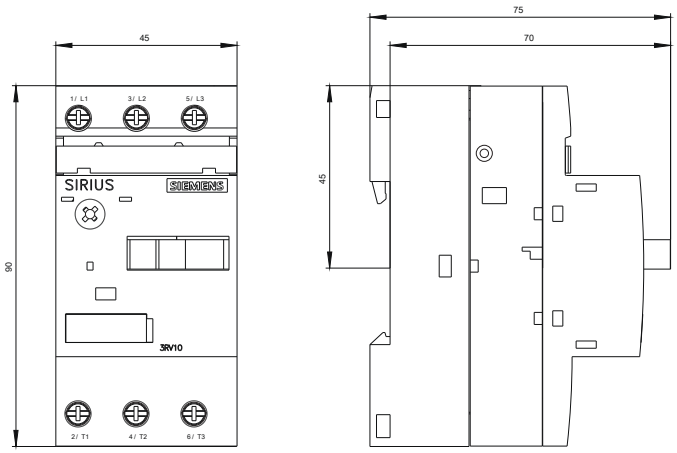

### 3RV2 MSP, size S2 , 3RV2131




### 3RV2 MSP, size S3 , 3RV2142

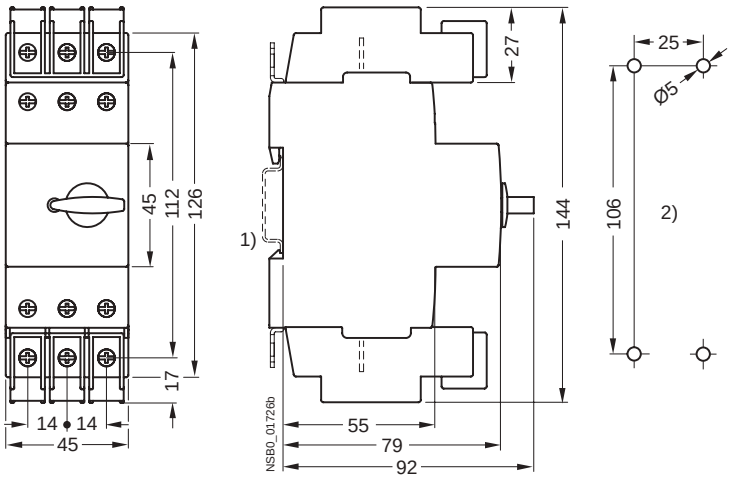


### 3RV1 MSP, size S00, 3RV1.1




### 3RV27 and 3RV28 circuit breakers, size S00, S0 and S3

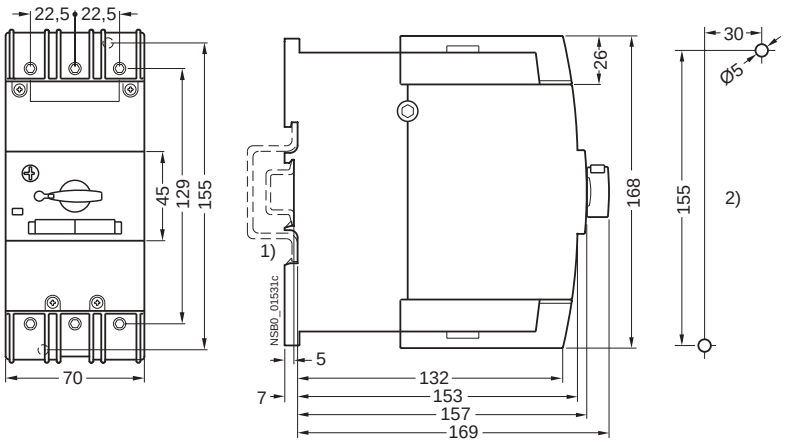
**3RV27 21, 3RV28 21**




1) Mounting according to EN 60715 to standard mounting rail TH 35.
2) Drilling pattern.

### 3RV27 circuit breakers, size S3

**3RV27 42**




1) Mounting according to EN 60715 on TH 35 standard mounting rail, 15 mm deep, or TH 75 standard mounting rail.
2) Drilling pattern.

## Overview

### *Mounting location and function*

The 3RV2 motor starter protectors/circuit breakers have three main contact elements. In order to achieve maximum flexibility, auxiliary switches, signaling switches, auxiliary releases and isolator modules can be supplied separately.

These components are easily fitted to the switches without the use of any tools according to requirements.

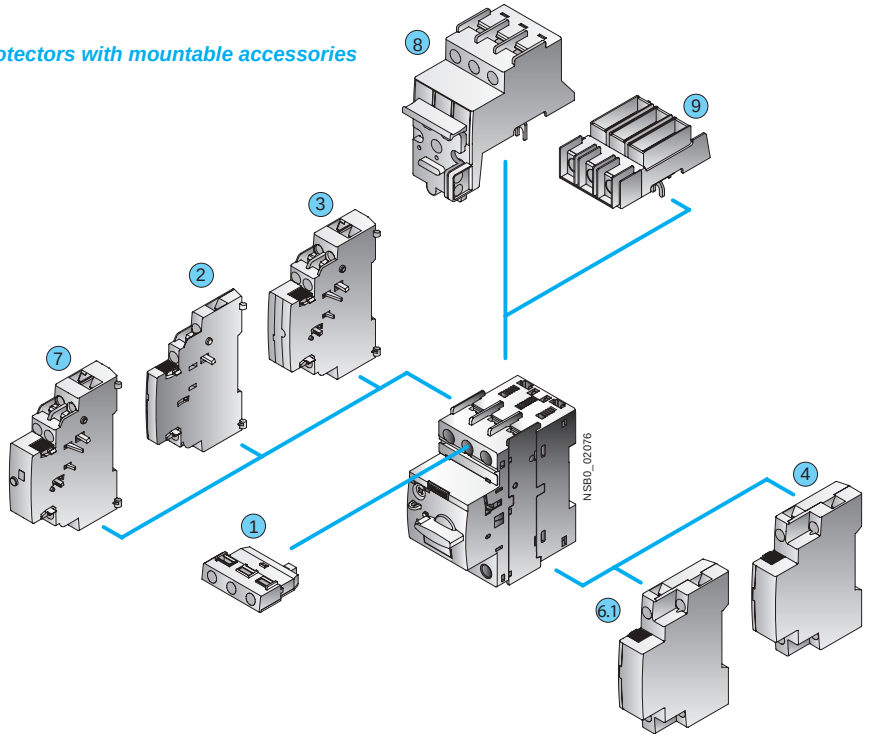
Overview graphic, see page 7/7.

| | | |
|---|---|---|
| **Front side**<br>Note:<br>• A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker. | **Transverse auxiliary switches, solid-state compatible transverse auxiliary switches**<br>1 NO + 1 NC<br>or<br>2 NO<br>or<br>1 CO | An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors/circuit breakers remains unchanged. |
| **Left-hand side**<br>Notes:<br>• A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker.<br>• Lateral auxiliary switches (two contacts) and signaling switches can be mounted separately or together.<br>• The signaling switch cannot be used for the 3RV27 and 3RV28 circuit breakers. | **Lateral auxiliary switches (2 contacts)**<br>1 NO + 1 NC<br>or<br>2 NO<br>or<br>2 NC | One of the three lateral auxiliary switches can be mounted on the left side per motor starter protector/circuit breaker. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector/circuit breaker.<br>The width of the lateral auxiliary switch with two contacts is 9 mm. |
| | **Lateral auxiliary switches (4 contacts)**<br>2 NO + 2 NC | One lateral auxiliary switch with four contacts can be mounted on the left side per motor starter protector/circuit breaker. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector/circuit breaker.<br>The width of the lateral auxiliary switch with four contacts is 18 mm. |
| | **Signaling switches**<br>Tripping 1 NO + 1 NC<br>Short circuit 1 NO + 1 NC | One signaling switch can be mounted on the left side of each motor starter protector.<br>The signaling switch has two contact systems.<br>One contact system always signals tripping irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signaling as a result of switching off with the actuator.<br>In order to be able to switch on the motor starter protector again after a short circuit, the signaling switch must be reset manually after the error cause has been eliminated.<br>The overall width of the signaling switch is 18 mm. |
| **Right-hand side**<br>Notes:<br>• One auxiliary release can be mounted per motor starter protector/circuit breaker.<br>• Accessories cannot be mounted at the right-hand side of the 3RV21 motor starter protectors for motor protection with overload relay function. | **Auxiliary releases** | |
| | Shunt releases | For remote-controlled tripping of the motor starter protector/circuit breaker. The release coil should only be energized for short periods (see circuit diagrams). |
| | or | |
| | Undervoltage releases | Trips the motor starter protector/circuit breaker when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored. Used for remote-controlled tripping of the motor starter protector/circuit breaker.<br>Particularly suitable for EMERGENCY-STOP disconnection by way of corresponding EMERGENCY-STOP pushbuttons according to DIN EN 60204-1. |
| | or | |
| | Undervoltage releases with leading auxiliary contacts<br>2 NO | Function and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function: the auxiliary contacts will open in switch position OFF to deenergize the coil of the undervoltage release, thus interrupting energy consumption. In the "tripped" position, these auxiliary contacts are not guaranteed to open. The leading contacts permit the motor starter protector/circuit breaker to reclose.<br>The overall width of the auxiliary release is 18 mm. |
| **Top**<br>Notes:<br>• The isolator module cannot be used for the 3RV27 and 3RV28 circuit breakers.<br>• The isolator module for size S2<br>- can only be used with 3RV2 motor starter protectors/circuit breakers up to max. 65 A<br>- cannot be used with the transverse auxiliary switch<br>• The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator module is used, we therefore recommend that either the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired. | **Isolator modules** | Isolator modules can be mounted to the upper connection side of the motor starter protectors.<br>The supply cable is connected to the motor starter protector through the isolator module.<br>The plug can only be unplugged when the motor starter protector is open and isolates all 3 poles of the motor starter protector from the network. The shock-protected isolation point is clearly visible and secured with a padlock to prevent reinsertion of the plug. |

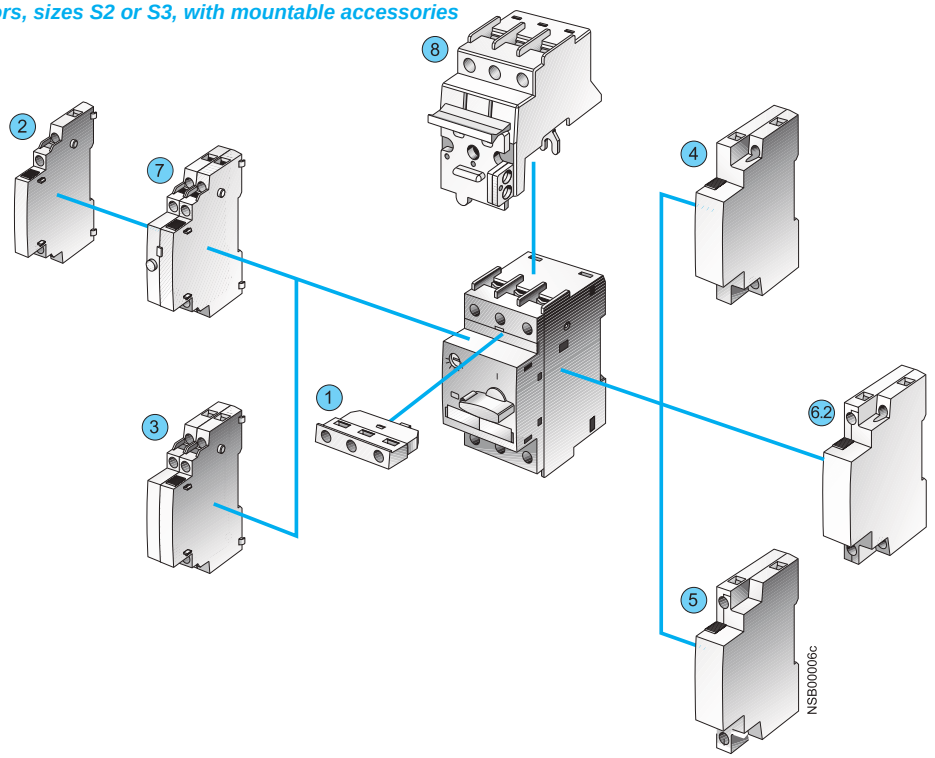
For a complete overview of which accessories can be used for the various motor starter protectors/circuit breakers, see page 7/2

## Overview

*S00 and S0 motor starter protectors with mountable accessories*




*Motor starter protectors, sizes S2 or S3, with mountable accessories*



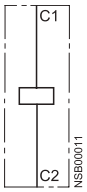

| Mountable accessories for all sizes S00 ... S3 | Mountable accessories | for sizes | Mountable accessories | for sizes |
|---|---|---|---|---|
| (1) Transverse auxiliary switch | (6.1) Undervoltage release with leading auxiliary contacts (can not be used with 3RV21 circuit breakers) | S00, S0 | (7) Signaling switch (can not be used with 3RV27 and 3RV28 circuit breakers) | S00 ... S3 |
| (2) Lateral auxiliary switch with 2 contacts | | S2, S3 | (8) Isolator module (can not be used with 3RV27 and 3RV28 circuit breakers) | S0 and S2 |
| (3) Lateral auxiliary switch with 4 contacts | (6.2) Undervoltage release with leading auxiliary contacts | | (9) Terminal block E | |
| (4) Shunt release | | | | |
| (5) Undervoltage release | | | | |

## Circuit diagrams

### *Internal connections*

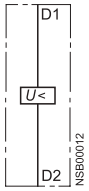
**Shunt release**

**3RV19 02-1D / 3RV29 02-1D**



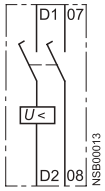

**Undervoltage release**

**3RV19 02-1A / 3RV29 02-1A**



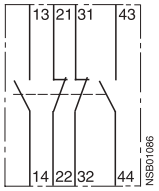

**Undervoltage release with leading auxiliary contacts**

**3RV19 12-1C / 3RV29 12-1C**
**3RV19 22-1C / 3RV29 22-1C**



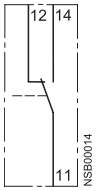

**Lateral auxiliary switch with 4 contacts**

**3RV19 01-1J / 3RV29 01-1J**

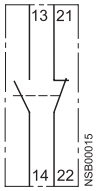



**Transverse auxiliary switch**

**3RV19 01-1D**
**3RV29 01-1D**
**3RV19 01-1G**
**3RV29 01-1G**



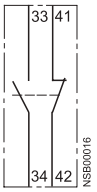

**3RV19 01-1E**
**3RV29 01-1E**
**3RV19 01-2E**
**3RV29 01-2E**




**3RV19 01-1F**
**3RV29 01-1F**

**Lateral auxiliary switch with 2 contacts**

**3RV19 01-1A**
**3RV29 01-1A**
**3RV19 01-2A**
**3RV29 01-2A**

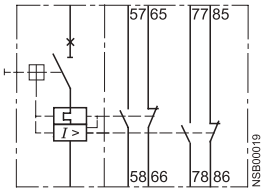



**3RV19 01-1B**
**3RV29 01-1B**
**3RV19 01-2B**
**3RV29 01-2B**

**3RV19 01-1C**
**3RV29 01-1C**
**3RV19 01-2C**
**3RV29 01-2C**

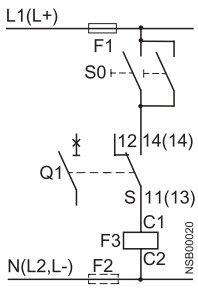
**Signallng switch**

**3RV19 21-1M / 3RV29 21-1M**

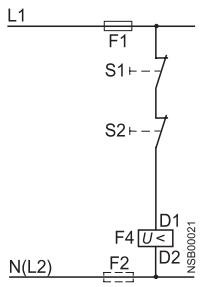



### *External connections*

**Shunt release**




**Undervoltage release**

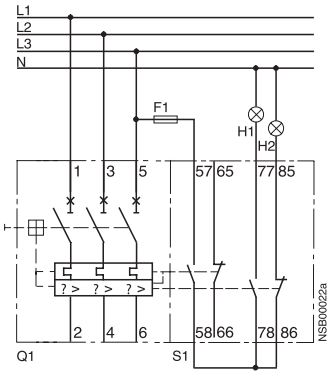



| | |
|---|---|
| S0; S1; S2 | OFF pushbuttons in system |
| Q1 | Motor starter protectors |
| S | Auxiliary switch of MSP Q1 |
| F1; F2 | Fuses (gL/gG) max. 10 A |
| F3 | Shunt release |
| F4 | Undervoltage release |

## Circuit diagrams

### *Typical circuits*

**3RV2 MSPs with 3RV29 21-1M signalling switch**



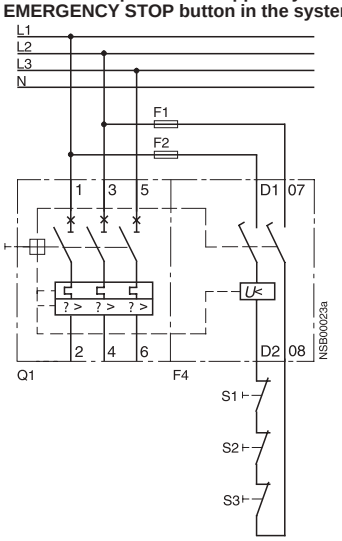

Separate "Tripped" and "Short circuit" signals

H1: "Short circuit" signal

H2: "Overload" or "Tripped by auxiliary release" signal

| | |
|---|---|
| H1; H2 | Indicator lights |
| F1 | Fuses (gL/gG) max. 10 A |
| Q1 | MSP |
| S1 | Signalling switch |

**Motor starter protectors tripped by means of pushbutton or EMERGENCY STOP button in the system**




The leading auxiliary contacts open in "OFF" position of the MSP to switch off the coil voltage of the under-voltage release, thus avoiding power consumption in switched off state.

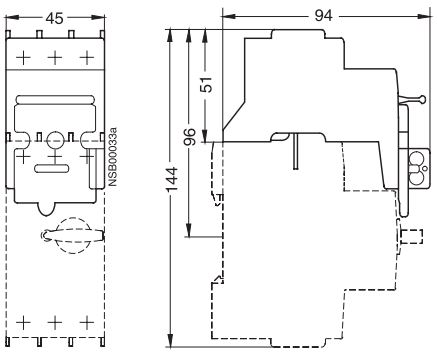
In the "tripped" position of the MSP, these contacts are not guaranteed to open.

| | |
|---|---|
| F1; F2 | Fuses (gL/gG) max. 10 A |
| Q1 | MSP |
| F4 | Undervoltage release |
| S1; S2, S3 | OFF pushbuttons in system |

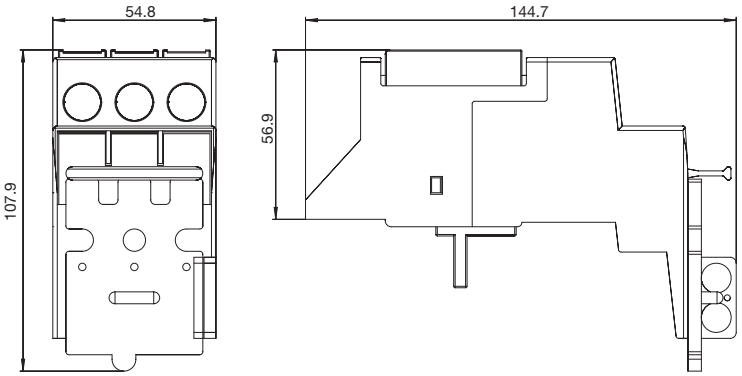
## Dimension drawings

### *Isolator modules*

3RV29 28-1A
for MSPs size S00, S0




3RV29 38-1A
for MSPs size S2




For dimension drawings of auxiliary switches, signalling switches and auxiliary releases, see page 1/43 and 1/46.

## Overview

### *Busbar adapters*

The MSPs are mounted directly with the aid of busbar adapters on FastBus-busbar systems with 40 mm and 60 mm centerline spacing, in order to save space and to reduce wiring times and costs.

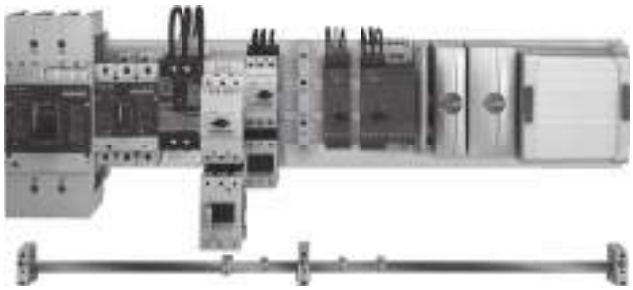
FastBus-busbar adapters for busbar systems with 40 mm centerline spacing are suitable for copper busbars with a width of 12 mm to 15 mm, while those with 60 mm centerline spacing are suitable for widths of 12 mm to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The MSPs are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

Refer to page 1/10 for busbar adapters for specific MSPs and accessories.

Further busbar adapters for snap-mounting direct-on-line starters and reversing starters, as well as additional accessories such as line terminals and outgoing terminals, busbar copper, etc., can be found in Section 5.

**SIRIUS MSPs and combination starters with FastBus-busbar adapters snapped onto busbars**

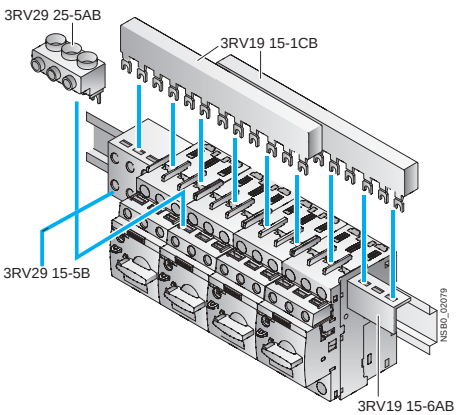


### *Insulated three-phase busbar system*

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV2 motor starter protectors with screw terminals. They can be used for the different types of motor starter protector up to 32 A. The 3RV19 15 three-phase busbar systems are generally unsuitable for the 3RV21 motor starter protectors for motor protection with overload relay function and for the 3RV27 and 3RV28 circuit breakers according to UL 489 / CSA C22.2 No. 5-02.

The busbars are suitable for between 2 and 5 circuit breakers/motor starter protectors. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A combination of motor starter protectors of different sizes is possible. The motor starter protectors are supplied by appropriate feeder terminals.




**SIRIUS three-phase busbar system size S00/S0**

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

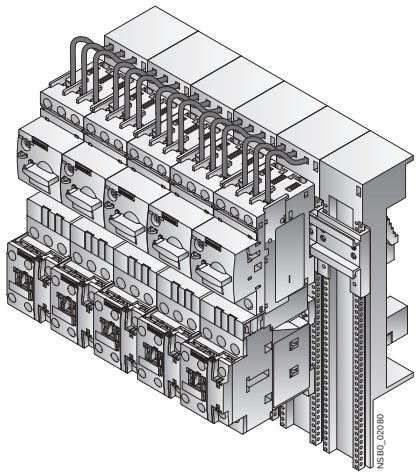
### *8US busbar adapters for 60 mm systems*

The motor starter protectors are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

The busbar adapters for busbar systems with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 5 mm or 10 mm thick.

The motor starter protectors are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals and outgoing terminals, flat copper profile, etc., can be found in Section 5.



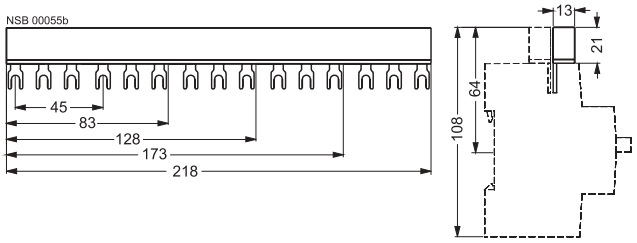

**SIRIUS load feeders with busbar adapters snapped onto busbars**

The three-phase busbar systems can also be used to construct “Type E Starters” according to UL/CSA. Special feeder terminals must be used for this purpose however (see “Selection and Ordering Data” on page 1/15).

## Dimension drawings

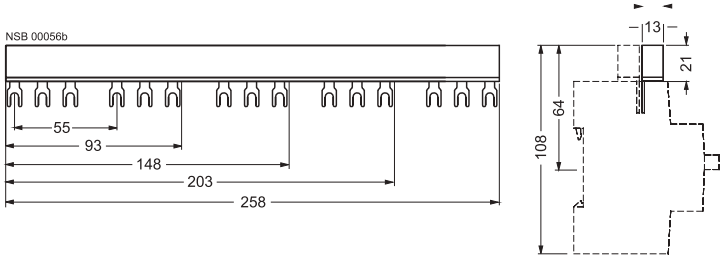
### 3RV19 15-1.. 3-phase busbar

for S00 and S0 MSPs , modular spacing 45 mm
for 2 MSPs 3RV19 15-1AB
for 3 MSPs 3RV19 15-1BB
for 4 MSPs 3RV19 15-1CB
for 5 MSPs 3RV19 15-1DB



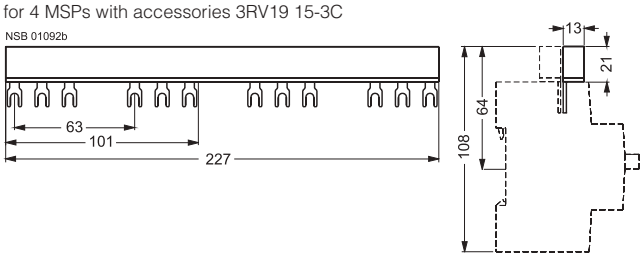

### 3RV19 15-2.. 3-phase busbar

for S00 and S0 circuit-breakers, modular spacing 55 mm
for 2 MSPs with accessories 3RV19 15-2AB
for 3 MSPs with accessories 3RV19 15-2BB
for 4 MSPs with accessories 3RV19 15-2CB
for 5 MSPs with accessories 3RV19 15-2DB



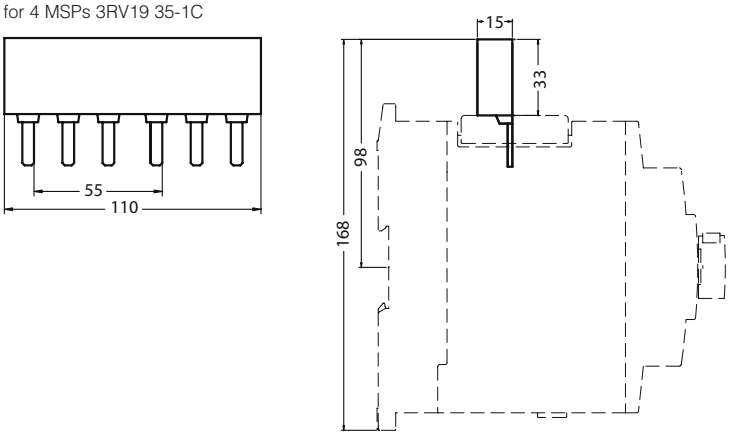

### 3RV19 15-3.. 3-phase busbar

for S00 and S0 MSPs, modular spacing 63 mm
for 2 MSPs with accessories 3RV19 15-3A
for 3 MSPs with accessories 3RV19 15-3B
for 4 MSPs with accessories 3RV19 15-3C




### 3RV19 35-1.. 3-phase busbar

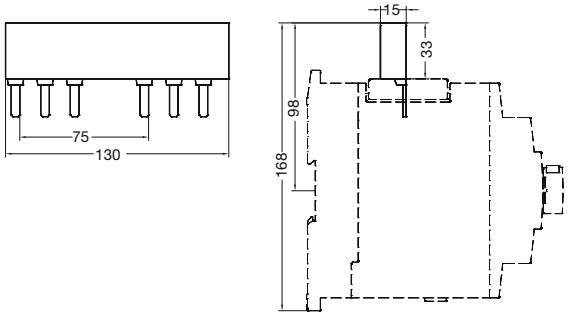
for S2 MSP, modular spacing 55 mm
for 2 MSPs 3RV19 35-1A
for 3 MSPs 3RV19 35-1B
for 4 MSPs 3RV19 35-1C



## Dimension drawings

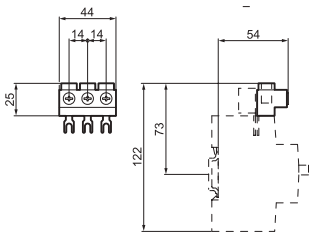
### 3RV19 35-3.. 3-phase busbar

for S2 MSP, modular spacing 75 mm
for 2 MSPs with accessories 3RV19 35-3A
for 3 MSPs with accessories 3RV19 35-3B
for 4 MSPs with accessories 3RV19 35-3C



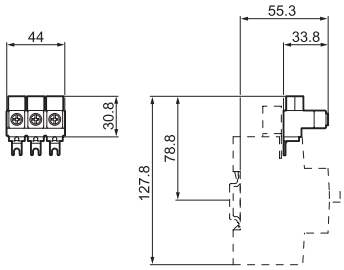

### 3RV29 25-5AB. 3-phase line-side terminals

connection from above,
size S00 and S0



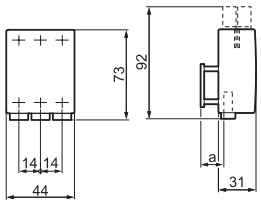

3RV29 35-5B
connection from above,
size S00 and S0

a) 3RV1. 1 19 mm
3RV1. 2 23 mm



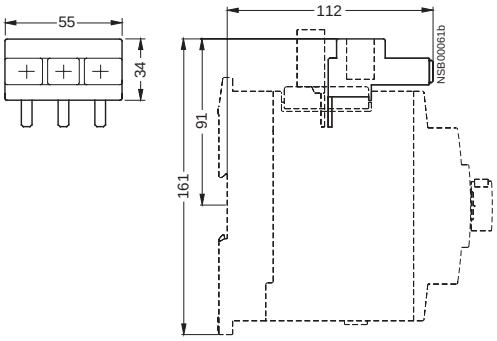

### 3RV29 25-5EB 3-phase line-side terminal

connection from above,
size S0



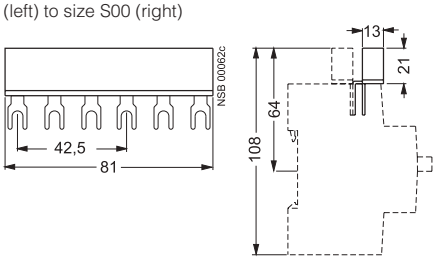

### 3RV19 35-5A 3-phase line-side terminal

for MSP size S2



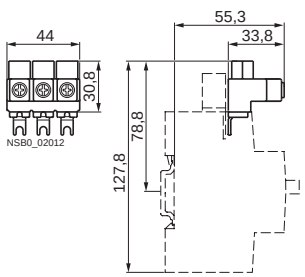

### 3RV19 15-5DB Connector

For connecting a 3-phase busbar for
MSPs of the size S0
(left) to size S00 (right)



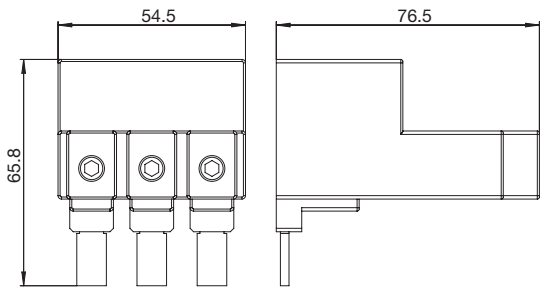

### 3RV19 25-5EB to construct "Type E Starters"

Connected from top, for motor starter protector size S0




### 3RV29 35-5E

Connected from top, for motor starter protector size S2



## Overview

### *Door-coupling rotary operating mechanisms*

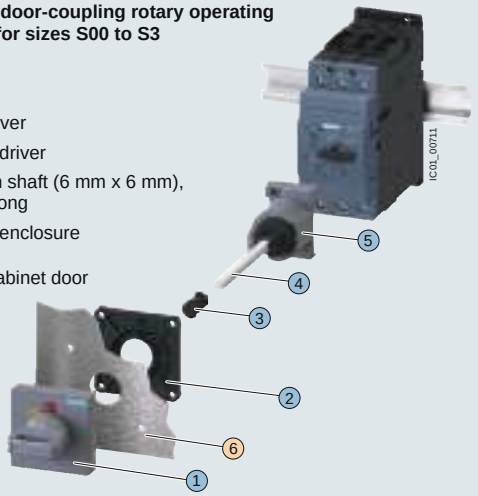
Motor starter protectors/circuit breakers with a rotary operating mechanism can be mounted in a control cabinet and operated externally by means of a door-coupling rotary operating mechanism. When the cabinet door with motor starter protector/circuit breaker is closed, the operating mechanism is coupled. When the motor starter protector/circuit breaker closes, the coupling is locked which prevents the door from being opened unintentionally. This interlock can be defeated by the maintenance personnel. In the OPEN position, the rotary operating mechanism can be secured against reclosing with up to three padlocks. Inadvertent opening of the door is not possible in this case either.

With the optional 3RV2926-.Q tolerance compensation, an offset can be compensated when installing the door-coupling rotary operating mechanism. For this purpose, the standard coupling head on the shaft is removed and replaced by the tolerance compensation.

**3RV2926-1B door-coupling rotary operating mechanism for sizes S00 to S3**

Comprising:

1. Actuator
2. Plastic cover
3. Coupling driver
4. Extension shaft (6 mm x 6 mm), 130 mm long
5. Coupling enclosure
6. Control cabinet door

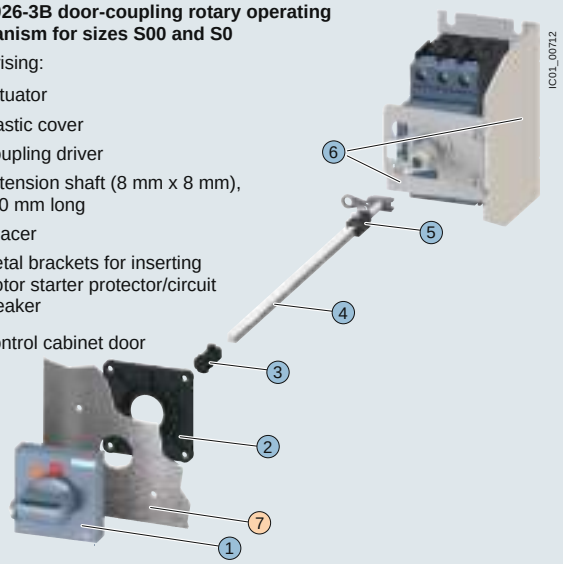



SIRIUS 3RV2926-1B door-coupling rotary operating mechanism

**3RV2926-3B door-coupling rotary operating mechanism for sizes S00 and S0**

Comprising:

1. Actuator
2. Plastic cover
3. Coupling driver
4. Extension shaft (8 mm x 8 mm), 300 mm long
5. Spacer
6. Metal brackets for inserting motor starter protector/circuit breaker
7. Control cabinet door




SIRIUS 3RV2926-3B door-coupling rotary operating mechanism for harsh conditions

### *Door-coupling rotary operating mechanism for mounting one main switch in size S3 according to UL 508A and NFPA 79*

For the installation of a door-coupling rotary operating mechanism for harsh conditions for a main switch (only possible in frame size S3) in a UL control cabinet (according to UL 508A and NFPA 79), the standard stipulates a second handle in the control cabinet. With the cabinet door open, it shall only be possible to switch on this supplementary handle by means of a "deliberate action".

The figure below shows the setup required for this purpose, with the 3RV2946-3C door-coupling rotary operating mechanism for harsh conditions, the 3RV2926-0P shaft support, and the 3VA9137-0GC05 supplementary handle (EMERGENCY OFF version).

To switch on the supplementary handle, the handle must be pressed against a spring in the direction of the mounting plane. This is the required "deliberate action" so that the supplementary handle does not turn empty and the circuit breaker can be closed.

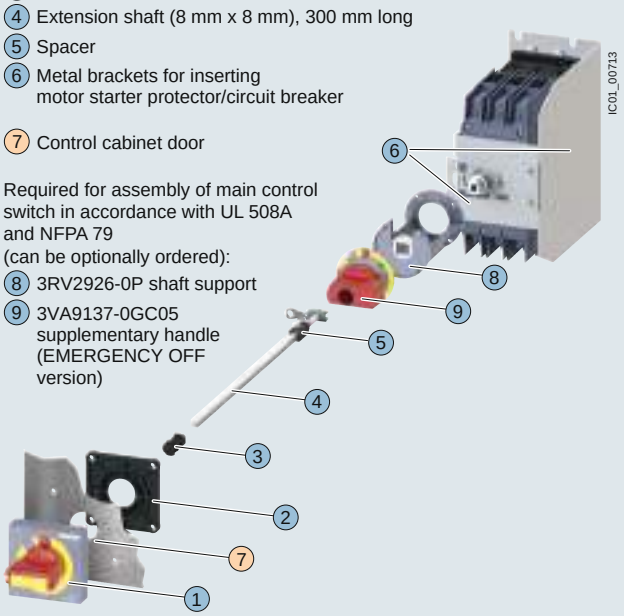
**3RV2946-3C EMERGENCY OFF door-coupling rotary operating mechanism for size S3**

Comprising:

1. Actuator
2. Plastic cover
3. Coupling driver
4. Extension shaft (8 mm x 8 mm), 300 mm long
5. Spacer
6. Metal brackets for inserting motor starter protector/circuit breaker
7. Control cabinet door

Required for assembly of main control switch in accordance with UL 508A and NFPA 79
(can be optionally ordered):

8. 3RV2926-0P shaft support
9. 3VA9137-0GC05 supplementary handle (EMERGENCY OFF version)

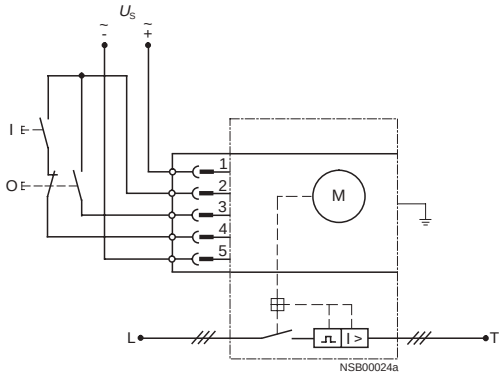



SIRIUS 3RV2946-3C EMERGENCY OFF door-coupling rotary operating mechanism for harsh operating conditions according to UL 508A and NFPA 79 with optional shaft support and supplementary handle (EMERGENCY OFF version)

## Circuit diagrams

### *Typical circuits*

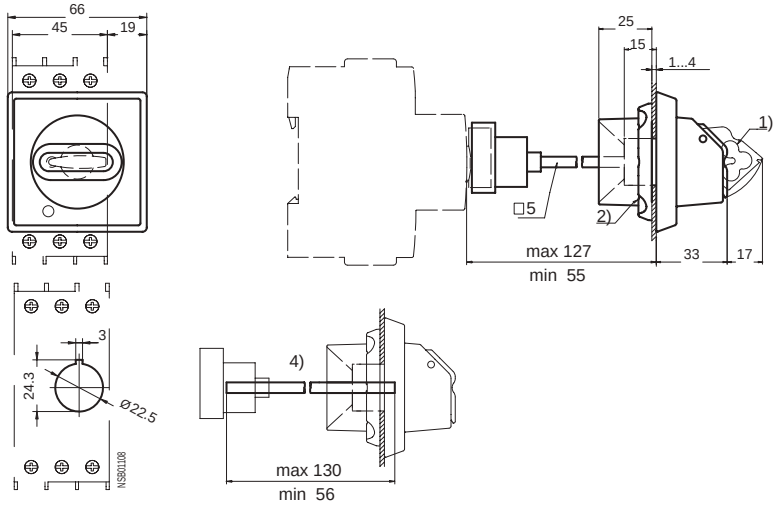
**3RV MSP with 3RV19 36/3RV19 46 remote-controlled motorized operating mechanism**




## Dimensional drawings

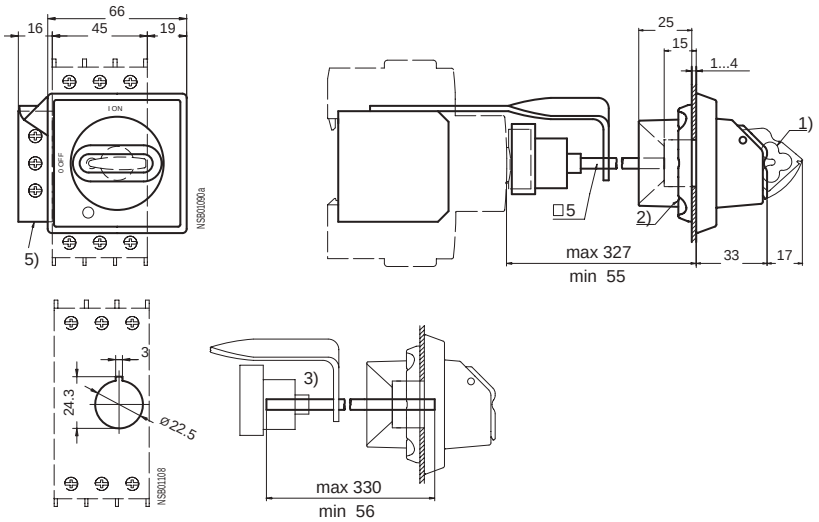
### *Door coupling rotary mechanism*

3RV29 26-0B/3RV29 26-0C short shaft[4]), for MSP sizes S00, S0, S2 and S3




1) Lockable in 0 position, with shackle diameter max. 8 mm
2) Mounting with screw cap
3) Supplied with a shaft length of 330 mm; adaptable by shortening of the shaft.
4) Supplied with a shaft length of 130 mm; adaptable by shortening of the shaft.
5) Grounding terminal 35 mm² and bracket for 330 mm shaft.

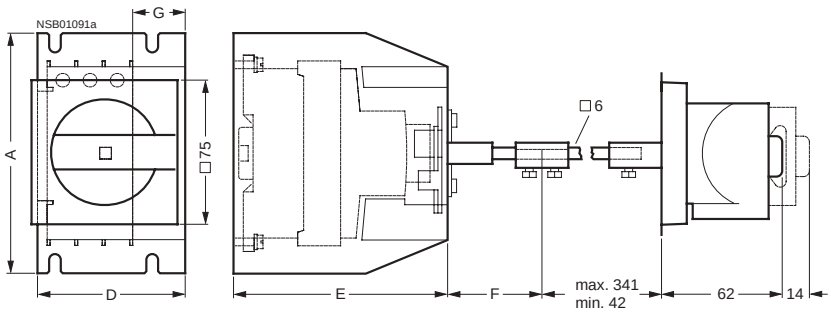
3RV29 26-0K/3RV29 26-0L long shaft (with bracket)[3]), for MSP sizes S00, S0, S2 and S3



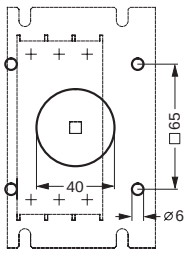
## Dimension drawings

***3RV29 . 6-2. Door coupling rotary mechanism for heavy duty***

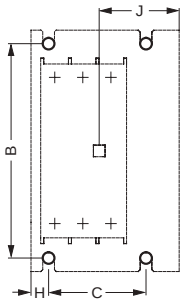
3RV29 26-2., 3RV29 36-2., 3R29 46-2.
for sizes S00, S0, S2 and S3

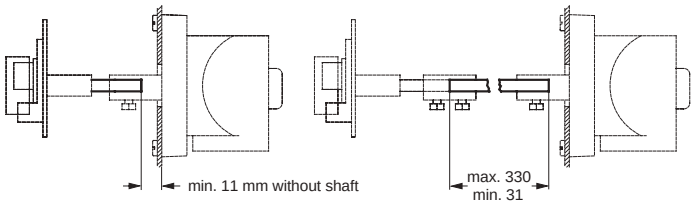



Drilling template, door




Drilling template, base




| Type | Size | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I |
| 3RV29 26-2. | S00, S0 | 125 | 111 | 50 | 77 | 112 | 50 | 27 | 9 | 42 |
| 3RV29 36-2. | S2 | 170 | 144 | 60 | 87 | 162 | 50 | 27 | 10 | 47 |
| 3RV29 46-2. | S3 | 194 | 180 | 60 | 100 | 187 | 48 | 25 | 10 | 53 |

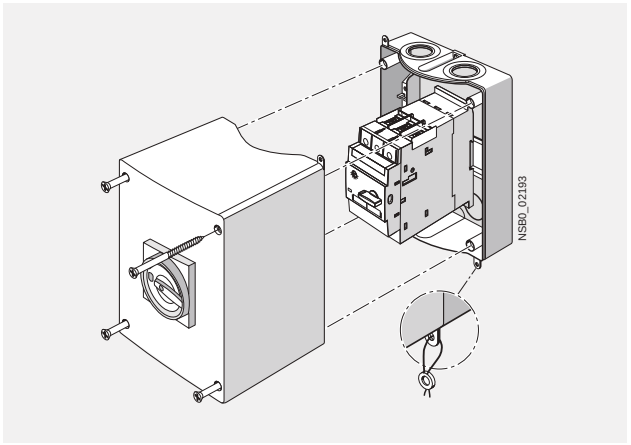
## Overview

### *Enclosure*

For stand-alone installation of motor starter protector size S2 ($I_{n\,max}$ = 65 A), molded-plastic enclosures for surface mounting are available.

When installed in a molded-plastic enclosures the motor starter protectors have a rated operational voltage $U_e$ of 500 V.

The molded-plastic enclosures are designed to degree of protection IP55.




Enclosures for surface mounting

All enclosures are equipped with N and PE terminals. There are two knock-out cable entries for cable glands at the top and two at the bottom; also on the rear corresponding cable entries are scored. There is a knockout on the top of the enclosure for indicator lights that are available as accessories.

In the enclosure for motor starter protector size S2 there is also room for the laterally mounted auxiliary release. There is no provision for installing a motor starter protector with a signaling switch.

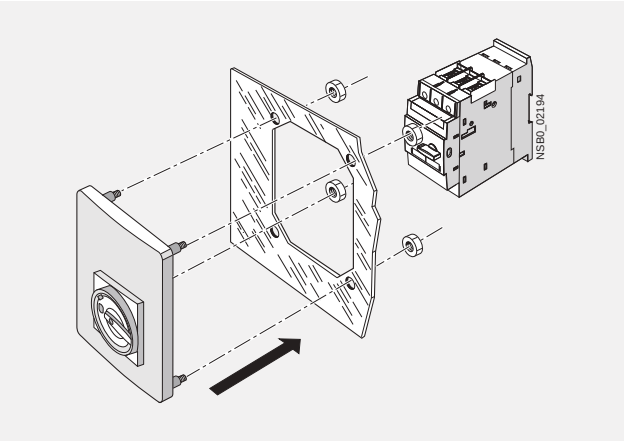
The molded-plastic enclosures of the size S2 motor starter protectors are fitted with a rotary operating mechanism.

The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

The rotary operating mechanisms can be locked in the Open position with up to 3 padlocks.

### *Front plates*

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for motor starter protector sizes S2 and S3 are available for this purpose.

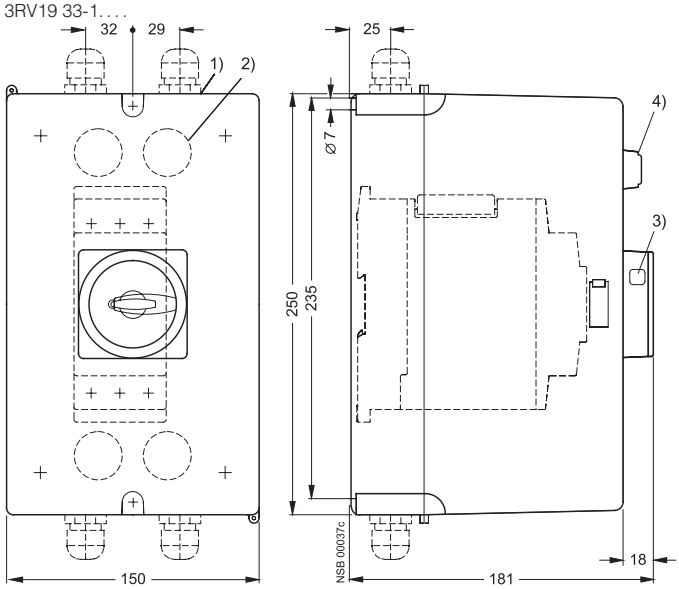



Front plate for size S2

## Dimension drawings

### *3RV19 . 3-1. . . . Cast aluminum enclosure for wall mounting*

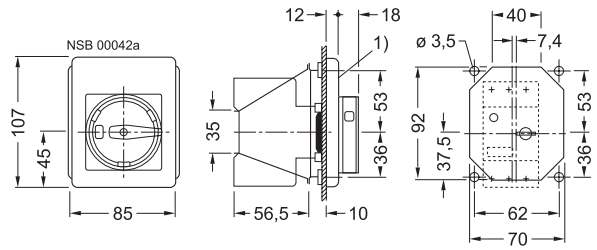
for MSPs of size S2
3RV19 33-1. . . .




1) Knock-outs for M32 (left) and M40 (right).
2) M32 knock-outs for rear-side cable entry.
3) Opening for padlock with shackle diameter max. 8 mm.
4) Indicator light 3RV19 03-5.

### *Molded-plastic front plate 3RV19 23-4.*

for MSP sizes S0, S2, S3
3RV29 23-4B
3RV29 23-4E
3RV19 23-4G (only for size S0)

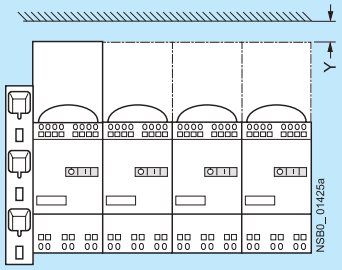


## Design

### *Installation guidelines*

Distance in Y direction from live, earthed or insulated parts according to IEC 60947-4: 10 mm.

In addition, the installation guidelines for motor starter protectors or fuseless load feeders including the clearances must be complied with.



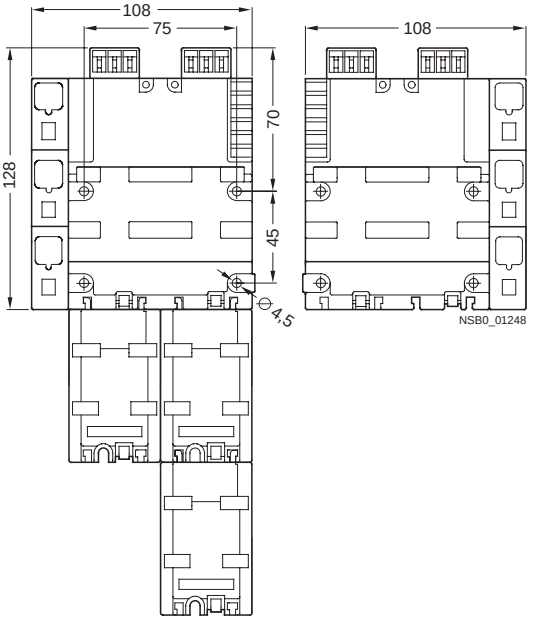

## Technical specifications

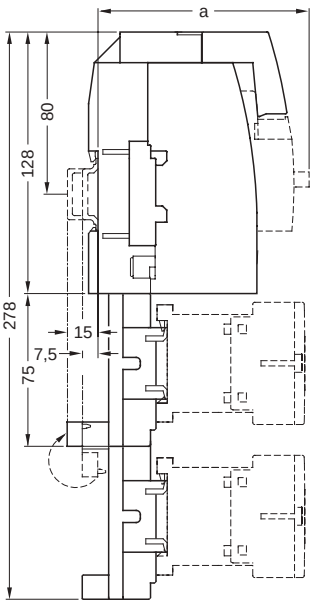
| Type | | 3RV29 .7 |
|---|---|---|
| **Rated operational voltage $U_e$** | | |
| • IEC | | |
| - 10 % overvoltage | V | 500 |
| - 5 % overvoltage | V | 525 |
| • UL/CSA | V | 600 |
| **Rated frequency** | Hz | 50/60 |
| **Rated current $I_n$** | A | 63 |
| **Permissible ambient temperature** | | |
| • During storage/transport | °C | -50 ... +80 |
| • During operation | °C | -20 ... +60 |
| **Permissible rated current of the 3RV10 11 motor starter protectors (size S00) at control cabinet internal temperature** | | |
| • +60 °C | % | 100 |
| **Permissible rated current of the 3RV10 21 motor starter protectors (size S0) up to 16 A at control cabinet internal temperature** | | |
| • +60 °C | % | 100 |
| **Permissible rated current for 3RV1. 21 motor starter protectors (size S0) from 16 A at control cabinet internal temperature** | | |
| • +40 °C | % | 100 |
| • +60 °C | % | 87 |
| **Degree of protection acc. to IEC 60529** | | IP20[1)] |
| **Touch protection acc. to IEC 61140** | | Finger-safe |
| **Conductor cross-sections for main circuit infeed** | | |
| • Solid, stranded: | $mm^2$ | 4 ... 25 |
| • Finely stranded with end sleeve | $mm^2$ | 4 ... 25 |
| • Finely stranded without end sleeve | $mm^2$ | 6 ... 25 |
| • AWG cables, solid or stranded | AWG | 10 ... 3 |
| **Conductor cross-sections of terminal block** | | |
| • Solid | $mm^2$ | 1.5 ... 6 |
| • Finely stranded with end sleeve | $mm^2$ | 1.5 ... 4 |
| • Finely stranded without end sleeve | $mm^2$ | 1.5 ... 6 |
| • AWG cables, solid or stranded | AWG | 15 ... 10 |

[1)] In infeed terminal compartment without a conductor connected: IP00.

## *Cage Clamp infeed system*

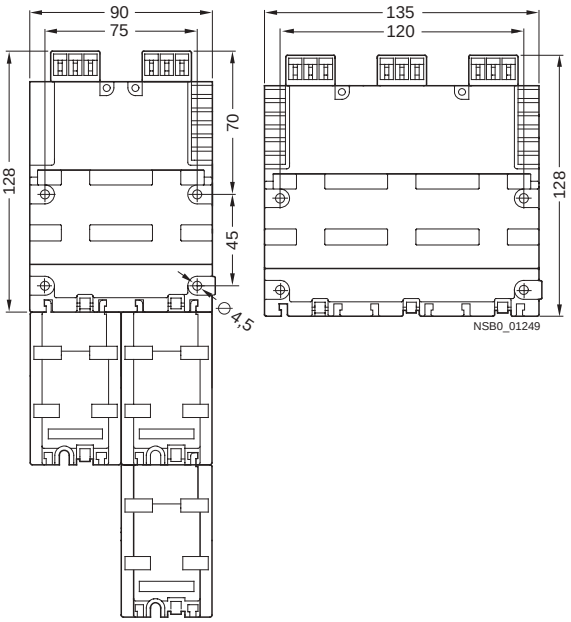
**3-phase busbars with line-side terminals**
for 2 circuit-breakers of sizes S00 and S0
3RV29 17-1.

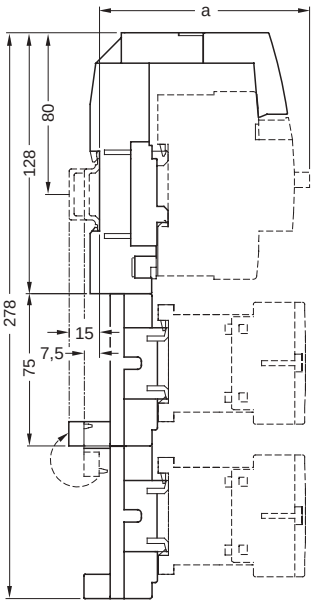



| | S00 | S0 |
|---|---|---|
| a | 104 | 125 |

**3-phase busbars for system expansion**
for 2 and 3 circuit-breakers of sizes S00 and S0
3RV29 17-4.




| | S00 | S0 |
|---|---|---|
| a | 104 | 125 |

# Contactors and Contactor Assemblies

## contents

**Section Overview** 2/2 - 2/5

**Product Overview** 2/6 - 2/7

**SIRIUS Contactors**
3RT20, 3-pole to 95A 2/8
3RT10, 3-pole to 500A 2/9
3RT10, 3-pole to 500A with Integrated Safety 2/11 - 2/10
3RT12, 3-pole Vacuum to 500A 2/12
3RT23, 4-pole with 4 NO 2/13
3RT24, 3-pole for Resistive Loads 2/15
3RT25, 4-pole with 2 NO + 2 NC 2/18
3RT26, for Capacitor Switching 2/25
3RT20, Interface Coupling Contactors 2/26 - 2/27
3RT20 Motor Contactors for DC Operation 2/22 - 2/24
3RH21 Contactor Relays 2/20 - 2/21
3RA13 / 3RA23 Reversing Contactors 2/43 - 2/50
3RT, 3TF Safety Contactors and 3RH2, 3TH2 Safety Control Relays 2/28 - 2/29
Function Modules for Communications 2/30 - 2/42
3RA24, Wye-Delta Starting 2/51 - 2/54
Contactor Coil Codes 2/55

**SIRIUS Control Relays & Coupling Relays**
3RH2 Control Relays 2/56
3RH24 Latched Control Relays 2/57
Auxiliary Switches 2/57
3RH21 Coupling Relays 2/58

**Special Application Contactors (3TF6 / 3TB5 / 3TC)**
3TF6 Vacuum Contactors up to 820A 2/59 - 2/60
3TC DC Switching Contactors 2/61 - 2/62
3TB5 Contactor Coils 2/107 - 2/108

**SIRIUS Contactor & Relay Accessories**
Overview 2/63 - 2/71
Auxiliary Switches 2/72 - 2/75
AuxiliaryTime Delay and Latching Blocks 2/76 - 2/77
Surge and EMC Suppressors 2/79 - 2/80
Contactor Accessories 2/82 - 2/85
Reversing Accessories 2/86 - 2/88
Wye-delta Accessories 2/89
NEMA 1 Enclosures 2/100

**SIRIUS Current Monitoring Relays**
3RR21 Basic Versions 2/91 - 2/94
3RR22 Standard Versions 2/91 - 2/94
3RR24 with IO-Link 2/95 - 2/98
Accessories 2/99

**Special Application Contactor Accessories**
Auxiliary Contacts 2/59
Box Terminals and Covers 2/60
Surge Suppressors for 3TB, 3TC, 3TF 2/60

**SIRIUS Contactor Spare Parts**
Coils 2/101 - 2/105
Arc Chutes 2/106
Contact Kits 2/106

**Obsolete Contactor / Relay Spare Parts** ..... 2/109 - 2/110

**Design / Function Overview**
3RT20 Contactors, S00 to S3 2/111 - 2/112
3RT10 Contactors, S6 to S12 2/113 - 2/114
WYE-Delta Starters 2/117 - 2/122
3RH2 Control Relays 2/123
3TF6 Vacuum Contactors up to 820A 2/124
3RT / 3RH Accessories 2/125 - 2/127

**Technical Data**
3RT10 / 3RT20 Contactors 2/128 - 2/158
3RT12 Vacuum Contactors 2/134, 2/159 - 2/164
3RT24 Resistive Load Contactors 2/165 - 2/172
3RT23 4-pole Contactors 4 NO 2/173 - 2/174
3RT25 4-pole Contactors 2 NO & 2 NC 2/175 - 2/176
3RT26 Capacitor Switching Contactors 2/177
3RT20 Interface Relays 2/178
3TF6 Vacuum Contactors up to 820A 2/179 - 2/184
3TC DC Switching Contactors 2/185 - 2/188
Accessories 2/189 - 2/191
3RH2 Control and Latching Relays 2/192 - 2/195
3RH21 Coupling Relays 2/196

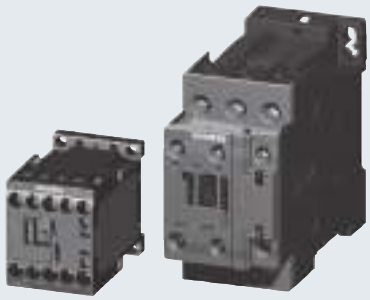
**Circuit Diagrams**
3RT Contactors & Accessories 2/197 - 2/205
3RA23 Reversing Contactors 2/206
WYE-Delta Starters 2/207
3TF6 Vacuum Contactors up to 820A 2/208
3RH2 Control & Latching Relays 2/210
3RH21 Coupling Relays 2/209

**Position of Terminals**
3RT Contactors and Accessories 2/210 - 2/214
3RT Capacitor Contactors 2/213
3TF6 Vacuum Contactors up to 820A 2/215
3RH2 Control Relays 2/210

**Dimensions**
3RT, 3-pole Contactors S00 to S3 2/216 - 2/219
3RT10, 3-pole Contactors S6 to S12 2/220 - 2/221
3RT24, 3-pole Contactors for Resistive Loads 2/220 - 2/221
3RT10, Contactors S6 to S12, integrated safety 2/222
3RT12, 3-pole Vacuum Contactors 2/223
3RT23, 3RT25 4-pole Contactors 2/224
3RT26, Contactors for Capacitor Switching 2/225
3RA13 / 23 Reversing Contactors 2/226 - 2/228
3TF6 Vacuum Contactors up to 820A 2/229
Contactor Accessories 2/230 - 2/231
3RH2 Control and Coupling Relays 2/232

## contents


### Contactors for switching three-phase motors



**3RT20 contactors, 3-pole**
**3 to 75 HP, Sizes S00 to S3**
with screw, spring or ring lug connections

Page

**Selection and ordering data**

| | |
|---|---|
| • AC/DC operation | 2/8 |
| • Accessories | 2/72 |
| • Spare parts | 2/101 |
| Description | 2/111 |
| Technical data | 2/128 |
| Internal circuit diagrams | 2/197 |
| Position of terminals | 2/210 |
| Dimension drawings | 2/216 |

**3RT10 contactors, 3-pole,**
**100 to 400 HP,**
**sizes S6, S10 and S12**

Page

**Selection and ordering data**

| | |
|---|---|
| • AC/DC operation | 2/11 |
| • Accessories | 2/72 |
| • Spare parts | 2/105 |
| Description | 2/113 |
| Technical data | 2/130 |
| Internal circuit diagrams | 2/203 |
| Position of terminals | 2/211 |
| Dimension drawings | 2/220 |

**3RT20 NEMA**
**labeled contactors,**
**NEMA size 0 to 6**

Page

**Selection and ordering data**

| | |
|---|---|
| • AC/DC operation | 2/8, 2/11 |
| • Accessories | 2/72 |
| • Spare parts | 2/101 |
| Description | 2/111 |
| Technical data | 2/128 |
| Internal circuit diagrams | 2/197 |
| Position of terminals | 2/210 |
| Dimension drawings | 2/216 |

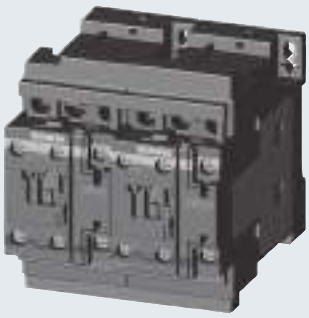
### Contactor assemblies for switching three-phase motors

**3RT12 vacuum contactors, 3-pole,**
**150 to 400 HP,**
**sizes S10 and S12**

Page

**Selection and ordering data**

| | |
|---|---|
| • AC/DC operation | 2/12 |
| • Accessories | 2/72 |
| • Spare parts | 2/105 |
| Description | 2/113 |
| Technical data | 2/159 |
| Internal circuit diagrams | 2/203 |
| Position of terminals | 2/211 |
| Dimension drawings | 2/223 |



**3RA13 / 23 contactor assemblies for reversing, 3 to 75 HP, sizes S00 to S3**
with screw or spring loaded connections

Page

**Selection and ordering data**

| | |
|---|---|
| • AC/DC operation | 2/46 |
| • Accessories | 2/86 |
| • Spare parts | 2/101 |
| Overview | 2/44 |
| Description | 2/43 |
| Circuit diagrams | 2/206 |
| Position of terminals | 2/211 |
| Dimension drawings | 2/226 |

**Wye Delta for**
**customer assembly of**
**sizes S00 to S12**

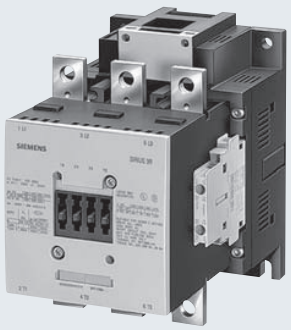
Page

**Selection and ordering data**

| | |
|---|---|
| • For wye-delta starting | 2/53 |
| • Accessories | 2/89 |
| • Spare parts | 2/101 |
| Overview | 2/115 |
| Description | 2/117 |
| Circuit diagrams | 2/207 |

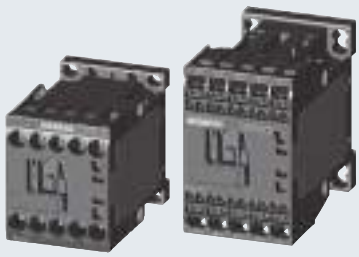
# contents

## Contactors for special applications



**3RT14 / 24 contactors, $I_e$/AC-1: 140 to 690 A, 3-pole, sizes S3 to S12,**
with screw connections


| | Page |
|---|---|
| **Selection and ordering data** | |
| • AC/DC operation | 2/15 |
| • Accessories | 2/72 |
| • Spare parts | 2/104 |
| Descriptions | 2/15 |
| Technical Data | 2/165 |
| Internal circuit diagrams | 2/203 |
| Position of terminals | 2/211 |
| Dimension drawings | 2/218 |

**3RT23 contactors, AC-1: 18 to 140 A with 4 NO main contacts, sizes S00 to S3**
with screw or spring connections


| | Page |
|---|---|
| **Selection and ordering data** | |
| • AC/DC operation | 2/13 |
| • Accessories | 2/72 |
| • Spare parts | 2/101 |
| Description | 2/13 |
| Technical Data | 2/173 |
| Internal circuit diagrams | 2/198 |
| Position of terminals | 2/214 |
| Dimension drawings | 2/224 |

**3RT25 contactors, AC-3: 7.5-25 HP with 2 NO + 2 NC main contacts, sizes S00 to S2**
with screw or spring connections

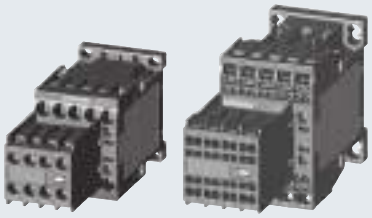

| | Page |
|---|---|
| **Selection and ordering data** | |
| • AC/DC operation | 2/18 |
| • Accessories | 2/72 |
| • Spare parts | 2/101 |
| Description | 2/18 |
| Technical Data | 2/175 |
| Internal circuit diagrams | 2/197 |
| Position of terminals | 2/210 |
| Dimension drawings | 2/224 |

**3RT26 capacitor contactors, up to 75 kvar, sizes S00 to S2**
with screw connections


| | Page |
|---|---|
| **Selection and ordering data** | |
| • AC/DC operation | 2/25 |
| • Accessories | 2/72 |
| • Spare parts | 2/103 |
| Descriptions | 2/15 |
| Technical Data | 2/177 |
| Internal circuit diagrams | 2/197 |
| Position of terminals | 2/213 |
| Dimension drawings | 2/225 |

**3RT20 coupling relays up to 20 HP (interface,) 3-pole, for switching motors, sizes S00 and S0**
with screw or spring connections


| | Page |
|---|---|
| **Selection and ordering data** | |
| • DC operation | 2/26 |
| • Accessories | 2/72 |
| • Spare parts | 2/101 |
| Description | 2/26 |
| Technical Data | 2/178 |
| Internal circuit diagrams | 2/197 |
| Position of terminals | 2/210 |
| Dimension drawings | 2/216 |

**3RT Safety Contactors and 3RH Safety Control Relays**


| | Page |
|---|---|
| **Selection and ordering data** | |
| • Safety with standard devices | 2/28 |
| • Safety with permanently mounted auxiliaries | 2/29 |
| • Accessories | 2/79 |
| Description | 2/28 |
| Technical Data | 2/128 |

## contents

### Contactors for special applications

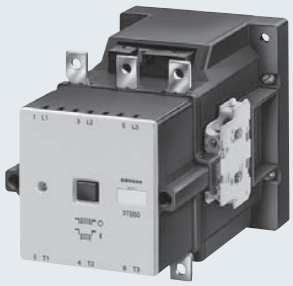
**3TF68 and 3TF69 vacuum contactors, 500 to 700 HP; contactor assemblies**

Page

**Selection and ordering data**

- AC/DC operation 2/59
- Accessories 2/59
- Spare parts 2/59

Descriptions 2/124
Technical Data 2/179
Internal circuit diagrams 2/208
Position of terminals 2/215
Dimension drawings 2/229

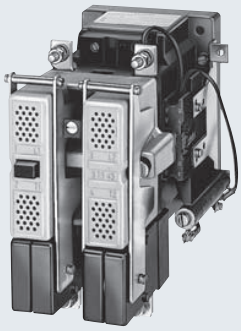


**3TB50 to 3TB56 contactors with DC solenoid system, 100 to 300 HP**

Page

**Selection and ordering data**

- Spare parts 2/108



**3TC Contactors**

Page

**Selection and ordering data**

- DC operation 2/61
- Spare parts 2/61

Technical Data 2/185

### 3RT1 SIRIUS Nomenclature

| 3RT1 | 0 | 3 | 5 | 1 | A | B0 | 1 |
|---|---|---|---|---|---|---|---|
| **SIRIUS Contactor** | **Application**<br>0 = 3 pole Standard<br>2 = 3 pole Vacuum<br>3 = 4 pole NO<br>4 = 3 pole resistive load<br>5 = 4 pole 2 NO + 2 NC<br>6 = 3 pole Capacitive | **Frame**<br>5 = S6<br>6 = S10<br>7 = S12 | **Current**<br>Designation<br>Choices = 4,5,6 | **Terminal**<br>2 = Spring Loaded Coil only<br>6 = Busbar Terminal | **Coil Type**<br>A = AC/DC (S6-S12)<br>N = UC Solid state (S6-S12)<br>P = UC Solid state with RLT (S6-S12) | **Coil Voltage**<br>See Coil Selection Chart page 2/55 | **Aux Contacts A)**<br>0 = None<br>4 = 2NO + 2NC (S6-S12)<br>5 = 1NO + 1 NC (S6-S12)<br>6 = 2 NO + 2 NC (S6-S12)<br>A) per EN50012 |

### 3RT2 SIRIUS Innovations Nomenclature

| 3RT2 | 0 | 1 | 5 | 1 | A | B0 | 1 |
|---|---|---|---|---|---|---|---|
| **SIRIUS Innovations Contactor** | **Application**<br>0 = 3 pole Standard<br>3 = 4 pole NO<br>5 = 4 pole 2 NO + 2 NC<br>6 = 3-pole Capacitive | **Frame**<br>1 = S00<br>2 = S0<br>3 = S2<br>4 = S3 | **Current**<br>3,4,5,6,7,8 | **Terminal**<br>1 = Screw<br>2 = Spring Loaded<br>3 = Spring Loaded Coil only<br>4 = Ring Lug | **Coil Type**<br>A = AC (S0-S3)<br>B = DC<br>N = UC Electronic | **Coil Voltage**<br>See Coil Selection Chart page 2/55 | **Aux Contacts A)**<br>0 = 1NO + 1NC (S0-S3)<br>1 = 1 NO (S00)<br>2 = 1 NC (S00)<br>4 = 2NO + 2NC (S00-S3)<br>A) per EN50012 |

Note: MSPs and Contactors of the same frame size are made to easily fit together with the use of a link module or can be purchased pre-assembled as 3RA starter assemblies. See section 4.

Note: Contactors and Overloads of the frame size S00 - S3 are made to easily fit together without the use of accessories.

Note: This is only a guide to decode the model number. All possible combinations of these are not available.

# Contents



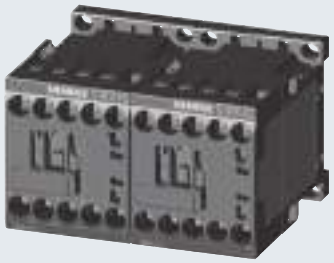
## SIRIUS contactor relays

**3RH21, 3RH22 control relays 4- and 8-pole, size S00, AC/DC operation** Page

**Selection and ordering data**


- With screw connections 2/56
- With spring connections 2/56
- Accessories for 3RH2 2/57

Overview 2/20
Technical data 2/192
Terminal diagrams 2/209
Position of terminals 2/210
Dimension drawings 2/232

**3RH24 latched control relays, 4-pole, size S00, AC/DC operation** Page

**Selection and ordering data**


- With screw connections 2/57
- Accessories for 3RH2 2/57

Application 2/123
Technical data 2/192
Terminal diagrams 2/209
Position of terminals 2/210
Dimension drawings 2/232


## SIRIUS coupling relays (interface)

**3RH21 coupling relays for switching auxiliary circuits, 4-pole, size S00, DC operation** Page

**Selection and ordering data**


- With screw connections 2/58
- with Cage Clamp connections 2/58

Application 2/58
Technical data 2/196
Terminal diagrams 2/209
Position of terminals 2/210
Dimension drawings 2/232


## SIRIUS current monitoring relays

**3RR current monitoring relays for direct mounting to SIRIUS contactors** Page

**Selection and ordering data**


- Basic versions 2/94
- Standard versions 2/94
- Versions with IO-Link 2/98
- Accessories for 3RR 2/99

Overview 2/91
Application 2/91
Technical data 2/92

# Contactors and Contactor Assemblies

## Overview

| Type | | S00 3RT20 1 | | | | S0 3RT20 2 | | | | | | S2 3RT20 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3RT20 contactors** | | | | | | | | | | | | | | | |
| **Type** | | **3RT2015** | **3RT2016** | **3RT2017** | **3RT2018** | **3RT2023** | **3RT2024** | **3RT2025** | **3RT2026** | **3RT2027** | **3RT2028** | **3RT2035** | **3RT2036** | **3RT2037** | **3RT2038** |
| **AC/DC operation** | | (p. 2/8) | | | | (p. 2/8) | | | | | | (p. 2/8) | | | |
| **Type** | | | | | | | | | | | | | | | |
| **AC/DC operation** | | | | | | | | | | | | | | | |
| **Maximum 3-phase horsepower ratings at 460V (UL and CSA listed values)** | | | | | | | | | | | | | | | |
| 200 V | HP | 1.5 | 2 | 3 | 3 | 2 | 3 | 5 | 7.5 | 10 | 10 | 10 | 15 | 20 | 20 |
| 230 V | HP | 2 | 3 | 3 | 5 | 3 | 3 | 5 | 7.5 | 10 | 10 | 15 | 15 | 20 | 25 |
| **460 V** | **HP** | **3** | **5** | **7.5** | **10** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **50** |
| 575 V | HP | 5 | 7.5 | 10 | 10 | 7.5 | 10 | 15 | 20 | 25 | 25 | 40 | 50 | 50 | 60 |
| **AC-3** | | | | | | | | | | | | | | | |
| $I_e$/AC-3/400V | A | 6 | 9 | 12 | 16 | 9 | 12 | 17 | 25 | 32 | 38 | 40 | 50 | 65 | 80 |
| 230 V | kW | 1.5 | 2.2 | 3 | 4 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 11 | 15 | 18.5 | 22 |
| **400 V** | **kW** | **3** | **4** | **5.5** | **7.5** | **4** | **5.5** | **7.5** | **11** | **15** | **18.5** | **18.5** | **22** | **30** | **37** |
| 500 V | kW | 3.5 | 4.5 | 5.5 | 7.5 | 4.5 | 7.5 | 10 | 11 | 18.5 | 18.5 | 22 | 30 | 37 | 37 |
| 690 V | kW | 4 | 5.5 | 5.5 | 7.5 | 7.5 | 7.5 | 11 | 11 | 18.5 | 18.5 | 22 | 22 | 37 | 45 |
| 1000 V | kW | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| **AC-4 (at $I_a$ = 6 x $I_e$)** | | | | | | | | | | | | | | | |
| **400 V** | **kW** | **3** | **4** | **4** | **5.5** | **4** | **5.5** | **7.5** | **7.5** | **11** | **11** | **18.5** | **22** | **30** | **37** |
| 400 V (200,000 operating cycles) | kW | 1.15 | 2 | 2 | 2.5 | 2 | 2.6 | 3.5 | 4.4 | 6 | 6 | 11.6 | 12.6 | 14.7 | 15.8 |
| **AC-1 (40°C, ≤ 690V)** | | | | | | | | | | | | | | | |
| **$I_e$** | **A** | **18** | **22** | **22** | **22** | **40** | **40** | **40** | **40** | **50** | **50** | **60** | **70** | **80** | **90** |

| | | | | |
|---|---|---|---|---|
| **Accessories for contactors** | | | | |
| **Auxiliary switch blocks** | front | **3RH29 11** (p. 2/72) | **3RH29 11** (p. 2/72) | |
| | lateral | **3RH29 11** (p. 2/74) | **3RH29 21** (p. 2/74) | |
| **Terminal covers** | | — | — | **3RT29 36** (p. 2/83) |
| **Box terminals** | | — | — | — |
| **Surge suppressor** | | **3RT29 16** (p. 2/79) | **3RT29 26** (p. 2/79) | **3RT29 36** (p. 2/79) |
| **3RU21 and 3RB3 overload relays (Section 3)** | | | | |
| **3RU21,** thermal, CLASS 10 | | **3RU21 16** 0.1-16A (p. 3/10) | **3RU21 26** 0.18-40A (p. 3/10) | **3RU21 36** 11-80A (p. 3/10) |
| **3RB30/31,** solid-state, CLASS 5, 10, 20 and 30 | | **3RB30 16** 0.1-16A (p. 3/22)<br>**3RB31 13** (p. 3/23) | **3RB30 26** 0.1-40A (p. 3/22)<br>**3RB31 23** (p. 3/23) | **3RB30 36** 12-80A (p. 3/22)<br>**3RB31 33** (p. 3/23) |
| **3RB22/23,** solid-state, CLASS 5, 10, 20 and 30 | | **3RB2.83+**<br>**3RB29 06** 0.3-25A (p. 3/34) | | **3RB22,** 10-100A (p. 3/34)<br>**3RB22, 3RB23** and **3RB24** with current measuring module |
| **3RV20 circuit-breakers (Section 1)** | | | | |
| Type | | **3RV20 11** 0.18-16A (p. 1/4) | **3RV20 21** 11-40A (p. 1/4) | **3RV20 31** 9.5-80A (p. 1/5) |
| **Link modules** | | **3RA29 11** (p. 1/10) | **3RA29 21** (p. 1/10) | **3RA29 31** (p. 1/10) |

| **3RA23 Reversing contractor assemblies** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Complete units** | **Type** | **3RA2315** | **3RA2316** | **3RA2317** | **3RA2318** | **3RA2324** | **3RA2325** | **3RA2326** | **3RA2327** | **3RA2328** | **3RA2335** | **3RA2336** | **3RA2337** | **3RA2338** |
| | | (page 2/46) | | | | (page 2/48) | | | | | (page 2/49) | | | |
| **460 V** | **HP** | **3** | **5** | **7.5** | **10** | **7.5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **50** |
| **Installation kits / wiring connectors** | | **3RA2913-2AA1 (p. 2/87)** | | | | **3RA2923-2AA1 (p. 2/87)** | | | | | **3RA2933-2AA1 (p. 2/87)** | | | |
| **Mechanical interlocks** | | **3RA2912-2H (p. 2/88)** | | | | **3RA2922-2H (p. 2/88)** | | | | | **3RA2934-2B (p. 2/86)** | | | |

# Contactors and Contactor Assemblies

## Overview

| Type | | S3 3RT2. 4 | | | S6 3RT1. 5 | | | S10 3RT1. 6 | | | S12 3RT1. 7 | | S14 3TF6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3RT20 contactors** | | | | | | | | | | | | | | |
| **Type** | | **3RT2045** (p. 2/8) | **3RT2046** | **3RT2047** | **3RT1054** (p. 2/11) | **3RT1055** | **3RT1056** | **3RT1064** (p. 2/11) | **3RT1065** | **3RT1066** | **3RT1075** (p. 2/11) | **3RT1076** | — | — |
| **AC/DC operation** | | | | | | | | | | | | | | |
| **Type** | | | | | | | | **3RT1264** (p. 2/12) | **3RT1265** | **3RT1266** | **3RT1275** (p. 2/12) | **3RT1276** | **3TF68** (p. 2/59) | **3TF69** |
| **AC/DC operation** | | | | | | | | | | | | | | |
| **Maximum 3-phase horsepower ratings at 460V (UL and CSA listed values)** | | | | | | | | | | | | | | |
| 200 V | HP | 25 | 30 | 30 | 40 | 50 | 60 | 60 | 75 | 100 | 125 | 150 | 200 | 290 |
| 230 V | HP | 30 | 30 | 40 | 50 | 60 | 75 | 75 | 100 | 125 | 150 | 200 | 250 | 350 |
| **460 V** | **HP** | **60** | **75** | **75** | **100** | **125** | **150** | **150** | **200** | **250** | **300** | **400** | **500** | **700** |
| 575 V | HP | 60 | 75 | 100 | 125 | 150 | 200 | 200 | 250 | 300 | 400 | 500 | 650 | 860 |
| **AC-3** | | | | | | | | | | | | | | |
| $I_e$/AC-3/400V | A | 80 | 95 | 110 | 115 | 150 | 185 | 225 | 265 | 300 | 400 | 500 | 630 | 820 |
| 230 V | kW | 22 | 22 | 30 | 37 | 45 | 55 | 55 | 75 | 90 | 132 | 160 | 200 | 260 |
| **400 V** | **kW** | **37** | **45** | **55** | **55** | **75** | **90** | **110** | **132** | **160** | **200** | **250** | **335** | **450** |
| 500 V | kW | 45 | 55 | 75 | 75 | 90 | 110 | 160 | 160 | 200 | 250 | 355 | 434 | 600 |
| 690 V | kW | 55 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 250 | 400 | 400/500 | 600 | 800 |
| 1000 V | kW | 37 | — | — | 75 | 90 | 90 | 90/315 | 132/355 | 132/400 | 250/560 | 250/710 | 600 | 800 |
| **AC-4 (at $I_a$ = 6 x $I_e$)** | | | | | | | | | | | | | | |
| **400 V** | **kW** | **37** | **45** | **55** | **55** | **75** | **90** | **110** | **132** | **160** | **200** | **250** | **355** | **400** |
| 400 V (200,000 operating cycles) | kW | 17.9 | 22 | 24.3 | 29 | 38 | 45 | 54/78 | 66/93 | 71/112 | 84/140 | 98/161 | 168 | 191 |
| **AC-1 (40°C, ≤ 690V)** | | | | | | | | | | | | | | |
| $I_e$ | A | **125** | **130** | **130** | **160** | **185** | **215** | **275/330** | **330** | **330** | **430/610** | **610** | **700** | **910** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Accessories for contactors** | | | | | | | | | | | | | | |
| **Auxiliary switch blocks** | front | **3RH29 11** | | (p. 2/72) | **3RH19 21** | | (p. 2/72) | | | | | | — | |
| | lateral | **3RH29 21** | | (p. 2/74) | **3RH19 21** | | (p. 2/74) | | | | | | **3TY7 561** | (p. 2/59) |
| **Terminal covers** | | **3RT2946-4EA2** | | (p. 2/85) | **3RT19 56-4EA1/2/3** | | (p. 2/85) | **3RT19 66-4EA1/2/3** | | (p. 2/85) | | | **3TX7 686/696** | (p. 2/60) |
| **Box terminals** | | — | | | **3RT19 55/56-4G** | | (p. 2/85) | **3RT19 66-4G** | | (p. 2/85) | | | — | |
| **Surge suppressor** | | **3RT29 36** | | (p. 2/79) | **3RT19 56-1C** (RC element) | | (p. 2/79) | | | | | | **3TX7 572** | (p. 2/60) |
| **3RU21 and 3RB3 overload relays (Section 3)** | | | | | | | | | | | | | | |
| **3RU21,** thermal, CLASS 10 | | **3RU21 46** 18-100A | | (p. 3/10) | — | | | — | | | — | | — | |
| **3RB30/31,** solid-state, CLASS 5, 10, 20 and 30 | | **3RB30 46** 12.5-100A<br>**3RB31 43** | | (p. 3/22)<br>(p. 3/23) | **3RB20 56** 50–200A<br>**3RB21 56** | | (p. 3/22)<br>(p. 3/23) | **3RB20 66** 50–630A<br>**3RB21 66** | | (p. 3/22)<br>(p. 3/23) | **3RB20 66** 160–630A<br>**3RB21 66** | (p. 3/22) | **3RB20 66** 160–630A<br>**3RB21 66** | (p. 3/22) |
| **3RB22/23,** solid-state, CLASS 5, 10, 20 and 30 | | | | | **3RB2.83 +** 20–200A<br>**3RB29 56** | | (p. 3/34) | **3RB2.83 +** 63–640A<br>**3RB29 56** | | (p. 3/34) | | | | |
| **3RV20 circuit-breakers (Section 1)** | | | | | | | | | | | | | | |
| Type | | **3RV20 41** 45-100A | | (p. 1/5) | — | | | — | | | — | | — | |
| **Link modules** | | **3RA19 41** | | (p. 1/10) | — | | | — | | | — | | — | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3RA23 Reversing contractor assemblies** | | | | | | | | | | | | | | |
| **Complete units** | **Type** | **3RA23 45** (p. 2/50) | **3RA23 46** | **3RA23 47** | — | | | — | | | — | | — | |
| **460 V** | **HP** | **60** | **75** | **75** | **100** | **125** | **150** | **150** | **200** | **250** | **300** | **400** | **500** | **700** |
| **Installation kits / wiring connectors** | | **3RA2943-2AA1** | | (p. 2/87) | **3RA1953-2A** | | (p. 2/87) | **3RA1963-2A** | | (p. 2/87) | **3RA1973-2A** | (p. 2/87) | **3TX7680-1A** | |
| **Mechanical interlocks** | | **3RA2934-2B** | | | **3RA1954-2A** | | (p. 2/86) | | | | | | **3TX7686-1A** | |

## Selection and ordering data

3RT201.-1A

3RT201. -2A. . .

3RT2028-1N...

3RT2025-2B...

3RT2035-1A...

3RT2045-1A...

| Frame Size | Amp Ratings AC3 | AC1 | Single-phase HP ratings 115V | 208V | 230V | Three-phase HP ratings 208V | 230V | 460V | 575V | Auxiliary contacts NO | NC | Screw Terminals Order No. | Spring-Loaded Terminals[1] Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3RT 3-pole contactors** | | | | | | | | | | | | | | |
| **S00** | **6** | 18 | 0.25 | 0.5 | 0.75 | 1.5 | 2 | **3** | 5 | 1 | 0 | **3RT2015-1□●●1** | **3RT2015-2□●●1** | 0.24/0.29 |
| | | | | | | | | | | 0 | 1 | **3RT2015-1□●●2** | **3RT2015-2□●●2** | |
| | **9** | 22 | 0.33 | 1 | 1 | 2 | 3 | **5** | 7.5 | 1 | 0 | **3RT2016-1□●●1** | **3RT2016-2□●●1** | |
| | | | | | | | | | | 0 | 1 | **3RT2016-1□●●2** | **3RT2016-2□●●2** | |
| | **12** | 22 | 0.5 | 1.5 | 2 | 3 | 3 | **7.5** | 10 | 1 | 0 | **3RT2017-1□●●1** | **3RT2017-2□●●1** | |
| | | | | | | | | | | 0 | 1 | **3RT2017-1□●●2** | **3RT2017-2□●●2** | |
| | **16** | 22 | 1 | 2 | 2 | 3 | 5 | **10** | 10 | 1 | 0 | **3RT2018-1□●●1** | **3RT2018-2□●●1** | |
| | | | | | | | | | | 0 | 1 | **3RT2018-1□●●2** | **3RT2018-2□●●2** | |
| **S0** | **9** | 40 | 1 | 1 | 1 | 2 | 3 | **5** | 7.5 | 1 | 1 | **3RT2023-1□●●0** | **3RT2023-2□●●0** | 0.42/0.60 |
| | **12** | 40 | 1 | 2 | 2 | 3 | 3 | **7.5** | 10 | 1 | 1 | **3RT2024-1□●●0** | **3RT2024-2□●●0** | |
| | **17** | 40 | 1 | 2 | 3 | 5 | 5 | **10** | 15 | 1 | 1 | **3RT2025-1□●●0** | **3RT2025-2□●●0** | |
| | **25** | 40 | 2 | 3 | 3 | 7.5 | 7.5 | **15** | 20 | 1 | 1 | **3RT2026-1□●●0** | **3RT2026-2□●●0** | |
| | **32** | 50 | 2 | 5 | 5 | 10 | 10 | **20** | 25 | 1 | 1 | **3RT2027-1□●●0** | **3RT2027-2□●●0** | |
| | **38** | 50 | 3 | 5 | 5 | 10 | 10 | **25** | 25 | 1 | 1 | **3RT2028-1□●●0** | **3RT2028-2□●●0** | |
| **S2** | **40** | 60 | 3 | 5 | 7.5 | 10 | 15 | **30** | 40 | 1 | 1 | **3RT2035-1□●●0** | **3RT2035-3□●●0** | 0.99/1.121 |
| | **50** | 70 | 3 | 7.5 | 10 | 15 | 15 | **40** | 50 | 1 | 1 | **3RT2036-1□●●0** | **3RT2036-3□●●0** | |
| | **65** | 80 | 5 | 10 | 10 | 20 | 20 | **50** | 50 | 1 | 1 | **3RT2037-1□●●0** | **3RT2037-3□●●0** | |
| | **80**[2] | 90 | 5 | 10 | 15 | 20 | 25 | **50** | 60 | 1 | 1 | **3RT2038-1□●●0** | **3RT2038-3□●●0** | |
| **S3** | **80** | 125 | 7.5 | 10 | 15 | 25 | 30 | **60** | 60 | 1 | 1 | **3RT2045-1□●●0** | **3RT2045-3□●●0** | 1.8/2.8 |
| | **95** | 130 | 10 | 10 | 20 | 30 | 30 | **75** | 75 | 1 | 1 | **3RT2046-1□●●0** | **3RT2046-3□●●0** | |
| | **110** | 130 | 10 | 10 | 20 | 30 | 40 | **75** | 100 | 1 | 1 | **3RT2047-1□●●0** | **3RT2047-3□●●0** | |
| | | | | | | | | | | | | □ | □ | |
| | **Size S2 & S3 only: Replace "B" with "K" for 24VDC coil only**<br>**Size S0-S3 only: UC Electronic with integrated varistor** | | | | | | | | | | | **AC Coil = A**<br>**DC Coil = B**<br>**UC Coil = N** | **A**<br>**B**<br>**N** | |

| NEMA SIze | Amp Ratings | Single-phase HP ratings 115V | 230V | Three-phase HP ratings 208V | 230V | 460V | 575V | Auxiliary contacts NO | NC | Screw Terminals with AC coil Order No. | Screw Terminals with 24 VDC coil Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NEMA Labeled Contactors** | | | | | | | | | | | | |
| **0** | **18** | 1 | 2 | 3 | 3 | **5** | 5 | 1 | 0 | **3RT2018-1A●●1-0UA0** | **3RT2018-1BB41-0UA0** | 0.28 |
| **1** | **27** | 2 | 3 | 7.5 | 7.5 | **10** | 10 | 1 | 1 | **3RT2027-1A●●0-0UA0** | **3RT2027-1BB40-0UA0** | 0.42 |
| **2** | **45** | 3 | 7.5 | 10 | 15 | **25** | 25 | 1 | 1 | **3RT2036-1A●●0-0UA0** | **3RT2036-1NB30-0UA0** | 0.986/1.121 |
| **3** | **90** | 7.5 | 15 | 25 | 30 | **50** | 50 | 1 | 1 | **3RT2046-1A●●0-0UA0** | **3RT2046-1NB30-0UA0** | 1.8 / 2.8 |

*Note: Ring lug terminals are also available in size S00 & S0 contactors, except contactors with communication interface or UC coil. Change the 8th digit of the order number to a "4", e. g. 3RT2015-4AK61.*

For further coil voltages, see page 2/55.
For auxiliaries and accessories, see page 2/72-2/89.
For spare parts, see page 2/101-2/106.
For technical data, see page 2/128-2/149.
For description, see page 2/111-2/112.
For int. circuit diagrams, see page 2/197-2/204.
For dimension drawings, see page 2/216-2/219.

[1] All terminals are spring loaded on frame sizes S00 & S0. Only the coil terminals are spring loaded on frame sizes S2 & S3.
[2] Max UL FLA = 65A at 460V

**AC Coil Selection for 3RT201 through 3RT204**

| ●●Coil Code | C2[3] | H2[4] | K6 | P6 | U6 | V6 | T6 |
|---|---|---|---|---|---|---|---|
| **60 Hz** | 24 V | 48 V | 120 V | 240 V | 277 V | 480 V | 600 V |
| **50 Hz** | 24 V | 48 V | 110 V | 220 V | — | — | — |

**DC Coil Selection for 3RT201 & 3RT202 (for 3RT203 & 3RT204 see UC)**

| ●●Coil Code | A4[5] | B4 | W4 | E4 | F4 | G4 | M4 |
|---|---|---|---|---|---|---|---|
| DC | 12 V | 24 V | 48 V | 60 V | 110 V | 125 V | 220 V |

**UC Coil Selection for 3RT202**

| ●●Coil Code | B3 | F3 | P3[5] |
|---|---|---|---|
| UC | 21-28V | 95-130V | 200-280V |

**UC Coil Selection for 3RT203 & 3RT204**

| ●● | B3 | F3 | P3[6] |
|---|---|---|---|
| | 20-33V | 83-155V | 175-280V |

[3] Use Code **B0** for 3RT201, S00
[4] Use Code **H0** for 3RT201, S00
[5] 3RT201 and 3RT202 only
[6] at upper limit = 1.1 x $U_S$

## Selection and ordering data

*** AC/DC Coils with built in surge suppressor**
*** Coil Types (40Hz to 60Hz, DC):**
*** Conventional Coil**
*** Solid-state operated coil with wider range and 24 V DC PLC input**
*** Solid-state operated coil with Remaining Lifetime Indication (RLT)**
*** Box terminals ordered separately**

3RT1054-6A. . 6

3RT1065-6P. . 5

| Frame Size | Amp Ratings AC3 | Amp Ratings AC1 | Single-phase HP ratings 115V | Single-phase HP ratings 230V | Three-phase HP ratings 200V | Three-phase HP ratings 230V | Three-phase HP ratings 460V | Three-phase HP ratings 575V | Auxiliary contacts NO | Auxiliary contacts NC | Screw Terminals on coil and aux. Order No. | Spring-type terminals on coil and aux. contacts Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3RT 3-pole Contactors** | | | | | | | | | | | | | |
| **S6** | **115** | 160 | — | 25 | 40 | 50 | **100** | 125 | 2 | 2 | **3RT1054-6□●●6** | **3RT1054-2□●●6** | |
| | **150** | 185 | — | 30 | 50 | 60 | **125** | 150 | 2 | 2 | **3RT1055-6□●●6** | **3RT1055-2□●●6** | 3.5 |
| | **185** | 215 | — | 30 | 60 | 75 | **150** | 200 | 2 | 2 | **3RT1056-6□●●6** | **3RT1056-2□●●6** | |
| **S10** | **225** | 275 | — | — | 60 | 75 | **150** | 200 | 2 | 2 | **3RT1064-6□●●6** | **3RT1064-2□●●6** | |
| | **265** | 330 | — | — | 75 | 100 | **200** | 250 | 2 | 2 | **3RT1065-6□●●6** | **3RT1065-2□●●6** | 6.7 |
| | **300** | 330 | — | — | 100 | 125 | **250** | 300 | 2 | 2 | **3RT1066-6□●●6** | **3RT1066-2□●●6** | |
| **S12** | **400** | 430 | — | — | 125 | 150 | **300** | 400 | 2 | 2 | **3RT1075-6□●●6** | **3RT1075-2□●●6** | |
| | **500** | 610 | — | — | 150 | 200 | **400** | 500 | 2 | 2 | **3RT1076-6□●●6** | **3RT1076-2□●●6** | 10.5 |
| | **UC Conventional Coil** | | | | | | | | | | **□** | **□** | |
| | **Solid State Operated Coil =** | | | | | | | | | | **A** | **A** | |
| | **Solid State Operated Coil with RLT =** | | | | | | | | | | **N** | **N** | |
| | | | | | | | | | | | **P●●5** | **—** | |

| NEMA Size | Amp Ratings | Single-phase HP ratings 115V | Single-phase HP ratings 230V | Three-phase HP ratings 208V | Three-phase HP ratings 230V | Three-phase HP ratings 460V | Three-phase HP ratings 575V | Auxiliary contacts NO | Auxiliary contacts NC | Screw Terminals on coil and aux. Order No. | Spring-type terminals on coil and aux. contacts Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NEMA Labeled Contactors** | | | | | | | | | | | | |
| **4** | **135** | — | 30 | 40 | 50 | **100** | 100 | 2 | 2 | **3RT1056-6A●●6-0UA0** | **—** | 3.5 |
| **5** | **300** | — | — | 100 | 125 | **250** | 300 | 2 | 2 | **3RT1066-6A●●6-0UA0** | **—** | 6.7 |
| **6** | **400** | — | — | 150 | 200 | **400** | 500 | 2 | 2 | **3RT1076-6A●●6-0UA0** | **—** | 10.5 |

All coil voltages are in the adjacent table.
For auxiliaries and accessories, see page 2/66-2/83.
For spare parts, see page 2/94-2/99.
For technical data, see page 2/143-2/151.
For description, see page 2/106-2/107.
For int. circuit diagrams, see page 2/196-2/198.
For dimension drawings, see page 2/213-2/222.

### Sizes S6 to S12 Coil Codes - UC operation (AC 50 to 60 Hz and DC)

| UC Conventional Coil | | |
|---|---|---|
| Rated control supply voltage Us **Us min ... Us max**[1] | **3RT1. 5.-.A** | |
| | **3RT1. 6.-.A** | |
| | **3RT1. 7.-.A** | |
| **Coil Codes** | **●●** | |
| 23 ... 26 V AC/DC | B3 | |
| 42 ... 48 V AC/DC | D3 | |
| 110 ... 127 V AC/DC | F3 | |
| 200 ... 220 V AC/DC | M3 | |
| 220 ... 240 V AC/DC | P3 | |
| 240 ... 277 V AC/DC | U3 | |
| 380 ... 420 V AC/DC | V3 | |
| 440 ... 480 V AC/DC | R3 | |
| 500 ... 550 V AC/DC | S3 | |
| 575 ... 600 V AC/DC | T3 | |

| Solid-State Coil | | |
|---|---|---|
| Rated control supply voltage Us **Us min ... Us max**[1] | **3RT1. 5.-.N** | **3RT1. 5.-.P** |
| | **3RT1. 6.-.N** | **3RT1. 6.-.P** |
| | **3RT1. 7.-.N** | **3RT1. 7.-.P** |
| **Coil Codes** | **●●** | **●●** |
| 21 ... 27.3 V AC/DC | B3 | — |
| 96 ... 127 V AC/DC | F3 | F3 |
| 200 ... 277 V AC/DC | P3 | P3 |

**1) Operating range:**
**0.8 x Us min to 1.1 × Us max.**

# Contactors for Switching Motors with Integrated Safety

**3RT contactors, 3-pole up to 400 HP** *NEW*



## Contactor with integrated failsafe connection

### Features

New Contactors from 100 to 400 HP for direct control by fail-safe controllers

- First contactor with fail-safe input
- Certified for use up to the highest safety level
- SIL CL 2 with one / SIL CL 3 with two contactors

### Benefits

- Savings on standard outputs in the controller
- Space savings due to elimination of the coupling level
- Less wiring
- Simplified safety assessment

### Overview

The size S6 to S12 range of tried and tested contactors from 100 to 400 HP @ 480V has been expanded to include versions suitable for direct control from fail-safe controllers, rendering the coupling level superfluous. The new contactors are also available with non-removable, lateral auxiliary switches, enabling fulfilment of Swiss Accident Insurance Institute (SUVA) requirements.

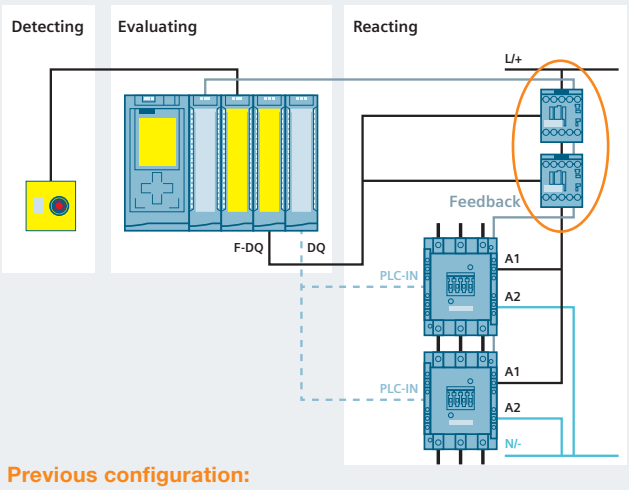
The new contactors constitute the logical extension and further development of the SIRIUS Modular System, serving to promote safe switching. They are the first contactors on the market to be equipped with an input for fail-safe signals. This makes it possible to attain SIL 2 and/or PLc with just one contactor and SIL 3 and/or PLe with two contactors in series according to IEC 62061 and ISO 13849-1.

The big advantage of this solution is that it saves on additional, possibly positively-driven coupling relays and makes evaluation of safety information considerably easier.

This reduction in coupling relays is also a huge plus point for non-safety applications. Whereas previously space, money and wiring expertise were required in order to operate contactors from 100 HP and higher using controllers, both functional and safety switching can now take place by direct activation.

Using the Safety Evaluation Tool you can quickly find the right contactor and safely configure your application.

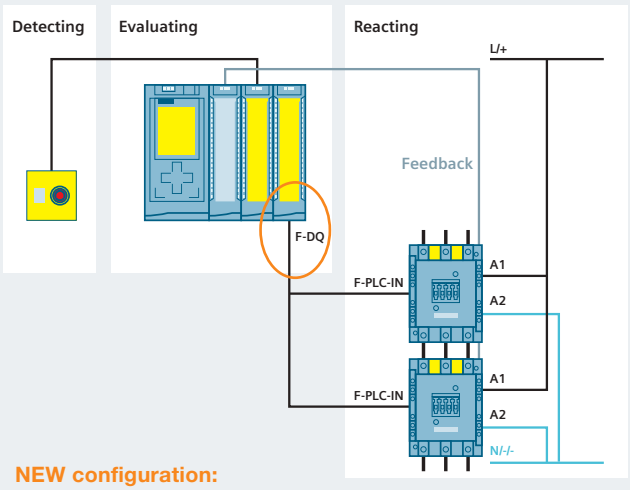
**Save space and costs with a direct connection to the controller – no need for coupling relays!**




**Previous configuration:**

**3RT1 size S6 for high motor outputs with standard PLC-IN**

- Normal switching duty via standard IO and PLC-IN
- Safety-related tripping initated by monitoring coupled links
- Feedback of the two S6 size 3RT1 contacts and the coupling relays via standard IO




**NEW configuration:**

**3RT1 size S6 for high motor outputs with new contactor with fail-safe F-PLC-IN**

- A1-A2 supplied via standard power supply (unit)
- Normal switching duty via F-DQ and F-PLC-IN
- Safety-related tripping via the same signal
- Feedback of the two S6 size 3RT1 via standard IO

## AC/DC Operation

- Solid-state operating mechanism (with integrated varistor) with fail-safe control input for safety-related applications to SIL CL 3
- 24 V DC control signal input, e.g. for control via the fail-safe output module of a controller (F-PLC) or safety relay
- Attainable Safety Integrity Level (SIL):
  - With one contactor: SIL CL 2 acc. to IEC 62061 or PL c acc. to ISO 13849-1
  - With two contactors in series: SIL CL 3 acc. to IEC 62061 or PL e acc. to ISO 13849-1according to IEC 60947-4-1, test conditions for utilization category AC-1
- Version with removable lateral auxiliary switches or permanently mounted auxiliary switches and additional approval according to SUVA (on request)
- For screw fixing
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections; a connection kit with screws, spring washer and nut is enclosed.

For more information on safety systems, see Section 13.

3RT105.-6S.36

3RT106.-6S.36

3RT107.-6S.36

3RT105.-6S.36-3PA0

3RT107.-6S.36-3PA0

## Selection and ordering data

| Frame Size | Amp Ratings AC3 | Amp Ratings AC1 | Single-phase HP ratings 115V | Single-phase HP ratings 230V | Three-phase HP ratings 200V | Three-phase HP ratings 230V | Three-phase HP ratings **460V** | Three-phase HP ratings 575V | Auxiliary contacts NO | Auxiliary contacts NC | Rated control supply voltage $U_S$ 50/60 Hz AC or DC | **Screw Terminals on coil and aux.** Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Solid-state operating mechanism** | | | | | | | | | | | | |
| ***With two removable laterally mounted auxiliary switches*** | | | | | | | | | | | | |
| **S6** | **115** | 160 | — | 25 | 40 | 50 | **100** | 125 | 2 | 2 | 96 ... 127<br>200 ... 270 | **3RT1054-6SF36**<br>**3RT1054-6SP36** |
| | **150** | 185 | — | 30 | 50 | 60 | **125** | 150 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1055-6SF36**<br>**3RT1055-6SP36** |
| | **185** | 215 | — | 30 | 60 | 75 | **150** | 200 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1056-6SF36**<br>**3RT1056-6SP36** |
| **S10** | **225** | 275 | — | — | 60 | 75 | **150** | 200 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1064-6SF36**<br>**3RT1064-6SP36** |
| | **265** | 330 | — | — | 75 | 100 | **200** | 250 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1065-6SF36**<br>**3RT1065-6SP36** |
| | **300** | 330 | — | — | 100 | 125 | **250** | 300 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1066-6SF36**<br>**3RT1066-6SP36** |
| **S12** | **400** | 430 | — | — | 125 | 150 | **300** | 400 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1075-6SF36**<br>**3RT1075-6SP36** |
| | **500** | 610 | — | — | 150 | 200 | **400** | 500 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1076-6SF36**<br>**3RT1076-6SP36** |
| ***With two permanently laterally mounted auxiliary switches*** | | | | | | | | | | | | |
| **S6** | **115** | 160 | — | 25 | 40 | 50 | **100** | 125 | 2 | 2 | 96 ... 127<br>200 ... 270 | **3RT1054-6SF36-3PA0**<br>**3RT1054-6SP36-3PA0** |
| | **150** | 185 | — | 30 | 50 | 60 | **125** | 150 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1055-6SF36-3PA0**<br>**3RT1055-6SP36-3PA0** |
| | **185** | 215 | — | 30 | 60 | 75 | **150** | 200 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1056-6SF36-3PA0**<br>**3RT1056-6SP36-3PA0** |
| **S10** | **225** | 275 | — | — | 60 | 75 | **150** | 200 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1064-6SF36-3PA0**<br>**3RT1064-6SP36-3PA0** |
| | **265** | 330 | — | — | 75 | 100 | **200** | 250 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1065-6SF36-3PA0**<br>**3RT1065-6SP36-3PA0** |
| | **300** | 330 | — | — | 100 | 125 | **250** | 300 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1066-6SF36-3PA0**<br>**3RT1066-6SP36-3PA0** |
| **S12** | **400** | 430 | — | — | 125 | 150 | **300** | 400 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1075-6SF36-3PA0**<br>**3RT1075-6SP36-3PA0** |
| | **500** | 610 | — | — | 150 | 200 | **400** | 500 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT1076-6SF36-3PA0**<br>**3RT1076-6SP36-3PA0** |

## Selection and ordering data

- **AC/DC operation** (40 Hz ... 60 Hz, DC)
- **Withdrawable coils**
- **Integrated coil circuit** (varistor)
- **Auxiliary and control conductors: screw connections**
- **Main conductor: bar connections**

3RT12 6 .

3RT12 7 .

| Size | Horsepower ratings and utilization categories | | | | | | Auxiliary contacts, lateral | | Rated control supply voltage $U_s$ | Order No. | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | AC-3 Maximum inductive current | Ratings of three-phase motors 200 V | 230 V | **460 V** | 575 V | AC-1 Maximum resistive current | | | | | |
| | Amps | HP | **HP** | **HP** | HP | Amps | NO | NC | AC/DC V | | kg |
| **Conventional operating mechanism** | | | | | | | | | | | |
| **S10** | 225 | 60 | 75 | **150** | 200 | 330 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT12 64-6AF36**<br>**3RT12 64-6AP36** | 6.4 |
| | 265 | 75 | 100 | **200** | 250 | 330 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT12 65-6AF36**<br>**3RT12 65-6AP36** | |
| | 300 | 100 | 125 | **250** | 300 | 330 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT12 66-6AF36**<br>**3RT12 66-6AP36** | |
| **S12** | 400 | 125 | 150 | **300** | 400 | 610 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT12 75-6AF36**<br>**3RT12 75-6AP36** | 9.6 |
| | 500 | 150 | 200 | **400** | 500 | 610 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT12 76-6AF36**<br>**3RT12 76-6AP36** | |
| **Solid-state operating mechanism · for DC 24 V PLC output** | | | | | | | | | | | |
| **S10** | 225 | 60 | 75 | **150** | 200 | 330 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT12 64-6NF36**<br>**3RT12 64-6NP36** | 6.4 |
| | 265 | 75 | 100 | **200** | 250 | 330 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT12 65-6NF36**<br>**3RT12 65-6NP36** | |
| | 300 | 100 | 125 | **250** | 300 | 330 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT12 66-6NF36**<br>**3RT12 66-6NP36** | |
| **S12** | 400 | 125 | 150 | **300** | 400 | 610 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT12 75-6NF36**<br>**3RT12 75-6NP36** | 9.6 |
| | 500 | 150 | 200 | **400** | 500 | 610 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT12 76-6NF36**<br>**3RT12 76-6NP36** | |

.

| Universal Coil Selection for 3RT126 through 3RT127: Conventional Operation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Coil Code** | B3 | D3 | F3 | M3 | P3 | U3 | V3 | R3 | S3 | T3 |
| **Volts AC/DC 40 - 60 Hz, DC** | 23 .. 26 V | 42 .. 48 V | 110 .. 127 V | 200 .. 220 V | 220 .. 240 V | 240 .. 277 V | 380 .. 420 V | 440 .. 480 V | 500 .. 550 V | 575 .. 600 V |

| Solid State Selection for 3RT126 through 3RT127: Solid-State | | | |
|---|---|---|---|
| **Coil Code** | B3 | F3 | P3 |
| **Volts AC/DC 40 - 60 Hz, DC** | 21 .. 27.3 V | 96 .. 127 V | 200 .. 277 V |

For further vacuum contactors, 500Hp and 700Hp (3TF68/69), see page 2/59.
For auxiliaries and accessories, see page 2/74 .
For spare parts, see page 2/105-2/106.
For technical data, see page 2/159-2/164.
For int. circuit diagrams, see page 2/203
For dimension drawings, see page 2/223.

## 3RT23 contactors, 4-pole (4 NO contacts) for switching resistive loads (AC-1)

### Standards

IEC 60947-1, EN 60947-1
IEC 60947-4-1, EN 60947-4-1
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

### Design

The contactors are suitable for use in any climate. They are safe from touch to DIN VDE 0106, Part 100. The accessories for the 3-pole SIRIUS contactors can also be used for the 4-pole designs.

*Mountable auxiliary contacts*

Size S00: 4 auxiliary contacts of which up to 3 can be NC.
Size S0 & S2: 4 additional auxiliary contacts up to 3 can be NC.
Sizes S2 and S3: Up to 4 auxiliary contacts (either laterally mounted or snappped onto the top).

*Contactor assemblies with mechanical interlock*

The 4-pole 3RT23 contactors with 4 NO contacts as the main contacts are suitable for making contactor assemblies with a mechanical interlock, e.g. for system transfers.

**Size S00:** Contactor assemblies can be made using two 3RT231. contactors in conjunction with the mechanical interlock and two connecting clips (Order No. 3RA2912-2H, pack comprising 10 interlocking elements and 20 clips for 10 contactor assemblies, see accessories on page 2/72).

**Size S0:** In order to make 4-pole contactor assemblies using two 3RT232. contactors, the fourth pole of the left-hand contactor must always be moved to the left-hand side. The contactor assembly can then be made easily with the aid of the 3RA2922-2H mechanical interlock and connecting clip set fitted between the two contactors.

**Sizes S2 and S3:** Contactor assemblies can be made using two 3RT23 3 or 3RT23 4. contactors in conjunction with the laterally mountable mechanical interlock and the mechanical connectors. The mechanical interlock for fitting onto the front cannot be used for size S2 and S3 contactors.

### Application

- Switching resistive loads
- Isolating systems with unearthed or poorly earthed neutral conductors
- System transfers when alternative AC power supplies are used
- As contactors which only carry current and do not have to switch in case of inductive loads – e.g. variable-speed operating mechanisms
- Switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1

### Selection and ordering data

| Rating data | | | Auxiliary contacts | | | Rated control supply voltage $U_s$ 50/60 Hz | AC Operation Screw Terminals [1] Order No. | Rated control supply voltage $U_s$ | DC Operation Screw Terminals [1] Order No. |
|---|---|---|---|---|---|---|---|---|---|
| AC-1 Max resist. current $I_e$ | | UL ratings AC loads at 600 V, | Identification No. | Version | | | | | |
| 40°C | 60°C | 60 Hz | | NO | NC | | | | |
| Amps | | Amps | | | | V AC | | V DC | |
| **For screwing and stapping onto 35 mm mounting rail** | | | | | | | | | |
| 3RT23 17-1AP60 | | | | | | | | | |
| *Size S00* – Auxiliary switches can be retrofitted | | | | | | | | | |
| 18 | 16 | **18** | — | — | — | 24<br>110/120<br>220/240 | **3RT23 16-1AB00**<br>**3RT23 16-1AK60**<br>**3RT23 16-1AP60** | 24<br>125<br>220 | **3RT23 16-1BB40**<br>**3RT23 16-1BG40**<br>**3RT23 16-1BM40** |
| 22 | 20 | **20** | — | — | — | 24<br>110/120<br>220/240 | **3RT23 17-1AB00**<br>**3RT23 17-1AK60**<br>**3RT23 17-1AP60** | 24<br>125<br>220 | **3RT23 17-1BB40**<br>**3RT23 17-1BG40**<br>**3RT23 17-1BM40** |
| 3RT23 27-1AP60 | | | | | | | | | |
| *Size S0* – Terminal designations according to EN 50012 —1 NO + 1 NC, identification number 11E | | | | | | | | | |
| 35 [2] | 30 [2] | **30** | 11E | 1 | 1 | 24<br>110/120<br>220/240 | **3RT23 25-1AC20**<br>**3RT23 25-1AK60**<br>**3RT23 25-1AP60** | 24<br>125<br>220 | **3RT23 25-1BB40**<br>**3RT23 25-1BG40**<br>**3RT23 25-1BM40** |
| 40 [2] | 35 [2] | **35** | 11E | 1 | 1 | 24<br>110/120<br>220/240 | **3RT23 26-1AC20**<br>**3RT23 26-1AK60**<br>**3RT23 26-1AP60** | 24<br>125<br>220 | **3RT23 26-1BB40**<br>**3RT23 26-1BG40**<br>**3RT23 26-1BM40** |
| 50 [2] | 42 [2] | **38** | 11E | 1 | 1 | 24<br>110/120<br>220/240 | **3RT23 27-1AC20**<br>**3RT23 27-1AK60**<br>**3RT23 27-1AP60** | 24<br>125<br>220 | **3RT23 27-1BB40**<br>**3RT23 27-1BG40**<br>**3RT23 27-1BM40** |
| 3RT23 36-1AP60 | | | | | | | | | |
| *Size S2* | | | | | | | | V UC | |
| 60 | 55 | **60** | 11E | 1 | 1 | 24<br>110/120<br>220/240 | **3RT23 36-1AC20**<br>**3RT23 36-1AK60**<br>**3RT23 36-1AP60** | 20-33<br>83-155<br>175-280 | **3RT23 36-1NB30**<br>**3RT23 36-1NF30**<br>**3RT23 36-1NP30** |
| 110 | 95 | **105** | 11E | 1 | 1 | 24<br>110/120<br>220/240 | **3RT23 37-1AC20**<br>**3RT23 37-1AK60**<br>**3RT23 37-1AP60** | 20-33<br>83-155<br>175-280 | **3RT23 37-1NB30**<br>**3RT23 37-1NF30**<br>**3RT23 37-1NP30** |
| *Size S3* | | | | | | | | V UC | |
| 140 | 130 | **120** | — | — | — | 24<br>110/120<br>220/240 | **3RT23 46-1AC20**<br>**3RT23 46-1AK60**<br>**3RT23 46-1AP60** | 20-33<br>83-155<br>175-280 | **3RT23 46-1NB30**<br>**3RT23 46-1NF30**<br>**3RT23 46-1NP30** |

1) Size S00 and S0 contactors are also available with spring-type terminals. Replace the 8th digit of the order no. with a "2" e.g. "3RT23 16-2AK60"

2) Minimum conductor cross-section 8 AWG.

For further voltages, see page 2/55.
For coil voltage tolerance, p. 2/55
For auxiliaries and accessories, see page 2/72-2/89.
For spare parts, see page 2/101-2/106.
For technical data, see page 2/173-2/174.
For in. circuit diagrams, see page 2/198-2/203.
For dimension drawings, see page 2/224.

### *Sizes S6 to S12: AC/DC operation*

- Solid-state operating mechanism
- Version with two laterally mounted auxiliary switches (2 NO + 2 NC each)
- For screw fixing
- Auxiliary and control circuits: Screw terminals
- Main conductors: Busbar connections; a connection kit is enclosed.

3RT1355-6A.36

3RT1363-6A.36

3RT1373-6A.36

| Size | Rated data AC-1, $t_u$: 40 °C | Auxiliary contacts, lateral | | Operating range 0.85 ... 1.1 x $U_s$ | 0.8 ... 1.1 x $U_s$ | Busbar connections | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Rated control supply voltage $U_s$ | | | | | |
| | Operational current $I_e$ at 600 V | Version | | 50/60 Hz AC | DC | Article No. | Price per PU | | |
| | A | NO | NC | V | V | | | | |
| **Solid-state operating mechanism** | | | | | | | | | |
| **With integrated coil circuit (varistor integrated in electronics at the factory)** | | | | | | | | | |
| **S6** | 200 | 2 | 2 | 24 ... 60 | 20 ... 60 | **3RT1355-6AE36** | | 1 | 1 unit |
| | | | | 48 ... 130 | 48 ... 130 | **3RT1355-6AF36** | | 1 | 1 unit |
| | | | | 100 ... 250 | 100 ... 250 | **3RT1355-6AP36** | | 1 | 1 unit |
| | | | | 250 ... 500 | 250 ... 500 | **3RT1355-6AR36** | | 1 | 1 unit |
| **S10** | 230 | 2 | 2 | 24 ... 60 | 20 ... 60 | **3RT1363-6AE36** | | 1 | 1 unit |
| | | | | 48 ... 130 | 48 ... 130 | **3RT1363-6AF36** | | 1 | 1 unit |
| | | | | 100 ... 250 | 100 ... 250 | **3RT1363-6AP36** | | 1 | 1 unit |
| | | | | 250 ... 500 | 250 ... 500 | **3RT1363-6AR36** | | 1 | 1 unit |
| | 250 | 2 | 2 | 24 ... 60 | 20 ... 60 | **3RT1364-6AE36** | | 1 | 1 unit |
| | | | | 48 ... 130 | 48 ... 130 | **3RT1364-6AF36** | | 1 | 1 unit |
| | | | | 100 ... 250 | 100 ... 250 | **3RT1364-6AP36** | | 1 | 1 unit |
| | | | | 250 ... 500 | 250 ... 500 | **3RT1364-6AR36** | | 1 | 1 unit |
| **S12** | 300 | 2 | 2 | 24 ... 60 | 20 ... 60 | **3RT1373-6AE36** | | 1 | 1 unit |
| | | | | 48 ... 130 | 48 ... 130 | **3RT1373-6AF36** | | 1 | 1 unit |
| | | | | 100 ... 250 | 100 ... 250 | **3RT1373-6AP36** | | 1 | 1 unit |
| | | | | 250 ... 500 | 250 ... 500 | **3RT1373-6AR36** | | 1 | 1 unit |
| | 350 | 2 | 2 | 24 ... 60 | 20 ... 60 | **3RT1374-6AE36** | | 1 | 1 unit |
| | | | | 48 ... 130 | 48 ... 130 | **3RT1374-6AF36** | | 1 | 1 unit |
| | | | | 100 ... 250 | 100 ... 250 | **3RT1374-6AP36** | | 1 | 1 unit |
| | | | | 250 ... 500 | 250 ... 500 | **3RT1374-6AR36** | | 1 | 1 unit |
| | 420 | 2 | 2 | 24 ... 60 | 20 ... 60 | **3RT1375-6AE36** | | 1 | 1 unit |
| | | | | 48 ... 130 | 48 ... 130 | **3RT1375-6AF36** | | 1 | 1 unit |
| | | | | 100 ... 250 | 100 ... 250 | **3RT1375-6AP36** | | 1 | 1 unit |
| | | | | 250 ... 500 | 250 ... 500 | **3RT1375-6AR36** | | 1 | 1 unit |

Depending on the operational current, bus connectors offset must be used for sizes S10 and S12, see page 4/35:

- 3RT136: For more than 275 A, the 3RT1966-4D bus connectors offset must be used.
- 3RT137: For more than 450 A, the 3RT1976-4D bus connectors offset must be used.

Accessories and spare parts, see page 4/35 onwards.

## Application

***AC and DC operation (size S3)***
***UC operation (AC/DC) (sizes S6 to S12)***

IEC 60 947, EN 60 947 (VDE 0660)

The contactors are suitable for use in any climate. They are safe from touch to DIN VDE 0106 Part 100.

3RT14/3RT24 contactors are used for switching resistive loads.

(AC-1) or as contactors, for example in variable-speed drives which normally only have to carry the current.

The accessories for the SIRIUS 3RT10/3RT20 contactors can also be used here.

## Selection and ordering data

3RT24 46-1A..0

| Ratings AC-1 utilization category, IEC Ratings: Maximum current (Amps) | Rated power of three phase loads cos Ø = 0.95 (@ 60°C): 230V kW | 400V kW | 500V kW | 690V kW | UL Ratings: Max Current (Amps) | 230/240V Hp | 460/480V Hp | 575/600V Hp | Rated control supply voltage $U_s$ | Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **With screw connections · for screwing and snapping onto 35 mm and 75 mm standard mounting rails** | | | | | | | | | | | |
| ***Size S3*** · (without auxiliary contacts) | | | | | | | | | | | |
| **• AC operation** | | | | | | | | | | | |
| **140** | 50 | 86 | 107 | 148 | 140 | 15 | 30 | 40 | 24 V, 50/60 Hz<br>120 V, 60 Hz<br>240 V, 60 Hz | **3RT24 46-1AC2 0**<br>**3RT24 46-1AK6 0**<br>**3RT24 46-1AP6 0** | 1.8 |
| **• DC operation · DC solenoid system** | | | | | | | | | | | |
| **140** | 50 | 86 | 107 | 148 | 131 | 15 | 30 | 40 | DC 24 V<br>DC 48 V | **3RT24 46-1BB4 0**<br>**3RT24 46-1BW40** | 2.7 |

**• AC/DC operation** (40 Hz ... 60 Hz, DC)
**• Withdrawable coils**
**• Integrated coil circuit** (varistor)
**• Auxiliary and control conductors: screw connections**
**• Main conductor: bar connections**

3RT14 6.

| Size | Ratings AC-1 utilization category, IEC Ratings: AC-1 Maximum resistive current (Amps) | Rated power of three phase loads cos Ø = 0.95 (@ 60°C): 230V kW | 400V kW | 500V kW | 690V kW | UL Rating: Max Current (Amps) | Auxiliary contacts, lateral: NO | NC | Rated control supply voltage $U_s$: AC/DC V | Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Conventional operating mechanism** | | | | | | | | | | | |
| **S6** | **275** | 95 | 165 | 205 | 285 | 210 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT14 56-6AF36**<br>**3RT14 56-6AP36** | 3.1 |
| **S10** | **400** | 145 | 250 | 315 | 430 | 360 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT14 66-6AF36**<br>**3RT14 66-6AP36** | 5.7 |
| **S12** | **690** | 245 | 430 | 535 | 740 | 580 | 2 | 2 | 110 ... 127<br>220 ... 240 | **3RT14 76-6AF36**<br>**3RT14 76-6AP36** | 9.1 |
| **Solid-state operating mechanism · for DC 24 V PLC output** | | | | | | | | | | | |
| **S6** | **275** | 95 | 165 | 205 | 285 | 210 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT14 56-6NF36**<br>**3RT14 56-6NP36** | 3.1 |
| **S10** | **400** | 145 | 250 | 315 | 430 | 360 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT14 66-6NF36**<br>**3RT14 66-6NP36** | 5.7 |
| **S12** | **690** | 245 | 430 | 535 | 740 | 580 | 2 | 2 | 96 ... 127<br>200 ... 277 | **3RT14 76-6NF36**<br>**3RT14 76-6NP36** | 9.1 |
| **Solid-state operating mechanism · for DC 24 V PLC with remaining lifetime indication** | | | | | | | | | | | |
| **S6** | **275** | 95 | 165 | 205 | 285 | 210 | 1 | 1 | 96 ... 127<br>200 ... 277 | **3RT14 56-6PF35**<br>**3RT14 56-6PP35** | 3.1 |
| **S10** | **400** | 145 | 250 | 315 | 430 | 360 | 1 | 1 | 200 ... 277 | **3RT14 66-6PP35** | 5.7 |
| **S12** | **690** | 245 | 430 | 535 | 740 | 580 | 1 | 1 | 200 ... 277 | **3RT14 76-6PP35** | 9.1 |

3RT14 7.

| Universal Coil Selection for 3RT145 through 3RT147: Conventional Operation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Coil Code** | B3 | D3 | F3 | M3 | P3 | U3 | V3 | R3 | S3 | T3 |
| **Volts AC/DC 40 - 60 Hz, DC** | 23 .. 26 V | 42 .. 48 V | 110 .. 127 V | 200 .. 220 V | 220 .. 240 V | 240 .. 277 V | 380 .. 420 V | 440 .. 480 V | 500 .. 550 V | 575 .. 600 V |

| Universal Coil Selection for 3RT145 through 3RT147: Solid-State | | | |
|---|---|---|---|
| **Coil Code** | B3 | F3 | P3 |
| **Volts AC/DC 40 - 60 Hz, DC** | 21 .. 27.3 V | 96 .. 127 V | 200 .. 277 V |

Note: B3 code not available for Remaining Lifetime Contactors.

For further coil voltages, see page 2/55.
For auxiliaries and accessories, see page 2/72-2/89.
For spare parts, see page 2/101-2/106.
For technical data, see page 2/165-2/172.
For int. circuit diagrams, see page 2/203.
For dimension drawings, see page 2/218, 2/220-2/221.

### *AC/DC operation*

- Solid-state operating mechanism
- Version with two laterally mounted auxiliary switches (2 NO + 2 NC each)
- For screw fixing
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections

3RT1481-6A.36, 3RT1482-6A.36

3RT1483-6AP36

3RT1485-6AP36, 3RT1486-6AP36

3RT1487-6AP36

| Rated data according to IEC 60947-4-1 | Auxiliary contacts, lateral | | Rated control supply voltage $U_s$ | | Busbar connections | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| AC-1, $t_u$: 40 °C | Version | | 50/60 Hz AC | DC | Article No. | Price per PU | |
| Operational current $I_e$ up to **1 000 V** | | | | | | | |
| **A** | NO | NC | V | V | | | |
| **Solid-state operating mechanism** | | | | | | | |
| ***With integrated coil circuit*** | | | | | | | |
| **900** | 2 | 2 | 100 ... 127<br>200 ... 240 | 100 ... 110<br>200 ... 220 | **3RT1481-6AF36**<br>**3RT1481-6AP36** | 1<br>1 | 1 unit<br>1 unit |
| **1 050** | 2 | 2 | 100 ... 127<br>200 ... 240 | 100 ... 110<br>200 ... 220 | **3RT1482-6AF36**<br>**3RT1482-6AP36** | 1<br>1 | 1 unit<br>1 unit |
| **1 260** | 2 | 2 | 100 ... 240 | 100 ... 220 | **3RT1483-6AP36** | 1 | 1 unit |
| **1 700** | 2 | 2 | 100 ... 240 | 100 ... 220 | **3RT1485-6AP36** | 1 | 1 unit |
| **2 100** | 2 | 2 | 100 ... 240 | 100 ... 220 | **3RT1486-6AP36** | 1 | 1 unit |
| **2 650** | 2 | 2 | 100 ... 240 | 100 ... 220 | **3RT1487-6AP36** | 1 | 1 unit |

Accessories, see next table; spare parts, see page 4/19.

## Accessories

Overview graphics for 3RT148 contactors with mountable accessories, see page 4/10.

**More information**

Manuals, see https://support.industry.siemens.com/cs/ww/en/ps/24229/man

| For contactors | Auxiliary contacts Version | | | | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | | Article No. | Price per PU | |
| Type | NO | NC | Left | Right | | | |
| **Second auxiliary switch (1 NO + 1 NC)** | | | | | | | |
| Lateral mounting on the right and/or the left | | | | | | | |
| 3RT148. | 1 | 1 | 61 53<br>62 54 | 71 83<br>72 84 | **3RH1981-1JA11** | 1 | 1 unit |

3RH1981-1JA11

## Spare parts

| For contactors | Auxiliary contacts | | | | Rated control supply voltage $U_s$ | | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | Version | | | | 50/60 Hz AC | DC | | | | |
| Type | NO | NC | Left | Right | V | V | | | | |
| **First auxiliary switch (1 NO + 1 NC)** | | | | | | | | | | |
| | Lateral mounting on the right and/or the left | | | | | | **Screw terminals** | | | |
| 3RT148. | 1 | 1 | 21 13 | 31 43 | -- | -- | **3RH1981-1DA11** | | 1 | 1 unit |
| **Phase barriers** | | | | | | | | | | |
| | (1 set = 4 units) | | | | | | | | | |
| 3RT1481 ... 3RT1483 | -- | -- | -- | -- | -- | -- | **3RT1983-4AA1** | | 1 | 1 unit |
| 3RT1485 ... 3RT1487 | -- | -- | -- | -- | -- | -- | **3RT1987-4AA1** | | 1 | 1 unit |
| **Withdrawable coils · AC/DC operation** | | | | | | | | | | |
| 3RT1481, 3RT1482 | -- | -- | -- | -- | 100 ... 127 | 100 ... 110 | **3RT1982-5AF31** | | 1 | 1 unit |
| | -- | -- | -- | -- | 200 ... 240 | 200 ... 220 | **3RT1982-5AP31** | | 1 | 1 unit |
| 3RT1483 | -- | -- | -- | -- | 100 ... 240 | 100 ... 220 | **3RT1983-5AP31** | | 1 | 1 unit |
| 3RT1485 ... 3RT1487 | -- | -- | -- | -- | 100 ... 240 | 100 ... 220 | **3RT1987-5AP31** | | 1 | 1 unit |

3RH1981-1DA11

3RT1983-4AA1

3RT1987-4AA1

3RT1982-5A.31, 3RT1983-5AP31

3RT1987-5AP31

## AC and DC operation

IEC 60 947-4-1/EN 60 947-4-1
(VDE 0660, Part 102)

## Design

The contactors are suitable for use in any climate. They are safe to touch according to EN 50274. The accessories for the 3-pole SIRIUS contactors can also be used for the 4-pole designs.

*Mountable auxiliary contacts*

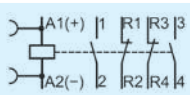
**Size S00 and S0:**
4 auxiliary contacts, of which up to 4 can be NC contacts.

**Size S2**
Up to 4 auxiliary contacts (either laterally mounted or snapped onto the top; auxiliary switch blocks to EN 50 012 and EN 50 005)

## Application

- Changing the polarity of hoisting gear motors
- Switching two separate loads from the same source

## Selection and ordering data

| Rating data | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| AC-2/AC-3 $T_u$: up to 60°C | | | AC-1 Max resistive current | | Auxiliary contacts Version | | Rated control supply voltage $U_S$ | **AC Operation [2] Screw terminals** | Rated control supply voltage $U_S$ | **DC Operation [2] Screw terminals** |
| Max Current $I_e$ at 400 V | Max motor HP at **460 V**, 60 Hz | | 40°C | 60°C | | | | Order No. | | Order No. |
| Amps | **NO** | **NC** | Amps | | NO | NC | V AC, 50/60 Hz | | V DC | |
| **For screwing and snapping onto 35 mm standard mounting rail** | | | | | | | | | | |
| 3RT25 16-1AB00 | | | | | | | | | | |
| ***Size S00*** [3] - Auxiliary switches can be retrofitted | | | | | | | | | | |
|  | | | | | | | | | | |
| 9 | | **5** | 18 | 16 | — | — | 24 | **3RT25 16-1AB00** | 24 | **3RT25 16-1BB40** |
| | | | | | | | 110/120 | **3RT25 16-1AK60** | 125 | **3RT25 16-1BG40** |
| | | | | | | | 220/240 | **3RT25 16-1AP60** | 220 | **3RT25 16-1BM40** |
| 12 | | **7.5** [4] | 22 | 20 | — | — | 24 | **3RT25 17-1AB00** | 24 | **3RT25 17-1BB40** |
| | | | | | | | 110/120 | **3RT25 17-1AK60** | 125 | **3RT25 17-1BG40** |
| | | | | | | | 220/240 | **3RT25 17-1AP60** | 220 | **3RT25 17-1BM40** |
| 3RT25 26-1AC20 | | | | | | | | | | |
| | | | | | | | | | | |
| 16 | | **10** [4] | 22 | 20 | — | — | 24 | **3RT25 18-1AB00** | 24 | **3RT25 18-1BB40** |
| | | | | | | | 110/120 | **3RT25 18-1AK60** | 125 | **3RT25 18-1BG40** |
| | | | | | | | 220/240 | **3RT25 18-1AP60** | 220 | **3RT25 18-1BM40** |
| ***Size S0*** - Terminal designations according to EN 50012, 1 NO + 1 NC, identification number 11E | | | | | | | | | | |
| | | | | | | | | | | |
| 25 | **15** | **15** | 40 | 35 | 1 | 1 | 24 | **3RT25 26-1AC20** | 24 | **3RT25 26-1BB40** |
| | | | | | | | 110/120 | **3RT25 26-1AK60** | 125 | **3RT25 26-1BG40** |
| | | | | | | | 220/240 | **3RT25 26-1AP60** | 220 | **3RT25 26-1BM40** |

For further voltages, see page 2/55.
For auxiliaries and accessories, see page 2/72-2/89.
For spare parts, see page 2/101-2/106.
For technical data, see page 2/175-2/176.
For int. circuit diagrams, see page 2/198-2/203.
For dimension drawings, see page 2/224.

1) For changing polarity; not suitable for reversing.

2) Size S00 and S0 contactors are also available with spring-type terminals. Replace the 8th digit of the order no. with a "2" e.g. "3RT25 16-2AK60"

3) Size S00:
Coil voltage tolerance
at 50 Hz: 0.8 ... 1.1 x $U_S$
at 60 Hz: 0.85 ... 1.1 x $U_S$

4) The NC contact can switch up to 5 HP.

## Selection and ordering data (continued)

| Rating data | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| AC-2/AC-3 $T_u$: up to 60°C | | | AC-1 Max resistive current | | Auxiliary contacts Version | | Rated control supply voltage $U_S$ | **AC Operation** [2] **Screw terminals** | Rated control supply voltage $U_S$ | **DC Operation** [2] **Screw terminals** |
| Max Current $I_e$ at 400 V | Max motor HP at **460 V**, 60 Hz | | 40°C | 60°C | | | | Order No. | | Order No. |
| Amps | **NO** | **NC** | Amps | | NO | NC | V AC, 50/60 Hz | | V DC | |
| **For screwing and snapping onto 35 mm standard mounting rail** | | | | | | | | | | |
| ***Size S2*** | | | | | | | | | | |
| 3RT253.-1N.30 | | | | | | | | | | |
| 35 | **30** | **20** | 60 | 55 | 1 | 1 | 24 | **3RT25 35-1AC20** | 20-33 | **3RT25 35-1NB30** |
| | | | | | | | 110/120 | **3RT25 35-1AK60** | 83-155 | **3RT25 35-1NF30** |
| | | | | | | | 220/240 | **3RT25 35-1AP60** | 175-280 | **3RT25 35-1NP30** |
| 41 | **30** | **25** | 70 | 60 | 1 | 1 | 24 | **3RT25 36-1AC20** | 20-33 | **3RT25 36-1NB30** |
| | | | | | | | 110/120 | **3RT25 36-1AK60** | 83-155 | **3RT25 36-1NF30** |
| | | | | | | | 220/240 | **3RT25 36-1AP60** | 175-280 | **3RT25 36-1NP30** |
| ***Size S3*** | | | | | | | | | | |
| 3RT254.-1N.30 | | | | | | | | | | |
| 65 | **30** | **25** | 100 | 90 | 1 | 1 | 20 ... 33 | **3RT25 35-1AC20** | | |
| | | | | | | | 175 ... 280 | **3RT25 35-1AK60** | | |
| 80 | **40** | **30** | 125 | 105 | 1 | 1 | 20 ... 33 | **3RT25 45-1NB30** | | |
| | | | | | | | 175 ... 280 | **3RT25 45-1NP30** | | |

For further voltages, see page 2/55.
For auxiliaries and accessories, see page 2/72-2/89.
For spare parts, see page 2/101-2/106.
For technical data, see page 2/175-2/176.
For int. circuit diagrams, see page 2/198-2/203.
For dimension drawings, see page 2/224.

1) For changing polarity; not suitable for reversing.

2) Size S00 and S0 contactors are also available with spring-type terminals. Replace the 8th digit of the order no. with a "2" e.g. "3RT25 16-2AK60"

3) Size S00:
Coil voltage tolerance
at 50 Hz: 0.8 ... 1.1 x $U_S$
at 60 Hz: 0.85 ... 1.1 x $U_S$

4) The NC contact can switch up to 5 HP.

## Overview

### DC operation

IEC 60947-4-1, EN 60947-4-1, for requirements according to IEC 60077-1 and IEC 60077-2.

The contactor relays are finger-safe according to EN 50274. The size S00 contactor relays have spring-type connections for all terminals.

### Ambient temperature

The permissible ambient temperature for operation of the contactor relays (across the full coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

### Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 x $U_S$ and are fitted as standard with suppressor diodes to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

## Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e. g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffer for longer operating times should the battery charging fail.

### Contactor relays without series resistor

Control and auxiliary circuits

These contactor relays have an extended operating range from 0.7 to 1.25 x $U_S$; the solenoid coils are fitted with a suppressor diode. An additional series resistor is not required.

*Note:*
*An additional auxiliary switch block cannot be mounted.*

Side-by-side mounting

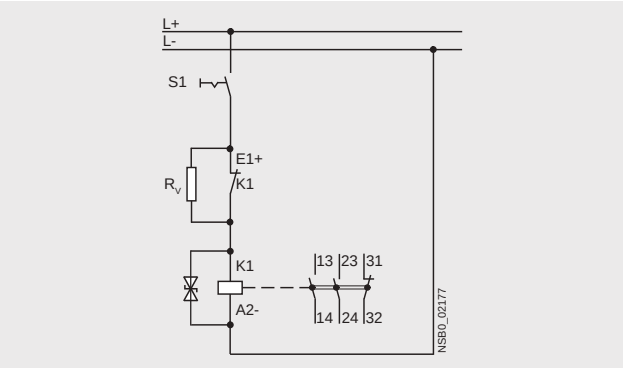
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C ≤ 70 °C.

### Contactor relays with series resistor

Control and auxiliary circuits

The DC solenoid systems of the contactor relays are modified (to hold-in coil) by means of a series resistor.

The size S00 contactor relays are supplied prewired with a plug-on module containing the series resistor. The suppressor diode is integrated.




A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

Side-by-side mounting

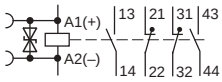
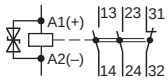
Side-by-side mounting is permitted at ambient temperatures up to 70 °C.

## Selection and ordering data

***DC operation · DC solenoid system***
***Spring-type terminals***
***For screw and snap-on mounting onto standard mounting rail***
***Solenoid coil fitted with suppressor diode***

3RH21 22-2K.40

3RH21 22-2K.40-0LA0

| Rated operational current $I_e$/AC-15/AC-14 $T_U$: 70 °C at | | | | Contacts | | Rated control supply voltage $U_s$ | Spring-type terminals | | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|
| **230 V** | 400 V | 500 V | 690 V | Version | | | Order No. | | |
| **A** | A | A | A | NO | NC | V DC | | | kg |
| **3RH21 contactor relays** | | | | | | | | | |
| *Size S00* | | | | | | | | | |
| **Without series resistor** | | | | | | | | | |
| Terminal designations according to EN 50011 | | | | | | | | | |
| 2 NO + 2 NC, identification number **22E** | | | | | | | | | |
|  | | | | | | | | | |
| **10** | 3 | 2 | 1 | 2 | 2[1] | 24 | **3RH21 22-2KB40** | | 0.300 |
| | | | | | | 110 | **3RH21 22-2KF40** | | 0.300 |
| **With series resistor** | | | | | | | | | |
| Terminal designations according to EN 50005 | | | | | | | | | |
| 2 NO + 1 NC, identification number **21E** | | | | | | | | | |
|  | | | | | | | | | |
| **10** | 3 | 2 | 1 | 2 | 1[2] | 24 | **3RH21 22-2KB40-0LA0** | | 0.300 |
| | | | | | | 110 | **3RH21 22-2KF40-0LA0** | | 0.300 |

[1] It is not possible to mount an auxiliary switch block.

[2] 4-pole auxiliary switch block according to EN 50005 can be mounted.

## More information

| Contactors | Type | | 3RH21 .. |
|---|---|---|---|
| **Upright mounting position** | | | |
| • Contactors with series resistor | | | Special version (on request) |
| • Contactors without series resistor | | | Special version (on request) |
| **Ambient temperature** | | | |
| • During operation | | °C | -40 ... +70 |
| • During storage | | °C | -55 ... +80 |
| **Solenoid coil operating range** | DC | | 0.7 ... 1.25 x $U_s$ |
| **Power consumption of the solenoid coils** | | | For cold coil and 1.0 x $U_s$ |
| • Contactors with series resistor | - Closing | W | 13 |
| | - Closed | W | 4 |
| • Contactors without series resistor | - Closing | W | 2.8 |
| | - Closed | W | 2.8 |

All specifications and technical specifications not mentioned here are identical to those of the standard contactor relays.

## Overview

### DC operation

IEC 60947-4-1, EN 60947-4-1,
for requirements according to IEC 60077-1 and IEC 60077-2.

The contactors are finger-safe according to EN 50274. The contactors have spring-type connections as well as screw connections. The size S00 and S0 contactors have spring-type connections for all terminals.

### Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

### Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 or 1.3 x $U_S$ and are fitted as standard with suppressor diodes. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

## Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e. g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffer for longer operating times should the battery charging fail.

### Contactors without series resistor

Control and auxiliary circuits

These contactors have an extended operating range from 0.7 to 1.25 x $U_S$; on size S00 the coils are fitted with suppressor diodes, on size S0 with varistors. An additional series resistor is not required.

*Note:*
*An additional auxiliary switch block cannot be mounted.*

Side-by-side mounting

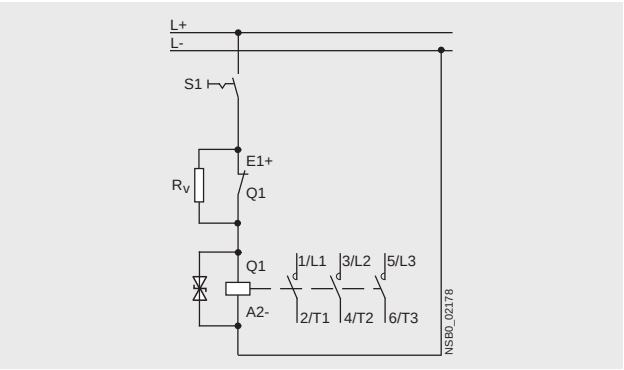
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C ≤ 70 °C.

### 3RT20 1. contactors with series resistor

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x $U_S$ and are fitted as standard with suppressor diodes to provide protection against overvoltage.

The DC solenoid systems of the contactors are modified (to holding excitation) by means of a series resistor.




The size S00 contactors are supplied prewired with a plug-on module containing the series resistor. The suppressor diode is integrated. A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

A circuit diagram showing the terminals is labeled on each contactor. One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts. With size S00 it is possible to extend the number of auxiliary contacts.

Side-by-side mounting

At ambient temperatures up to 70 °C, the size S00 contactors and contactor relays are allowed to be mounted side by side.

### 3RT20 2. contactors with solid-state operating mechanism, extended operating range

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.3 x $U_S$ and are fitted as standard with varistors to provide protection against overvoltage.

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.3 x $U_S$ at an ambient temperature of 70 °C. They are supplied as complete units with integrated coil electronics. A varistor is integrated for damping opening surges in the coil.

The mounting possibilities for auxiliary switches correspond to those of the standard contactors for switching motors in the matching size (see page 2/64).

Side-by-side mounting

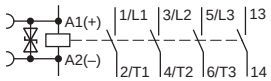
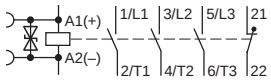
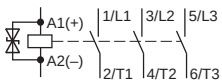
Side-by-side mounting is permitted at ambient temperatures up to 70 °C for these contactor versions in size S0.

## Selection and ordering data

***DC operation · DC solenoid system***
***Spring-type terminals***
***For screw and snap-on mounting onto standard mounting rail***
***Solenoid coil fitted with suppressor diode (S00)***

3RT20 1.-2K.4.

3RT20 1.-2K.42-0LA0

| Rated data AC-3 | | | | | Auxiliary contacts | | | Rated control supply voltage $U_s$ | Spring-type terminals | | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ at | Ratings of induction motors at | | | | Ident. No. | Version | | | | | |
| | | | | | | | | | Order No. | | |
| 400 V | 200 V | 230 V | **460 V** | 575 V | | NO | NC | | | | |
| A | HP | HP | **HP** | HP | | | | V DC | | | kg |
| **3RT20 contactors for switching motors** | | | | | | | | | | | |
| ***Size S00*** | | | | | | | | | | | |
| **Without series resistor**[4] | | | | | | | | | | | |
| Terminal designations according to EN 50012 or EN 50005 | | | | | | | | | | | |
| • 1 NO, identification number **10E** | | | | | | | | | | | |
|  | | | | | | | | | | | |
| • 1 NC, identification number **01** | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 12 | -- | 3 | **7.5** | 10 | **10E**[1] | 1 | -- | 24 | **3RT20 17-2KB41** | | 0.300 |
| | | | | | | | | 125 | **3RT20 17-2KG41** | | 0.300 |
| 12 | -- | 3 | **7.5** | 10 | **01**[1] | -- | 1 | 24 | **3RT20 17-2KB42** | | 0.300 |
| | | | | | | | | 125 | **3RT20 17-2KG42** | | 0.300 |
| **With series resistor** | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 12 | -- | 3 | **7.5** | 10 | **--**[2] | -- | 1[3] | 24 | **3RT20 17-2KB42-0LA0** | | 0.300 |
| | | | | | | | | 125 | **3RT20 17-2KG42-0LA0** | | 0.300 |
| 16 | -- | 5 | **10** | 10 | **--**[2] | -- | 1[3] | 24 | **3RT20 18-2KB42-0LA0** | | 0.300 |
| | | | | | | | | 125 | **3RT20 18-2KG42-0LA0** | | 0.300 |

For accessories and spare parts, see page 2/72-2/75.

1) It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.
2) One 4-pole auxiliary switch block according to EN 50005 can be mounted; no distance required up to 70 °C.
3) NC contact cannot be used because it is required for switching the series resistor.
4) Versions available with screw terminals.

***DC operation · DC solenoid system***
***Spring-type terminals***
***For screw and snap-on mounting onto standard mounting rail***
***Solenoid coil fitted with varistor (S0)***

3RT20 2.-2K.40

3RT20 2.-2X.40-0LA2

| Rated data AC-3 | | | | | Auxiliary contacts | | | Rated control supply voltage $U_s$ | Spring-type terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ at | Ratings of induction motors at | | | | Ident. No. | Version | | | Order No. | |
| 400 V | 200 V | 230 V | **460 V** | 575 V | | NO | NC | | | |
| A | HP | HP | **HP** | HP | | | | V DC | | kg |
| **3RT20 contactors for switching motors** | | | | | | | | | | |
| ***Size S0*** | | | | | | | | | | |
| Terminal designations according to EN 50012 | | | | | | | | | | |
| 1 NO + 1 NC, identification number **11E** | | | | | | | | | | |
| **Without series resistor**[1] | | | | | | | | | | |
| 16 | -- | 5 | **10** | 15 | **11E** | 1 | 1 | 24 | **3RT20 25-2KB40** | 0.600 |
| | | | | | | | | 125 | **3RT20 25-2KG40** | 0.600 |
| 25 | -- | 7.5 | **15** | 20 | **11E** | 1 | 1 | 24 | **3RT20 26-2KB40** | 0.600 |
| | | | | | | | | 125 | **3RT20 26-2KG40** | 0.600 |
| 32 | -- | 10 | **20** | 25 | **11E** | 1 | 1 | 24 | **3RT20 27-2KB40** | 0.600 |
| | | | | | | | | 125 | **3RT20 27-2KG40** | 0.600 |
| **With solid-state operating mechanism** | | | | | | | | | | |
| 16 | -- | 5 | **10** | 15 | **11E** | 1 | 1 | 24 | **3RT20 25-2XB40-0LA2** | 0.580 |
| | | | | | | | | 125 | **3RT20 25-2XG40-0LA2** | 0.580 |
| 25 | -- | 7.5 | **15** | 20 | **11E** | 1 | 1 | 24 | **3RT20 26-2XB40-0LA2** | 0.580 |
| | | | | | | | | 125 | **3RT20 26-2XG40-0LA2** | 0.580 |
| 32 | -- | 10 | **20** | 25 | **11E** | 1 | 1 | 24 | **3RT20 27-2XB40-0LA2** | 0.580 |
| | | | | | | | | 125 | **3RT20 27-2XG40-0LA2** | 0.580 |
| 38 | -- | 10 | **25** | 25 | **11E** | 1 | 1 | 24 | **3RT20 28-2XB40-0LA2** | 0.580 |
| | | | | | | | | 125 | **3RT20 28-2XG40-0LA2** | 0.580 |

For accessories and spare parts, see page 2/72-2/75.

[1] It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

## More information

| Contactors | Type | | 3RT20 17 | 3RT20 2. | 3RT20 2.-2XB40-0LA2 | 3RT20 2.-2XF40-0LA2 |
|---|---|---|---|---|---|---|
| **Ambient temperature** | | | | | | |
| • During operation | | °C | -40 ... +70 | | | |
| • During storage | | °C | -55 ... +80 | | | |
| **Solenoid coil operating range** | DC | | 0.7 ... 1.25 x $U_s$ | | 0.7 ... 1.3 x $U_s$ | |
| **Power consumption of the solenoid coils** | | | For cold coil and 1.0 x $U_s$ | | | |
| • Contactors with series resistor | - Closing | W | 13 | -- | -- | -- |
| | - Closed | W | 4 | -- | -- | -- |
| • Contactors without series resistor | - Closing | W | 2.8 | 4.5 | -- | -- |
| | - Closed | W | 2.8 | 4.5 | -- | -- |
| • Contactors with solid-state operating mechanism | - Closing | W | -- | -- | 6.7 | 13.2 |
| | - Closed | W | -- | -- | 0.8 | 1.56 |

All specs and technical specs not mentioned here are identical to those of the standard contactors for switching motors.

## AC operation

IEC 60947-5, DIN EN 60947-5-1, (VDE 0660 Part 200)

The contactors are suitable for use in any climate and are finger safe per DIN EN 50274.

The 3RT26 capacitor contactors are application specific variants of the size S00 to S2 SIRIUS Innovations contactors. The capacitors are precharged by means of the mounted leading NO contacts and resistors; only then do the main contacts close.

This prevents disturbances in the power system and welding of the contactors.

Only discharged capacitors are permitted to be switched on with capacitor contactors. Recommendation: use discharge chokes for parallel connection with the capacitors.

The capacitor contactors of size S00 contain either 1NO or 1NC in the basic unit and another unassigned NC contact in the auxiliary switch block fitted to the basic unit.

The auxiliary switch block which is snapped onto the capacitor contactor of sizes S0 contains the three leading NO contacts and one standard NO contact, which is unassigned.

The capacitor contactors of size S2 can be fitted additionally with a 2-pole auxiliary switch on the right side (2 NO, 2 NC or 1 NO + 1 NC), type 3RH19 21-1EA.. for lateral mounting.

For the capacitor making and breaking capacity of the basic 3RT20 contactor variant, see the technical data.

## Selection and ordering data
### AC operation

| AC-6b utilization category For switching three-phase capacitors at an ambient temperature of 60 °C 2) | | | | | Current | Auxiliary contacts, unassigned | Rated control supply voltage $U_s$ 1) 3) | Screw connection | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|
| UL capacitor rating at operational voltage | | | | | | | | Order No. | |
| | 200/208 | 230/240 | 460/480 | 575/600 | | | | | |
| Phase | kvar | kvar | kvar | kvar | | | AC | | kg |
| **For screwing and snapping onto 35 mm standard mounting rail** | | | | | | | | | |
| 3RT26 17-1AK63 | | | | | | | | | |
| **• Size S00** | | | | | | | | | |
| 1Ø | 3.6 | 4 | 8.3 | 10 | 18 | 1NO / 1NC | 24 V, 50/60 Hz | **3RT26 17-1AB03** | 0.24 |
| 3Ø | 6.2 | 6.9 | 14 | 17 | | | 120 V, 60 Hz | **3RT26 17-1AK63** | |
| | | | | | | | 240 V, 60 Hz | **3RT26 17-1AP63** | |
| **• Size S0** | | | | | | | | | |
| 1Ø | 4.8 | 5.3 | 11 | 13 | 24 | 1NO / 2NC | 24 V, 50/60 Hz | **3RT26 25-1AC25** | 0.49 |
| 3Ø | 8.3 | 9.1 | 18 | 23 | | | 120 V, 60 Hz | **3RT26 25-1AK65** | |
| | | | | | | | 240 V, 60 Hz | **3RT26 25-1AP65** | |
| 1Ø | 5.8 | 6.4 | 13 | 16 | 29 | 1NO / 2NC | 24 V, 50/60 Hz | **3RT26 26-1AC25** | 0.49 |
| 3Ø | 10 | 11 | 22 | 28 | | | 120 V, 60 Hz | **3RT26 26-1AK65** | |
| | | | | | | | 240 V, 60 Hz | **3RT26 26-1AP65** | |
| 3RT2637-1NF35 | | | | | | | | | |
| 1Ø | 6.6 | 7.3 | 15 | 18 | 33 | 1NO / 2NC | 24 V, 50/60 Hz | **3RT26 27-1AC25** | 0.49 |
| 3Ø | 11 | 13 | 25 | 31 | | | 120 V, 60 Hz | **3RT26 27-1AK65** | |
| | | | | | | | 240 V, 60 Hz | **3RT26 27-1AP65** | |
| 1Ø | 8.6 | 9.5 | 20 | 24 | 43 | 1NO / 2NC | 24 V, 50/60 Hz | **3RT26 28-1AC25** | 0.59 |
| 3Ø | 15 | 16 | 33 | 41 | | | 120 V, 60 Hz | **3RT26 28-1AK65** | |
| | | | | | | | 240 V, 60 Hz | **3RT26 28-1AP65** | |
| **• Size S2** | | | | | | | | | |
| 1Ø | 14 | 16 | 33 | 40 | 72A | 2 NC | 23-33 VUC | **3RT26 36-1NB35** | 1.11 |
| 3Ø | 25 | 27 | 55 | 69 | | | 83-155 VUC | **3RT26 36-1NF35** | |
| | | | | | | | 175-280 VUC | **3RT26 36-1NP35** | |
| 1Ø | 20 | 22 | 45 | 54 | 98A | 2 NC | 20-33 VUC | **3RT26 37-1NB35** | 1.11 |
| 3Ø | 34 | 38 | 75 | 94 | | | 83-155 VUC | **3RT26 37-1NF35** | |
| | | | | | | | 175-280 VUC | **3RT26 37-1NP35** | |

1) Coil voltage tolerance: 0.85 ... 1.1 x $U_s$.
2) A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C

For further voltages, see page 2/55.
For auxiliaries and accessories, see page 2/72-2/89.
For technical data, see page 2/177.
For wiring diagram, see page 2/205.
For dimension drawings, see page 2/225.

**DC Coil Selection for 3RT261 only**

| ●Coil Code | B4 | W4 | E4 | F4 | G4 | M4 |
|---|---|---|---|---|---|---|
| DC | 24 V | 48 V | 60 V | 110 V | 125 V | 220 V |

**UC Coil Selection for 3RT262**

| ●Coil Code | NB3 | NF3 | NP3 |
|---|---|---|---|
| UC | 21-28V | 95-130V | 200-280V |

**UC Coil Selection for 3RT263**

| ●Coil Code | B3 | F3 | P3 |
|---|---|---|---|
| | 20-33V | 83-155V | 175-280V |

3) at upper limit = 1.1 x $U_S$

## AC and DC operation

IEC 60947, EN 60947.
The 3RT20 coupling contactors for switching motors are tailored to the special requirements of working with electronic controls.

The 3RT20 1 coupling contactors cannot be expanded with auxiliary switch blocks.
Coupling contactors have a low power consumption and an extended solenoid coil operating range.

Depending on the version, the solenoid coils are supplied either without overvoltage damping or with a diode, suppressor diode or varistor connected as standard.

## Selection and ordering data
### DC operation

3RT2015-1HB41

3RT2015-2HB41

| Surge suppressor | Ratings Utilization category | | Auxiliary contacts | | | Screw connection | Spring-type connection | Weight approx. |
|---|---|---|---|---|---|---|---|---|
| | AC-3 | | Ident. no. | Design | | Order No. | Order No. | (screw/ spring) |
| | Maximum inductive current | Maximum[1] horsepower ratings at 460 V | | | | | | |
| | Amps | **HP** | | NO | NC | | | kg |
| **For screwing and snapping onto 35 mm standard mounting rail** | | | | | | | | |
| **• Size S00** Terminal designations according to EN 50 012 | | | | | | | | |
| Rated control supply voltage $U_s$ = DC 24 V, coil voltage tolerance **0.7 to 1.25** × $U_s$ Power consumption of the coils **2.8 W** at 24 V (no auxiliary switch blocks can be mounted) | | | | | | | | |
| Diode, varistor or RC element can be mounted | 7 | **3** | **10E 01** | 1<br>– | –<br>1 | **3RT20 15-1HB41**<br>**3RT20 15-1HB42** | **3RT20 15-2HB41**<br>**3RT20 15-2HB42** | 0.28/0.30 |
| Diode integrated | 7 | **3** | **10E 01** | 1<br>– | –<br>1 | **3RT20 15-1J B41**<br>**3RT20 15-1J B42** | **3RT20 15-2J B41**<br>**3RT20 15-2J B42** | 0.28/0.30 |
| Suppressor diode integrated | 7 | **3** | **10E 01** | 1<br>– | –<br>1 | **3RT20 15-1KB41**<br>**3RT20 15-1KB42** | **3RT20 15-2KB41**<br>**3RT20 15-2KB42** | 0.28/0.30 |
| Diode, varistor or RC element can be mounted | 9 | **5** | **10E 01** | 1<br>– | –<br>1 | **3RT20 16-1HB41**<br>**3RT20 16-1HB42** | **3RT20 16-2HB41**<br>**3RT20 16-2HB42** | 0.28/0.30 |
| Diode integrated | 9 | **5** | **10E 01** | 1<br>– | –<br>1 | **3RT20 16-1J B41**<br>**3RT20 16-1J B42** | **3RT20 16-2J B41**<br>**3RT20 16-2J B42** | 0.28/0.30 |
| Suppressor diode integrated | 9 | **5** | **10E 01** | 1<br>– | –<br>1 | **3RT20 16-1KB41**<br>**3RT20 16-1KB42** | **3RT20 16-2KB41**<br>**3RT20 16-2KB42** | 0.28/0.30 |
| Diode, varistor or RC element can be mounted | 12 | **7.5** | **10E 01** | 1<br>– | –<br>1 | **3RT20 17-1HB41**<br>**3RT20 17-1HB42** | **3RT20 17-2HB41**<br>**3RT20 17-2HB42** | 0.28/0.30 |
| Diode integrated | 12 | **7.5** | **10E 01** | 1<br>– | –<br>1 | **3RT20 17-1J B41**<br>**3RT20 17-1J B42** | **3RT20 17-2J B41**<br>**3RT20 17-2J B42** | 0.28/0.30 |
| Suppressor diode integrated | 12 | **7.5** | **10E 01** | 1<br>– | –<br>1 | **3RT20 17-1KB41**<br>**3RT20 17-1KB42** | **3RT20 17-2KB41**<br>**3RT20 17-2KB42** | 0.28/0.30 |

For technical data, see page 2/178.
For int. circuit diagrams, see page 2/197-2/202.
For dimension drawings, see page 2/216.

1) Complete HP ratings on page 2/131

## Selection and ordering data
### DC operation

3RT2015-1VB41

3RT2015-2VB41

3RT2024-1KB40

| Surge suppressor | Ratings Utilization category AC-3 Maximum inductive current | Maximum horsepower ratings at 460 V | Auxiliary contacts Ident. no. | Design NO | Design NC | Screw connection Order No. | Spring-type connection Order No. | Weight approx. (screw/spring) |
|---|---|---|---|---|---|---|---|---|
| | Amps | **HP** | | | | | | kg |
| **For screwing and snapping onto 35 mm standard mounting rail** | | | | | | | | |
| **• Size S00** Terminal designations according to EN 50 012 Rated control supply voltage $U_s$ =DC 24 V, coil voltage tolerance **0.85 to 1.85** × $U_s$ Power consumption of the coils **1.6 W** at 24 V (no auxiliary switch blocks can be mounted) | | | | | | | | |
| Diode, varistor or RC element can be mounted | 7 | **3** | **10E** **01** | 1 – | – 1 | **3RT20 15-1MB41-0KT0** **3RT20 15-1MB42-0KT0** | **3RT20 15-2MB41-0KT0** **3RT20 15-2MB42-0KT0** | 0.28/0.30 |
| Diode integrated | 7 | **3** | **10E** **01** | 1 – | – 1 | **3RT20 15-1VB41** **3RT20 15-1VB42** | **3RT20 15-2VB41** **3RT20 15-2VB42** | 0.28/0.30 |
| Suppressor diode integrated | 7 | **3** | **10E** **01** | 1 – | – 1 | **3RT20 15-1SB41** **3RT20 15-1SB42** | **3RT20 15-2SB41** **3RT20 15-2SB42** | 0.28/0.30 |
| Diode, varistor or RC element can be mounted | 9 | **5** | **10E** **01** | 1 – | – 1 | **3RT20 16-1MB41-0KT0** **3RT20 16-1MB42-0KT0** | **3RT20 16-2MB41-0KT0** **3RT20 16-2MB42-0KT0** | 0.28/0.30 |
| Diode integrated | 9 | **5** | **10E** **01** | 1 – | – 1 | **3RT20 16-1VB41** **3RT20 16-1VB42** | **3RT20 16-2VB41** **3RT20 16-2VB42** | 0.28/0.30 |
| Suppressor diode integrated | 9 | **5** | **10E** **01** | 1 – | – 1 | **3RT20 16-1SB41** **3RT20 16-1SB42** | **3RT20 16-2SB41** **3RT20 16-2SB42** | 0.28/0.30 |
| Diode, varistor or RC element can be mounted | 12 | **7.5** | **10E** **01** | 1 – | – 1 | **3RT20 17-1MB41-0KT0** **3RT20 17-1MB42-0KT0** | **3RT20 17-2MB41-0KT0** **3RT20 17-2MB42-0KT0** | 0.28/0.30 |
| Diode integrated | 12 | **7.5** | **10E** **01** | 1 – | – 1 | **3RT20 17-1VB41** **3RT20 17-1VB42** | **3RT20 17-2VB41** **3RT20 17-2VB42** | 0.28/0.30 |
| Suppressor diode integrated | 12 | **7.5** | **10E** **01** | 1 – | – 1 | **3RT20 17-1SB41** **3RT20 17-1SB42** | **3RT20 17-2SB41** **3RT20 17-2SB42** | 0.28/0.30 |
| **• Size S0** Rated control supply voltage $U_s$ = DC 24 V, coil voltage tolerance **0.7 to 1.25** × $U_s$ Power consumption of the coils **4.5 W** at 24 V no auxiliary switch blocks can be mounted. | | | | | | | | |
| Varistor integrated | 12 | **7.5** | **11E** | 1 | 1 | **3RT20 24-1KB40** | **3RT20 24-2KB40** | 0.58/0.60 |
| | 16 | **10** | **11E** | 1 | 1 | **3RT20 25-1KB40** | **3RT20 25-2KB40** | 0.58/0.60 |
| | 25 | **15** | **11E** | 1 | 1 | **3RT20 26-1KB40** | **3RT20 26-2KB40** | 0.58/0.60 |
| | 32 | **20** | **11E** | 1 | 1 | **3RT20 27-1KB40** | **3RT20 27-2KB40** | 0.58/0.60 |

For technical data, see page 2/178.
For int. circuit diagrams, see page 2/197-2/202.
For dimension drawings, see page 2/216.

## Applications

**"Safety" Contactors**
Safety rated contactors are required to have mirrored contact construction according to IEC 60947-4-1 Annex F. A mirror contact is a Normally Closed (NC) auxiliary contact which can not be closed simultaneously with a Normally Open (NO) main contact.

In some industries, such as automotive, requirements have been established that a safety rated contactor must also have permanently mounted auxiliary contact blocks. See page 2/29 for Contactors with permanently mounted auxiliary contacts.

**Siemens Contactors for "Safety" applications:**
All Siemens standard 3RT, 3TF6, 40HN & 40PH Contactors are provided with positively driven (mirror) contacts which meet or exceed the criteria for "Safety Contactors" according to IEC 60947-4 Annex F which describes the requirements for mirror contact performance. When applying Safety Contactors in safety circuits, the NC auxiliary contacts must be wired in series or parallel and must be used as monitoring contacts with feedback to the safety evaluation device (i.e. safety relay or failsafe logic controller).

**"Safety" Control Relays**
Safety rated control relays are required to have positively driven contact elements according to IEC 60947-5-1 Annex L. Positively driven contact elements are a combination of NO auxiliary contacts and NC auxiliary contacts whose construction prevents them from being closed simultaneously.

In some industries, such as automotive, requirements have been established that a safety rated control relays must also have permanently mounted auxiliary contact blocks. See page 2/24 for Control Relays with permanently mounted auxiliary contacts.

**Siemens Control Relays for "Safety" applications:**
All SIRIUS 3RH control relays (with at least 1 NC contact) meet or exceed the criteria for "Safety Control Relays" according to IEC 60947-5-1 Annex L. This is true for the basic 3RH relay with or without an additional auxiliary contact block.

3RT20 2. -1A .00

3RT10 7. -6A ..6

3RH29 21. -1F

3RH29 21. -1DA 11

3RH21

3RH24

3RH2911-2HA..

| Frame size | Contactors | Auxiliary contact block |
|---|---|---|
| S00 | 3RT201 | 3RH2911 |
| | 3RT231 | |
| | 3RT251 | |
| | 3RT261 | 3RH1911 |
| S0 | 3RT202 | 3RH2921 |
| | 3RT232 | |
| | 3RT252 | |
| | 3RT262 | 3RH2921 |
| S2 | 3RT203 | 3RH2921 |
| | 3RT233 | |
| | 3RT253 | |
| | 3RT263 | |
| S3 | 3RT204 | 3RH2921 |
| | 3RT234 | |
| | 3RT244 | |
| | 3RT264 | |
| S6 | 3RT105 | 3RH1921 |
| | 3RT145 | |
| S10 | 3RT106 | 3RH1921 |
| | 3RT126 | |
| | 3RT146 | |
| S12 | 3RT107 | 3RH1921 |
| | 3RT127 | |
| | 3RT147 | |
| | 3TF6 | 3TY7561-1UA00 |

| Frame size | Control Relays | Auxiliary contact block |
|---|---|---|
| S00 | 3RH21 | 3RH2911 |
| | 3RH24 | |
| | 3TH20 | 3TX44 |

For contactors, see pages 2/8-2/11.
For auxiliaries contact blocks, see pages 2/72-2/74.
For control relays, see pages 2/56-2/58.
For auxiliaries contact blocks, see page 2/72-2/74..

## Application

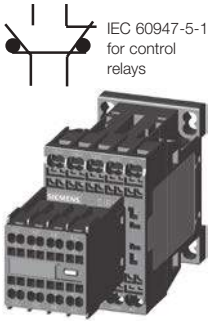
### "Safety" Contactors

Safety rated contactors are required to have mirrored contact construction according to IEC 60947-4 Annex F. A mirror contact is a Normally Closed (NC) auxiliary contact which can not be closed simultaneously with a Normally Open (NO) main contact. In some industries, such as Automotive, the auxiliary contact blocks are required to be permanently attached to meet the requirements of "unintentional misuse" as specified in IEC 60292, paragraph 3.12. Tested by SUVA.

3RT202* -1AK64-3MA0

### "Safety" Control Relays

Safety rated control relays are required to have positively driven contact elements according to IEC 60947-5-1 Annex L. Positively driven contact elements are a combination of NO auxiliary contacts and NC auxiliary contacts whose construction prevents them from being closed simultaneously. In some industries, such as automotive, the auxiliary contact blocks are required to be permanently attached to meet the requirements of "unintentional misuse" as specified in IEC 60292, paragraph 3.12. Tested by SUVA.




3RH22**-2BB40

## Application

| Frame Size | Max. current AC3 | Max. current AC1 | Single-phase HP ratings 115V | Single-phase HP ratings 220/240V | Three-phase HP ratings 200V | Three-phase HP ratings 230V | Three-phase HP ratings 460V | Three-phase HP ratings 575V | Auxiliary contacts Ident. No. | Auxiliary contacts NO | Auxiliary contacts NC | Screw Terminals Order No. | Spring-Type Terminals [1] Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | A | HP | HP | HP | HP | HP | HP | | | | | |
| **Contactors with permanently mounted auxiliary contact blocks** | | | | | | | | | | | | | |
| S00 | 6 | 18 | ¼ | ¾ | 1 ½ | 2 | 3 | 5 | 22E | 2 | 2 | **3RT2015-1●●●4-3MA0** | **3RT2015-2●●●4-3MA0** |
| | 9 | 22 | ⅓ | 1 | 2 | 3 | 5 | 7 ½ | 22E | 2 | 2 | **3RT2016-1●●●4-3MA0** | **3RT2016-2●●●4-3MA0** |
| | 12 | 22 | ½ | 2 | 3 | 3 | 7 ½ | 10 | 22E | 2 | 2 | **3RT2017-1●●●4-3MA0** | **3RT2017-2●●●4-3MA0** |
| | 16 | 22 | 1 | 2 | 3 | 5 | 10 | 10 | 22E | 2 | 2 | **3RT2018-1●●●4-3MA0** | **3RT2018-2●●●4-3MA0** |
| S0 | 9 | 40 | 1 | 1 | 2 | 3 | 5 | 7 ½ | 22E | 2 | 2 | **3RT2023-1●●●4-3MA0** | **3RT2023-2●●●4-3MA0** |
| | 12 | 40 | 1 | 2 | 3 | 3 | 7 ½ | 10 | 22E | 2 | 2 | **3RT2024-1●●●4-3MA0** | **3RT2024-2●●●4-3MA0** |
| | 17 | 40 | 1 | 3 | 5 | 5 | 10 | 15 | 22E | 2 | 2 | **3RT2025-1●●●4-3MA0** | **3RT2025-2●●●4-3MA0** |
| | 25 | 40 | 2 | 3 | 7 ½ | 7 ½ | 15 | 20 | 22E | 2 | 2 | **3RT2026-1●●●4-3MA0** | **3RT2026-2●●●4-3MA0** |
| | 32 | 50 | 2 | 5 | 10 | 10 | 20 | 25 | 22E | 2 | 2 | **3RT2027-1●●●4-3MA0** | **3RT2027-2●●●4-3MA0** |
| | 38 | 50 | 3 | 5 | 10 | 10 | 25 | 25 | 22E | 2 | 2 | **3RT2028-1●●●4-3MA0** | **3RT2028-2●●●4-3MA0** |
| S2 | 40 | 60 | 3 | 7 ½ | 10 | 15 | 30 | 40 | 22E | 2 | 2 | **3RT2035-1●●●4-3MA0** | **3RT2035-3●●●4-3MA0** |
| | 50 | 70 | 3 | 10 | 15 | 15 | 40 | 50 | 22E | 2 | 2 | **3RT2036-1●●●4-3MA0** | **3RT2036-3●●●4-3MA0** |
| | 65 | 80 | 5 | 10 | 20 | 20 | 50 | 50 | 22E | 2 | 2 | **3RT2037-1●●●4-3MA0** | **3RT2037-3●●●4-3MA0** |
| | 80[4] | 90 | 5 | 15 | 20 | 25 | 50 | 60 | 22E | 2 | 2 | **3RT2038-1●●●4-3MA0** | **3RT2038-3●●●4-3MA0** |
| S3 | 80 | 120 | 7 ½ | 15 | 25 | 30 | 60 | 75 | 22E | 2 | 2 | **3RT2045-1●●●4-3MA0** | **3RT2045-3●●●4-3MA0** |
| | 95 | 120 | 10 | 20 | 30 | 30 | 75 | 100 | 22E | 2 | 2 | **3RT2046-1●●●4-3MA0** | **3RT2046-3●●●4-3MA0** |
| S6 | 150 | 185 | -- | 30 | 50 | 60 | 125 | 150 | 22E | 2 | 2 | **3RT1055-6●●●6-3PA0** | — |
| | 185 | 215 | -- | 30 | 60 | 75 | 150 | 200 | 22E | 2 | 2 | **3RT1056-6●●●6-3PA0** | — |
| S10 | 225 | 275 | -- | -- | 60 | 75 | 150 | 200 | 22E | 2 | 2 | **3RT1064-6●●●6-3PA0** | — |
| | 265 | 330 | -- | -- | 75 | 100 | 200 | 250 | 22E | 2 | 2 | **3RT1065-6●●●6-3PA0** | — |
| | 300 | 330 | -- | -- | 100 | 125 | 250 | 300 | 22E | 2 | 2 | **3RT1066-6●●●6-3PA0** | — |

**Control circuit coil options: Replace ●●● with the desired code**

| Frame Size S00 - S0 | ●●● | Frame Size S2 | ●●● | Frame Size S3 | ●●● | Frame Size S6 - S10 | ●●● |
|---|---|---|---|---|---|---|---|
| 120 V AC | **AK6** | 120 V AC | **AK6** | 120 V AC ** | **AK6** | 23 … 26 V UC*, conventional coil | **AB3** |
| 120 V AC, integrated varistor | **CK6** | 120 V AC w/ Varistor | **CK6** | 24V DC | **KB4** | 21-27 V UC*, solid state coil w/ PLC interface | **NB3** |
| 230 V AC | **AP0** | 24 V DC w/Varistor | **KB4** | w/ integrated varistor | | | |
| 24 V DC | **BB4** | | | 24V AC/DC w/integrated varistor | **NB3** | 110 … 127 V UC*, conventional coil | **AF3** |
| 24 V DC, integrated varistor | **DB4** | | | | | *UC coil: accepts DC voltage or AC voltage, 40 to 60 Hz. | |
| 24 V DC, integrated diode assy. | **FB4** | | | | | | |

| Frame Size | Max. current at 240 V [2] | Rated control supply voltage $U_s$ | Auxiliary contacts Ident. No. | Auxiliary contacts NO | Auxiliary contacts NC | Screw Terminals [3] Order No. | Spring Terminals [3] Order No. |
|---|---|---|---|---|---|---|---|
| | A | | | | | | |
| **Control relays with permanently mounted auxiliary contact blocks** | | | | | | | |
| **S00-S00** | **10** | 110 V AC, 50 Hz / 120 V AC, 60 Hz | 44E | 4 | 4 | **3RH2244-1AK60** | **3RH2244-2AK60** |
| | **10** | 24 V DC | 44E | 4 | 4 | **3RH2244-1BB40** | **3RH2244-2BB40** |
| | **10** | 110 V AC, 50 Hz / 120 V AC, 60 Hz | 62E | 6 | 2 | **3RH2262-1AK60** | **3RH2262-2AK60** |
| | **10** | 24 V DC | 62E | 6 | 2 | **3RH2262-1BB40** | **3RH2262-2BB40** |

For other voltages see page 2/55.
For accessories, see pages 2/79-2/84.
For spare parts, see pages 2/101-2/104.
For technical data, see pages 2/128-2/149.
For description, see pages 2/111-2/112.
For int. circuit diagrams, see page 2/197-2/203.
For dimension drawings, see pages 2/216-2/223.

1) All terminals are spring loaded on frame size S00 and S0. Only the coil and auxiliary contact terminals are spring loaded on frame sizes S2 & S3.

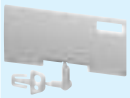
2) For AC-15/AC-14, max current for front mounted auxiliary contacts = 6 A.

3) The 3RH22 control relays are also available with ring lug terminals. Replace the 8th digit of the order number with a "4", e. g. 3RH2244-4AK60

4) Max UL FLA = 65A at 460V

## Overview

The function modules for mounting onto contactors enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking, and can be connected to the control system by either parallel wiring or through IO-Link or AS-Interface.

| Version | SIRIUS function modules for parallel wiring | SIRIUS function modules for IO-Link[1] | SIRIUS function modules for AS-Interface[1] |
|---|---|---|---|
| For direct-on-line starting | Timing relays: ON or OFF-delay with semiconductor output<br>With screw or spring-type terminals<br> | With screw or spring-type terminals<br> | With screw or spring-type terminals<br> |
| For reversing starting | Wiring modules for sizes S00, S0 & S2<br>With screw or spring-type terminals · (with screw terminals for main and control circuit)<br> | 1 function module for size S00, S0 & S2, screw and spring-type connection, plus the respective wiring modules[1]<br> | 1 function module for size S00, S0 & S2, screw and spring-type connection, plus the respective wiring modules[1]<br> |
| For wye-delta starting | 1 function module for size S00, S0 & S2, screw and spring-type connection of the contactors, plus the respective wiring modules[2]<br> | For wye-delta starting: 1 function module for size S00, S0 & S2, plus screw and spring-type connection, plus the respective wiring modules[2]<br> | For wye-delta starting: 1 function module for size S00, S0 & S2, plus screw and spring-type connection, plus the respective wiring modules[2]<br> |
| Accessories | Sealable covers<br>  | Operator panel for autonomous controlling of up to 4 starters<br>Module connector for the grouping of starters<br>Connection cable between the operator panel and the starter group<br>Sealable covers<br> | AS-Interface addressing units<br>Sealable covers<br> |

1) Use of the communication-capable function modules for IO-Link or AS-Interface requires contactors with communication interface (see pages 2/32).

2) The modules for the control current wiring, which are included in the wiring kit, are not required.

*Note:*
*When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.*

## Overview

Simply by being plugged in place, the SIRIUS function modules enable different functionalities required for the assembly of starters to be realized in the starter. The function modules and wiring kits help to reduce the wiring work within the starter practically to zero.

### *SIRIUS function modules for direct-on-line starting*

The electronic timing relays which can be mounted onto the contactor are available in these versions:

- Sizes S00 and S0 for applications in the range from 24 to 240 V AC/DC (wide voltage range)
- Size S2 for applications in either the range from 24 to 90 V AC/DC or 90 to 240 V AC/DC

Both the electrical and mechanical connection are made by simple snapping on and locking.

A protection circuit (varistor) is integrated in each module.

The electronic timing relay with semiconductor output uses two contact legs to actuate the contactor underneath by means of a semiconductor after the set time *t* has elapsed.

The switching state feedback is performed by a mechanical switching state indicator (plunger). In addition, the auxiliary switches in the contactors are freely accessible and can be used for feedbacks to the control system or for signal lamps.

A sealable cover is available to protect against careless adjustment of the set times.

### *SIRIUS function modules for reversing starting*

The wiring kits for reversing starters enable the cost-effective assembly of contactor assemblies. They can be used for all applications with reversing duty up to 50 HP.
For a detailed description see page 2/43.

### *SIRIUS function modules for wye-delta starting*

Both interlocking and timing functions are required for the assembly of wye-delta starters. With the function modules for wye-delta starting and the matching link modules for the main circuit, these starters can be assembled easily and with absolutely no errors.

The entire sequence in the control circuit is integrated in the snap-on modules. This covers:

- An adjustable wye time *t* from 0.5 to 60 s
- A non-adjustable dead interval of 50 ms
- Electrical contacting to the contactors by means of coil pick-off (contact legs)
- Feedback of the switching state at the contactor using a mechanical switch position indicator (plunger)
- Electrical interlocking between the contactors

These modules do not require their own terminals and can therefore be used for contactors with both screw and spring-type terminals in the S00, S0 and S2. To start the wye-delta starter, only the first of the three contactors (line contactor) is actuated. All other functions then take place inside the individual modules.

This also offers advantages if the timing function was previously implemented in a controller, as it again results in a significant reduction in the number of PLC outputs, the programming work and the wiring outlay.

The kits for the main circuit include the mechanical interlock, the star jumper, the wiring modules at the top and at the bottom, and the required connecting clips.

A protection circuit (varistor) is integrated in the basic module.

## Application

The snap-on function modules for direct-on-line starting are used above all for realizing timing functions independently of the control system.

With the OFF-delay variant of the timing relay it is possible for example for the fan motor for cooling a main drive to be switched off with a delay so that sufficient cooling after operation is guaranteed even if the plant and its control system have already been switched off.

The ON-delay timing relays enable for example the time-delayed starting of several drives so that the summation starting current does not rise too high, which could result in voltage failure.

The function modules for wye-delta starting are mostly used where current-limiting measures for starting a drive are required, e.g. for large fans and ventilators, and a high level of availability is essential at the same time. This technology has been used with success for several decades and has the additional advantage of requiring relatively little know-how. Through the use of function modules, the assembly work with simple standard components is even easier and error-free.

## Benefits

The use of snap-on function modules for direct-on-line starting (timing relays) results in the following advantages:

- Reduction of control current wiring
- Prevention of wiring errors
- Reduction of testing costs
- Implementation of timing functions independently of the control system
- Less space required in the control cabinet compared to a separate timing relay
- No additive protection circuit required (varistor integrated)

The use of function modules for wye-delta starting results in the following advantages:

- Operation solely through the line contactor A1/A2 – no further wiring needed
- Reduction of the control current wiring inside the contactor assembly and to the higher-level control system where applicable
- Prevention of wiring errors
- Reduction of testing costs
- Integrated electrical interlocking saves costs and prevents errors
- Less space needed in the control cabinet compared to using a separate timing relay
- Adjustable starting in star mode from 0.5 to 60 s
- Independent of the contactor's control supply voltage (24 to 240 V AC/DC)
- Varistor integrated – no additive protection circuit required
- No control current wiring thanks to plug-in technology and connecting cables
- Mechanically coded assembly enables easy configuration and reliable wiring
- Fewer versions – one module kit for screw and spring-type connection and for the two sizes S00 to S2
- Mechanical interlocking (with wiring kit for the main circuit)

## Selection and ordering data

- Ideal for diagnostics to the automation controller
- Quickly locate and rectify faults
- Configuration available in Step 7 and TIA Portal
- Easy engineering of parameters
- For DOL, reversing and wye delta starters up to 50 HP
- Manual starter operation with optional operator panel
- Reduces control wiring in the panel
- Available for 24VDC control systems
- Easily snap on IO-Link or AS-Interface modules onto contactors

| | Frame Size | Amp Ratings AC3 | Amp Ratings AC1 | Single-phase HP ratings 115V | Single-phase HP ratings 230V | Three-phase HP ratings 208V | Three-phase HP ratings 230V | Three-phase HP ratings **460V** | Three-phase HP ratings 575V | Auxiliary contacts NO | Auxiliary contacts NC | **Screw Terminals 24 V DC coil** Order No. | **Spring-type Terminals 1) 24 V DC coil** Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3RT 3-pole Contactors** | | | | | | | | | | | | | | |
| 3RT2018-1BB41-0CC0 | S00 | **7** | 18 | 0.25 | 0.75 | 1.5 | 2 | **3** | 5 | 1 | 0 | **3RT2015-1BB41-0CC0** | **3RT2015-2BB41-0CC0** | 0.28 |
| | | | | | | | | | | 0 | 1 | **3RT2015-1BB42-0CC0** | **3RT2015-2BB42-0CC0** | |
| | | **9** | 22 | 0.33 | 1 | 2 | 3 | **5** | 7.5 | 1 | 0 | **3RT2016-1BB41-0CC0** | **3RT2016-2BB41-0CC0** | |
| | | | | | | | | | | 0 | 1 | **3RT2016-1BB42-0CC0** | **3RT2016-2BB42-0CC0** | |
| | | **12** | 22 | 0.5 | 2 | 3 | 3 | **7.5** | 10 | 1 | 0 | **3RT2017-1BB41-0CC0** | **3RT2017-2BB41-0CC0** | |
| | | | | | | | | | | 0 | 1 | **3RT2017-1BB42-0CC0** | **3RT2017-2BB42-0CC0** | |
| | | **16** | 22 | 1 | 2 | 3 | 5 | **10** | 10 | 1 | 0 | **3RT2018-1BB41-0CC0** | **3RT2018-2BB41-0CC0** | |
| | | | | | | | | | | 0 | 1 | **3RT2018-1BB42-0CC0** | **3RT2018-2BB42-0CC0** | |
| 3RT2028-1BB40-0CC0 | S0 | **9** | 40 | 1 | 1 | 2 | 3 | **5** | 7.5 | 1 | 1 | **3RT2023-1BB40-0CC0** | **3RT2024-2BB40-0CC0** | 0.58 |
| | | **12** | 40 | 1 | 2 | 3 | 3 | **7.5** | 10 | 1 | 1 | **3RT2024-1BB40-0CC0** | **3RT2024-2BB40-0CC0** | |
| | | **16** | 40 | 1 | 3 | 5 | 5 | **10** | 15 | 1 | 1 | **3RT2025-1BB40-0CC0** | **3RT2025-2BB40-0CC0** | |
| | | **25** | 40 | 2 | 3 | 7.5 | 7.5 | **15** | 20 | 1 | 1 | **3RT2026-1BB40-0CC0** | **3RT2026-2BB40-0CC0** | |
| | | **32** | 50 | 2 | 5 | 10 | 10 | **20** | 25 | 1 | 1 | **3RT2027-1BB40-0CC0** | **3RT2027-2BB40-0CC0** | |
| | | **38** | 50 | 3 | 5 | 10 | 10 | **25** | 25 | 1 | 1 | **3RT2028-1BB40-0CC0** | **3RT2028-2BB40-0CC0** | |
| 3RT2038-1NB30-0CC0 | S2 | **40** | 60 | 3 | 7.5 | 10 | 15 | **30** | 40 | 1 | 1 | **3RT2035-1NB30-0CC0** | **3RT2035-3NB30-0CC0** | 1.122 |
| | | **50** | 70 | 3 | 10 | 15 | 15 | **40** | 50 | 1 | 1 | **3RT2036-1NB30-0CC0** | **3RT2036-3NB30-0CC0** | |
| | | **65** | 80 | 5 | 10 | 20 | 20 | **50** | 50 | 1 | 1 | **3RT2037-1NB30-0CC0** | **3RT2037-3NB30-0CC0** | |
| | | **80** | 90 | 5 | 15 | 20 | 25 | **50** | 60 | 1 | 1 | **3RT2038-1NB30-0CC0** | **3RT2038-3NB30-0CC0** | |
| 3RT2045-1NB30-0CC0 | S3 | **80** | 125 | 7.5 | 15 | 25 | 30 | **60** | 60 | 1 | 1 | **3RT2045-1NB30-0CC0** | **3RT2045-3NB30-0CC0** | 1.85 |
| | | **95** | 130 | 10 | 20 | 30 | 30 | **75** | 75 | 1 | 1 | **3RT2046-1NB30-0CC0** | **3RT2046-3NB30-0CC0** | |
| | | **110** | 130 | 10 | 20 | 30 | 40 | **75** | 100 | 1 | 1 | **3RT2047-1NB30-0CC0** | **3RT2047-3NB30-0CC0** | |

1) All terminals are spring loaded in sizes S00 and S0.
For sizes S2-S3, only the coil and aux contacts are spring loaded.

Communication capable contactors are ideal for starter feedback to the automation level. IO-Link starters in the cabinet save considerable wiring effort. AS-Interface is best suited for distributed systems.

For reversing contactors with communication capability, see pages 2/45-2/49
For accessories, see page 2/33, 2/36, 2/40.
For technical data, see page 2/37, 2/41, 2/42
For description, see page 2/30.
For further information on IO-Link and AS-Interface, see page 2/34-2/35 and 2/38-2/39.

## Selection and ordering data

3RA28 16-0EW20

3RA29 13-2AA1

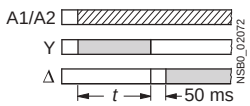
3RA29 13-2BB2

| For contactors | Rated control supply voltage $U_s$ [1] | Time setting range $t$ | Screw terminals | Weight approx. | Spring-type [2] terminals | Weight approx. |
|---|---|---|---|---|---|---|
| Type | V | s | Order No. | kg | Order No. | kg |
| **Assembly kits for reversing starting** | | | | | | |
| | **Assembly kits for making 3-pole contactor assemblies**<br>The assembly kit contains:<br>Mechanical interlock;<br>2 connecting clips for 2 contactors,<br>wiring modules on the top and bottom | | | | | |
| 3RT20 1. | • For size S00 | | **3RA29 13-2AA1** | 0.046 | **3RA29 13-2AA2** | 0.070 |
| 3RT20 2. | • For size S0 | | **3RA29 23-2AA1** | 0.089 | **3RA29 23-2AA2** | 0.112 |
| 3RT20 3. | • For size S2 (w/o mechanical interlock, see pg. 2/49) | | **3RA29 33-2AA1** | 0.159 | **3RA29 33-2AA2** | 0.156 |
| **Assembly kits for wye-delta starting** | | | | | | |
| | **Assembly kits for making 3-pole contactor assemblies**<br>The assembly kit contains:<br>Mechanical interlock,<br>4 connecting clips for 3 contactors;<br>star jumper,<br>wiring modules on the top and bottom | | | | | |
| 3RT20 1. | • For size S00 | | **3RA29 13-2BB1** | 0.051 | **3RA29 13-2BB2** | 0.080 |
| 3RT20 2. | • For size S0 (only main circuit for version with spring-type terminals) | | **3RA29 23-2BB1** | 0.099 | **3RA29 23-2BB2** | 0.133 |
| 3RT20 3. | • For size S2 (only main circuit for version with spring-type terminals) | | **3RA29 33-2BB1** | 0.242 | **3RA29 33-2BB2** | 0.182 |
| **Function modules for wye-delta starting** | | | | | | |
| | The electrical connection between the function module and the contactor assembly is established automatically by snapping on and plugging in the connecting cables.<br>**Wye-delta function** (varistor integrated) | | | | | |
| 3RT20 1.<br>3RT20 2.<br>3RT20 3. | 24 ... 240 AC/DC | 0.5 ... 60 (10, 30, 60 selectable) | **3RA28 16-0EW20** | 0.170 | **3RA28 16-0EW20** | 0.170 |
| **Accessories** | | | | | | |
| | **Sealable covers**<br>for 3RA27, 3RA28, 3RA29 | | **3RA29 10-0** | 0.002 | **3RA29 10-0** | 0.002 |

[1] AC voltage values apply for 50 Hz and 60 Hz.

[2] Assembly kits in sizes S0 and S2 are supplied with wiring modules for the main circuit only.

*Note:*
*When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.*

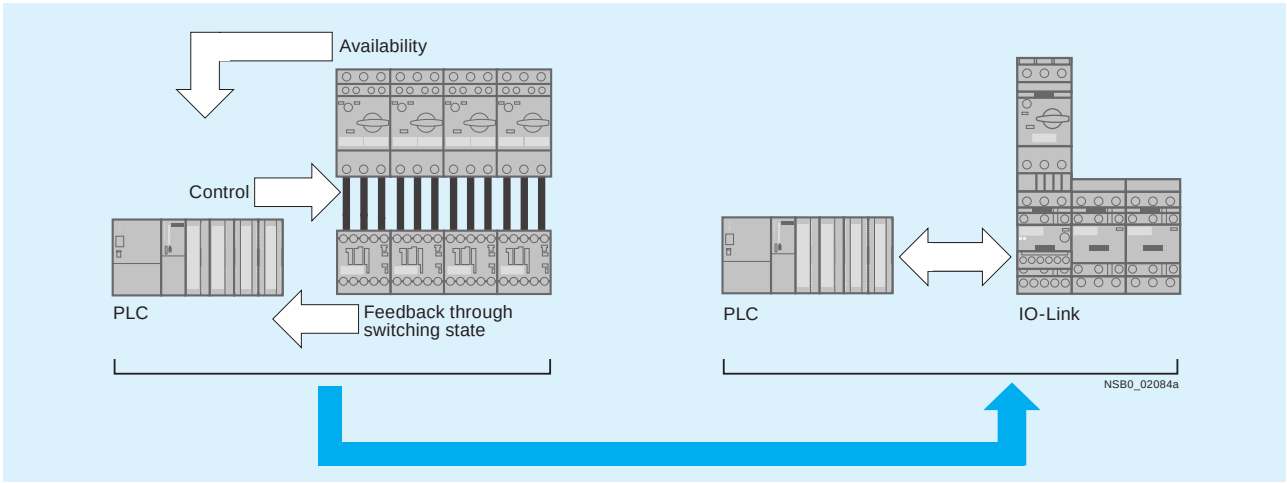
| Function | Function charts |
|---|---|
| | Timing relay energized |
| | Contact closed |
| | Contact open |
| **2 NO contacts (internally connected)** | |
| Wye-delta function<br>(varistor integrated)<br>• 1 NO contact, delayed<br>• 1 NO contact, instantaneous | 3RA28 16-0EW20<br>  |

## Overview

The SIRIUS function modules for IO-Link enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking. The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely, and feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions. The starters are connected to the higher-level control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master.

Through this type of connection to the control system, a maximum of wiring is saved. The following essential signals are transmitted:

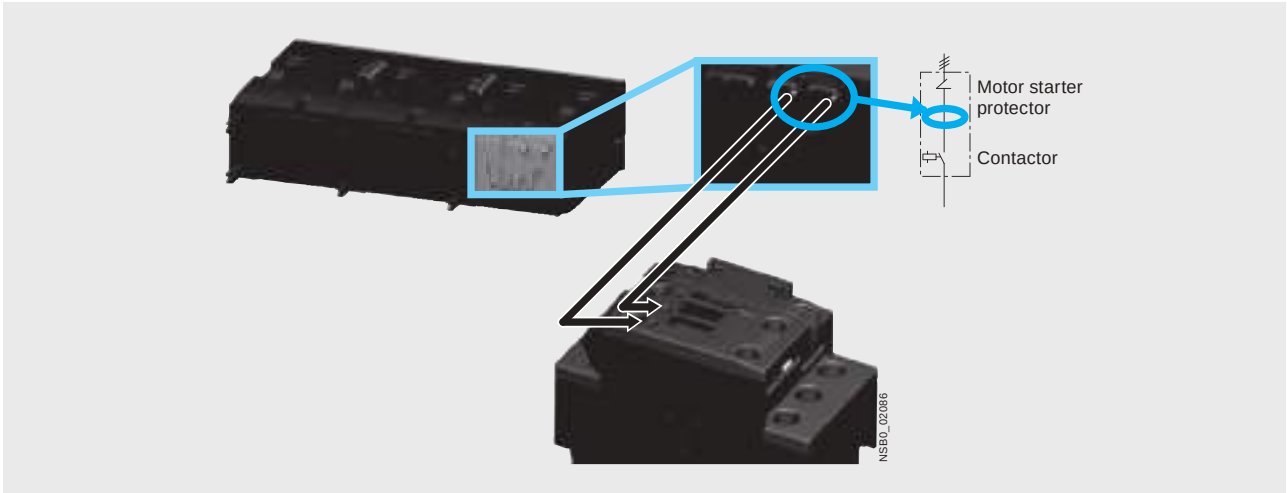
- Availability of the starter in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter




Signal transmission through IO-Link

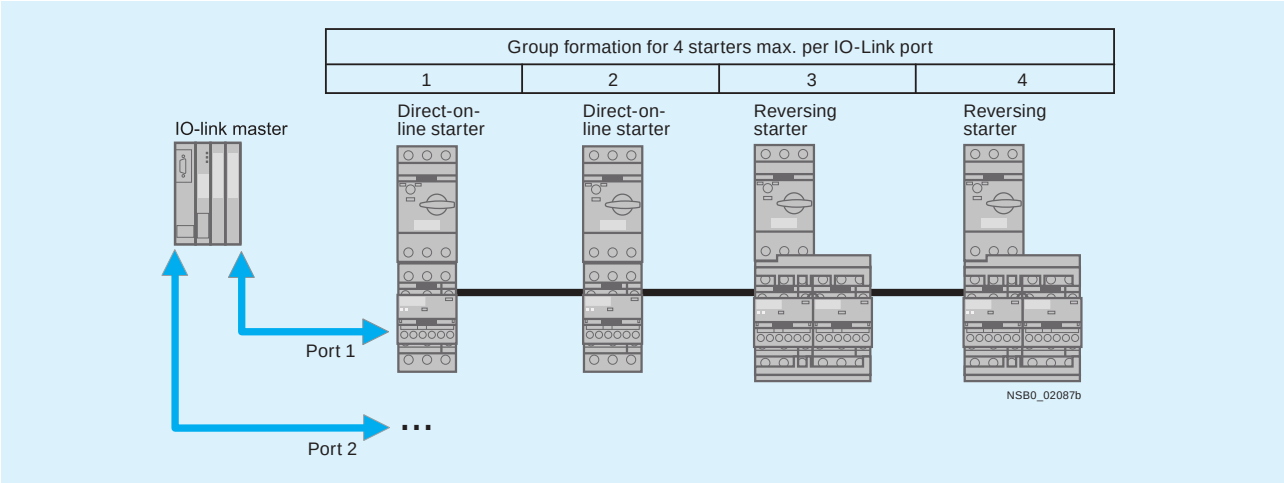
The inquiry from the motor starter protector does not take place through additional wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires the use of communication versions of the contactors with communication interface (see page 2/32).




Availability signal through voltage pick-off

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET200S. All the signals of the individual controls are made available through only 3 individual wires per starter group directly in the process image. If the potential at the master of the ET200S is the same as that of the controls, a further reduction in wiring is possible by providing the control supply voltage to the contactors by jumpering the corresponding communication wires.




Group formation with IO-Link

In case of a malfunction, the corresponding error signals are also sent directly to the PLC in acyclic mode. This is in addition to transmission of the switching signals and status signals.

Possible error signals:

- Device defect
- No main voltage (motor starter protector tripped)
- No control supply voltage
- Limit position on the right / on the left
- Manual mode
- Process image fault

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i. e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Local manual operation of the complete starter group is also straight-forward using a operator panel. The latter is easily connected to the last starter and can be built into the front panel of the control cabinet if required. This offers significant advantages particularly for commissioning.

## Application

The use of SIRIUS function modules with IO-Link is recommended above all in machines and plants in which there are several motor starters in one control cabinet. Using IO-Link, the connection of these starters to the automation level is easy, quick and error-free. And with IO modules no longer needed, the width of the ET200S becomes far smaller.

## Benefits

- Reduction of the control current wiring to no more than one cable having three conductors for four starters
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA for clear diagnostics if a fault occurs
- Fewer IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additional control circuit required

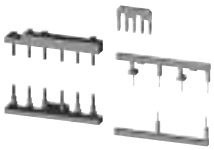
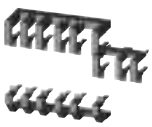
Further information on the application and benefits of the SIRIUS function modules for connection to the control system through IOLink can be found in Chapter 14 “Industrial Communication”.

## Selection and ordering data

| | Version | Screw terminals | Spring-type terminals | Weight |
|---|---|---|---|---|
| | | Order No. | Order No. | kg |
| **Function modules for direct-on-line starting** | | | | |
| 3RA2711-1AA00 3RA2711-2AA00 | **IO-Link connection** Includes one module connector for assembling an IO-Link group | **3RA2711-1AA00** | **3RA2711-2AA00** | |
| **Function modules for reversing starting**[1] | | | | |
| 3RA2711-1BA00 3RA2711-2BA00 | **IO-Link connection**, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group | **3RA2711-1BA00** | **3RA2711-2BA00** | |
| 3RA2923-2AA1 | **Assembly kits for making 3-pole contactor assemblies** The assembly kit contains: mechanical interlock, 2 connecting clips for two contactors, wiring modules on the top and bottom | | | |
| | • For size S00 | **3RA2913-2AA1** | **3RA2913-2AA2** | |
| 3RA2923-2AA2 | • For size S0 | | | |
| | - For main, auxiliary and control circuits | **3RA2923-2AA1** | -- | |
| | - Only for main circuit[2] | -- | **3RA2923-2AA2** | |
| | • For size S2 | | | |
| | - For main, auxiliary and control circuits | **3RA2933-2AA1** | -- | |
| | - Only for main circuit[2] | -- | **3RA2933-2AA2** | |

1) For prewired contactor assemblies for reversing starting with voltage tap-off, see pages 2/46 and 2/49. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.
2) Version in sizes S0 and S2 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

Matching contactors with communications interface required; see pages 2/26.

| | Version | Screw terminals | Spring-type terminals | Weight |
|---|---|---|---|---|
| | | Order No. | Order No. | kg |
| **Function modules for wye-delta starting**[1] | | | | |
| 3RA2711-1CA00 | **IO-Link connection**, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group | **3RA2711-1CA00** | **3RA2711-2CA00** | |
|  3RA2923-2BB1 | **Assembly kits for making 3-pole contactor assemblies**[2] The assembly kit contains: mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom | | | |
| | • For size S00 | **3RA2913-2BB1** | **3RA2913-2BB2** | |
|  3RA2923-2BB2 | • For size S0 | | | |
| | - For main, auxiliary and control circuits | **3RA2923-2BB1** | -- | |
| | - Only for main circuit[3] | -- | **3RA2923-2BB2** | |
| | • For size S2 | | | |
| | - For main, auxiliary and control circuits | **3RA2933-2BB1** | -- | |
| | - Only for main circuit[3] | -- | **3RA2933-2BB2** | |

Matching contactors with communications interface required; see pages 2/32.

1) For complete contactor assemblies for wye-delta starting including function modules, see pages 2/53 and 2/54.
2) When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.
3) Version in sizes S0 and S2 with spring-type terminals: Only the wiring modules for the main circuit are included. No connectors are included for the auxiliary and control circuit.

| | Version | Order No. | Weight kg |
|---|---|---|---|
| **Accessories** | | | |
| 3RA2711-0EE10 | **Module connector set**, comprising: • 2 module connectors, 14-pole, short • 2 interface covers | **3RA2711-0EE10** | |
| | **Module connectors** | | |
| 3RA2711-0EE06 | • 14-pole, 9 cm For size jump + 1 space | **3RA2711-0EE06** | |
| | • 14-pole, 26 cm For various space combinations | **3RA2711-0EE07** | |
| | • 14-pole, 33.5 cm For various space combinations | **3RA2711-0EE08** | |
| 3RA2711-0EE15 | • 10-pole, 9 cm For separate control signal infeed within an IO-Link group | **3RA2711-0EE16** | |
| | **Interface covers** (Set of 5) | **3RA2711-0EE15** | |
| 3RA2910-0 | **Sealable covers** For 3RA27, 3RA28, 3RA29 | **3RA2910-0** | |
| **Operator panels**[1] | | | |
| 3RA6935-0A | **Operator panel (set)**, comprising: • 1 x operator panel • 1 x enabling module • 1 x interface cover • 1 x fixing terminal | **3RA6935-0A** | |
| 3RA2711-0EE11 | **Connection cable**, length 2 m, 10- to 14-pole For connecting the operator panel to the communication module | **3RA2711-0EE11** | |
| | Enabling modules (replacement) | **3RA6936-0A** | |
| | Interface covers (replacement) | **3RA6936-0B** | |

1) Suitable only for communication through IO-Link.

For manuals, see http://support.automation.siemens.com/WW/view/en/39319600.

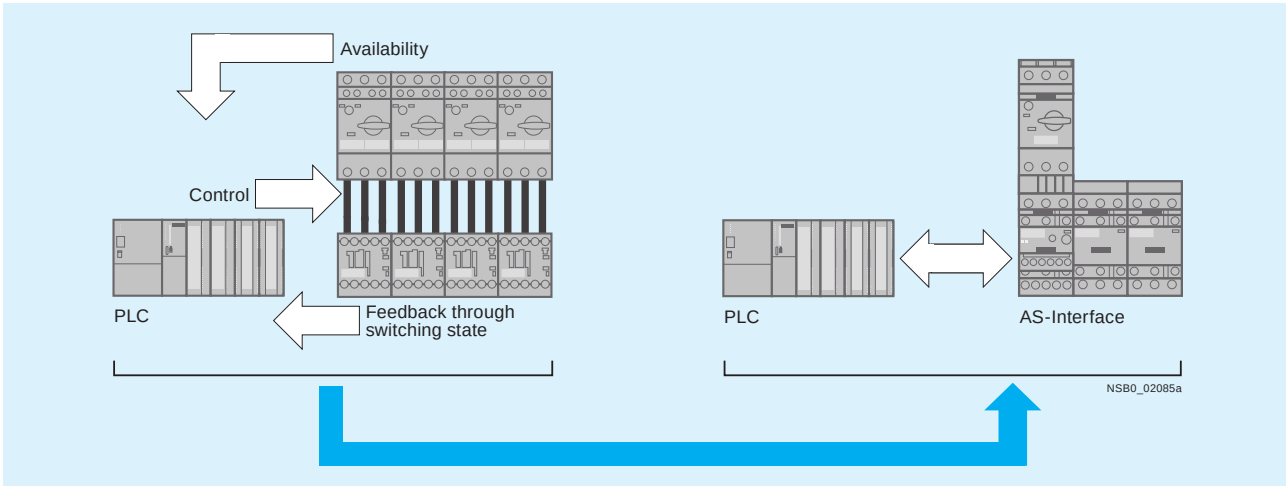
## Overview

The SIRIUS function modules for AS-Interface enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking. The electrical and mechanical connection to the contactor is established by snapping on and locking. An additional control circuit for the individual contactors can be eliminated with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions. Connection of the starters to the higher-level control system takes place through AS-Interface with the Specification V2.1 in A/B technology. As the result, up to 62 starters can be connected to one master and the address is entered in normal manner with an addressing unit.

Through the AS-Interface connection to the control system, a maximum of wiring is saved. The wiring outlay is reduced to the control supply voltage and the two individual wires for AS-Interface.

The following essential signals are transmitted:

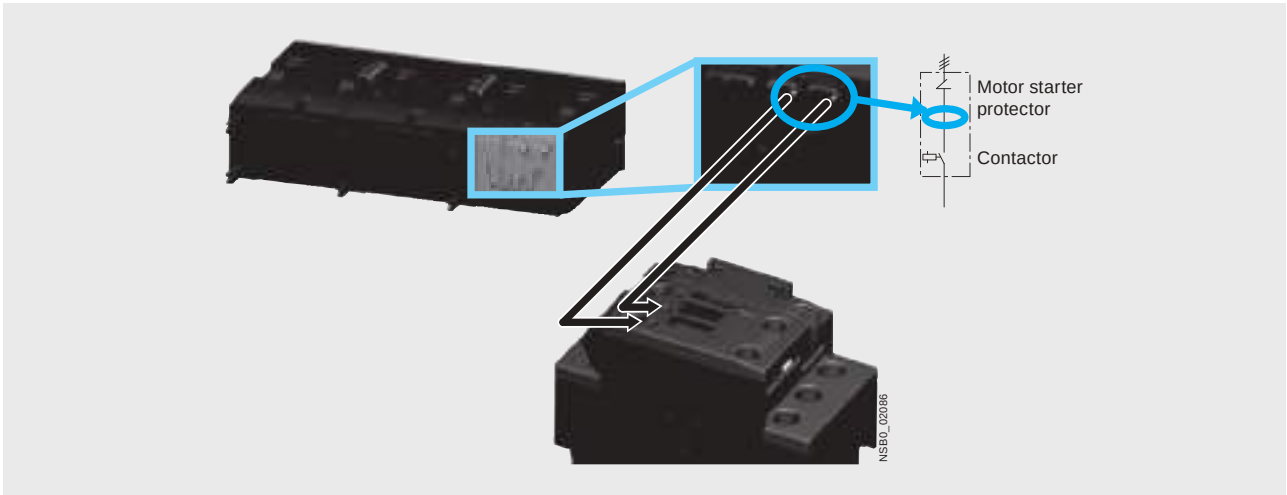
- Availability of the starter in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



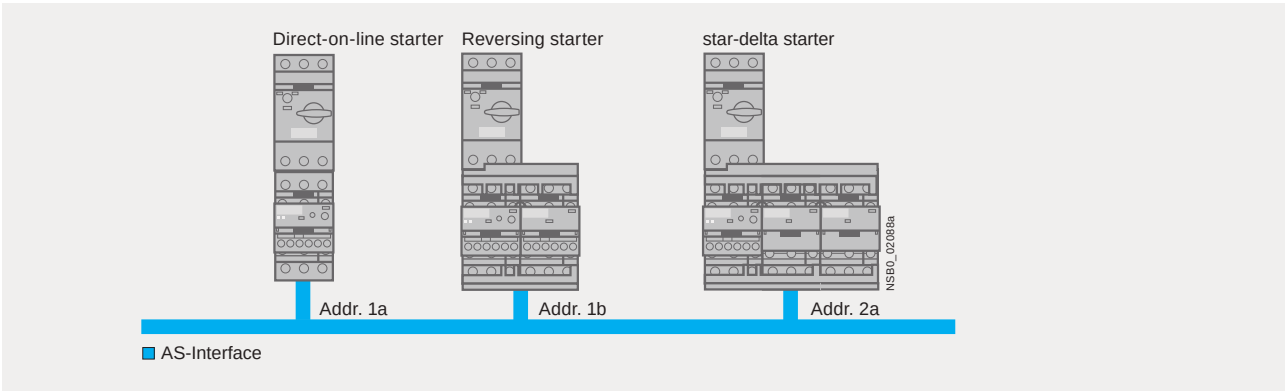

Signal transmission through AS-Interface

The inquiry from the motor starter protector does not take place through additional wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires use of communication versions of the contactors with communication interface (see page 2/32).




Availability signal through voltage pick-off




Topology with AS-Interface

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example, to a position switch. The input interrupts the voltage supply to the contactor coil directly, i. e. without going through the PLC. These terminals are jumpered in the as-delivered state.

## Application

The use of SIRIUS function modules with AS-Interface is recommended above all in machines and plants requiring easy connection of several different sensors and actuators both inside and outside the control cabinet to the higher-level control system. And with IO modules no longer needed, the width of the PLC is far smaller.

## Benefits

- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Elimination of IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additional control circuit required

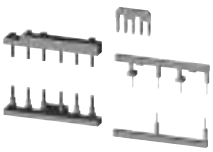
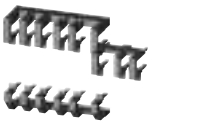
## Selection and ordering data

| | Version | Screw terminals | Spring-type terminals | Weight |
|---|---|---|---|---|
| | | Order No. | Order No. | kg |
| **Function modules for direct-on-line starting** | | | | |
| 3RA2712-1AA00 | **AS-Interface connection** | **3RA2712-1AA00** | **3RA2712-2AA00** | |
| 3RA2712-2AA00 | | | | |
| **Function modules for reversing starting**[1] | | | | |
| 3RA2712-1BA00 | **AS-Interface connection**, comprising one basic and one coupling module | **3RA2712-1BA00** | **3RA2712-2BA00** | |
| 3RA2712-2BA00 | | | | |
| 3RA2923-2AA1 | **Assembly kits for making 3-pole contactor assemblies** The assembly kit contains: mechanical interlock, 2 connecting clips for two contactors, wiring modules on the top and bottom | | | |
| | • For size S00 | **3RA2913-2AA1** | **3RA2913-2AA2** | |
| 3RA2923-2AA2 | • For size S0 | | | |
| | - For main, auxiliary and control current | **3RA2923-2AA1** | -- | |
| | - Only for main current | -- | **3RA2923-2AA2** | |
| | • For size S2 | | | |
| | - For main, auxiliary and control current | **3RA2933-2AA1** | -- | |
| | - Only for main current | -- | **3RA2933-2AA2** | |

Matching contactors with communications interface required; see page 2/32.

For matching AS-Interface masters, routers and power supply units, see Chapter 14 “Industrial Communication”.

1) For prewired contactor assemblies for reversing starting with communication interface, see pages 2/46 and 2/49. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

| | Version | Screw terminals | Spring-type terminals | Weight |
|---|---|---|---|---|
| | | Order No. | Order No. | kg |
| **Function modules for wye-delta starting**[1] | | | | |
| 3RA2712-1CA00 | **AS-Interface connection**, comprising one basic module and two coupling modules | **3RA2712-1CA00** | **3RA2712-2CA00** | |
| 3RA2712-2CA00 | | | | |
|  3RA2923-2BB1 | **Assembly kits for making 3-pole contactor assemblies** The assembly kit contains: mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom | | | |
| | • For size S00 | **3RA2913-2BB1** | **3RA2913-2BB2** | |
| | • For size S0 | | | |
| | - For main, auxiliary and control circuits | **3RA2923-2BB1** | **--** | |
| | - Only for main circuit | **--** | **3RA2923-2BB2** | |
|  3RA2923-2BB2 | • For size S2 | | | |
| | - For main, auxiliary and control circuits | **3RA2933-2BB1** | **--** | |
| | - Only for main circuit | **--** | **3RA2933-2BB2** | |

1) For complete contactor assemblies for wye-delta starting including function modules, see pages 2/53 and 2/54.

Matching contactors with communications interface required; see page 2/32.

For matching AS-Interface masters, routers and power supply units, see Chapter 14 “Industrial Communication”.

| | Version | Order No. | Weight |
|---|---|---|---|
| | | | kg |
| **Accessories** | | | |
| 3RA2711-0EE10 | **Module connector set**, comprising: • 2 module connectors, 14-pole, short • 2 interface covers | **3RA2711-0EE10** | |
| 3RA2711-0EE06 | **Module connectors** • 14-pole, 9 cm For size jump + 1 space | **3RA2711-0EE06** | |
| 3RA2711-0EE15 | **Interface covers** (Set of 5) | **3RA2711-0EE15** | |
| 3RA2910-0 | **Sealable covers** For 3RA27, 3RA28, 3RA29 | **3RA2910-0** | |

For manuals, see http://support.automation.siemens.com/WW/view/en/39318922.

## Technical specifications

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type | | | 3RA2811 | 3RA2831 | 3RA2812 | 3RA2832 | 3RA2816 | | |
| Can be used for size | | | S00, S0 | S2 | S00, S0 | S2 | S00, S0, S2 | | |
| Function | | | ON-delay | | OFF-delay with control signal | | Wye-delta function | | |
| **General data** | | | | | | | | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III | | V AC | 300 | | | | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV AC | 4 | | | | | | |
| **Operating range of excitation** | | | 0.85 ... 1.1 x $U_s$,<br>0.95 ... 1.05 times the rated frequency | | | | | | |
| **Overvoltage protection** | | | Varistor integrated | | | | | | |
| **Rated power** | | W | 1 | | | | 1 | | |
| • Power consumption at 230 V AC, 50 Hz | | VA | 1 | | | | 2 | | |
| **DIAZED protection** | Operational class gG | A | -- | | | | 4 | | |
| **Switching frequency** for load | | | | | | | | | |
| • With $I_e$ at 230 V AC | | $h^{-1}$ | 2 500 | | | | -- | | |
| • With 3RT2 contactor at 230 V AC | | $h^{-1}$ | 2 500 | | | | -- | | |
| **Recovery time** | | ms | 50 | | | | 150 | | |
| **Minimum ON period** | | ms | -- | | 35 | | -- | | |
| **Residual current** | Max. | mA | 5 | -- | | | -- | | |
| **Voltage drop**<br>With conducting output | Max. | VA | 3.5 | -- | | | -- | | |
| **Setting accuracy**<br>With reference to upper limit of scale | Typ. | | ±15 % | | | | | | |
| **Repeat accuracy** | Max. | | ±1 % | | | | | | |
| **Electrical endurance** | | | | | | | | | |
| • With 3RT2028 contactor | | Operating cycles | 100 000 | | | | -- | | |
| • At AC-15, 250 V, 3 A | | Operating cycles | -- | | | | 100 000 | | |
| **Mechanical endurance** | | Operating cycles | 100 x $10^6$ | | | | 10 x $10^6$ | | |
| **Permissible ambient temperature** | | | | | | | | | |
| • During operation | | °C | -25 ... +60 | | | | | | |
| • During storage | | °C | -40 ... +80 | | | | | | |
| **Degree of protection** acc. to IEC 60947-1, Appendix C | | | IP20 | | | | | | |
| **Shock resistance**<br>Half-sine acc. to IEC 60068-2-27 | | *g*/ms | 15/11 | | | | | | |
| **Vibration resistance**<br>According to IEC 60068-2-6 | | Hz/mm | 10 ... 55/0.35 | | | | | | |
| **Electromagnetic compatibility (EMC)** | | | IEC 61000-6-2, IEC 61000-6-4, IEC 61812-1, IEC 60947-4-1 | | | | | | |
| **Overvoltage protection** | | | Varistor integrated | | | | | | |
| **Permissible mounting position** | | | Any (see contactor) | | | | | | |
| **Conductor cross-sections** | | | | | | | | | |
| **Connection type**<br>(1 or 2 conductors can be connected) | | | **Screw terminals** | | | | | | |
| • Solid | | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | | | | -- | | |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5) | | | | -- | | |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) | | | | -- | | |
| • Terminal screws | | | M3 (for standard screw driver size 2 or Pozidriv 2) | | | | -- | | |
| • Tightening torque | | Nm | 0.8 ... 1.2 | | | | -- | | |
| **Connection type**<br>(1 or 2 conductors can be connected) | | | **Spring-type terminals** | | | | | | |
| • Operating devices | | mm | 3.0 x 0.5 | | | | -- | | |
| • Solid | | $mm^2$ | 2 x (0.25 ... 1.5) | | | | -- | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.25 ... 1.5) | | | | -- | | |
| • Finely stranded | | $mm^2$ | 2 x (0.25 ... 1.5) | | | | -- | | |
| • AWG cables, solid or stranded | | AWG | 2 x (24 ... 16) | | | | -- | | |

## Design

### *Complete equipment assemblies*

The fully wired reversing contactor assemblies are suitable for use in any climate. They are safe from touch to EN 50274.

The contactor assemblies each consist of two contactors with identical ratings. The contactors are mechanically and electrically interlocked (NC contact interlock). The main and control circuits are wired according to the circuit diagrams on page 2/206.

For motor protection, either 3RU2 or 3RB3 overload relays for direct mounting or individual mounting or thermistor motor protection tripping units must be ordered separately.

### *Components for customer assembly*

Installation kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays, the mechanical interlock and — for momentary-contact operation — auxiliary switch blocks for latching must be ordered separately

The following points should be noted:

Size S00

- For maintained-contact operation:
  use contactors with an NC contact in the basic unit for the electrical interlock.
- For momentary-contact operation:
  use contactors with an NC contact in the basic unit for the electrical interlock; in addition, an auxiliary switch block with at least one NO contact for latching is required per contactor.

Size S0 and S2

Contactors come equipped with integrated 1 NO and 1NC aux contacts in each contactor. Both electrical interlocking and latching are satisfied with the integrated auxiliaries. Mechanical interlocking is required in either size and comes in the assembly kits except for size S2 where you need to order 3RA2934-2B interlock separately.

Sizes S3

- For maintained-contact operation:
  the contactors have no auxiliary contact in the basic unit; NC contacts for the electrical interlock are therefore integrated in the mechanical interlock that can be mounted on the side of each contactor (one contact each for the left and right-hand contactors).
- For momentary-contact operation:
  the electrical interlock is the same as for maintained-contact operation; in addition, an auxiliary switch with one NO contact for latching is required per contactor. This contact can be snapped onto the top of the contactors. Alternatively, auxiliary switch blocks mounted on the side can be used; they must be fitted onto the outside of each contactor.

If the front-mounted mechanical interlock is used for size S2 to S3 contactors, two location holes for single-pole auxiliary switch blocks are provided on the front of each S2 contactor while three additional, single-pole auxiliary switch blocks can be snapped onto S3 contactors. The maximum auxiliary switch complements per contactor stated on page 2/15 must not be exceeded.

When size S3 contactors are combined with a frontmounted mechanical interlock, the 3RA19 33-2B and 3RA19 43-2B installation kits cannot be used.

Sizes S6 to S12

To insert the mechanical interlock, the prestamped location holes positioned opposite on the contactor must be knocked out. The internal auxiliary contacts (up to 1 NO + 1 NC per contactor) can be used for the electrical interlock and latching. The mechanical interlock itself does not contain any auxiliary contacts. Additional auxiliary contacts can be used on the outside and front (on the front in the case of 3RT10) of the reversing contactor assembly.

## Principle of operation

The operating times of the individual 3RT10/20 contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, providing they are interlocked via their auxiliary switches (NC contact interlock) and the operating mechanisms. An additional dead interval of 50 ms is necessary on reversing if the individual contactors are used at voltages > 500 V. The operating times of the individual contactors are not affected by the mechanical interlock.

## Surge suppression

Sizes S00 to S3

All contactor assemblies can be fitted with RC elements or varistors for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the front of the contactors (S00) or fitted onto the coil terminals on the top or bottom (S3). For sizes S0 and S2, the surge protection fits behind the hinged door on the front of the contactor and does not take up any additional space.

Sizes S6 to S12

The contactors are fitted with varistors as standard.

## Overview

The 3RA13 and 3RA23 reversing contactor assemblies can be ordered as follows:

Sizes S00 to S3

- Fully wired and tested, open type, with mechanical and electrical interlock. 1)

Sizes S00 to S12

- As components for customer assembly.

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

For overload relays for motor protection, see section 3.

The 3RA23 and 3RA13 contactor assemblies have screw connections and are available for screwing or snapping onto 35 mm standard mounting rails. The 3RA23 contactor assemblies are also available with spring-type terminals.

The cULus and UL approvals only apply to the complete contactor assemblies and not to the components for customer assembly.

***AC and DC operation***

See pages 2/46 through 2/50 for complete part numbers.

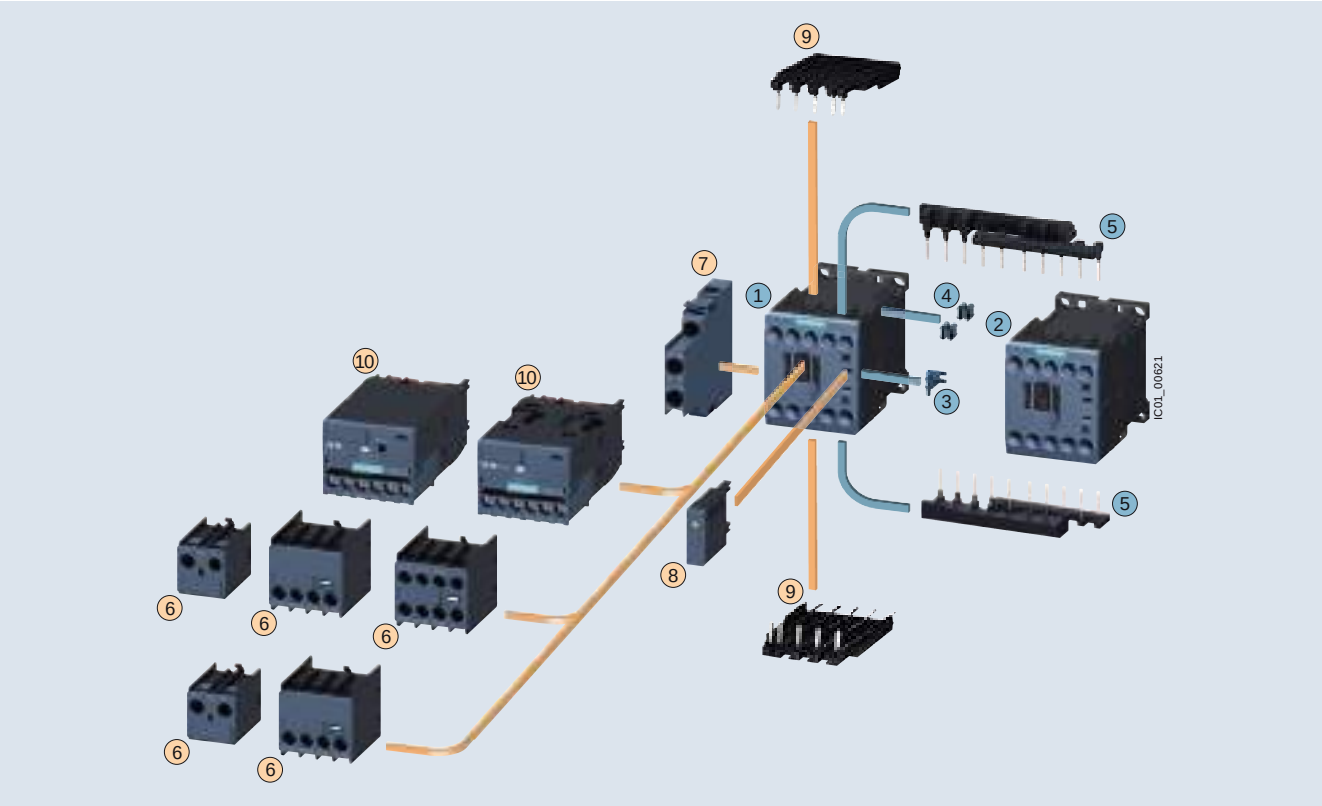
| Maximum horsepower rating at 460 V AC | AC-3 maximum inductive current | Size | Order No. | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Contactor | Mechanical interlock 2) | Mechanical interlock 3) | Mechanical interlock 4) | Installation kit | **Fully wired and tested contactor assembly** |
| **HP** | A | | | | | | | |
| **3** | 7 | **S00** | 3RT20 15 | 3RA29 13-2AA1 6) | – | – | 3RA29 13-2AA1 6) | **3RA23 15-8XB30- ...** |
| **5** | 9 | | 3RT20 16 | | | | | **3RA23 16-8XB30- ...** |
| **7.5** | 12 | | 3RT20 17 | | | | | **3RA23 17-8XB30- ...** |
| **10** | 16 | | 3RT20 18 | | | | | **3RA23 18-8XB30- ...** |
| **7.5** | 12 | **S0** | 3RT20 24 | 3RA29 23-2AA1 6) | – | – | 3RA29 23-2AA1 6) | **3RA23 24-8XB30- ...** |
| **10** | 16 | | 3RT20 25 | | | | | **3RA23 25-8XB30- ...** |
| **15** | 25 | | 3RT20 26 | | | | | **3RA23 26-8XB30- ...** |
| **20** | 32 | | 3RT20 27 | | | | | **3RA23 27-8XB30- ...** |
| **25** | 38 | | 3RT20 28 | | | | | **3RA23 28-8XB30- ...** |
| **30** | 40 | **S2** | 3RT20 35 | 3RA29 34-2B | – | – | 3RA29 33-2AA1 7) | **3RA23 35-8XB30-1..** |
| **40** | 50 | | 3RT20 36 | | | | | **3RA23 36-8XB30-1..** |
| **50** | 65 | | 3RT20 37 | | | | | **3RA23 37-8XB30-1..** |
| **50** | 80 | | 3RT20 38 | | | | | **3RA23 38-8XB30-1..** |
| **50** | 65 | **S3** | 3RT20 45 | 3RA29 34-2B | – | – | 3RA29 43-2AA1 8) | **3RA23 45-8XB30-1..** |
| **60** | 80 | | 3RT20 46 | | | | | **3RA23 46-8XB30-1..** |
| **75** | 95 | | 3RT20 47 | | | | | **3RA23 47-8XB30-1..** |
| **100** | 115 | **S6** | 3RT10 54 | – | – | 3RA19 54-2A | 3RA19 53-2A 9) | – |
| **125** | 150 | | 3RT10 55 | | | | | |
| **150** | 185 | | 3RT10 56 | | | | | |
| **150** | 225 | **S10** | 3RT10 64 | – | – | 3RA19 54-2A | 3RA19 63-2A 9) | – |
| **200** | 265 | | 3RT10 65 | | | | | |
| **250** | 300 | | 3RT10 66 | | | | | |
| **300** | 400 | **S12** | 3RT10 75 | – | – | 3RA19 54-2A | 3RA19 73-2A 9) | – |
| **400** | 500 | | 3RT10 76 | | | | | |

For accessories, see page 2/86-2/89.
For circuit diagrams, see page 2/206.
For dimension drawings, see page 2/226-2/228.

1) An additional dead interval of 50 ms is necessary on reversing at voltages > 500 V.
2) Laterally mountable with one auxiliary contact (except no auxiliary contact in S2 & S3)
3) For front mounting with one auxiliary contact.
4) Laterally mountable without auxiliary contact.
5) Interlock must be ordered with installation kit.
6) Installation kit contains: mechanical interlock; 2 connecting clips for 2 contactors; wiring connectors on the top and bottom.
7) Installation kit contains: 2 connecting clips for 2 contactors; wiring connectors on the top and bottom and the mechanical interlock.
8) Installation kit contains: 2 connecting clips for 2 contactors; wiring connectors on the top and bottom.
9) Installation kit contains: wiring connector on the top and bottom.

***Fully wired and tested reversing contactor assemblies · Size S00 – Up to 10 HP***

The figure shows the version with screw terminals




## Mountable accessories (optional)

| To be ordered separately | | Type |
|---|---|---|
| 6 | Auxiliary switch block, front[1] | 3RH2911 |
| 7 | Auxiliary switch block, lateral | 3RH2921 |
| 8 | Surge suppressors | 3RT2916 |
| 9 | Solder pin adapters | 3RT1916-4KA1 |
| 10 | Function module for connection to the control system | 3RA271.-1BA00 |

## Complete reversing contactor assembly

| Individual parts | | Type Q11 | Type Q12 |
|---|---|---|---|
| 1 2 | Contactors, 3 kW | 3RT2015 | 3RT2015 |
| 1 2 | Contactors, 4 kW | 3RT2016 | 3RT2016 |
| 1 2 | Contactors, 5.5 kW | 3RT2017 | 3RT2017 |
| 1 2 | Contactors, 7.5 kW | 3RT2018 | 3RT2018 |
| 3 ... 5 | Assembly kit comprising: | 3RA2913-2AA1 | |
| | 3 Mechanical interlock[2] | | |
| | 4 Two connecting clips for two contactors[2] | | |
| | 5 Wiring modules on the top and bottom for connecting the main current circuits, electrical interlock included[3], interruptible (NC contact interlock) | | |

1) Auxiliary switch block according to EN 50005 must be used.

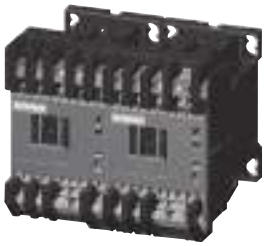
2) The parts 3 and 4 can only be ordered together as 3RA2912-2H mechanical connectors.

3) 3RT201. contactors with one NC contact in the basic unit are required for the electrical interlock. An additional NO contact is required for momentary-contact operation.

## *Fully wired and tested contactor assemblies[2] · Size S00 · Up to 10 HP*

3RA23 18-8XE30-1BB4

3RA23 1.-8XB30-1A..



3RA23 1.-8XB30-2A..

| AC data | | | UL data | | | | | | | Screw terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amp ratings | Single-phase HP ratings | | Three-phase HP ratings | | | | Rated control supply voltage $U_s$ at 50/60 Hz | Auxiliary contacts | | Spring-type terminals | |
| AC2/AC3 | 115 V | 230 V | 200 V | 230 V | **460 V** | 575 V | | NO | NC | Order No. | |
| | | | | | | | V | | | | kg |
| **AC operation, 50/60 Hz** | | | | | | | | | | | |
| ***Size S00[1]*** | | | | | | | | | | | |
| 7 | 1/4 | 3/4 | 1 1/2 | 2 | 3 | 5 | 24 AC | 0 | 2 | **3RA23 15-8XB30-□AB0** | 0.46/0.50 |
| 7 | 1/4 | 3/4 | 1 1/2 | 2 | 3 | 5 | 110/120 AC | 0 | 2 | **3RA23 15-8XB30-□AK6** | 0.46/0.50 |
| 7 | 1/4 | 3/4 | 1 1/2 | 2 | 3 | 5 | 220/240 AC | 0 | 2 | **3RA23 15-8XB30-□AP6** | 0.46/0.50 |
| 9 | 1/3 | 1 | 2 | 3 | 5 | 7 1/2 | 24 AC | 0 | 2 | **3RA23 16-8XB30-□AB0** | 0.46/0.50 |
| 9 | 1/3 | 1 | 2 | 3 | 5 | 7 1/2 | 110/120 AC | 0 | 2 | **3RA23 16-8XB30-□AK6** | 0.46/0.50 |
| 9 | 1/3 | 1 | 2 | 3 | 5 | 7 1/2 | 220/240 AC | 0 | 2 | **3RA23 16-8XB30-□AP6** | 0.46/0.50 |
| 12 | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 24 AC | 0 | 2 | **3RA23 17-8XB30-□AB0** | 0.46/0.50 |
| 12 | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 110/120 AC | 0 | 2 | **3RA23 17-8XB30-□AK6** | 0.46/0.50 |
| 12 | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 220/240 AC | 0 | 2 | **3RA23 17-8XB30-□AP6** | 0.46/0.50 |
| 16 | 1 | 2 | 3 | 5 | 10 | 10 | 24 AC | 0 | 2 | **3RA23 18-8XB30-□AB0** | 0.46/0.50 |
| 16 | 1 | 2 | 3 | 5 | 10 | 10 | 110/120 AC | 0 | 2 | **3RA23 18-8XB30-□AK6** | 0.46/0.50 |
| 16 | 1 | 2 | 3 | 5 | 10 | 10 | 220/240 AC | 0 | 2 | **3RA23 18-8XB30-□AP6** | 0.46/0.50 |
| **DC operation** | | | | | | | | | | | |
| 7 | 1/4 | 3/4 | 1 1/2 | 2 | 3 | 5 | 24 DC | 0 | 2 | **3RA23 15-8XB30-□BB4** | 0.58/0.62 |
| 9 | 1/3 | 1 | 2 | 3 | 5 | 7 1/2 | 24 DC | 0 | 2 | **3RA23 16-8XB30-□BB4** | 0.58/0.62 |
| 12 | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 24 DC | 0 | 2 | **3RA23 17-8XB30-□BB4** | 0.58/0.62 |
| 16 | 1 | 2 | 3 | 5 | 10 | 10 | 24 DC | 0 | 2 | **3RA23 18-8XB30-□BB4** | 0.58/0.62 |
| **With communication interface[3]** | | | | | | | | | | | |
| 7 | 1/4 | 3/4 | 1 1/2 | 2 | 3 | 5 | 24 DC | 0 | 2 | **3RA23 15-8XE30-□BB4** | 0.58/0.62 |
| 9 | 1/3 | 1 | 2 | 3 | 5 | 7 1/2 | 24 DC | 0 | 2 | **3RA23 16-8XE30-□BB4** | 0.58/0.62 |
| 12 | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 24 DC | 0 | 2 | **3RA23 17-8XE30-□BB4** | 0.58/0.62 |
| 16 | 1 | 2 | 3 | 5 | 10 | 10 | 24 DC | 0 | 2 | **3RA23 18-8XE30-□BB4** | 0.58/0.62 |

| | |
|---|---|
| Screw terminals | **1** |
| Spring-loaded terminals | **2** |

For other voltages see page 2/55

For accessories and spare parts, see page 2/72-2/89.

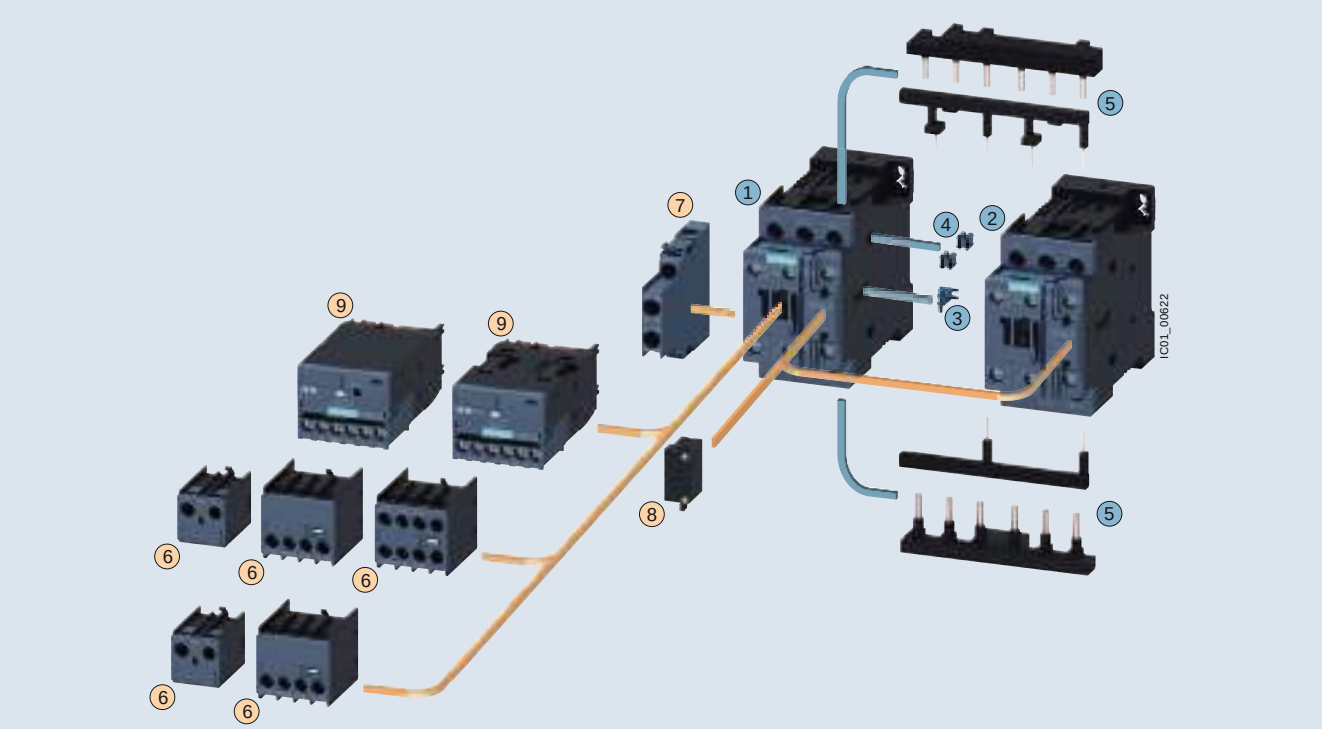
1) For coil operating range, see page 2/55.

2) The contactors integrated in the contactor assemblies have no unassigned auxiliary contacts.

3) For use with 3RA27 and 3RA28 communication modules. See pages 2/30 to 2/37.

***Fully wired and tested reversing contactor assemblies · Size S0 – Up to 25 HP***

The figure shows the version with screw terminals




## Mountable accessories (optional)

| To be ordered separately | Type |
|---|---|
| (6) Auxiliary switch block, front | 3RH2911 |
| (7) Auxiliary switch block, lateral | 3RH2921 |
| (8) Surge suppressors | 3RT2926 |
| (9) Function module for connection to the control system | 3RA271.-1BA00 |

[1] The parts (3) and (4) can only be ordered together as 3RA2922-2H mechanical connectors.

## Complete reversing contactor assembly

| Individual parts | | Type Q11 | Type Q12 |
|---|---|---|---|
| (1)(2) | Contactors, 5.5 kW | 3RT2024 | 3RT2024 |
| (1)(2) | Contactors, 7.5 kW | 3RT2025 | 3RT2025 |
| (1)(2) | Contactors, 11 kW | 3RT2026 | 3RT2026 |
| (1)(2) | Contactors, 15 kW | 3RT2027 | 3RT2027 |
| (1)(2) | Contactors, 18.5 kW | 3RT2028 | 3RT2028 |
| (3) ... (5) | Assembly kit comprising: | 3RA2923-2AA1 | |
| | (3) Mechanical interlock[1] | | |
| | (4) Two connecting clips for two contactors[1] | | |
| | (5) Wiring modules on the top and bottom for connecting the main current circuits, electrical interlock included (NC contact interlock) | | |

## *Fully wired and tested contactor assemblies · Size S0 · up to 25 HP*

3RA23 24-8XE30-1BB4

3RA23 2.-8XB30-1A..

3RA23 2.-8XB30-2A..

| AC data | UL data | | | | | | | | | Screw terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amp ratings | Single-phase HP ratings | | Three-phase HP ratings | | | | Rated control supply voltage $U_s$ at 50/60 Hz | Auxiliary contacts | | Spring-type terminals | |
| AC2/AC3 | 115 V | 230 V | 200 V | 230 V | **460 V** | 575 V | | NO | NC | Order No. | |
| | | | | | | | V | | | | kg |
| **AC operation, 50/60 Hz** | | | | | | | | | | | |
| ***Size S0***[1] | | | | | | | | | | | |
| 12 | 1 | 2 | 3 | 3 | 7 1/2 | 10 | 24 AC | 2 | 2 | **3RA23 24-8XB30-□AC2** | 0.84/0.94 |
| 12 | 1 | 2 | 3 | 3 | 7 1/2 | 10 | 110/120 AC | 2 | 2 | **3RA23 24-8XB30-□AK6** | 0.84/0.94 |
| 12 | 1 | 2 | 3 | 3 | 7 1/2 | 10 | 220/240 AC | 2 | 2 | **3RA23 24-8XB30-□AP6** | 0.84/0.94 |
| 16 | 1 | 3 | 5 | 5 | 10 | 15 | 24 AC | 2 | 2 | **3RA23 25-8XB30-□AC2** | 0.84/0.94 |
| 16 | 1 | 3 | 5 | 5 | 10 | 15 | 110/120 AC | 2 | 2 | **3RA23 25-8XB30-□AK6** | 0.84/0.94 |
| 16 | 1 | 3 | 5 | 5 | 10 | 15 | 220/240 AC | 2 | 2 | **3RA23 25-8XB30-□AP6** | 0.84/0.94 |
| 25 | 2 | 3 | 7 1/2 | 7 1/2 | 15 | 20 | 24 AC | 2 | 2 | **3RA23 26-8XB30-□AC2** | 0.84/0.94 |
| 25 | 2 | 3 | 7 1/2 | 7 1/2 | 15 | 20 | 110/120 AC | 2 | 2 | **3RA23 26-8XB30-□AK6** | 0.84/0.94 |
| 25 | 2 | 3 | 7 1/2 | 7 1/2 | 15 | 20 | 220/240 AC | 2 | 2 | **3RA23 26-8XB30-□AP6** | 0.84/0.94 |
| 32 | 2 | 5 | 10 | 10 | 20 | 25 | 24 AC | 2 | 2 | **3RA23 27-8XB30-□AC2** | 0.84/0.94 |
| 32 | 2 | 5 | 10 | 10 | 20 | 25 | 110/120 AC | 2 | 2 | **3RA23 27-8XB30-□AK6** | 0.84/0.94 |
| 32 | 2 | 5 | 10 | 10 | 20 | 25 | 220/240 AC | 2 | 2 | **3RA23 27-8XB30-□AP6** | 0.84/0.94 |
| 38 | 3 | 5 | 10 | 10 | 25 | 25 | 24 AC | 2 | 2 | **3RA23 28-8XB30-□AC2** | 0.84/0.94 |
| 38 | 3 | 5 | 10 | 10 | 25 | 25 | 110/120 AC | 2 | 2 | **3RA23 28-8XB30-□AK6** | 0.84/0.94 |
| 38 | 3 | 5 | 10 | 10 | 25 | 25 | 220/240 AC | 2 | 2 | **3RA23 28-8XB30-□AP6** | 0.84/0.94 |
| **DC operation** | | | | | | | | | | | |
| 12 | 1 | 2 | 3 | 3 | 7 1/2 | 10 | 24 DC | 2 | 2 | **3RA23 24-8XB30-□BB4** | 1.22/1.32 |
| 16 | 1 | 3 | 5 | 5 | 10 | 15 | 24 DC | 2 | 2 | **3RA23 25-8XB30-□BB4** | 1.22/1.32 |
| 25 | 2 | 3 | 7 1/2 | 7 1/2 | 15 | 20 | 24 DC | 2 | 2 | **3RA23 26-8XB30-□BB4** | 1.22/1.32 |
| 32 | 2 | 5 | 10 | 10 | 20 | 25 | 24 DC | 2 | 2 | **3RA23 27-8XB30-□BB4** | 1.22/1.32 |
| 38 | 3 | 5 | 10 | 10 | 25 | 25 | 24 DC | 2 | 2 | **3RA23 28-8XB30-□BB4** | 1.22/1.32 |
| **With communication interface**[2] | | | | | | | | | | | |
| 12 | 1 | 2 | 3 | 3 | 7 1/2 | 10 | 24 DC | 2 | 2 | **3RA23 24-8XE30-□BB4** | 1.22/1.32 |
| 16 | 1 | 3 | 5 | 5 | 10 | 15 | 24 DC | 2 | 2 | **3RA23 25-8XE30-□BB4** | 1.22/1.32 |
| 25 | 2 | 3 | 7 1/2 | 7 1/2 | 15 | 20 | 24 DC | 2 | 2 | **3RA23 26-8XE30-□BB4** | 1.22/1.32 |
| 32 | 2 | 5 | 10 | 10 | 20 | 25 | 24 DC | 2 | 2 | **3RA23 27-8XE30-□BB4** | 1.22/1.32 |
| 38 | 3 | 5 | 10 | 10 | 25 | 25 | 24 DC | 2 | 2 | **3RA23 28-8XE30-□BB4** | 1.22/1.32 |

| | |
|---|---|
| Screw terminals | **1** |
| Spring-loaded terminals | **2** |

For other voltages see page 2/55.

For accessories and spare parts, see page 2/72-2/89.

1) For coil operating range, see page 2/55.

2) For use with 3RA27 and 3RA28 communication modules. See pages 2/30 to 2/37.

## Selection and ordering data

For Reversing Contactors with communication interface: replace the 8XB30-1NB3 with 8XE30-1NB3.

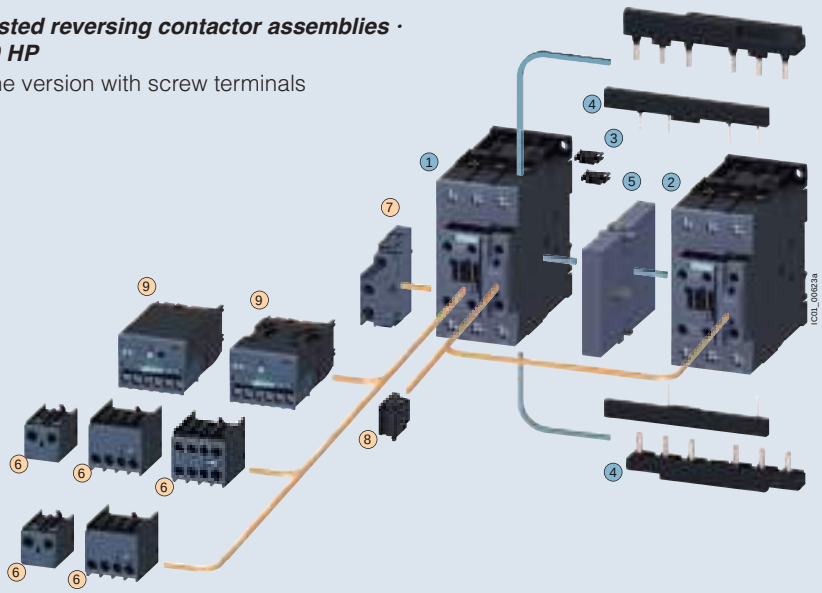
### *Size S2 · up to 50 HP*

| AC data Amp ratings AC2/AC3 | UL data Single-phase HP ratings | | Three-phase HP ratings | | | | Rated control supply voltage [1] | Auxiliary contacts | | Screw Terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 115 V | 230 V | 200 V | 230 V | **460 V** | 575 V | | | | | |
| A | HP | HP | HP | HP | **HP** | HP | | NO | NC | Order No. | kg |
| **AC operation** | | | | | | | | | | | |
| 40 | 3 | 7.5 | 10 | 15 | **30** | 40 | 24 V, 50/60 Hz | 2 | 2 | **3RA2335-8XB30-1AC2** | 1.72 |
| | | | | | | | 120 V, 60 Hz | 2 | 2 | **3RA2335-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 2 | 2 | **3RA2335-8XB30-1AP6** | |
| 50 | 3 | 10 | 15 | 15 | **40** | 50 | 24 V, 50/60 Hz | 2 | 2 | **3RA2336-8XB30-1AC2** | 1.72 |
| | | | | | | | 120 V, 60 Hz | 2 | 2 | **3RA2336-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 2 | 2 | **3RA2336-8XB30-1AP6** | |
| 65 | 5 | 10 | 20 | 20 | **50** | 50 | 24 V, 50/60 Hz | 2 | 2 | **3RA2337-8XB30-1AC2** | 2.548 |
| | | | | | | | 120 V, 60 Hz | 2 | 2 | **3RA2337-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 2 | 2 | **3RA2337-8XB30-1AP6** | |
| 80 [1] | 5 | 15 | 20 | 25 | **50** | 60 | 24 V, 50/60 Hz | 2 | 2 | **3RA2338-8XB30-1AC2** | 2.548 |
| | | | | | | | 120 V, 60 Hz | 2 | 2 | **3RA2338-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 2 | 2 | **3RA2338-8XB30-1AP6** | |
| **AC/DC operation** | | | | | | | | | | | |
| 40 | 3 | 7.5 | 10 | 15 | **30** | 40 | 20-33 AC/DC | 2 | 2 | **3RA2335-8XB30-1NB3** | 2.5 |
| 50 | 3 | 10 | 15 | 15 | **40** | 50 | 20-33 AC/DC | 2 | 2 | **3RA2336-8XB30-1NB3** | |
| 65 | 5 | 10 | 20 | 20 | **50** | 50 | 20-33 AC/DC | 2 | 2 | **3RA2337-8XB30-1NB3** | |
| 80 [1] | 5 | 15 | 20 | 25 | **50** | 60 | 20-33 AC/DC | 2 | 2 | **3RA2338-8XB30-1NB3** | |

1) Max UL FLA = 65A at 460V

***Fully wired and tested reversing contactor assemblies · Size S2 · Up to 50 HP***

The figure shows the version with screw terminals




### Mountable accessories (optional)

| To be ordered separately | Type |
|---|---|
| (6) Auxiliary switch block, front | 3RH2911 |
| (7) Auxiliary switch block, lateral | 3RH2921 |
| (8) Surge suppressors | 3RT2936 |
| (9) Function module for connection to the control system | 3RA271.-1BA00 |

For further voltages, see page 2/55.
For overview, see page 2/43-2/44.
For accessories, see page 2/72-2/89.
For circuit diagrams, see page 2/207.
For dimension drawings, see page 2/226.

**Coil voltage tolerance:**
at 50Hz: 0.8 to 1.1 x Us
at 60Hz: 0.85 to 1.1 x Us
at AC/DC: 0.8 to 1.1 x Us

### Complete reversing contactor assembly

| Individual parts | | Type Q11 | Type Q12 |
|---|---|---|---|
| (1)(2) | Contactors, 18.5 kW | 3RT2035 | 3RT2035 |
| (1)(2) | Contactors, 22 kW | 3RT2036 | 3RT2036 |
| (1)(2) | Contactors, 30 kW | 3RT2037 | 3RT2037 |
| (1)(2) | Contactors, 37 kW | 3RT2038 | 3RT2038 |
| (3)(4) | Assembly kit comprising: | 3RA2933-2AA1 | |
| | (3) Two connectors for two contactors | | |
| | (4) Wiring modules on the top and bottom for connecting the main and auxiliary current circuits, electrical interlock included (NC contact interlock) | | |
| (5) | Mechanical interlock (must be ordered separately) | 3RA2934-2B | |

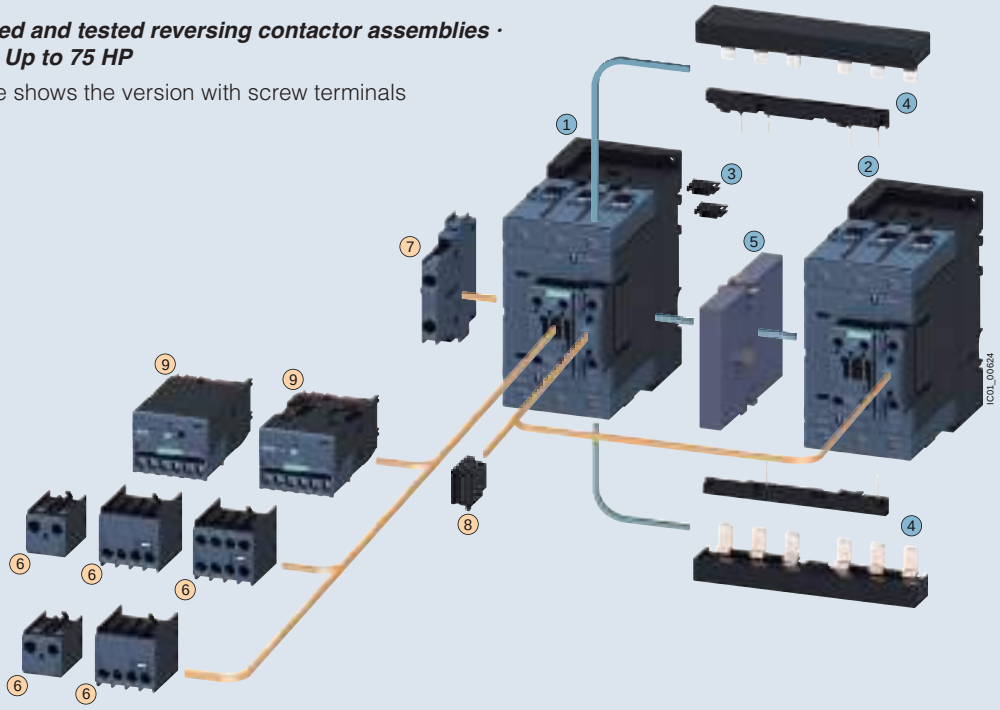
## Selection and ordering data

### *Size S3 · up to 75 HP*

| AC data Amp ratings AC2/AC3 | UL data Single-phase HP ratings | | Three-phase HP ratings | | | | Rated control supply voltage [1] | Auxiliary contacts | | Fully wired and tested contactor assembly | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 115 V | 230 V | 200 V | 230 V | **460 V** | 575 V | | | | | |
| A | HP | HP | HP | HP | **HP** | HP | | NO | NC | Order No. | kg |
| **AC operation** | | | | | | | | | | | |
| 80 | 5 | 15 | 20 | 25 | **50** | 60 | 24 V, 50/60 Hz | 0 | 2 | **3RA2345-8XB30-1AC2** | 3.9 |
| | | | | | | | 120 V, 60 Hz | 0 | 2 | **3RA2345-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 0 | 2 | **3RA2345-8XB30-1AP6** | |
| 95 | 7.5 | 15 | 25 | 30 | **60** | 75 | 24 V, 50/60 Hz | 0 | 2 | **3RA2346-8XB30-1AC2** | 3.9 |
| | | | | | | | 120 V, 60 Hz | 0 | 2 | **3RA2346-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 0 | 2 | **3RA2346-8XB30-1AP6** | |
| 110 | 10 | 20 | 30 | 30 | **75** | 100 | 24 V, 50/60 Hz | 0 | 2 | **3RA2347-8XB30-1AC2** | 3.9 |
| | | | | | | | 120 V, 60 Hz | 0 | 2 | **3RA2347-8XB30-1AK6** | |
| | | | | | | | 240 V, 60 Hz | 0 | 2 | **3RA2347-8XB30-1AP6** | |
| **AC/DC operation** | | | | | | | | | | | |
| 80 | 5 | 15 | 20 | 25 | **50** | 60 | 20-33 V AC/DC | 0 | 2 | **3RA2345-8XB30-1NB3** | 5.7 |
| 95 | 7.5 | 15 | 25 | 30 | **60** | 75 | 20-33 V AC/DC | 0 | 2 | **3RA2346-8XB30-1NB3** | |
| 110 | 10 | 20 | 30 | 30 | **75** | 100 | 20-33 V AC/DC | 0 | 2 | **3RA2347-8XB30-1NB3** | |

***Fully wired and tested reversing contactor assemblies · Size S3 · Up to 75 HP***

The figure shows the version with screw terminals




### Mountable accessories (optional)

| To be ordered separately | Type |
|---|---|
| (11) Auxiliary switch block, front | 3RH2911 |
| (12) Auxiliary switch block, lateral | 3RH2921 |
| (13) Surge suppressors | 3RT2936 |
| (14) Function module for connection to the control system (the associated module connectors 3RA2711-0EE17 must be ordered separately | 3RA271.-1BA00 |

For further voltages, see page 2/55.
For overview, see page 2/43-2/44.
For accessories, see page 2/72-2/89.
For circuit diagrams, see page 2/207.
For dimension drawings, see page 2/226.

1) Coil voltage tolerance
at 50 Hz: 0.8 ... 1.1 x $U_s$
at 60 Hz: 0.85 ... 1.1 x $U_s$

### Complete reversing contactor assembly

| Individual parts | Type Q11 | Q12 |
|---|---|---|
| (1)(2) Contactors, 37 kW | 3RT2045 | 3RT2045 |
| (1)(2) Contactors, 45 kW | 3RT2046 | 3RT2046 |
| (1)(2) Contactors, 55 kW | 3RT2047 | 3RT2047 |
| (3)(4) Assembly kit comprising: | 3RA2943-2AA1 | |
| (3) Two connectors for two contactors | | |
| (4) Wiring modules on the top and bottom for connecting the main and auxiliary current circuits, electrical interlock included (NC contact interlock) | | |
| (5) Mechanical interlock (must be ordered separately) | 3RA2934-2B | |

## Overview

These 3RA24 contactor assemblies for wye-delta starting are designed for standard applications.

*Note:*
*Contactor assemblies for wye-delta starting in special applications such as very heavy starting or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.*

The 3RA24 contactor assemblies for wye-delta starting can be ordered as follows:

Sizes S00 and S0

- Fully wired and tested, with electrical and mechanical interlock.
- As individual parts for customer assembly.

A dead interval of 50 ms on reversing is already integrated in the function module for wye-delta starting.

There is also a range of accessories (lateral auxiliary switch blocks, etc.) that must be ordered separately.

For overload relays for motor protection see Chapter 3 "Overload Relays" --> "3RB3 Solid-State Overload Relays".

The 3RA24 contactor assemblies have screw or spring-type terminals and are suitable for screwing or snapping onto TH 35 standard mounting rails.

With the fully wired and tested 3RA24 contactor assemblies, the auxiliary contacts included in the basic devices are unassigned.

### *Motor protection*

Overload relays or thermistor motor protection releases can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

### *Surge suppression*

Sizes S00 and S0

Surge suppression (varistor) is included in the function modules for wye-delta starting.

### *Function modules for wye-delta starting*

The 3RA28 16-0EW20 wye-delta function module (see page 2/33 replaces the complete wiring in the control circuit and can be used in the voltage range from 24 to 240 V AC/DC. It is snapped onto the front of the contactor assembly size S00 or S0.

One function module comprises a complete module kit:

- One 3RA29 12-0 basic module with integrated control logic and time setting,
- And two 3RA29 11-0 coupling modules with related connecting cables.

The scope of supply comprises a complete module kit for one contactor assembly for wye-delta starting size S00 or S0, regardless of the connection method.

Screw terminals

| Rated data at AC 50 Hz 400 V | | | Size | | | |
|---|---|---|---|---|---|---|
| **Power** | Operational current $I_e$ | Motor current | | Line/delta contactor | Star contactor | **Order No. complete** |
| **kW** | A | A | | | | |
| **5.5** | 12 | 9.5 ... 13.8 | **S00-S00-S00** | 3RT2015-1.... | 3RT2015-1.... | **3RA2415-8XF32-1...** |
| **7.5** | 16 | 12.1 ... 17 | | 3RT2017-1.... | 3RT2015-1.... | **3RA2416-8XF32-1...** |
| **11** | 25 | 19 ... 25 | | 3RT2018-1.... | 3RT2016-1.... | **3RA2417-8XF32-1...** |
| **11** | 25 | 19 ... 25 | **S0-S0-S0** | 3RT2024-1...0 | 3RT2024-1...0 | **3RA2423-8XF32-1...** |
| **15** | 32 | 24.1 ... 34 | | 3RT2026-1...0 | 3RT2024-1...0 | **3RA2425-8XF32-1...** |
| **18.5** | 40 | 34.5 ... 40 | | 3RT2026-1...0 | 3RT2024-1...0 | **3RA2425-8XF32-1...** |
| **22** | 50 | 31 ... 43 | | 3RT2027-1...0 | 3RT2026-1...0 | **3RA2426-8XF32-1...** |
| **22/30** | 50 | 31 ... 43 | **S2-S2-S0** | 3RT2035-1...0 | 3RT2026-1...0 | **3RA2434-8XF32-1...** |
| **37** | 80 | 62.1 ...77.8 | | 3RT2035-1...0 | 3RT2027-1...0 | **3RA2435-8XF32-1...** |
| **45** | 86 | 69 ... 86 | | 3RT2036-1...0 | 3RT2028-1...0 | **3RA2436-8XF32-1...** |
| **55** | 115 | 77.6 ...108.6 | **S2-S2-S2** | 3RT2037-1...0 | 3RT2035-1...0 | **3RA2444-8XF32-1...** |
| **75** | 150 | 120.7 ... 150 | | 3RT2045-1...0 | 3RT2036-1...0 | **3RA2445-8XF32-1...** |
| **90** | 160 | 86 ... 160 | | 3RT2046-1...0 | 3RT2037-1...0 | **3RA2446-8XF32-1...** |

Spring-type terminals

| Rated data at AC 50 Hz 400 V | | | Size | | | |
|---|---|---|---|---|---|---|
| **Power** | Operational current $I_e$ | Motor current | | Line/delta contactor | Star contactor | **Order No. complete** |
| **kW** | A | A | | | | |
| **5.5** | 12 | 9.5 ... 13.8 | **S00-S00-S00** | 3RT2015-2.... | 3RT2015-2.... | **3RA24 15-8XF31-2...** |
| **7.5** | 16 | 12.1 ... 17 | | 3RT2017-2.... | 3RT2015-2.... | **3RA24 16-8XF31-2...** |
| **11** | 25 | 19 ... 25 | | 3RT2018-2.... | 3RT2016-2.... | **3RA24 17-8XF31-2...** |
| **11** | 25 | 19 ... 25 | **S0-S0-S0** | 3RT2024-2....0 | 3RT2024-2....0 | **3RA24 23-8XF32-2...** |
| **15** | 32 | 24.1 ... 34 | | 3RT2026-2....0 | 3RT2024-2....0 | **3RA24 25-8XF32-2...** |
| **18.5** | 40 | 34.5 ... 40 | | 3RT2026-2....0 | 3RT2024-2....0 | **3RA24 25-8XF32-2...** |
| **25** | 50 | 31 ... 43 | | 3RT2027-2....0 | 3RT2026-2....0 | **3RA24 26-8XF32-2...** |

*Note:*

*The selection of contactor types refers to fused configurations.*

### *Components for customer assembly*

Assembly kits with wiring modules and mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, function modules for wye-delta starting or wye-delta timing relays, auxiliary switches for electrical interlock – if required also feeder terminals and base plates – must be ordered separately.

The wiring kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta contactors (top) and between the delta and star contactors (bottom).

Control circuit

Features:
- Time setting range 0.5 to 60 s (3 selectable settings)
- Wide voltage range 24 to 240 V AC/DC
- Dead interval of 50 ms, non-adjustable.

Screw terminals

| | Accessories for customer assembly | | | Overload relay, thermal (trip class CLASS 10) | | Overload relay, solid-state (trip class CLASS 10) | |
|---|---|---|---|---|---|---|---|
| **Power** | Function modules for wye-delta starting | Assembly kit B, for single infeed | Star jumper | Setting range | Order No. | Setting range | Order No. |
| **kW** | | | | A | | A | |
| **5.5** | 3RA28 16-0EW20 | 3RA29 13-2BB1[1] | 3RT29 16-4BA31 | 5.5 ... 8 | 3RU21 16-1HB0 | 4 ... 16 | 3RB30 16-1TB0 |
| **7.5** | | | | 7 ... 10 | 3RU21 16-1JB0 | | |
| **11** | | | | 11 ... 16 | 3RU21 16-4AB0 | | |
| **11** | 3RA28 16-0EW20 | 3RA29 23-2BB1[2] | 3RT29 26-4BA31 | 11 ... 16 | 3RU21 26-4AB0 | 6 ... 25 | 3RB30 26-1QB0 |
| **15** | | | | 14 ... 20 | 3RU21 26-4BB0 | | |
| **18.5** | | | | 20 ... 25 | 3RU21 26-4DB0 | | |
| **22** | | | | 20 ... 25 | 3RU21 26-4DB0 | | |

Spring-type terminals

| | Accessories for customer assembly | | | Overload relay, thermal (trip class CLASS 10) | | Overload relay, solid-state (trip class CLASS 10) | |
|---|---|---|---|---|---|---|---|
| **Power** | Function modules for wye-delta starting | Assembly kit B, for single infeed | Star jumper | Setting range | Order No. | Setting range | Order No. |
| **kW** | | | | A | | A | |
| **5.5** | 3RA28 16-0EW20 | 3RA29 13-2BB2[1] | 3RT29 16-4BA32 | 5.5 ... 8 | 3RU21 16-1HC0 | 4 ... 16 | 3RB30 16-1TE0 |
| **7.5** | | | | 7 ... 10 | 3RU21 16-1JC0 | | |
| **11** | | | | 11 ... 16 | 3RU21 16-4AC0 | | |
| **11** | 3RA28 16-0EW20 | 3RA29 23-2BB2[2] | 3RT29 26-4BA32 | 11 ... 16 | 3RU21 26-4AC0 | 6 ... 25 | 3RB30 26-1QE0 |
| **15** | | | | 14 ... 20 | 3RU21 26-4BC0 | | |
| **18.5** | | | | 20 ... 25 | 3RU21 26-4DC0 | | |
| **22** | | | | 20 ... 25 | 3RU21 26-4DC0 | | |

[1] The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper and auxiliary circuit wiring.

[2] The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper.

### *Order No. scheme*

| Digit of the Order No. | 1. - 3. | 4. | 5. | 6. | 7. | | 8. | 9. | 10. | 11. | 12. | | 13. | 14. | 15. | 16. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | □□□ | □ | □ | □ | □ | – | □ | □ | □ | □ | □ | – | □ | □ | □ | □ |
| **SIRIUS contactor assemblies** | **3 R A** | | | | | | | | | | | | | | | |
| **2nd generation** | | **2** | | | | | | | | | | | | | | |
| **Device type (e. g. 4 = contactor assembly for wye-delta starting)** | | | **4** | | | | | | | | | | | | | |
| **Contactor size (1 = S00, 2 = S0)** | | | | □ | | | | | | | | | | | | |
| **Power dependent on size (e. g. 25 = 15 kW)** | | | | | □ | | | | | | | | | | | |
| **Type of overload relay (8X = without)** | | | | | | | □ | □ | | | | | | | | |
| **Assembly (F = ready-assembled, E, H = ready-assembled with communication)** | | | | | | | | | □ | | | | | | | |
| **Interlock (3 = mechanical and electrical)** | | | | | | | | | | □ | | | | | | |
| **Free auxiliary switches (e. g. S00: 1 = 3 NO total, S0: 2 = 3 NO + 3 NC total)** | | | | | | | | | | | □ | | | | | |
| **Connection type (1 = screw, 2 = spring)** | | | | | | | | | | | | | □ | | | |
| **Operating range / solenoid coil circuit (e. g. A = AC standard / without)** | | | | | | | | | | | | | | □ | | |
| **Rated control supply voltage (e. g. K6 = 110/120 V, 50/60 Hz)** | | | | | | | | | | | | | | | □ | □ |
| **Example** | **3 R A** | **2** | **4** | **2** | **5** | **–** | **8** | **X** | **F** | **3** | **2** | **–** | **1** | **A** | **K** | **6** |

## *Fully wired and tested contactor assemblies · Size S00-S00-S00 · Up to 11 kW*

3RA24 1.-8XE31-2BB4

3RA24 1.-8XF31-1A.0

3RA24 1.-8XF31-2A.0

| Rated data AC-3 | | | | | Rated control supply voltage $U_s$ [1] at 50/60 Hz | Screw terminals | Weight approx. | Spring-type terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ up to | Ratings of induction motors at 50 Hz and | | | | | Order No. | | Order No. | |
| 400 V | 230 V | **400 V** | 500 V | 690 V | | | | | |
| A | kW | **kW** | kW | kW | V | | kg | | kg |
| **AC operation, 50/60 Hz** | | | | | | | | | |
| 12 | 3.3 | **5.5** | 7.2 | 9.2 | 24 AC | **3RA24 15-8XF31-1AB0** | 0.910 | **3RA24 15-8XF31-2AB0** | 0.910 |
| | | | | | 110/120 AC | **3RA24 15-8XF31-1AF0** | 0.850 | **3RA24 15-8XF31-2AF0** | 0.910 |
| | | | | | 220/240 AC | **3RA24 15-8XF31-1AP0** | 0.850 | **3RA24 15-8XF31-2AP0** | 0.910 |
| 16 | 4.7 | **7.5** | 10.3 | 9.2 | 24 AC | **3RA24 16-8XF31-1AB0** | 0.910 | **3RA24 16-8XF31-2AB0** | 0.910 |
| | | | | | 110/120 AC | **3RA24 16-8XF31-1AF0** | 0.850 | **3RA24 16-8XF31-2AF0** | 0.910 |
| | | | | | 220/240 AC | **3RA24 16-8XF31-1AP0** | 0.850 | **3RA24 16-8XF31-2AP0** | 0.910 |
| 25 | 5.5 | **11** | 11 | 11 | 24 AC | **3RA24 17-8XF31-1AB0** | 0.850 | **3RA24 17-8XF31-2AB0** | 0.910 |
| | | | | | 110/120 AC | **3RA24 17-8XF31-1AF0** | 0.850 | **3RA24 17-8XF31-2AF0** | 0.910 |
| | | | | | 220/240 AC | **3RA24 17-8XF31-1AP0** | 0.850 | **3RA24 17-8XF31-2AP0** | 0.910 |
| **DC operation** | | | | | | | | | |
| 12 | 3.3 | **5.5** | 7.2 | 9.2 | 24 DC | **3RA24 15-8XF31-1BB4** | 0.910 | **3RA24 15-8XF31-2BB4** | 0.910 |
| 16 | 4.7 | **7.5** | 10.3 | 9.2 | 24 DC | **3RA24 16-8XF31-1BB4** | 0.910 | **3RA24 16-8XF31-2BB4** | 0.910 |
| 25 | 5.5 | **11** | 11 | 11 | 24 DC | **3RA24 17-8XF31-1BB4** | 1.030 | **3RA24 17-8XF31-2BB4** | 1.090 |
| ***For IO-Link connection*** | | | | | | | | | |
| 12 | 3.3 | **5.5** | 7.2 | 9.2 | 24 DC | **3RA24 15-8XE31-1BB4** | 1.030 | **3RA24 15-8XE31-2BB4** | 1.090 |
| 16 | 4.7 | **7.5** | 10.3 | 9.2 | 24 DC | **3RA24 16-8XE31-1BB4** | 1.030 | **3RA24 16-8XE31-2BB4** | 1.090 |
| 25 | 5.5 | **11** | 11 | 11 | 24 DC | **3RA24 17-8XE31-1BB4** | 1.030 | **3RA24 17-8XE31-2BB4** | 1.090 |
| ***For AS-Interface connection*** | | | | | | | | | |
| 12 | 3.3 | **5.5** | 7.2 | 9.2 | 24 DC | **3RA24 15-8XH31-1BB4** | 1.050 | **3RA24 15-8XH31-2BB4** | 1.110 |
| 16 | 4.7 | **7.5** | 10.3 | 9.2 | 24 DC | **3RA24 16-8XH31-1BB4** | 1.050 | **3RA24 16-8XH31-2BB4** | 1.110 |
| 25 | 5.5 | **11** | 11 | 11 | 24 DC | **3RA24 17-8XH31-1BB4** | 1.050 | **3RA24 17-8XH31-2BB4** | 1.110 |

The wye-delta starters listed here are assembled from individual contactors which are UL Listed. The overall assembly Catalog Number is not UL Listed.

For other voltages see page 2/55.

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x $U_s$; at 60 Hz: 0.85 ... 1.1 x $U_s$.

***Fully wired and tested contactor assemblies · Size S0-S0-S0 · Up to 22 kW***

3RA24 2.-8XE32-1BB4

3RA24 2.-8XF32-1A.2

3RA24 2.-8XF32-2A.2

| Rated data AC-3 | | | | | Rated control supply voltage $U_s$ [1] at 50/60 Hz | Screw terminals | Weight approx. | Spring-type terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ up to | Ratings of induction motors at 50 Hz and | | | | | Order No. | | Order No. | |
| 400 V | 230 V | **400 V** | 500 V | 690 V | | | | | |
| A | kW | **kW** | kW | kW | V | | kg | | kg |
| **AC operation, 50/60 Hz** | | | | | | | | | |
| 25 | 7.1 | **11** | 15.6 | 19 | 24 AC | **3RA24 23-8XF32-1AC2** | 1.370 | **3RA24 23-8XF32-2AC2** | 1.530 |
| | | | | | 110/220 AC | **3RA24 23-8XF32-1AK6** | 1.370 | **3RA24 23-8XF32-2AK6** | 1.530 |
| | | | | | 220/240 AC | **3RA24 23-8XF32-1AP6** | 1.370 | **3RA24 23-8XF32-2AP6** | 1.530 |
| 32 / 40 | 11.4 | **15 / 18.5** | 19 | 19 | 24 AC | **3RA24 25-8XF32-1AC2** | 1.370 | **3RA24 25-8XF32-2AC2** | 1.530 |
| | | | | | 110/220 AC | **3RA24 25-8XF32-1AK6** | 1.370 | **3RA24 25-8XF32-2AK6** | 1.530 |
| | | | | | 220/240 AC | **3RA24 25-8XF32-1AP6** | 1.370 | **3RA24 25-8XF32-2AP6** | 1.530 |
| 50 | -- | **22** | 19 | 19 | 24 AC | **3RA24 26-8XF32-1AC2** | 1.390 | **3RA24 26-8XF32-2AC2** | 1.550 |
| | | | | | 110/220 AC | **3RA24 26-8XF32-1AK6** | 1.390 | **3RA24 26-8XF32-2AK6** | 1.550 |
| | | | | | 220/240 AC | **3RA24 26-8XF32-1AP6** | 1.390 | **3RA24 26-8XF32-2AP6** | 1.550 |
| **DC operation** | | | | | | | | | |
| 25 | 7.1 | **11** | 15.6 | 19 | 24 DC | **3RA24 23-8XF32-1BB4** | 1.940 | **3RA24 23-8XF32-2BB4** | 2.100 |
| 32 / 40 | 11.4 | **15 / 18.5** | 19 | 19 | 24 DC | **3RA24 25-8XF32-1BB4** | 1.940 | **3RA24 25-8XF32-2BB4** | 2.100 |
| 50 | -- | **22** | 19 | 19 | 24 DC | **3RA24 26-8XF32-1BB4** | 1.960 | **3RA24 26-8XF32-2BB4** | 2.120 |
| ***For IO-Link connection*** | | | | | | | | | |
| 25 | 7.1 | **11** | 15.6 | 19 | 24 DC | **3RA24 23-8XE32-1BB4** | 1.940 | **3RA24 23-8XE32-2BB4** | 2.100 |
| 32 / 40 | 11.4 | **15 / 18.5** | 19 | 19 | 24 DC | **3RA24 25-8XE32-1BB4** | 1.940 | **3RA24 25-8XE32-2BB4** | 2.100 |
| 50 | -- | **22** | 19 | 19 | 24 DC | **3RA24 26-8XE32-1BB4** | 1.960 | **3RA24 26-8XE32-2BB4** | 2.120 |
| ***For AS-Interface connection*** | | | | | | | | | |
| 25 | 7.1 | **11** | 15.6 | 19 | 24 DC | **3RA24 23-8XH32-1BB4** | 1.960 | **3RA24 23-8XH32-2BB4** | 2.120 |
| 32 / 40 | 11.4 | **15 / 18.5** | 19 | 19 | 24 DC | **3RA24 25-8XH32-1BB4** | 1.960 | **3RA24 25-8XH32-2BB4** | 2.120 |
| 50 | -- | **22** | 19 | 19 | 24 DC | **3RA24 26-8XH32-1BB4** | 1.980 | **3RA24 26-8XH32-2BB4** | 2.140 |

The wye-delta starters listed here are assembled from individual contactors which are UL Listed. The overall assembly Catalog Number is not UL Listed.

For other voltages see page 2/55 .

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x $U_s$ ; at 60 Hz: 0.85 ... 1.1 x $U_s$.

## Selection and ordering data

| Contactor type | | | 3RT201 3RA211 | 3RT231 3RT251 | 3RT202 3RA212 | 3RT232 3RT252 | 3RT2617 3RT2627 3RT2637 | 3RT203 3RA213 | 3RT233 3RT253 | 3RT104 3RT134 3RT144 3RA114 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | S00 | S00 | S0 | S0 | S00-S2 | S2 | S2 | S3 |
| **Rated control supply voltages (changes to 10th and 11th positions of the Order No.)** | | | | | | | | | | |
| ***AC Operation***[1] | | | | | | | | | | |
| **Coils for 50 Hz** (exception: size S00: 50 and 60 Hz [2]) | **24 V AC** | | B0 | B0 | B0 | B0 | B0 | B0 | B0 | B0 |
| | **42 V AC** | | D0 | D0 | D0 | -- | -- | D0 | -- | D0 |
| | **48 V AC** | | H0 | H0 | H0 | -- | -- | H0 | -- | H0 |
| | **110 V AC** | | F0 | F0 | F0 | F0 | F0 | F0 | F0 | F0 |
| | **230 V AC** | | P0 | P0 | P0 | P0 | P0 | P0 | P0 | P0 |
| | **400 V AC** | | V0 | V0 | V0 | V0 | V0 | V0 | V0 | V0 |
| **Coils for 50 and 60 Hz** [2] | **24 V AC** | | B0 | B0 | C2 | C2 | C2 | C2 | C2 | C2 |
| | **42 V AC** | | D0 | D0 | D2 | D2 | -- | D2 | D2 | D2 |
| | **48 V AC** | | H0 | H0 | H2 | H2 | -- | H2 | H2 | H2 |
| | **110 V AC** | | F0 | F0 | G2 | G2 | G2 | G2 | G2 | G2 |
| | **208 V AC** | | M2 | M2 | M2 | M2 | M2 | M2 | M2 | M2 |
| | **220 V AC** | | N2 | N2 | N2 | N2 | N2 | N2 | N2 | N2 |
| | **230 V AC** | | P0 | P0 | L2 | L2 | L2 | L2 | L2 | L2 |
| | **240 V AC** | | P2 | P2 | P2 | P2 | P2 | P2 | P2 | P2 |
| **For USA and Canada** [3] | 50 Hz: | 60 Hz: | | | | | | | | |
| | **110 V AC** | **120 V AC** | K6 | K6 | K6 | K6 | K6 | K6 | K6 | K6 |
| | **220 V AC** | **240 V AC** | P6 | P6 | P6 | P6 | P6 | P6 | P6 | P6 |
| | | **277 V AC** | — | — | — | U6 | — | U6 | U6 | U6 |
| | | **480 V AC** | V6 | — | V6 | — | — | V6 | V6 | V6 |
| | | **600 V AC** | — | — | — | T6 | — | T6 | T6 | T6 |
| **For Japan** | 50/60 Hz[4]: | 60 Hz[5]: | | | | | | | | |
| | **100 V AC** | **110 V AC** | G6 | G6 | G6 | G6 | G6 | G6 | G6 | G6 |
| | **200 V AC** | **220 V AC** | N6 | N6 | N6 | N6 | N6 | N6 | N6 | N6 |
| | **400 V AC** | **440 V AC** | R6 | R6 | R6 | R6 | R6 | R6 | R6 | R6 |
| ***DC Operation***[1] | | | | | | | | | | |
| | **12 V DC** | | A4 | A4 | — | — | — | — | — | — |
| | **24 V DC** | | B4 | B4 | B4 | B4 | — | — | — | — |
| | **42 V DC** | | D4 | D4 | D4 | D4 | — | — | — | — |
| | **48 V DC** | | W4 | W4 | W4 | W4 | — | — | — | — |
| | **60 V DC** | | E4 | E4 | E4 | E4 | — | — | — | — |
| | **72 V DC** | | J8 | J8 | J8 | J8 | — | — | — | — |
| | **80 V DC** | | — | — | — | — | — | — | — | — |
| | **110 V DC** | | F4 | F4 | F4 | F4 | — | — | — | — |
| | **125 V DC** | | G4 | G4 | G4 | G4 | — | — | — | — |
| | **220 V DC** | | M4 | M4 | M4 | M4 | — | — | — | — |
| | **230 V DC** | | P4 | P4 | P4 | — | — | — | — | — |

Coil codes for frame sizes S6-S12 can be found on page 2/9. Further voltages on request

| Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$ [6] | Contactor type / Size | -- S00 | 3RT2. 2.-.N S0 | Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$ [6] | Contactor type / Size | 3RT2. 3.-.N S2 | 3RT2. 2.-.N S3 |
|---|---|---|---|---|---|---|---|
| **Sizes S00 to S3** | | | | | | | |
| ***AC/DC operation (50/60 Hz AC, DC)*** | | | | | | | |
| 21 ... 28 V AC/DC | | -- | B3 | 20 ... 33 V AC/DC | | B3 | B3 |
| 95 ... 130 V AC/DC | | -- | F3 | 83 ... 155 V AC/DC | | F3 | F3 |
| 200 ... 280 V AC/DC[7] | | -- | P3 | 175 ... 280 V AC/DC | | P3 | P3 |

[1] For deviating coil voltages and coil operating ranges of sizes S00 and S0, the SITOP power 24 V DC power supply unit with wide range input (93 to 264 V AC; 30 to 264 V DC) can be used for coil excitation (For more SITOP information see section 15).

[2] Coil operating range
at 50 Hz: 0.8 ... 1.1 x $U_s$
at 60 Hz: 0.85 ... 1.1 x $U_s$

[3] Coil operating range
Size S00: at 50 Hz: 0.85.... 1.1 x $U_s$
at 60 Hz: 0.8 ... 1.1 x $U_s$
Size S0 to S3: at 50 Hz and 60 Hz: 0.8 ... 1.1 x $U_s$

[4] Coil operating range
Size S00: at 50/60 Hz: 0.85 ... 1.1 x $U_s$
Size S0: at 50 Hz: 0.8 ... 1.1 x $U_s$
at 60 Hz: 0.85 ... 1.1 x $U_s$

[5] Coil operating range
at 60 Hz: 0.8 ...1.1 x $U_s$

[6] Coil operating range for S0: 0.7 x $U_{s\,min}$ ... 1.3 x $U_{s\,max}$
Coil operating range for S2: 0.8 x $U_{s\,min}$ ...1.1 x $U_{s\,max}$

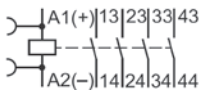
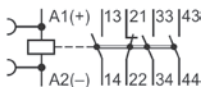
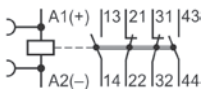
[7] The following applies to S0 and $U_{s\,max}$ = 280 V: Upper limit =1.1 x $U_{s\,max}$

## Selection and ordering data
AC and DC operation

3RH11 . . -1 . . . .

3RH11 . . -2 . . . .

***Size S00*** – Terminal designations according to EN 50011

| Rated current at **240 V** NEMA A600/Q600 | Auxiliary contacts Ident-ification No. | Version NO | Version NC | Rated control supply voltage $U_S$ | **AC Operation Screw Terminals**[1) 2)] | Rated control supply voltage $U_S$ | **DC Operation Screw Terminals**[1) 2)] |
|---|---|---|---|---|---|---|---|
| Amps | | | | V AC 50/60 Hz[3)] | **Order No.** | V DC | **Order No.** |
| **For screw and snap-on mounting onto TH 35 standard mounting rail** | | | | | | | |
|  10 | 40E | 4 | — | 24<br>110/120<br>220/240 | **3RH2140-1AB00**<br>**3RH2140-1AK60**<br>**3RH2140-1AP60** | 24<br>110<br>220 | **3RH2140-1BB40**<br>**3RH2140-1BF40**<br>**3RH2140-1BM40** |
|  10 | 31E | 3 | 1 | 24<br>110/120<br>220/240 | **3RH2131-1AB00**<br>**3RH2131-1AK60**<br>**3RH2131-1AP60** | 24<br>110<br>220 | **3RH2131-1BB40**<br>**3RH2131-1BF40**<br>**3RH2131-1BM40** |
|  10 | 22E | 2 | 2 | 24<br>110/120<br>220/240 | **3RH2122-1AB00**<br>**3RH2122-1AK60**<br>**3RH2122-1AP60** | 24<br>110<br>220 | **3RH2122-1BB40**<br>**3RH2122-1BF40**<br>**3RH2122-1BM40** |

Notes:
For further voltages, see page 2/55.
For accessories, see pages 2/72-2/83.
For technical data, see pages 2/192-2/195.
For overview, see page 2/123.
For position terminals, see page 2/209-2/210.
For dimension drawings, see page 2/131.

1) The 3RH21 contactor relays are also available with spring-type terminals. Replace the 8th digit of the order number with a "2" e.g. "3RH2140-2AB00"

2) The 3RH21 contactor relays are also available with ring lug terminals. Replace the 8th digit of the order number with a "4" e.g. "3RH2140-4AB00"

3) AC coil operating range at 50 Hz: 0.8 to 1.1 x $U_S$ at 60 Hz: 0.85 to 1.1 x $U_S$

4) For AC-15/AC-14 the following applies: $I_e$ = 6A for mounted auxiliary contacts.

## Overview

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

The number of auxiliary contacts can be extended by means of front auxiliary switch blocks (up to 4 poles).

RC elements, varistors diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

## Selection and ordering data

***Size S00*** – Terminal designations according to EN 5001

| Rated current at **240 V** AC-14, AC-15 **NEMA A600/Q600** | Aux. contacts Ident. No. | Aux. contacts Version NO | Aux. contacts Version NC | Rated control supply voltage $U_S$ | **AC Operation Screw Terminals**[1] | Rated control supply voltage $U_S$ | **DC Operation Screw Terminals** |
|---|---|---|---|---|---|---|---|
| Amps | | NO | NC | V AC | **Order No.** | V DC | **Order No.** |
| **For screw and snap-on mounting onto TH 35 standard mounting rail** | | | | | | | |
| 3RH2422-1BB40 | | | | | | | |
| 10 | 40E | 4 | — | 24, 50/60 Hz<br>110, 50 Hz/120, 60 Hz<br>220, 50 Hz / 240, 60 Hz<br>230, 50/60 Hz | **3RH2440-1AB00**<br>**3RH2440-1AK60**<br>**3RH2440-1AP60**<br>**3RH2440-1AP00** | 24<br>110<br>125<br>220 | **3RH2440-1BB40**<br>**3RH2440-1BF40**<br>**3RH2440-1BG40**<br>**3RH2440-1BM40** |
| 10 | 31E | 3 | 1 | 24, 50/60 Hz<br>110, 50 Hz / 120, 60 Hz<br>220, 50 Hz / 240, 60 Hz<br>230, 50/60 Hz | **3RH2431-1AB00**<br>**3RH2431-1AK60**<br>**3RH2431-1AP60**<br>**3RH2431-1AP00** | 24<br>110<br>125<br>220 | **3RH2431-1BB40**<br>**3RH2431-1BF40**<br>**3RH2431-1BG40**<br>**3RH2431-1BM40** |
| 10 | 22E | 2 | 2 | 24, 50/60 Hz<br>110, 50 Hz / 120, 60 Hz<br>220, 50 Hz / 240, 60 Hz<br>230, 50/60 Hz | **3RH2422-1AB00**<br>**3RH2422-1AK60**<br>**3RH2422-1AP60**<br>**3RH2422-1AP00** | 24<br>110<br>125<br>220 | **3RH2422-1BB40**<br>**3RH2422-1BF40**<br>**3RH2422-1BG40**<br>**3RH2422-1BM40** |

For accessories for 3RH24, see below and page 2/72-2/83
For technical data, see page 2/192-2/195.
For overview, see page 2/123.
For position of terminals, see page 2/209-2/210.
For dimension drawings, see page 2/232.

### Auxiliary switch blocks for 3RH21, 3RH24 control relays

***Size S00*** – For assembling to control relays to have 8 contacts

| For contactor type | For contactor HS Block Ident. No. | Contacts Version NO | Contacts Version NC | Weight approx. kg. | **Screw Terminals Order No.** | **Spring Terminals Order No.** |
|---|---|---|---|---|---|---|
| **Auxiliary switch blocks for snapping onto the front according to EN 50011** | | | | | | |
| 3RH2911-1GA40 | | | | | | |
| 3RH2140, 3RH2440, Ident. No. 40 E | 80E | 4 | — | 0.050 | **3RH2911-1GA40** | **3RH2911-2GA40** |
| 3RH2140, 3RH2440, Ident. No. 40 E | 71E | 3 | 1 | 0.050 | **3RH2911-1GA31** | **3RH2911-2GA31** |
| 3RH2140, 3RH2440, Ident. No. 40 E | 62E | 2 | 2 | 0.050 | **3RH2911-1GA22** | **3RH2911-2GA22** |
| 3RH2140, 3RH2440, Ident. No. 40 E | 53E | 1 | 3 | 0.050 | **3RH2911-1GA13** | **3RH2911-2GA13** |
| 3RH2140, 3RH2440, Ident. No. 40 E | 44E | — | 4 | 0.050 | **3RH2911-1GA04** | **3RH2911-2GA04** |

3RH2911-2GA40

1) Coil voltage tolerance
at 50 Hz: 0.8 to 1.1 x $U_S$
at 60 Hz: 0.85 to 1.1 x $U_S$

For further accessories see pages 2/72-2/83

## Application

***DC operation***
IEC 60 947 and EN 60 947

The 3RH21 coupling relays for switching auxiliary circuits are tailored to the special requirements of working with electronic controls.

The 3RH21 coupling relays cannot be extended with auxiliary switch blocks.

Coupling relays have a low power consumption, an extended coil voltage tolerance and an integrated surge suppressor for damping opening surges on select versions

## Selection and ordering data

### DC operation

***Size S00*** – Terminal designations according to EN 50 011

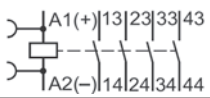
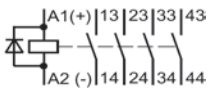
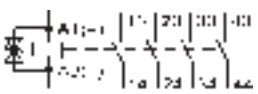
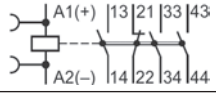
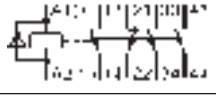
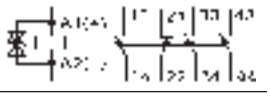
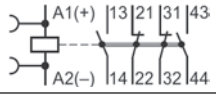
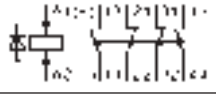
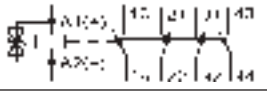
| | Surge suppressor | Rated current at **240 V** NEMA A600/Q600 | Ident-ification No. | Auxiliary contacts Version NO | NC | **Screw Terminals**[1] **Order No.** | **Spring Terminals**[1] **Order No.** | Weight approx. kg. |
|---|---|---|---|---|---|---|---|---|
| | | Amps | | | | | | |
| **For screw and snap-on mounting onto TH 35 standard mounting rail** | | | | | | | | |
| Rated control supply voltage $U_s$ = 24 V DC, coil voltage tolerance **0.7 to 1.25 x $U_s$** Power consumption of the coils **2.8 W** at 24 V (no auxiliary switch blocks can be mounted) | Diode, varistor, or RC element can be mounted | 10 | **40E** | 4 | — | **3RH2140-1HB40** | **3RH2140-2HB40** | 0.300 |
| | | 10 | **31E** | 3 | 1 | **3RH2131-1HB40** | **3RH2131-2HB40** | 0.300 |
| | | 10 | **22E** | 2 | 2 | **3RH2122-1HB40** | **3RH2122-2HB40** | 0.300 |
| | Diode integrated | 10 | **40E** | 4 | — | **3RH2140-1JB40** | **3RH2140-2JB40** | 0.300 |
| | | 10 | **31E** | 3 | 1 | **3RH2131-1JB40** | **3RH2131-2JB40** | 0.300 |
| | | 10 | **22E** | 2 | 2 | **3RH2122-1JB40** | **3RH2122-2JB40** | 0.300 |
| | Suppressor diode integrated | 10 | **40E** | 4 | — | **3RH2140-1KB40** | **3RH2140-2KB40** | 0.300 |
| | | 10 | **31E** | 3 | 1 | **3RH2131-1KB40** | **3RH2131-2KB40** | 0.300 |
| | | 10 | **22E** | 2 | 2 | **3RH2122-1KB40** | **3RH2122-2KB40** | 0.300 |
| Rated control supply voltage $U_s$ = 24 V DC, coil voltage tolerance **0.85 to 1.85 x $U_s$** Power consumption of the coils **1.6 W** at 24 V (no auxiliary switch blocks can be mounted) | Diode, varistor, or RC element can be mounted | 10 | **40E** | 4 | — | **3RH2140-1MB40-0KT0** | **3RH2140-2MB40-0KT0** | 0.300 |
| | | 10 | **31E** | 3 | 1 | **3RH2131-1MB40-0KT0** | **3RH2131-2MB40-0KT0** | 0.300 |
| | | 10 | **22E** | 2 | 2 | **3RH2122-1MB40-0KT0** | **3RH2122-2MB40-0KT0** | 0.300 |
| | Diode integrated | 10 | **40E** | 4 | — | **3RH2140-1VB40** | **3RH2140-2VB40** | 0.300 |
| | | 10 | **31E** | 3 | 1 | **3RH2131-1VB40** | **3RH2131-2VB40** | 0.300 |
| | | 10 | **22E** | 2 | 2 | **3RH2122-1VB40** | **3RH2122-2VB40** | 0.300 |
| | Suppressor diode integrated | 10 | **40E** | 4 | — | **3RH2140-1SB40** | **3RH2140-2SB40** | 0.300 |
| | | 10 | **31E** | 3 | 1 | **3RH2131-1SB40** | **3RH2131-2SB40** | 0.300 |
| | | 10 | **22E** | 2 | 2 | **3RH2122-1SB40** | **3RH2122-2SB40** | 0.300 |

3RH2140-1HB40

3RH2140-2SB40

For technical data, see 2/196.
For position of terminals, see 2/209-2/210.
For dimension drawings, see 2/232.

1) Ring lug terminals are also available. Replace the 8th digit of the order number with a "4", e.g. 3RH2140-4HB40

| | Suppressor element mountable | Diode integrated | Suppressor diode integrated |
|---|---|---|---|
| **40E** |  |  |  |
| **31E** |  |  |  |
| **22E** |  |  |  |

## Selection and ordering data

| Maximum inductive current AC-3 | Maximum power ratings UL Ratings 200 V | 230 V | 460 V | 575 V | IEC ratings 1000 V | Max. resistive current AC-1 | Auxiliary contacts NO | NC | Rated control supply voltage [1] | Order No. | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | HP | HP | **HP** | HP | **kW** | A | | | V | | kg |
| **AC operation [2] [3]** | | | | | | | | | | | |
| 3TF68 | **Size 14**<br>**Auxiliary and control conductors: screw terminals**<br>**Main conductor: bar connections**<br>**• AC Operation** | | | | | | | | | | |
| 630 | 200 | 250 | **500** | 600 | 600 | 700 | 4 | 4 | 110-132, 50/60 Hz | **3TF6844-■CF7** | 15 |
| 630 | 200 | 250 | **500** | 600 | 600 | 700 | 4 | 4 | 200-240, 50/60 Hz | **3TF6844-■CM7** | 15 |
| 820 | 290 | 350 | **700** | 860 | 800 | 910 | 4 | 4 | 110-132, 50/60 Hz | **3TF6944-■CF7** | 19 |
| 820 | 290 | 350 | **700** | 860 | 800 | 910 | 4 | 4 | 200-240, 50/60 Hz | **3TF6944-■CM7** | 19 |
| | | | | | | | **UL ratings shown in above table:** | | | **■=0** | |
| | | | | | | | **For IEC use only up to 1000 V:** | | | **■=8** | |
| **• DC Operation** | | | | | | | | | | | |
| 630 | 200 | 250 | **500** | 600 | 600 | 700 | 3 | 3 | 24 V DC | **3TF6833-■DB4** | 16.9 |
| 820 | 290 | 350 | **700** | 860 | 800 | 910 | 3 | 3 | 24 V DC | **3TF6933-■DB4** | 20.9 |
| | | | | | | | **UL ratings shown in above table:** | | | **■=1** | |
| | | | | | | | **For IEC use only up to 1000 V:** | | | **■=8** | |

## Accessories and Spare parts for 3TF68 and 3TF69 vacuum contactors

### Selection and ordering data

| Details | For contactor type | Order No. | Weight approx. kg |
|---|---|---|---|
| **Coils** | | | |
| 3TY7 | **AC Operation**<br>The coils are fitted with varistors for damping surges as standard; the coil is supplied with the closing electronics included. | 3TF68<br>3TF69 | **3TY7683-0C●●**<br>**3TY7693-0C●●** | 0.65 |
| | **DC Operation**<br>Reversing contactors are required for size 14 contactors:<br>Contactor type — Reversing contactor type<br>3TF68 and 3TF69: 3TC44 (70 mm wide, 85 mm high)<br>The coils are supplied without a reversing contactor. | 3TF68<br>3TF69 | **3TY7683-0D●●**<br>**3TY7693-0D●●** | 0.56 |
| | **●● For rated control supply voltages, see page 2/109.** | | | |
| **Vacuum interrupters** | | | | |
| | **In order to ensure reliable operation of the contactors, only Siemens original replacement interrupters should be used.**<br>3 vacuum interrupters with mouning parts per set. | 3TF68<br>3TF69 | **3TY7680-0B**<br>**3TY7690-0B** | 3.2<br>3.5 |
| **Auxiliary switch blocks with screw terminals** | | | | |
| 3TY7561-1. | 1 NO and 1 NC — First auxiliary switch block, left or right. Replacement type for: 3TY7561-1A, -1B | 3TF68 / 3TF69 | **3TY7561-1AA00** | 0.042 |
| | 1 NO and 1 NC — First auxiliary switch block, left or right late break | 3TF68 / 3TF69 | **3TY7561-1EA00** | 0.042 |
| | 1 NO and 1 NC — Second auxiliary switch block, left or right. Replacement type for: 3TY7 561-1K, -1L | 3TF68 / 3TF69 | **3TY7561-1KA00** | 0.042 |
| | **Auxiliary switches for coil reconnection, for DC economy circuit with screw connections** | | | |
| | 1 NC — Auxiliary switch block late break | 3TF68 / 3TF69 | **3TY7681-1G** | 0.042 |
| | **Solid-state compatible auxiliary switch block with screw terminals**<br>For mounting onto the side of contactors. For use in dusty atmosphere and electronic circuits with rated operational currents $I_e$ AC-14 and DC-13 from 1 mA to 300 mA at 3 V to 60 V. | 3TF68 / 3TF69 | **3TY7561-1UA00** | 0.042 |

For accessories, see page 2/59-2/60.
For technical data, see page 2/179-2/184.
For description, see page 2/124.
For internal circuit diagrams, see page 2/218.
For position of terminals, see page 2/215
For dimension drawings, see page 2/229.

1) For further voltages, see page 2/109.
2) Surge suppression integrated: fitted with varistor.
3) For EMC, see description on page 2/124.
3TF68/69 vacuum contactors are supplied with integrated surge suppression for the main conducting paths (for description, see page 2/124). In operation in circuits with DC choppers, frequency converters, variable-speed drives, for example, this protective circuitry is not required. It might be damaged by voltage peaks and harmonics generated, possibly followed by phase-to-phase shortcircuits. For this reason. the contactors can be supplied without overvoltage damping. To order these versions add a "-Z" and the order code "A02".

## Selection and ordering data

| | For contactor Size | Type | Design | Order No. | Weight approx. kg | Std. Pack Qty |
|---|---|---|---|---|---|---|
| **Interface for control by PLC** | | | | | | |
| 3TX7 090-0D | | | Coil voltage tolerance: DC 17 V to 30 V<br>Power consumption: 0.5 W at DC 24 V<br>Fitted with varistor<br>For technical data, see Part 7. | | | |
| | **14** | 3TF68 and 3TF69 | For snapping onto the side of auxiliary switch blocks, with surge suppression | **3TX7 090-0D** | 0.1 | 1 |
| **Terminal covers** | | | | | | |
| 3TX7 686-0A | **14** | 3TF68<br>3TF69 | for protection against inadvertent contact with the exposed busbar connections (DIN VDE 0106 Part 100)" | (Order No. and price per set)<br>**3TX7 686-0A**<br>**3TX7 696-0A** | 0.17 | 1 set = 2 units |
| **Link for paralleling (star jumper) · 3-pole, without terminal [1]** | | | | | | |
| 3TX7 680-0D | **14** | 3TF68 | | **3TX7 680-0D** | 0.26 | 1 |
| **• Cover plate for paralleling link** | | | | | | |
| | **14** | 3TF68 | A cover plate must be used in order to protect against inadvertent contact (DIN VDE 0106 Part 100). | **3TX7 680-0E** | 0.18 | 1 |
| **Box terminals for laminated copper bars** | | | | | | |
| 3TX7570-1E | **• Without auxiliary conductor terminal** | | | | | |
| | **14** | 3TF68 | With single covers for protection against inadvertent contact (EN 50274) | **3TX7 570-1E** | 0.6 | 1 |
| | **• With auxiliary conductor terminal** | | | | | |
| | **14** | 3TF69 | Conductor cross-sections for auxiliary conductors:<br>Solid: 2 × (0.75 ... 2.5) mm²<br>Finely stranded with end sleeve: 2 × (0.5 ... 2.5) mm²<br>Solid or stranded: 2 × (18 ... 12) AWG<br>Tightening torque: 0.8 Nm ... 1.4 Nm (7 ... 12 lb.in) | **3TX7 690-1F** | 2.0 | 1 |
| **Surge suppressors — Varistors** | | | | | | |
| 3TX7 572-3G | **14** | 3TF68 and 3TF69 | For DC economy circuit; for lateral snapping onto auxiliary switches<br>*Rated control supply voltage, V DC*<br>24 … 48<br>48 … 127<br>127 … 240<br>The varistor is included in the scope of supply of the 3TF68 and 3TF69 contactors with AC operation.<br>Includes the peak value of the alternating voltage on the DC side. | **3TX7 572-3G**<br>**3TX7 572-3H**<br>**3TX7 572-3J** | 0.09<br>0.09<br>0.09 | 1<br>1<br>1 |

1) The link for paralleling can be reduced by one pole.

## Ordering information

- Select Contactor from table below.
- Complete catalog number replace the two daggers (††) with appropriate coil voltage suffix. See corresponding coil voltage suffix table below.
- Technical Data see page 2/185-2/188.
- Dimensions see page 2/229.

3TC44

3TC52

| | Frame Size | Ampere Rating Open | Ampere Rating Enclosed | 2 Pole DC HP Ratings (DC-3, DC-5) 115 V | 230 V | 500 V | 575 V | Auxiliary contacts NO | NC | AC-Operated Order No. | DC-Operated Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3TC DC Contactors** | | | | | | | | | | | |
| | 2 | 40 | 40 | 5 | 10 | 15 | 15 | 2 | 2 | **3TC4417–0B††** | **3TC4417–0A††** |
| | 4 | 75 | 68 | 8 | 18 | 40 | 45 | 2 | 2 | **3TC4817–0B††** | **3TC4817–0A††** |
| | 8 | 220 | 200 | 25 | 50 | 100 | 100 | 2 | 2 | **3TC5217–0B††** | **3TC5217–0A††** |
| | 12 | 330 | 300 | 40 | 75 | 150 | 150 | 2 | 2 | **3TC5617–0B††** | **3TC5617–0A††** |

| | Device | Frame Size | Catalog Number | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Coils, AC** | | | **24V AC** | **120V AC** | **220/240V AC** | **277V AC** | **480V AC** | **600V AC** |
| 3TY6483-0AK6 | 3TC | 3TC4417-0B†† | **3TY7403-0AC2** | **3TY7403-0AK6** | **3TY7403-0AP6** | **3TY7403-0AU1** | **3TY7403-0AV0** | **3TY7403-0AS0** |
| | | 3TC4817-0B†† | **3TY6483-0AC1** | **3TY6483-0AK6** | **3TY6483-0AP6** | **3TY6483-0AP0** | **3TY6483-0AV0** | **3TY6483-0AS0** |
| | | 3TC5217-0B†† | | **3TY6523-0AK6** | **3TY6523-0AP6** | **3TY6523-0AP0** | **3TY6523-0AV0** | |
| | | 3TC5617-0B†† | | **3TY6566-0AK6** | | **3TY6566-0AP0** | **3TY6566-0AV0** | **3TY6566-0AS0** |
| **Coils, DC** | | | **24V DC** | **48V DC** | **110V DC** | **125V DC** | **230V DC** | |
| 3TY6483-0BB4 | 3TC | 3TC4417-0A†† | **3TY6443-0BB4** | | **3TY6443-0BF4** | **3TY6443-0BG4** | | |
| | | 3TC4817-0A†† | **3TY6483-0BB4** | **3TY6483-0BW4** | **3TY6483-0BF4** | **3TY6483-0BG4** | | |
| | | 3TC5217-0A†† | **3TY6523-0BB4** | | **3TY6523-0BF4** | **3TY6523-0BG4** | **3TY6523-0BP4** | |
| | | 3TC5217-0A†† | **3TY6563-0BB4** | | **3TY6563-0BF4** | **3TY6563-0BG4** | **3TY6563-0BP4** | |

| | Frame size | Contactor type | Mounting position | Solid state | Order No. |
|---|---|---|---|---|---|
| **Auxiliary Contact Blocks with 1 NO + 1 NC contacts** [2] | | | | | |
| 3TY6501-1A | 2, 4 | 3TC44 or 3TC48 | 1st block, left or right | — | **3TY6501-1AA00** |
| | | | 2nd block, left or right | Yes[3] | **3TY7561-1UA00** |
| | 4 | 3TC48 | 2nd block, left [5] | — | **3TY6501-1K** |
| | | | 2nd block, right[5] | — | **3TY6501-1L** |
| | 8, 12 | 3TC52 or 3TC56 | 1st block, left | — | **3TY6561-1A** |
| | | | 1st block, right | — | **3TY6561-1B** |
| | | | 2nd block, left[5] | — | **3TY6561-1K** |
| | | | 2nd block, right[5] | — | **3TY6561-1L** |

| | Device Type | Frame Size | Catalog Number |
|---|---|---|---|
| **Main Contacts** [1] | | | |
| 3TY2480-0A | 3TC | 3TC44 | **3TY2440-0A** |
| | | 3TC48 | **3TY2480-0A** |
| | | 3TC52 | **3TY2520-0A** |
| | | 3TC56 | **3TY2560-0A** |
| **Arc Chutes** | | | |
| 3TY2482-0A | 3TC | 3TC44 | **3TY2442-0A** |
| | | 3TC48 | **3TY2482-0A** |
| | | 3TC52 | **3TY2522-0A** |
| | | 3TC56 | **3TY2562-0A** |

### Coil Suffix Table ††

**Replace †† in the contactor Order No. with a coil code from the table below.**

| V AC 50/60 Hz | Code |
|---|---|
| 24 | C1 |
| 120 | K1* |
| 240 | P1 |
| 460 | V0 |
| 600 | S0 |

*Use suffix K2 for 3TC44.

| V DC | Code |
|---|---|
| 24 | B4 |
| 36 | V4 |
| 48 | W4 |
| 60 | E4 |
| 72 | J8 |
| 110 | F4 |
| 125 | G4 |
| 220 | M4 |
| 230 | P4 |

1) Main contact kits for size 3TC48 and larger include springs. Smaller sizes do not.

2) On DC operated contactors the maximum number of auxiliary contacts is 2 NO, 2 NC.

3) For use in dusty atmosphere and electronic circuits with rated operational currents $I_e$ AC-14 and DC-13 from 1 mA to 300 mA at 3V to 60V. With 1 changeover contact.

4) Discount Code: DC Contactors

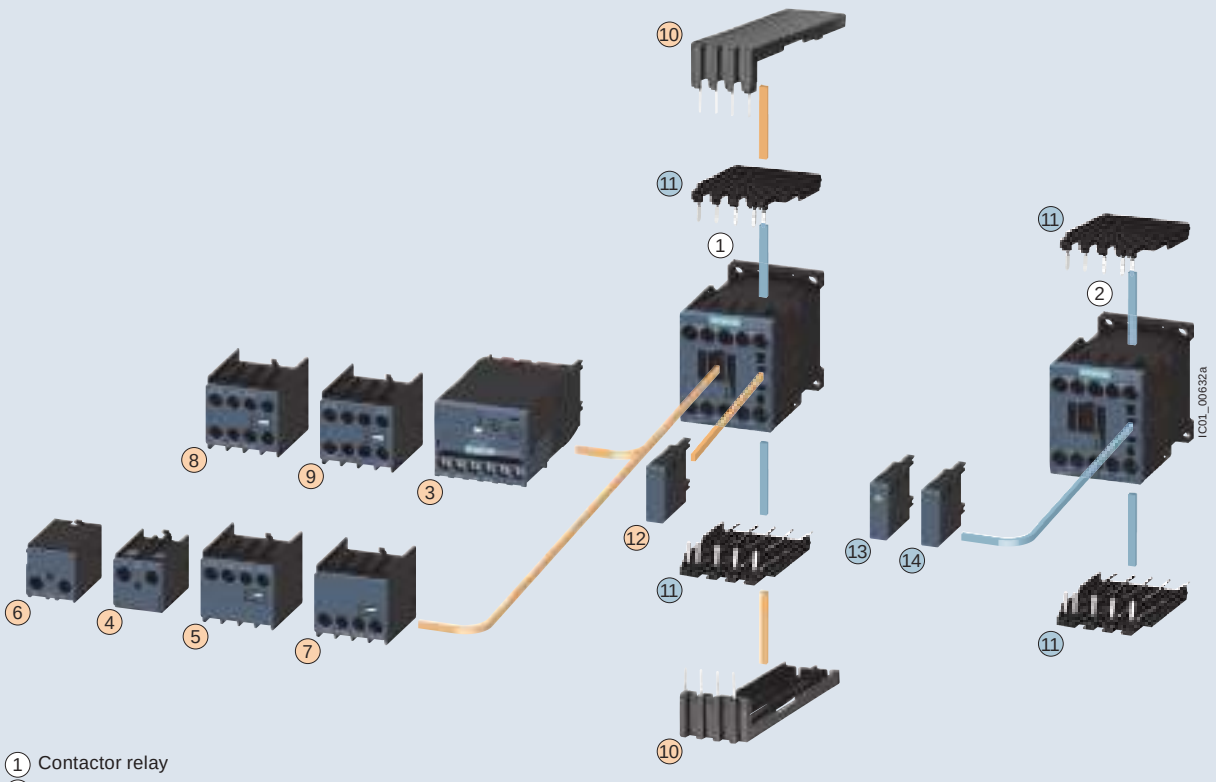
5) Can only be mounted on AC-operated contactors.

# DC Contactor Replacement Parts



| For contactors | | Version | Rated control supply voltage $U_s$ | | Order No. | Std. Pack Qty |
|---|---|---|---|---|---|---|
| Size | Type | | V AC | V DC | | |
| **Surge suppressors · Varistors** | | | | | | |
| 3TX7 402-3. | | | | | | |
| **2** | 3TC44[1] | **Varistors**[2] with line spacer, for mounting onto the coil terminal | 24 ... 48 | 24 ... 70 | **3TX7 402-3G** | 1 |
| | | | 48 ... 127 | 70 ... 150 | **3TX7 402-3H** | 1 |
| | | | 127 ... 240 | 150 ... 250 | **3TX7 402-3J** | 1 |
| | | | 240 ... 400 | | **3TX7 402-3K** | 1 |
| | | | 400 ... 600 | | **3TX7 402-3L** | 1 |
| 3TX7 462-3. | | | | | | |
| **4** | 3TC48 | **Varistors**[2] for sticking onto the contactor base or for mounting separately | 24 ... 48 | 24 ... 70 | **3TX7 462-3G** | 1 |
| | | | 48 ... 127 | 70 ... 150 | **3TX7 462-3H** | 1 |
| | | | 127 ... 240 | 150 ... 250 | **3TX7 462-3J** | 1 |
| | | | 240 ... 400 | | **3TX7 462-3K** | 1 |
| | | | 400 ... 600 | | **3TX7 462-3L** | 1 |
| **8 and 12** | 3TC52, 3TC56 | **Varistor** for sticking onto the contactor base or for mounting separately | 24 ... 48 | | **3TX7 462-3G** | 1 |
| | | | 48 ... 127 | | **3TX7 462-3H** | 1 |
| | | | 127 ... 240 | | **3TX7 462-3J** | 1 |
| | | | 240 ... 400 | | **3TX7 462-3K** | 1 |
| | | | 400 ... 600 | | **3TX7 462-3L** | 1 |
| 3TX7 522-3. | | | | | | |
| **8 and 12** | 3TC52, 3TC56 | **Varistors**[2] for separate screw connection or snapping onto TH 35 standard mounting rail | | 24 ... 70 | **3TX7 522-3G** | 1 |
| | | | | 70 ... 150 | **3TX7 522-3H** | 1 |
| | | | | 150 ... 250 | **3TX7 522-3J** | 1 |
| **Surge suppressors · RC elements** | | | | | | |
| 3TX7 462-3., 3TX7 522-3. | | | | | | |
| **4** | 3TC48 | **RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail | 24 ... 48 | 24 ... 70 | **3TX7 462-3R** | |
| | | | | | **3TX7 522-3R** | |
| | | | 48 ... 127 | 70 ... 150 | **3TX7 462-3S** | |
| | | | | | **3TX7 522-3S** | |
| | | | 127 ... 240 | 150 ... 250 | **3TX7 462-3T** | |
| | | | | | **3TX7 522-3T** | |
| | | | 240 ... 400 | | **3TX7 462-3U** | |
| | | | 400 ... 600 | | **3TX7 462-3V** | |
| **8 and 12** | 3TC52, 3TC56 | **RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail | 24 ... 48 | | **3TX7 522-3R** | |
| | | | 48 ... 127 | | **3TX7 522-3S** | |
| | | | 127 ... 240 | | **3TX7 522-3T** | |
| | | | 240 ... 400 | | **3TX7 522-3U** | |
| | | | 400 ... 600 | | **3TX7 522-3V** | |
| **Surge suppressors · Diodes** | | | | | | |
| 3TX7 462-3. | | | | | | |
| **4 to 12** | 3TC48, 3TC52, . 3TC56 | **Diode assemblies**[3] (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately | | 24 ... 250 | **3TX7 462-3D** | |
| **Terminal covers** | | | | | | |
| 3TX6 506-3B | | | | | | |
| **6** | 3TC48 | For protection against inadvertent contact with exposed busbar connections. Can be screwed on free screw end. Covers one busbar connection | | | **3TX6 506-3B** | 1 set= 6 units |
| **10 and 14** | 3TC52, 3TC56 | | | | **3TX6 546-3B** | 1 set= 6 units |

[1] The connection piece for mounting the surge suppressor must be bent slightly.
[2] Includes the peak value of the alternating voltage on the DC side.
[3] Not for DC economy circuit.




1 Contactor relay
2 Coupling contactor relay for auxiliary circuits

3 3RA28 function module
4 1-pole auxiliary switch block, cable entry from the top
5 2-pole auxiliary switch block, cable entry from the top
6 1-pole auxiliary switch block, cable entry from the bottom
7 2-pole auxiliary switch block, cable entry from the bottom
8 4-pole auxiliary switch block
(terminal designations according to EN 50011 or EN 50005)
9 2-pole auxiliary switch block, solid-state compatible version
(terminal designations according to EN 50005)

10 Solder pin adapter for contactor relays with 4-pole auxiliary switch block
11 Solder pin adapter
12 Additional load module for increasing the permissible residual current
13 Surge suppressor with LED
14 Surge suppressor without LED

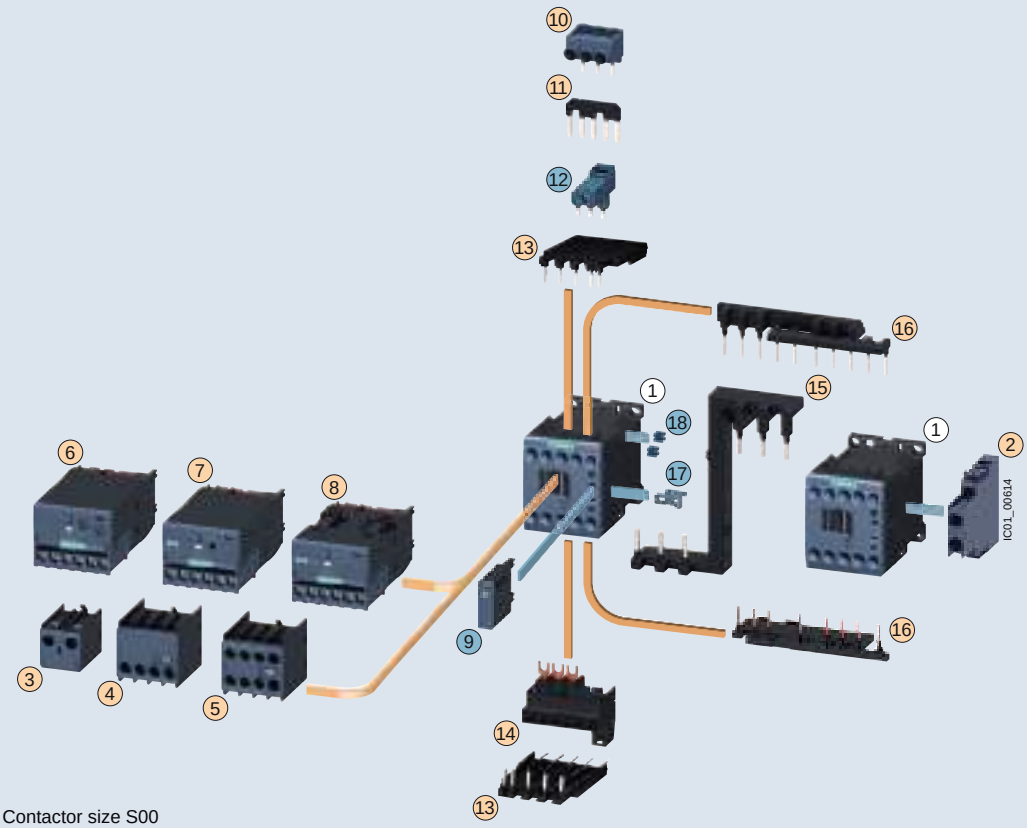
For contactor relays
For increasing the permissible residual current

## Overview

### *The SIRIUS family of controls*

The SIRIUS modular system with its components for the switching, starting, protection and monitoring of motors and industrial systems stands for the fast, flexible and space-saving construction of control cabinets.

### *3RT2 contactors*
### *Size S00 with mountable accessories*




1 Contactor size S00

2 2-pole auxiliary switch block, laterally mountable
3 1-pole auxiliary switch block, for snapping onto the front cable entry from the top
4 2-pole auxiliary switch block, for snapping onto the front cable entry from the bottom
5 4-pole auxiliary switch block, for snapping onto the front
6 3RA28 function module
7 3RA27 function module for AS-Interface, direct starting
8 3RA27 function module for IO-Link, direct starting
9 Surge suppressor with/without LED
10 Three-phase feeder terminal
11 Star jumper, 3-pole, without connecting terminal
12 Link for paralleling, 3-pole, with connecting terminal
13 Solder pin adapter
14 Connection module (adapter and connector) for contactors with screw-type connection
15 Safety main current connector for two contactors

Assembly kit 3RA2913-2AA1 comprising:

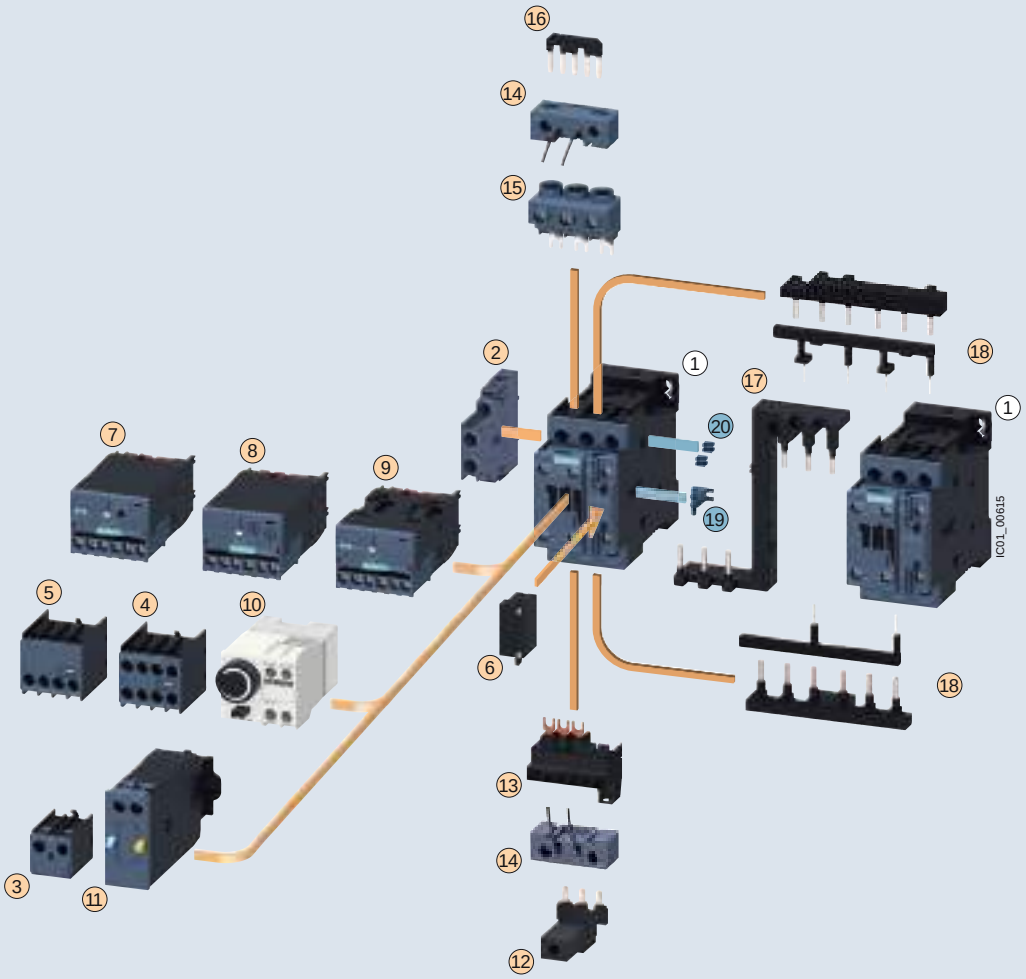
16 Wiring modules on the top and bottom for connecting the main, auxiliary and control current paths, electrical interlock[1] included (NC contact interlock), can be broken off (NC contact interlock)
17 Mechanical interlocks[2]
18 Two connecting clips for two contactors[2]

For contactors
For contactors and coupling contactors

[1] 3RT201. contactors with one NC contact in the basic unit are required for the electrical interlock. An additional NO contact is required for momentary-contact operation.

[2] The parts 17 and 18 can only be ordered together as 3RA2912-2H mechanical connectors.

***3RT2 contactors***
***Size S0 with mountable accessories***




(1) Contactor size S0

(2) 2-pole auxiliary switch block, laterally mountable
(3) 1-pole auxiliary switch block, for snapping onto the front cable entry from the top
(4) 4-pole auxiliary switch block, for snapping onto the front
(5) 2-pole auxiliary switch block, for snapping onto the front cable entry from the bottom
(6) Surge suppressor with/without LED
(7) 3RA27 function module for AS-Interface, direct starting
(8) 3RA28 function module
(9) 3RA27 function module for IO-Link, direct starting
(10) Pneumatically delayed auxiliary switch block
(11) Mechanical latching block

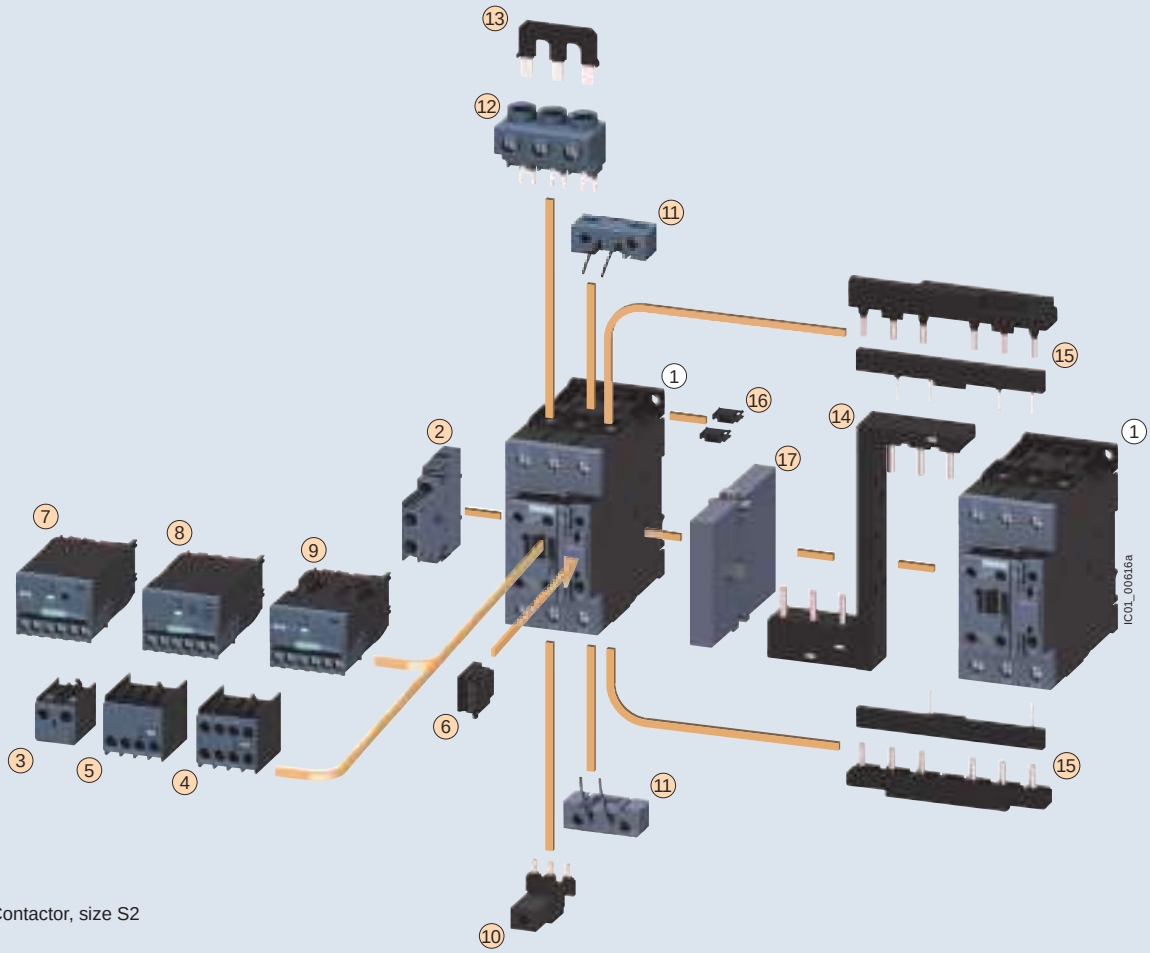
(12) Link for paralleling, 3-pole, with connecting terminal
(13) Connection module (adapter and plug) for contactors with screw-type connection
(14) Coil terminal module, on the top and bottom
(15) Three-phase feeder terminal
(16) Link for paralleling (star jumper), 3-pole, without connecting terminal
(17) Safety main current connector for two contactors

Assembly kit 3RA2923-2AA1 comprising:

(18) Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)
(19) Mechanical interlocks [1)]
(20) Two connecting clips for two contactors [1)]

○ For contactors
● For contactors and coupling contactors

[1)] The parts (19) and (20) can only be ordered together as 3RA2912-2H mechanical connectors.




1 Contactor, size S2

2 2-pole auxiliary switch block, laterally mountable
3 1-pole auxiliary switch block, for snapping onto the front, cable entry from above
4 4-pole auxiliary switch block, for snapping onto the front
5 2-pole auxiliary switch block, for snapping onto the front, cable entry from below
6 Surge suppressor with/without LED
7 3RA27 function modules for AS-Interface, direct-on-line starting
8 3RA28 function modules
9 3RA27 function modules for IO-Link, direct-on-line starting
10 Link for paralleling, 3-pole, with connection terminal
11 Coil terminal module, top and bottom
12 Three-phase feeder terminal
13 Link for paralleling (star jumper), 3-pole, without connection terminal
14 Safety main current connector for two contactors

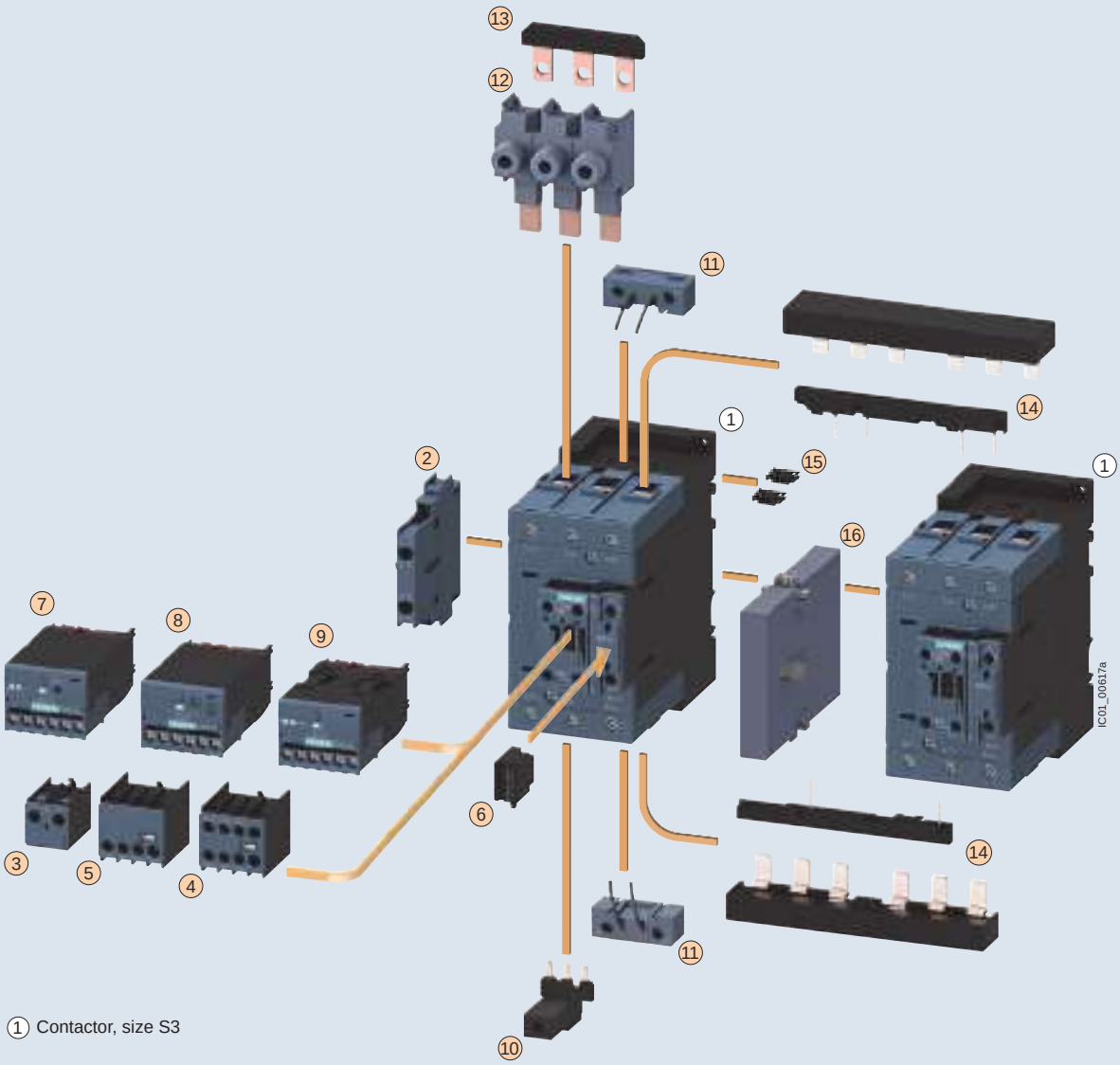
Assembly kit 3RA2933-2AA1 comprising:

15 Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)
16 Two connecting clips for two contactors

To be ordered separately:

17 Mechanical interlocks

Accessories see pages 2/72 to 2/87.




(1) Contactor, size S3

(2) 2-pole auxiliary switch block, laterally mountable
(3) 1-pole auxiliary switch block, for snapping onto the front, cable entry from above
(4) 4-pole auxiliary switch block, for snapping onto the front
(5) 2-pole auxiliary switch block, for snapping onto the front, cable entry from below
(6) Surge suppressor with/without LED
(7) 3RA27 function modules for AS-Interface, direct-on-line starting
(8) 3RA28 function modules
(9) 3RA27 function modules for IO-Link, direct-on-line starting
(10) Links for paralleling, 3-pole, with connection terminal
(11) Coil terminal module, top and bottom
(12) Single-phase infeed terminals (3 units)
(13) Links for paralleling (star jumper), 3-pole without connecting terminal

Assembly kit 3RA2943-2AA1 comprising:

(14) Wiring modules on the top and bottom for connecting the main, auxiliary and control current paths, electrical interlock[1] included, can be broken off (NC contact interlock)
(15) Two connectors for two contactors

To be ordered separately:

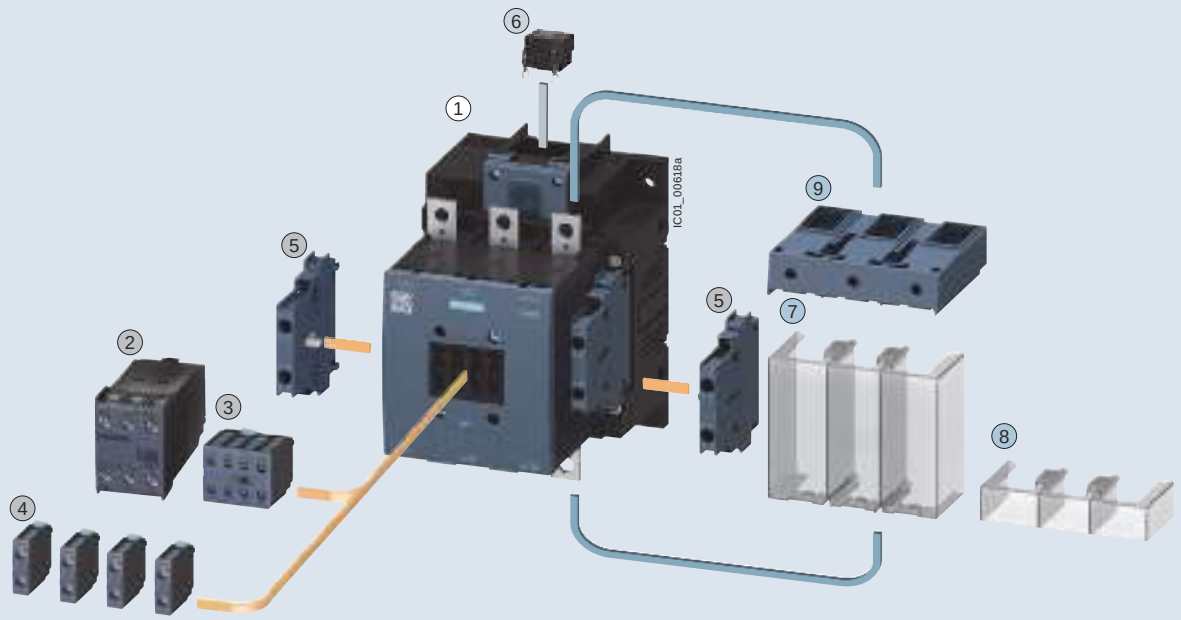
(16) Mechanical interlock

[1] 3RT201. contactors with one NC contact in the basic unit are required for the electrical interlock. An additional NO contact is required for momentary-contact operation.

Accessories see pages 2/72 to 2/87.

Motor Starters see Chapter 4 Combination Starters & Starters for group installation

***(illustration for basic unit)***



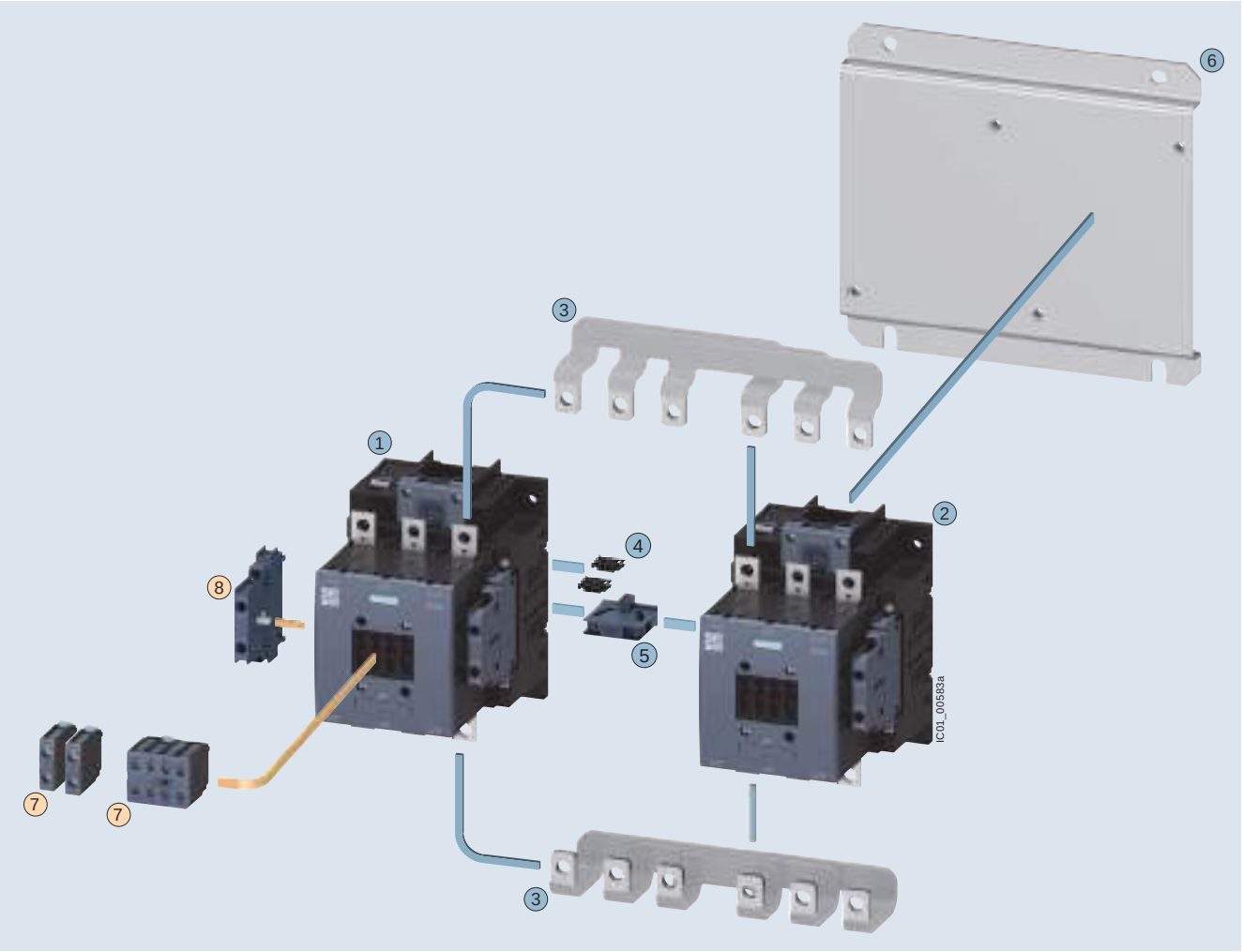

1 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12

2 Auxiliary switch block, solid-state time-delay (ON or OFF-delay or star-delta (wye-delta) starting)
3 4-pole auxiliary switch block
4 1-pole auxiliary switch block (up to 4 can be snapped on)
5 2-pole auxiliary switch block, laterally mountable left or right
6 Surge suppressor (RC element) for plugging into top of withdrawable coil
7 Terminal cover for cable lug and busbar connection
8 Terminal cover for box terminal
9 Box terminal block

Accessories identical for sizes S6 to S12
Different accessories for sizes S6 and S10/S12

For accessories see pages 2/72 to 2/89.

For mountable overload relays see Chapter 3, "Overload Relays".




## Mountable accessories (optional)

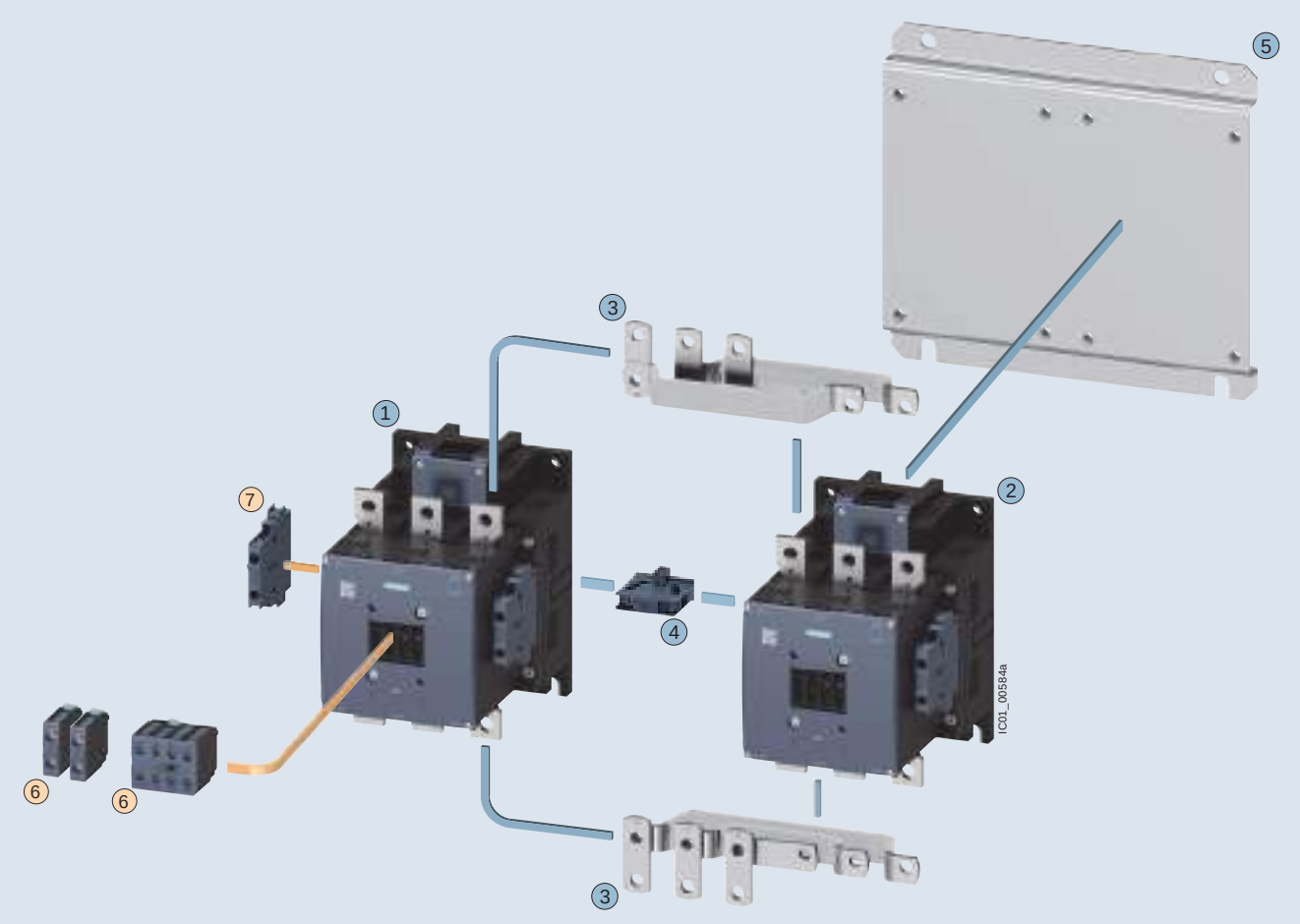
| To be ordered separately | | Type |
|---|---|---|
| 6 | Auxiliary switch block, front | 3RH1921 |
| 7 | Auxiliary switch block, lateral | 3RH1921 |

## Reversing contactor assembly for customer assembly

| Individual parts | | Type Q11 | Type Q12 |
|---|---|---|---|
| 1 2 | Contactors, 55 kW | 3RT1.54 | 3RT1.54 |
| 1 2 | Contactors, 75 kW | 3RT1.55 | 3RT1.55 |
| 1 2 | Contactors, 90 kW | 3RT1.56 | 3RT1.56 |
| 3 | Assembly kit consisting of: Wiring modules on the top and bottom for contactors without box terminals for connecting the main and auxiliary circuits, electrical interlock included (NC contact interlock) | 3RA1953-2A | |
| 4 | Two connectors for two contactors | 3RA1932-2D | |
| 5 | Mechanical interlock (must be ordered separately) | 3RA1954-2A | |
| 6 | Base plate for reversing contactor assemblies | 3RA1952-2A | |

For accessories see pages 2/72-2/89.

Mountable overload relays see Chapter 3, “Overload Relays”.




## Mountable accessories (optional)

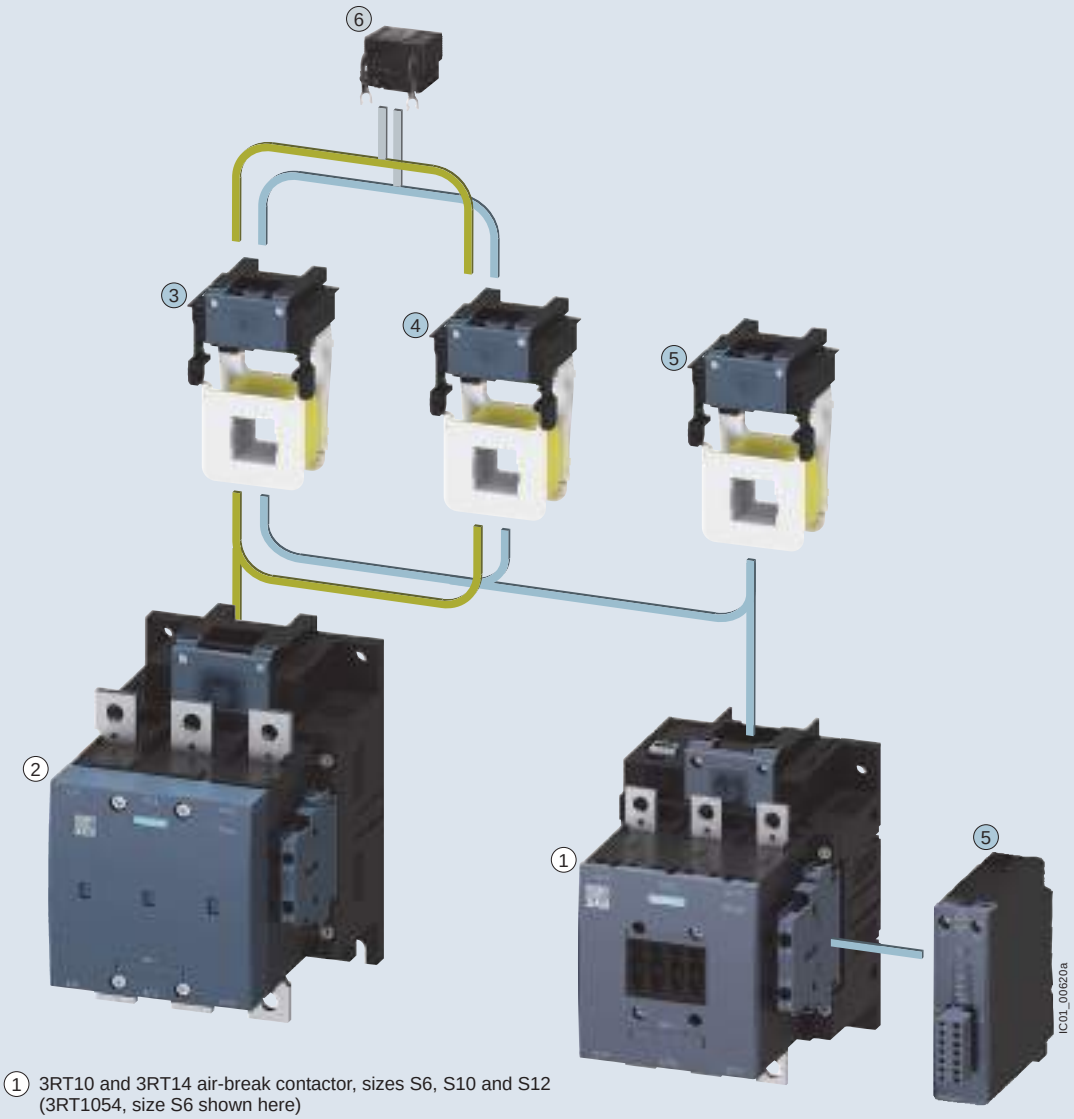
| To be ordered separately | Type |
|---|---|
| 6 Auxiliary switch block, front | 3RH1921 |
| 7 Auxiliary switch block, lateral | 3RH1921 |

## Reversing contactor assembly for customer assembly

| Individual parts | | Type Q11 | Q12 |
|---|---|---|---|
| 1 2 | Contactors, 110 kW | 3RT1.64 | 3RT1.64 |
| 1 2 | Contactors, 132 kW | 3RT1.65 | 3RT1.65 |
| 1 2 | Contactors, 160 kW | 3RT1.66 | 3RT1.66 |
| 3 | Assembly kit consisting of: Wiring modules on the top and bottom for contactors without box terminals for connecting the main and auxiliary circuits, electrical interlock included (NC contact interlock) | 3RA1963-2A | |
| 4 | Mechanical interlock (must be ordered separately) | 3RA1954-2A | |
| 5 | Base plate for reversing contactor assemblies | 3RA1962-2A | |

For accessories see pages 2/72-2/89.

For mountable overload relays see Chapter 3, "Overload Relays".




1. 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12
(3RT1054, size S6 shown here)
2. 3RT12 vacuum contactor, sizes S10 and S12
(3RT1266, size S10 shown here)
3. Withdrawable coils for 3RT1...-.**A**... contactors with conventional operating mechanism
(size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors)
(size S12: the same for air-break and vacuum contactors)
4. Withdrawable coils for 3RT1...-.**N**... contactors with solid-state operating mechanism.
(size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors)
(size S12: the same for air-break and vacuum contactors)
5. Withdrawable coils and laterally mountable module (plug-on) for 3RT1...-.**P**... air-break contactors with solid-state operating mechanism and remaining lifetime indicator
6. Surge suppressor (RC element), plug-mountable on withdrawable coils
• 3RT1...-.**A**... with conventional operating mechanism
• 3RT1...-.**N**... with solid-state operating mechanism

◯ Same accessories for sizes S6 to S12
◯ Different accessories depending on size

For surge suppressors see page 2/79,
withdrawable coils see page 2/105.

For mountable overload relays see Chapter 3,
“Overload Relays”.

## Selection and ordering data

3RH2911-1HA01

3RH2911-2HA01

3RH19 21-1HA. .

3RH19 21-2HA . .

| For contactors/ control relays | Rated operational Current [3] 6A NEMA A600/Q600 | Contactor with HS block Ident. No. | Connections position | Auxiliary contacts Version NO | NC | NO | NC | Screw Terminals[1] Order No. | Spring Terminals[1] Order No. |
|---|---|---|---|---|---|---|---|---|---|
| Type | | | | | | | | | |
| **Auxiliary switch blocks for snapping onto the front according to EN 50012 (also compliant with the requirements according to EN 50005)** | | | | | | | | | |
| ***Size S00*** [2] | | | | | | | | | |
| **For assembling contactors with 2, 3, 4, or 5 auxiliary contacts** | | | | | | | | | |
| 3RT201., Ident. No. 10E 3RT231. 3RT251. | **11E** | | | — | 1 | — | — | **3RH2911-1HA01** | **3RH2911-2HA01** |
| | **12E** | | | — | 2 | — | — | **3RH2911-1HA02** | **3RH2911-2HA02** |
| | **13E** | | | — | 3 | — | — | **3RH2911-1HA03** | **3RH2911-2HA03** |
| | **21E** | | | 1 | — | — | — | **3RH2911-1HA10** | **3RH2911-2HA10** |
| | **21E** | | | 1 | 1 | — | — | **3RH2911-1HA11** | **3RH2911-2HA11** |
| | **22E** | | | 1 | 2 | — | — | **3RH2911-1HA12** | **3RH2911-2HA12** |
| | **23E** | | | 1 | 3 | — | — | **3RH2911-1HA13** | **3RH2911-2HA13** |
| | **31E** | | | 2 | — | — | — | **3RH2911-1HA20** | **3RH2911-2HA20** |
| | **31E** | | | 2 | 1 | — | — | **3RH2911-1HA21** | **3RH2911-2HA21** |
| | **32E** | | | 2 | 2 | — | — | **3RH2911-1HA22** | **3RH2911-2HA22** |
| | **41E** | | | 3 | — | — | — | **3RH2911-1HA30** | **3RH2911-2HA30** |
| | **41E** | | | 3 | 1 | — | — | **3RH2911-1HA31** | **3RH2911-2HA31** |
| ***Size S0 to S3*** | | | | | | | | | |
| **For assembling contactors with 3, 4, or 5 auxiliary contacts** | | | | | | | | | |
| 3RT202. , Ident. No. 11E 3RT232. 3RT252. 3RT203. 3RT233. 3RT235. | **12E** | | | — | 1 | — | — | **3RH2911-1HA01** | **3RH2911-2HA01** |
| | **13E** | | | — | 2 | — | — | **3RH2911-1HA02** | **3RH2911-2HA02** |
| | **14E** | | | — | 3 | — | — | **3RH2911-1HA03** | **3RH2911-2HA03** |
| | **21E** | | | 1 | — | — | — | **3RH2911-1HA10** | **3RH2911-2HA10** |
| | **22E** | | | 1 | 1 | — | — | **3RH2911-1HA11** | **3RH2911-2HA11** |
| | **23E** | | | 1 | 2 | — | — | **3RH2911-1HA12** | **3RH2911-2HA12** |
| | **24E** | | | 1 | 3 | — | — | **3RH2911-1HA13** | **3RH2911-2HA13** |
| | **31E** | | | 2 | — | — | — | **3RH2911-1HA20** | **3RH2911-2HA20** |
| | **32E** | | | 2 | 1 | — | — | **3RH2911-1HA21** | **3RH2911-2HA21** |
| | **33E** | | | 2 | 2 | — | — | **3RH2911-1HA22** | **3RH2911-2HA22** |
| | **41E** | | | 3 | — | — | — | **3RH2911-1HA30** | **3RH2911-2HA30** |
| | **42E** | | | 3 | 1 | — | — | **3RH2911-1HA31** | **3RH2911-2HA31** |
| **Auxiliary switch blocks for snapping onto the front according to EN 50012** | | | | | | | | | |
| ***Sizes S6 to S12*** | | | | | | | | | |
| **4-pole** | | | | | | | | | |
| 3RT1. 4 to 3RT1. 7, 3RT11. | **22** | | (with location digits 5, 6, 7, 8) | 2 | 2 | — | — | **3RH1921-1XA22-0MA0** | **3RH1921-2XA22-0MA0** |

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers.
For position of the terminals see pages 2/209-2/213.
For int. circuit diagrams see page 2/197.
3RH29 aux blocks are not intended for use with 3RT1 or 3RH1 contactors and relays.
3RH19 aux blocks are not intended for use with 3RT2 or 3RH2 contactors and relays.
For auxiliary switch blocks for 3RH2140 and 3RH2440 see page 2/57.

1) The 3RH2911-.HA.. aux. switches are available with ring-lug terminals. Replace the 8th digit of the Order No. with a "4".

2) Size S00 can be mounted according to EN 50012 only on basic units which have no integrated NC contact.

3) UL ratings: See appendix page 19/7

## Selection and ordering data

3RH2911-1FA40

3RH2911-2FA40

3RH19 21-1C. . .

3RH19 21-2C . . .

3RH19 21-1LA . .

3RH19 21-1MA..

| For contactors/ control relays | Rated operational Current [3] 6A NEMA A600/Q600 | Contactor with HS block Ident. No. | Connections position | Auxiliary contacts Version | | | | **Screw Terminals**[1] Order No. | **Spring Terminals**[1] Order No. |
|---|---|---|---|---|---|---|---|---|---|
| Type | | | | NO | NC | NO | NC | | |
| **Auxiliary switch blocks for snapping onto the front according to EN 50005** | | | | | | | | | |
| ***Sizes S00 to S3*** | | | | | | | | | |
| **2- or 4-pole auxiliary switch blocks for assembling contactors with 3 and 5 or 4 and 6 auxiliary contacts** | | | | | | | | | |
| 3RT2. 1., | **40** | | | 4 | — | — | — | **3RH2911-1FA40** | **3RH2911-2FA40** |
| 3RT2. 2., | **22** | | | 2 | 2 | — | — | **3RH2911-1FA22** | **3RH2911-2FA22** |
| 3RT2. 3., | **04** [1] | | | — | 4 | — | — | **3RH2911-1FA04** | **3RH2911-2FA04** |
| 3RH21 .., | **11** [2] | | | — | — | 1 | 1 | **3RH2911-1FB11** | **3RH2911-2FB11** |
| 3RH24 .. | **22** [2] | | | 1 | 1 | 1 | 1 | **3RH2911-1FB22** | **3RH2911-2FB22** |
| | **22** [2] | | | — | — | 2 | 2 | **3RH2911-1FC22** | **3RH2911-2FC22** |
| **1- and 2- pole auxiliary switch blocks, cable entry from above or below** | | | | | | | | | |
| 3RT2. 1., | **10** | Top | | 1 | — | — | — | **3RH2911-1AA10** | — |
| 3RT2. 2., | | Bottom | | 1 | — | — | — | **3RH2911-1BA10** | — |
| 3RT2. 3., | **01** | Top | | — | 1 | — | — | **3RH2911-1AA01** | — |
| 3RH21 .., | | Bottom | | — | 1 | — | — | **3RH2911-1BA01** | — |
| 3RH24 .. | **11** | Top | | 1 | 1 | — | — | **3RH2911-1LA11** | — |
| | | Bottom | | 1 | 1 | — | — | **3RH2911-1MA11** | — |
| | **20** | Top | | 2 | — | — | — | **3RH2911-1LA20** | — |
| | | Bottom | | 2 | — | — | — | **3RH2911-1MA20** | — |
| ***Sizes S6 to S12*** | | | | | | | | | |
| **Single-pole auxiliary switch blocks (also compliant with EN 5001**[2]**)** | | | | | | | | | |
| 3RT1. 4 to | — | | | 1 | — | — | — | **3RH1921-1CA10** | **3RH1921-2CA10** |
| 3RT1. 7, | — | | | — | 1 | — | — | **3RH1921-1CA01** | **3RH1921-2CA01** |
| 3RT11 | — | | | — | — | 1 | — | **3RH1921-1CD10** | — |
| | — | | | — | — | — | 1 | **3RH1921-1CD01** | — |

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers.
For position of the terminals see pages 2/209-2/213.
For int. circuit diagrams see page 2/197.

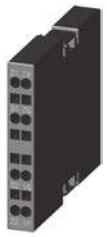
1) Mounting is permitted only on basic units which have no integrated NC contact.

2) Version with early make and delayed break contacts

3) UL ratings: See appendix page 19/7

## Selection and ordering data

3RH2911-1DA02


3RH2911-2DA02

3RH19 21-1EA. .
-1KA. .

3RH2921-1DA02

| For contactors/ control relays | Rated operational Current [4] 6A NEMA A600/Q600 | Contactor with HS block Ident. No. | Mountable to contactor/ contactor relay side | Auxiliary contacts Version NO | NC | Screw Terminals[1] Order No. | Spring Terminals[1] Order No. |
|---|---|---|---|---|---|---|---|
| Type | | | | | | | |
| **Laterally mountable auxiliary switch blocks according to EN 50012** | | | | | | | |
| **Laterally mountable auxiliary switch block, 2-pole** | | | | | | | |
| ***Size S00*** [1) 2)] | | | | | | | |
| 3RT201. | A600/Q600 | **12E** | right or left | — | 2 | **3RH2911-1DA02** | **3RH2911-2DA02** |
| Ident. No. 10E | A600/Q600 | **21E** | right or left | 1 | 1 | **3RH2911-1DA11** | **3RH2911-2DA11** |
| ***Size S0 to S3*** | | | | | | | |
| 3RT2.2. [3)] | A600/Q600 | **13E** | right or left | — | 2 | **3RH2921-1DA02** | **3RH2921-2DA02** |
| Ident.No. 11E | A600/Q600 | **22E** | right or left | 1 | 1 | **3RH2921-1DA11** | **3RH2921-2DA11** |
| 3RT2.3. | A600/Q600 | **31E** | right or left | 2 | — | **3RH2921-1DA20** | **3RH2921-2DA20** |
| **First laterally mountable auxiliary switch block, 2-pole** | | | | | | | |
| ***Sizes S6 to S12*** | | | | | | | |
| 3RT1. 3 to 3RT1. 7 | A600/Q600 | | right or left | 1 | 1 | **3RH1921-1DA11** | **3RH1921-2DA11** |
| **Second laterally mountable auxiliary switch block, 2-pole** | | | | | | | |
| ***Sizes S6 to S12*** | | | | | | | |
| 3RT1. 4 to 3RT1. 7 | A300/Q300 | | right or left | 1 | 1 | **3RH1921-1JA11** | **3RH1921-2JA11** |
| **Laterally mountable auxiliary switch blocks according to EN 50005** | | | | | | | |
| **First laterally mountable auxiliary switch block, 2-pole** | | | | | | | |
| ***Sizes S00*** [1) 2)] | | | | | | | |
| 3RT2.1. | A600/Q600 | **02** | right or left | — | 2 | **3RH2911-1DA02** | **3RH2911-2DA02** |
| Ident.No. 10E | A600/Q600 | **11** | right or left | 1 | 1 | **3RH2911-1DA11** | **3RH2911-2DA11** |
| | A600/Q600 | **20** | right or left | 2 | — | **3RH2911-1DA20** | **3RH2911-2DA20** |
| ***Sizes S0 to S3*** | | | | | | | |
| 3RT2.2., | A600/Q600 | **02** | right or left | — | 2 | **3RH2921-1DA02** | **3RH2921-2DA02** |
| 3RT2.3.[3)] | A600/Q600 | **11** | right or left | 1 | 1 | **3RH2921-1DA11** | **3RH2921-2DA11** |
| | A600/Q600 | **20** | right or left | 2 | — | **3RH2921-1DA20** | **3RH2921-2DA20** |
| ***Sizes S6 to S12*** | | | | | | | |
| 3RT1. 4 to | A300/Q300 | | right or left | — | 2 | **3RH1921-1EA02** | **3RH1921-2EA02** |
| 3RT1. 7 | A300/Q300 | | right or left | 1 | 1 | **3RH1921-1EA11** | **—** |
| | A300/Q300 | | right or left | 2 | — | **3RH1921-1EA20** | **3RH1921-2EA20** |
| **Second laterally mountable auxiliary switch block, 2-pole** | | | | | | | |
| ***Sizes S6 to S12*** | | | | | | | |
| 3RT1. 4 to | A300/Q300 | | right or left | — | 2 | **3RH1921-1KA02** | **3RH1921-2KA02** |
| 3RT1. 7 | A300/Q300 | | right or left | 1 | 1 | **3RH1921-1KA11** | **—** |
| | A300/Q300 | | right or left | 2 | — | **3RH1921-1KA20** | **3RH1921-2KA20** |

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers.
For position of the terminals see pages 2/209-2/213.
For int. circuit diagrams see pages 2/197-2/202.

1) With size S00, mounting according to EN 50012 is permitted only on basic units which have no NC contact integrated.

2) Ident. No. 41, 32 and 23 according to EN 50012 is also possible. Please note the corresponding circuit diagrams for mounting 3RH29 11-1DA.. on the left.

3) With 3RT23 2., 3RT25. 2. mountable only on the right.

4) UL ratings: See appendix page 19/7

## Selection and ordering data

- Operation in dusty atmospheres
- Solid-state circuits with rated operational currents $I_e$/AC-14 and DC-13 from 1 … 300 mA at 3 … 60 V
- Hard gold-plated contacts
- Mirror contacts according to EN 60947-4-1, Appendix F, for laterally mountable auxiliary switches

## Selection and ordering data

3RH2911-1NF02

3RH2911-2NF02

3RH2911-2DE11

3RH1921-2DE11

3RH29 21-2DE11

| For contactors/ control relays | Contactor with HS block Ident. No. | Mountable to contactor/ contactor relay side | Auxiliary contacts Version NO | NC | NO | NC | Screw Terminals[1] Order No. | Spring Terminals[1] Order No. |
|---|---|---|---|---|---|---|---|---|
| Type | | | | | | | | |
| **Solid-state compatible auxiliary switch blocks for snapping onto the front according to EN 50005 [1]** | | | | | | | | |
| ***Sizes S00 to S3*** | | | | | | | | |
| 3RT2. 1., | **02** | | — | — | — | 2 | **3RH2911-1NF02** | **3RH2911-2NF02** |
| 3RT2.2., 3RT2.3. | **11** | | 1 | — | — | 1 | **3RH2911-1NF11** | **3RH2911-2NF11** |
| 3RH21 .., 3RH24 .. | **20** | | 2 | — | — | — | **3RH2911-1NF20** | **3RH2911-2NF20** |
| ***Sizes S6 to S12*** | | | | | | | | |
| 3RT1. 4 to | — | | 1 | 1 | 1 | 1 | **3RH1921-1FE22** | **3RH19 21-2FE22** |
| 3RT1. 7 | — | | — | 2 | 2 | — | | **3RH1921-2FJ22** |
| **Solid-state compatible auxiliary switch blocks, laterally mountable, according to EN 50012** | | | | | | | | |
| **First laterally mountable auxiliary switch block, 2-pole** | | | | | | | | |
| ***Size S00*** [2] | | | | | | | | |
| 3RT2. 1., Ident. No. 10E | **21E** | right | 1 | — | — | 1 | — | **3RH2911-2DE11** |
| ***Size S0 to S3*** | | | | | | | | |
| 3RT2. 2, 3RT2. 3 Ident. No. 10E | **22E** | right | 1 | — | — | 1 | — | **3RH2921-2DE11** |
| ***Sizes S6 to S12*** | | | | | | | | |
| 3RT1. 4 to 3RT1 . 7 | | right or left | 1 | — | — | 1 | — | **3RH1921-2DE11** |
| **Second laterally mountable auxiliary switch block, 2-pole** | | | | | | | | |
| ***Sizes S6 to S12*** | | | | | | | | |
| 3RT1. 4 to 3RT1. 7 | | right or left | 1 | — | — | 1 | — | **3RH1921-2JE11** |
| **Solid-state compatible auxiliary switch blocks, laterally mountable, according to EN 50005** | | | | | | | | |
| ***Size S00*** | | | | | | | | |
| 3RT2. 1., Ident. No. 10E | **11** | right or left | 1 | — | — | 1 | — | **3RH2911-2DE11** |
| ***Size S0 to S2*** | | | | | | | | |
| 3RT2. 2., 3RT2. 3 | **11** | right or left | 1 | — | — | 1 | — | **3RH2921-2DE11** |

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers.
For position of the terminals see pages 2/209 -2/213.
For int. circuit diagrams see pages 2/197-2/202.

1) The 3RH29 11-.NF.. auxiliary switches are also available with ring lug terminal connection. The 8th digit of the order number must be replaced with "4", e. g.: 3RH2911-1NF11 -> 3RH2911-4NF11

2) Size S00 can be mounted according to EN 50012 only on basic units which have no integrated NC contact.

## Selection and ordering data

| | For contactors | Rated control supply voltage $U_s$ [1] | Time setting range $t$ | Output / auxiliary contacts | Screw Terminals Order No. | Spring Terminals Order No. |
|---|---|---|---|---|---|---|
| | Type | V | Sec | | | |
| **Time-delay, solid-state auxiliary switch blocks for snapping onto the front according to DIN 46199-5** | | | | | | |
| | The electrical connection between the solid-state time-delay auxiliary switch and the contactor underneath is established automatically when it is snapped on and locked into place. | | | | | |
| | ***Sizes S00 to S3*** | | | | | |
| 3RA2813-1AW10 | | **ON-delay (varistor integrated)** | | | | |
| | 3RT2., 3RH21 [2] 3RH24 | 24 … 240 AC/DC | 0.05 … 100 (1, 10, 100, selectable) | 1 CO<br>1 NO + 1 NC | **3RA2813-1AW10**<br>**3RA2813-1FW10** | **3RA2813-2AW10**<br>**3RA2813-2FW10** |
| | | **OFF-delay with auxiliary voltage (varistor integrated)** | | | | |
| | | 24 … 240 AC/DC | 0.05 … 100 (1, 10, 100, selectable) | 1 CO<br>1 NO + 1 NC | **3RA28 14-1AW10**<br>**3RA28 14-1FW10** | **3RA28 14-2AW10**<br>**3RA28 14-2FW10** |
| | | **OFF-delay without auxiliary voltage[3] (varistor integrated)** | | | | |
| | | 24 … 240 AC/DC | 0.05 … 100 (1, 10, 100, selectable) | 1 CO<br>1 NO + 1 NC | **3RA2815-1AW10**<br>**3RA2815-1FW10** | **3RA2815-2AW10**<br>**3RA2815-2FW10** |
| | ***Sizes S6 to S12*** | | | | | |
| 3RT1926-2FJ11 | | **ON-delay (varistor integrated)** | | | | |
| | 3RT10, 3RT13, 3RT14, 3RT15 | 24 AC/DC [4] | 0.05 … 1 | 1 NO + 1 NC | **3RT19 26-2EJ11** | — |
| | | | 0.5 … 10 | 1 NO + 1 NC | **3RT19 26-2EJ21** | — |
| | | | 5 … 100 | 1 NO + 1 NC | **3RT19 26-2EJ31** | — |
| | | 100 … 127 AC [4] | 0.05 … 1 | 1 NO + 1 NC | **3RT19 26-2EC11** | — |
| | | | 0.5 … 10 | 1 NO + 1 NC | **3RT19 26-2EC21** | — |
| | | | 5 … 100 | 1 NO + 1 NC | **3RT19 26-2EC31** | — |
| | | 200 … 240 AC [4] | 0.05 … 1 | 1 NO + 1 NC | **3RT19 26-2ED11** | — |
| | | | 0.5 … 10 | 1 NO + 1 NC | **3RT19 26-2ED21** | — |
| | | | 5 … 100 | 1 NO + 1 NC | **3RT19 26-2ED31** | — |
| | | **OFF-delay without auxiliary voltage [5]** | | | | |
| | | 24 AC/DC [4] | 0.05 … 100 (1, 10, 100, selectable) | 1 NO + 1 NC<br>1 NO + 1 NC<br>1 NO + 1 NC | **3RT19 26-2FJ11**<br>**3RT19 26-2FJ21**<br>**3RT19 26-2FJ31** | —<br>—<br>— |
| | | 100 … 127 AC [4] | 0.05 … 100 (1, 10, 100, selectable) | 1 NO + 1 NC<br>1 NO + 1 NC<br>1 NO + 1 NC | **3RT19 26-2FK11**<br>**3RT19 26-2FK21**<br>**3RT19 26-2FK31** | —<br>—<br>— |
| | | 200 … 240 AC [4] | 0.05 … 100 (1, 10, 100, selectable) | 1 NO + 1 NC<br>1 NO + 1 NC<br>1 NO + 1 NC | **3RT19 26-2FL11**<br>**3RT19 26-2FL21**<br>**3RT19 26-2FL31** | —<br>—<br>— |
| | | **WYE-delta function** | | | | |
| | | 24 AC/DC [4]<br>100 … 127 AC [4]<br>200 … 240 AC [4] | 1.5 … 30<br>1.5 … 30<br>1.5 … 30 | each have:<br>1 NO delayed<br>1 NO instant<br>interval 50ms | **3RT19 26-2GJ51**<br>**3RT19 26-2GC51**<br>**3RT19 26-2GD51** | —<br>—<br>— |

For technical data, see pages 2/189-2/190.
For int. circuit diagrams, see page 2/205.
For position of terminals, see page 2/213.

When the solid-state time-delay auxiliary switches are used, no other auxiliary switches are allowed to be mounted on the basic units.

1) AC voltage values apply for 50 Hz and 60 Hz.

2) Cannot be fitted onto coupling relays.

3) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact change-over to the correct setting.

4) Terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch must be connected to the associated contactor by means of connecting leads.

5) Position of the output contacts not defined in the as-delivered state (bistable relay). Applying the control voltage once results in the contacts switching to the correct position.

## Selection and ordering data

3RA2812-1DW10

3RA2811-2CW10

| For contactors | Rated control supply voltage $U_s$ [1] | Time setting range $t$ | Screw terminals | Spring-type terminals | Weight |
|---|---|---|---|---|---|
| Type | V AC/DC | s | Order No. | Order No. | kg |
| **Timing relays for mounting on 3RT2 contactors** | | | | | |
| | ***Sizes S00 to S3*** | | | | |
| | The electrical connection between the timing relay and the contactor underneath is established automatically when it is snapped on and locked. | | | | |
| | **ON-delay** Two-wire design, varistor integrated | | | | |
| 3RT20.., 3RT23.., 3RT25.., 3RH21[2], 3RH24 | 24 ... 240 | 0.05 ...100 (1, 10, 100; selectable) | **3RA2811-1CW10** | **3RA2811-2CW10** | |
| 3RT203. | 24 ... 90 | 0.05 ...100 (1, 10, 100; selectable) | **3RA2831-1DG10** | **3RA2831-2DG10** | |
| | 90 ... 240 | | **3RA2831-1DH10** | **3RA2831-2DH10** | |
| | **OFF-delay with control signal** Varistor integrated | | | | |
| 3RT20.., 3RT23.., 3RT25.., 3RH21[2], 3RH24 | 24 ... 240 | 0.05 ...100 (1, 10, 100; selectable) | **3RA2812-1DW10** | **3RA2812-2DW10** | |
| 3RT203. | 24 ... 90 | 0.05 ...100 (1, 10, 100; selectable) | **3RA2832-1DG10** | **3RA2832-2DG10** | |
| | 90 ... 240 | | **3RA2832-1DH10** | **3RA2832-2DH10** | |

1) AC voltage values apply for 50 Hz and 60 Hz.
2) Cannot be fitted onto coupling relays.

For description, see page 2/126.
For technical data, see page 2/189.
For circuit diagrams, see page 2/205.

1) AC voltage ratings apply for 50 and 60 Hz.
2) The 3RA28 time-delay blocks are available with spring-type terminals. Replace the 8th digit of the order number with a "2".
3) Cannot be fitted onto coupling relays

## Selection and ordering data

| | For contactors | Rated control supply voltage $U_s$ [1] | Time setting range $t$ | Screw Terminals [2] Order No. | Weight approx. |
|---|---|---|---|---|---|
| | Type | V | sec | | kg |
| **Off-delay device** | | | | | |
| 3RT2916-2B.01 | ***Sizes S00 to S2*** | | | | |
| | **For contactors with DC operation. Non-adjustable delay time** | | | | |
| | 3RT2., 3RH2. . .-1BF40 | 110 AC/DC | S00: > 0.1<br>S0: > 0.08; S2: > 0.25 | **3RT2916-2BK01** | 0.150 |
| | 3RT2., 3RH2. . .-1BM40 | 220 ... 230 AC/DC | S00: > 0.5<br>S0: > 0.3; S2: > 0.8 | **3RT2916-2BL01** | 0.150 |
| 3RT2916-2BE01 | 3RT2., 3RH2. . .-1BB40 | 24 DC | S00: > 0.2<br>S0: > 0.1; S2: > 0.1 | **3RT2916-2BE01** | 0.150 |
| | ***Sizes S3*** | | | | |
| | 3RT2. 4 | 24 DC | S3: 70 fixed | **3RT2916-2BE01** | 0.093 |
| **Pneumatic time-delay auxiliary switches for mounting on 3RT2 contactors** | | | | | |
| 3RT2927-2P..1 | ***Size S0*** | | | | |
| | **Auxiliary contacts 1 NO and 1 NC**[3] | | | | |
| | **With ON-delay**<br>3RT202[4] | — | 1 ... 30<br>10 ... 180 | **3RT2927-2PA01**<br>**3RT2927-2PA11** | 0.090<br>0.090 |
| | **With OFF-delay**<br>3RT202[4] | — | 1 ... 30<br>10 ... 180 | **3RT2927-2PR01**<br>**3RT2927-2PR11** | 0.090<br>0.090 |
| **Mechanical latching blocks** | | | | | |
| 3RT2926-3AB31 | **For mounting onto the front of contactors**<br>**The contactor remains in the energized state even after voltage failure** | | | | |
| | ***Size S0*** | | | | |
| | 3RT2. 2 | 24 AC/DC | — | **3RT2926-3AB31** | 0.100 |
| | | 110 AC/DC | — | **3RT2926-3AF31** | 0.100 |
| | | 230 AC/DC | — | **3RT2926-3AP31** | 0.100 |

For description, see page 2/126.
For technical data, see page 2/189.
For circuit diagrams, see page 2/205.

1) AC voltage ratings apply for 50 and 60 Hz.

2) The 3RA28 time-delay blocks are available with spring-type terminals. Replace the 8th digit of the order number with a "2".

3) In addition to these, no other auxiliary contacts are permitted.

4) Cannot be fitted onto coupling contactors and coupling contactor relays.

## Selection and ordering data

| For contactors | Version | Rated control supply voltage $U_s$ [1] | | Order No. | Weight |
|---|---|---|---|---|---|
| | | AC operation | DC operation | | |
| Type | | V AC | V DC | | kg |
| **Surge suppressors without LED (also for spring-type terminals)** | | | | | |
| ***Size S00*** | | | | | |
| | **For plugging onto the front side of the contactors (with and without auxiliary switch block)** | | | | |
| 3RT2.1, 3RH2. | **Varistors** | 24 ... 48 | 24 ... 70 | | **3RT2916-1BB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2916-1BC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2916-1BD00** |
| | | 240 ... 400 | -- | | **3RT2916-1BE00** |
| | | 400 ... 600 | -- | | **3RT2916-1BF00** |
| 3RT2.1, 3RH2. | **RC elements** | 24 ... 48 | 24 ... 70 | | **3RT2916-1CB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2916-1CC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2916-1CD00** |
| | | 240 ... 400 | -- | | **3RT2916-1CE00** |
| | | 400 ... 600 | -- | | **3RT2916-1CF00** |
| 3RT2.1, 3RH2. | **Noise suppression diodes** | -- | 12 ... 250 | | **3RT2916-1DG00** |
| 3RT2.1, 3RH2. | **Diode assemblies** (diode and Zener diode) for DC operation | -- | 12 ... 250 | | **3RT2916-1EH00** |
| ***Size S0*** | | | | | |
| | **For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)** | | | | |
| 3RT2.2 | **Varistors** [2] | 24 ... 48 | 24 ... 70 | | **3RT2926-1BB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2926-1BC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2926-1BD00** |
| | | 240 ... 400 | -- | | **3RT2926-1BE00** |
| | | 400 ... 600 | -- | | **3RT2926-1BF00** |
| 3RT2.2 | **RC elements** | 24 ... 48 | 24 ... 70 | | **3RT2926-1CB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2926-1CC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2926-1CD00** |
| | | 240 ... 400 | -- | | **3RT2926-1CE00** |
| | | 400 ... 600 | -- | | **3RT2926-1CF00** |
| 3RT2.2 | **Diode assembly** for DC operation | -- | 24 | | **3RT2926-1ER00** |
| | | -- | 30 ... 250 | | **3RT2926-1ES00** |
| ***Size S2 and S3*** | | | | | |
| | **For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)** | | | | |
| 3RT2.3. 3RT2.4. | **Varistors** [2][3] | 24 ... 48 | 24 ... 70 | | **3RT2936-1BB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2936-1BC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2936-1BD00** |
| | | 240 ... 400 | -- | | **3RT2936-1BE00** |
| | | 400 ... 600 | -- | | **3RT2936-1BF00** |
| 3RT2.3. | **RC elements** | 24 ... 48 | 24 ... 70 | | **3RT2936-1CB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2936-1CC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2936-1CD00** |
| | | 240 ... 400 | -- | | **3RT2936-1CE00** |
| | | 400 ... 600 | -- | | **3RT2936-1CF00** |
| 3RT2.3. 3RT2.4. | **Diode assembly** [3] for DC operation | -- | 24 | | **3RT2936-1ER00** |
| | | -- | 30 ... 250 | | **3RT2936-1ES00** |
| ***Size S3*** | | | | | |
| | **For plugging into the two recesses on the left next to the connection block for auxiliary switches and coils A1 and A2. The connecting cables are wired to A1 and A2.** | | | | |
| 3RT2.4 | **RC elements** | 24 ... 48 | 24 ... 70 | | **3RT2946-1CB00** |
| | | 48 ... 127 | 70 ... 150 | | **3RT2946-1CC00** |
| | | 127 ... 240 | 150 ... 250 | | **3RT2946-1CD00** |
| | | 240 ... 400 | -- | | **3RT2946-1CE00** |
| | | 400 ... 600 | -- | | **3RT2946-1CF00** |

3RT2916-1B.00

3RT2926-1E.00

3RT2936-1B.00

3RT2936-1E.00

3RT2946-1C.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about other voltages.
[2] The varistor is already integrated into the AC/DC contactors.
[3] Surge suppressors 3RT2936-1B/1E (version E03) can be used in 3RT2.4 contactors.

## Selection and ordering data

### Surge suppressors without LED

***Sizes S6 to S12***

3RT1956-1C.00

**For connecting to withdrawable coil for contactors with**
- **Standard operating mechanisms 3RT1...-.A...**
- **Solid-state operating mechanisms 3RT1...-.N...**

| For contactors Type | Version | Rated control supply voltage $U_s$ [1] AC operation V AC | DC operation V DC | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | **Screw terminals** | | | |
| 3RT1.5 ... 3RT1.7 | **RC elements** | 24 ... 48 | 24 ... 70 | ▶ | **3RT1956-1CB00** | | 1 | 1 unit |
| | | 48 ... 127 | 70 ... 150 | ▶ | **3RT1956-1CC00** | | 1 | 1 unit |
| | | 127 ... 240 | 150 ... 250 | ▶ | **3RT1956-1CD00** | | 1 | 1 unit |
| | | 240 ... 400 | -- | ▶ | **3RT1956-1CE00** | | 1 | 1 unit |
| | | 400 ... 600 | | 20 | **3RT1956-1CF00** | | 1 | 1 unit |

3RT1956-1C.02

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | **Spring-loaded terminals** | | | |
| 3RT1.5 ... 3RT1.7 | **RC elements** | 24 ... 48 | 24 ... 70 | ▶ | **3RT1956-1CB02** | | 1 | 1 unit |
| | | 48 ... 127 | 70 ... 150 | 2 | **3RT1956-1CC02** | | 1 | 1 unit |
| | | 127 ... 240 | 150 ... 250 | ▶ | **3RT1956-1CD02** | | 1 | 1 unit |
| | | 240 ... 400 | -- | 2 | **3RT1956-1CE02** | | 1 | 1 unit |
| | | 400 ... 600 | | 20 | **3RT1956-1CF02** | | 1 | 1 unit |

[1] Can be used for AC operation for 50/60 Hz. Other voltages on request.

### Surge suppressors with LED (also for spring-type terminals)

3RT2916-1J.00

3RT2926-1MR00

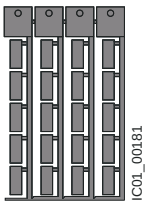
3RT2936-1J.00

| For contactors Type | Version | Rated control supply voltage $U_s$ [1] AC operation V AC | DC operation V DC | mW | Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|
| | ***Size S00*** | **For plugging onto the front side of the contactors (with and without auxiliary switch block)** | | | | |
| 3RT2.1, 3RH2. | **Varistor** | 24 ... 48 | 12 ... 24 | 10 ... 120 | **3RT2916-1JJ00** | 0.010 |
| | | 48 ...127 | 24 ... 70 | 20 ... 470 | **3RT2916-1JK00** | 0.010 |
| | | 127 ... 240 | 70 ... 150 | 50 ... 700 | **3RT2916-1JL00** | 0.010 |
| | | — | 150 ... 250 | 160 ... 950 | **3RT2916-1JP00** | 0.010 |
| 3RT2.1, 3RH2. | **Noise suppression diode** | — | 24 ... 70 | 20 ... 470 | **3RT2916-1LM00** | 0.010 |
| | | — | 50 ... 150 | 50 ... 700 | **3RT2916-1LN00** | 0.010 |
| | | — | 150 ... 250 | 160 ... 950 | **3RT2916-1LP00** | 0.010 |
| | ***Size S0*** | **For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)** | | | | |
| 3RT2.2 | **Varistor** | 24 ... 48 | 12 ... 24 | 10 ... 120 | **3RT2926-1JJ00** | 0.010 |
| | | 48 ...127 | 24 ... 70 | 20 ... 470 | **3RT2926-1JK00** | 0.010 |
| | | 127 ... 240 | 70 ... 150 | 50 ... 700 | **3RT2926-1JL00** | 0.010 |
| 3RT2.2 | **Diode assembly** | — | 24 | 20 ... 470 | **3RT2926-1MR00** | 0.010 |
| | ***Size S2 and S3*** | **For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)** | | | | |
| 3RT2.3, 3RT2.4 | **Varistor** [2] | 24 ... 48 | 12 ... 24 | 10 ... 120 | **3RT2936-1JJ00** | 0.010 |
| | | 48 ...127 | 24 ... 70 | 20 ... 470 | **3RT2936-1JK00** | 0.010 |
| | | 127 ... 240 | 70 ... 150 | 50 ... 700 | **3RT2936-1JL00** | 0.010 |

1) Can be used for AC operations for 50/60 Hz. Other voltages on request.

2. 3RT2936 (version E03) surge suppressors can be used for 3RT2.4 contactors.

## Selection and ordering data

| | For contactors | Version | Units | Order No. | Weight approx. kg |
|---|---|---|---|---|---|
| **Main conducting path surge suppression module for 3RT12 vacuum contactors** | | | | | |
| | ***Sizes S10 and S12***<br>3RT12 | For damping overvoltages and protecting the motor windings against multiple reignition when switching off three-phase motors.<br>For connection on the contactor feeder side (2-T1/4-T2/6-T3).<br>For separate installation.<br>Rated operational voltage $U_e$ ≥ 500 V AC ... ≤ 690 V AC<br>Rated operational voltage $U_e$ ≤ 1000 V AC | | **3RT1966-1PV3**<br>**3RT1966-1PV4** | 0.18<br>0.36 |
| **Auxiliary conductor terminal, 3-pole** | | | | | |
| 3RT2946-4F<br> | ***Size S3***<br>3RT204. | For connecting auxiliary and control leads to the main conductor terminals (for one side). | | **3RT2946-4F** | |
| **Blank Labels** | | | | | |
| 3RT29 00- 1SB20<br>  | | Unit labeling plates<br>20 mm x 7 mm, pastel<br>PC labeling system for individual inscription of unitlabeling plates available from: murrplastik Systems, Inc. | 340 units | **3RT2900-1SB20** | 0.200 |
| | | 10 mm x 7 mm | 816 units | **3RT2900-1SB10** | 0.294 |

## Links for paralleling

3RT1916-4BB31

3RT1916-4BB41

3RT1936-4BB31

3RT1956-4BA31

| Size | For contactors | Maximum resistive current Ie/AC-1 (at 60 °C) of contactors | Max. conductor cross sections | **Screw Terminals** | Standard package quantity | Weight approx. |
|---|---|---|---|---|---|---|
| | Type | A | | Order No. | | kg |
| S00 | 3RT201. | 3-pole, with terminal 1), 2) | 4 AWG, stranded | **3RT1916-4BB31** | | 0.015 |
| S0 | 3RT202. | | 0 AWG, stranded | **3RT2926-4BB31** | | 0.042 |
| S2 | 3RT203. | | 95 mm2 | **3RT1936-4BB31** | | 0.139 |
| S3 | 3RT204. | 3-pole, with through hole (WYE jumpers) 1), 2) | 185 mm2 | **3RT1946-4BB31** | | 0.205 |
| S6 | 3RT1. 5 | | — | **3RT1956-4BA31** | | 0.159 |
| S10/S12 | 3RT1. 6<br>3RT1. 7 | | — | **3RT1966-4BA31** | | 0.541 |
| S00 | 3RT231.<br>3RT251. | 4-pole, with terminal 1), 2) | 4 AWG, stranded | **3RT1916-4BB41** | | 0.016 |

1) Can be used for AC operation for 50/60 Hz.
Please inquire about further voltages.

## Selection and ordering data

| | For contactors Type | Version | Order No. | Weight |
|---|---|---|---|---|
| **EMC suppression modules; 3-phase, up to 10 HP** | | | | |
| | ***Size S00 (for contactors with AC or DC operation)*** | | | |
| | | | **Screw terminals** | |
| 3RT2916-1PA. | 3RT201 | **RC elements** (3 x 220 Ω/0.22 µF) | | |
| | | Up to 400 V | **3RT2916-1PA1** | |
| | | Up to 575 V | **3RT2916-1PA2** | |
| | | Up to 690 V | **3RT2916-1PA3** | |
| | 3RT201 | **Varistors** | | |
| | | Up to 400 V | **3RT2916-1PB1** | |
| | | Up to 575 V | **3RT2916-1PB2** | |
| | | Up to 690 V | **3RT2916-1PB3** | |
| **Coupling links for control by PLC** | | | | |
| | ***Size S0*** | | | |
| 3RH2924-1GP11 | 3RT2. 2 | **For mounting onto the coil terminals of the contactors (only for contactors with screw terminals)**<br>With LED for indicating switching state.<br>With integrated varistor for damping opening surges.<br>24 V DC control,<br>17 ... 30 V DC operating range | **3RH2924-1GP11** | |
| | ***Sizes S00 to S3*** | | | |
| 3RH2914-1GP11 | 3RT2. 1,<br>3RT2. 2,<br>3RT2. 3 | **For mounting on the front side of contactors with AC, DC or AC/DC operation**<br>24 V DC control,<br>17 ... 30 V DC operating range | **3RH2914-1GP11** | |
| | | | **Spring-type terminals** | |
| | | 24 V DC control,<br>17 ... 30 V DC operating range | **3RH2914-2GP11** | |
| **Additional load modules** | | | | |
| | ***Size S00*** | | | |
| 3RT2916-1GA00 | 3RT2. 1,<br>3RH2. | **For plugging onto the front side of the contactors with or without auxiliary switch blocks**<br>For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor.<br>Rated voltage:<br>50/60 Hz, 180 to 255 V AC | **3RT2916-1GA00** | |
| **LED module for indicating contactor operation** | | | | |
| | ***Sizes S00 to S3*** | | | |
| 3RT2926-1QT00 | 3RT2.. | **For snapping into the location hole of an inscription label on the front of a contactor**<br>either directly on the contactor or on the front auxiliary switch.<br>The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state.<br>Yellow LED.<br>Rated voltage:<br>24 ... 240 V AC/DC, with reverse polarity protection. | **3RT2926-1QT00** | |
| **Control kit** | | | | |
| | ***Sizes S00 to S3*** | | | |
| 3RT2916-4MC00 | | **For manual operation of the contactor contacts** for start-up and service | | |
| | 3RT2. 1,<br>3RH2. | | **3RT2916-4MC00** | |
| | 3RT2. 2 | | **3RT2926-4MC00** | |
| | 3RT2. 3 | | **3RT2936-4MC00** | |

## Selection and ordering data

| | For contactors Type | Version | Order No. | Weight |
|---|---|---|---|---|
| **Sealable covers** | | | | |
| | ***Sizes S00 to S3*** | | | |
| 3RT2916-4MA10 | 3RT2.1, 3RT2.2, 3RT2.3, 3RT2.4, 3RH2.[1] | Sealable covers for preventing manual operation (Not suitable for coupling relays) | **3RT2916-4MA10** | |
| **Connection modules for contactors with screw terminals** | | | | |
| | ***Sizes S00 and S0*** | | | |
| 3RT1926-4RD01 | | **Adapters for contactors** Ambient temperature $T_{u\,max}$ = 60 °C | **Screw terminals** | |
| | 3RT2.1, 3RH2. | Size S00, rated operational current $I_e$ at AC-3/400 V: 20 A | **3RT1916-4RD01** | |
| | 3RT2.2 | Size S0, rated operational current $I_e$ at AC-3/400 V: 25 A | **3RT1926-4RD01** | |
| 3RT1900-4RE01 | 3RT2.1, 3RT2.2, 3RH2. | **Plugs for contactors** Size S00, S0 | **3RT1900-4RE01** | |
| **Terminal covers for contactors with box terminals** | | | | |
| | ***Size S2*** | | | |
| 3RT2936-4EA2 | | **Covers for box terminals** | | |
| | 3RT203 | For 3-pole contactors | **3RT2936-4EA2** | |
| | 3RT233, 3RT253 | For 4-pole contactors (see Chapter 4) | **3RT2936-4EA4** | |
| **Coil connection modules** | | | | |
| | ***Sizes S0 and S2*** | | | |
| 3RT2926-4RA11 | 3RT2.2, 3RT2.3 | Connection from top<br>Connection from below<br>Connection diagonally | **3RT2926-4RA11**<br>**3RT2926-4RB11**<br>**3RT2926-4RC11** | |
| | | | **Spring-type terminals** | |
| 3RT2926-4RA12 | 3RT2.2 | Connection from top<br>Connection from below | **3RT2926-4RA12**<br>**3RT2926-4RB12** | |
| **Covers for contactors with ring cable lug connections** | | | | |
| | ***Size S00*** | | | |
| | | | **Ring terminal lug connections** | |
| 3RT2916-4EA13 | 3RT2.1, 3RH2 | **Covers for ring terminal lug connections** Single covers | **3RT2916-4EA13** | |
| | ***Size S0*** | | | |
| 3RT2926-4EB13 | 3RT2.2 | **Covers for ring terminal lug connections** Set for one device, comprising 4 single covers:<br>- 2 x 3RT2926-4EB13<br>- 2 x 3RV2928-4AA00 | **3RT2926-4EB13** | |

1) Exception: contactors and contactor relays with auxiliary switch block mounted onto the front.

| | For contactors<br>Type | Version | Order No. | Weight |
|---|---|---|---|---|
| **Screw adapters for fixing the contactors** | | | | |
| | ***Sizes S0 and S2*** | | | |
| <br>NSB0_01470<br>3RT1926-4P | 3RT2.2,<br>3RT2.3 | Screw adapters for easier screw fixing<br>2 units required per contactor<br>(1 pack contains 10 sets for 10 contactors) | **3RT1926-4P** | |
| **Solder pin adapters for contactors up to 7.5 HP / 12 A** | | | | |
| | ***Size S00, up to 7.5 HP*** | | | |
| | | | **Screw terminals** | |
| | 3RT2.1,<br>3RH21 | Assembly kit for soldering contactors onto a printed circuit board.<br>For 1 contactor, 1 set is required. | **3RT1916-4KA1** | |
| <br>3RT1916-4KA1 | | | | |
| **Solder pin adapters for contactors up to 7.5 HP / 12 A with mounted 4-pole auxiliary switch block** | | | | |
| | ***Size S00, up to 7.5 HP*** | | | |
| <br> <br> <br>

## Selection and ordering data

| | For contactors Size | Type | Design | Order No. | Weight approx. kg. |
|---|---|---|---|---|---|
| **Box terminal block for contactors with screw connections** | | | | | |
| 3RT19 5. -4G | | | For circular conductors and ribbon cables For connectable cross-sections, see technical data of contactors, page 2/99 | | |
| | **S3** | 3RT20 4 | 10 AWG (solid), 0 AWG (stranded) / 2.5 to 70 mm² | **3RT29 46-4G** | |
| | **S6** | 3RT1. 5 (3RB205) | up to 70 mm² / 2/0 AWG<br>up to 120 mm² / 4/0 AWG | **3RT19 55-4G**<br>**3RT19 56-4G** | 0.23<br>0.26 |
| | **S10, S12** | 3RT1. 6, 3RT1. 7 (3RB206) | 240 mm² - 500 mm² / 500 MCM - 750 MCM with auxiliary conductor connection | **3RT19 66-4G** | 0.64 |
| **Covers for contactors with screw connections** | | | | | |
| 3RT29 36-4EA2 | | | **Terminal cover for box terminals** | | |
| | **S2** | 3RT20 3 | Additional shock-hazard protection for mounting on the box terminals (2 units required per contactor) | **3RT29 36-4EA2** | 0.012 |
| | **S3** | 3RT20 4 | | **3RT19 46-4EA2** | |
| | **S6** | 3RT1 . 5 | Length: 25 mm | **3RT19 56-4EA2** | 0.016 |
| | **S10, S12** | 3RT1 . 6, 3RT1 . 7 | Length: 30 mm | **3RT19 66-4EA2** | |
| | | | **Terminal cover for cable lug and busbar connection** | | |
| 3RT19 46-4EA1 | **S3** | 3RT20 4 3RT24 4 | For complying with the phase clearances and as shock-hazard protection in the case of a distant box terminal [1] (2 units required per contactor) | **3RT19 46-4EA1** | 0.028 |
| | **S6** | 3RT1 . 5 | Length: 100 mm | **3RT19 56-4EA1** | 0.05 |
| | **S10, S12** | 3RT1 . 6, 3RT1 . 7 | Length: 120 mm | **3RT19 66-4EA1** | |
| | | | For covering bars between the contactor and 3RB20 overload relay or wiring connector for contactor assemblies | | |
| | **S6** | 3RT1 . 5 | Length: 27 mm | **3RT19 56-4EA3** | 0.018 |
| | **S10, S12** | 3RT1 . 6, 3RT1 . 7 | Length: 42 mm | **3RT19 66-4EA3** | |

| | Design | Order No. | Package quantity | Weight approx. kg |
|---|---|---|---|---|
| **Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm² (17 AWG)** | | | | |
| 3RT1916-4JA02 | Insulation stop strips can be inserted in cable entry of the spring terminal (2 strips per contactor required) | | | |
| | • For basic devices S00 (3RT201. or 3RH2. ), removable individually | **3RT2916-4JA02** | 20 strips | 0.005 |
| | • For auxiliary and control circuit on basic devices size S0 and S2 (3RT2.2., 3RT2.3.) and for mountable 3RH29 auxiliary switches, removable in pairs | **3RT1916-4JA02** | 20 strips | 0.010 |
| **Tool for opening spring-type terminals** | | | | |
| 3RA2908-1A | **Screwdriver** for all SIRIUS devices with spring-type terminals Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray//black, partially insulated | **3RA2908-1A** | 1 unit | 0.045 |
| | | | | |

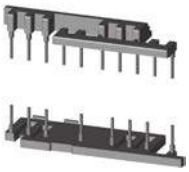
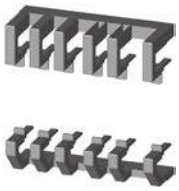
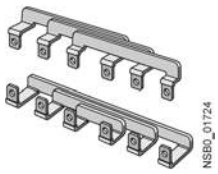
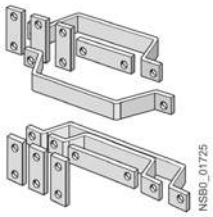
1) Refer to the note on page 2/149, conductor cross-sections.

## Accessories

| | For contactors Type | Size | Design | Order No. | Weight approx. kg |
|---|---|---|---|---|---|
| **Mechanical interlocks** | | | | | |
| 3RA19 24-2B | 3RT2.3 | **S2** | **laterally mountable** for 3RT2 S2 contactors only. There are no NC auxiliary contacts. Use the integrated NC auxiliary on the contactor. | **3RA2934-2B** | 0.04 |
| | 3RT204, 3RT234, 3RT245 | **S3** [1] | **laterally mountable** each with one auxiliary contact (1 NC) per contactor (can only couple contactors of max. 1 level different size. The mounting depth of the smaller contactor has to be adapted.) Interlock width: 10 mm | **3RA2934-2B** | 0.05 |
| 3RA19 54-2G | 3RT204 to 3RT105 | **S3 to S6** | **adapter to mechanically** interlock a 3RT204 with a 3RT105<br>includes the adapter and QTY 2 - 3RA1942-2G mechanical connectors<br>requires the 3RA1954 - 2A to be ordered separately<br>Note: Fits 3RT104 AC coil versions only. Does not fit 3RT104 DC coil versions. | **3RA1954-2G** | |
| 3RA19 54-2A | 3RT1. 5 to 3RT1. 7 | **S6, S10, S12** | **laterally mountable** without auxiliary contacts; size S6, S10 and S12 contactors can be interlocked with each other as required; no adaptation of mounting depth is necessary. Contactor clearance 10 mm. | **3RA1954-2A** | 0.02 |
| **Baseplates** | | | | 1 unit | |
| 3RA1972-2A | 3RT10 5 | **S6** | for customer mounting of contactor assemblies for reversing | **3RA1952-2A** | 1.3 |
| | 3RT1. 6 | **S10** | | **3RA1962-2A** | 2.4 |
| | 3RT1. 7 | **S12** | | **3RA1972-2A** | 2.6 |

1) Can also be used for size S3 4-pole contactors.

## Accessories

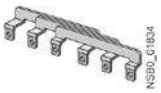
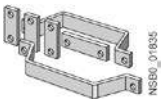
| | For contactors Type | Size | Details | Screw Terminals Order No. | Spring Terminals Order No. | Pkg. qty. |
|---|---|---|---|---|---|---|
| **Assembly kits for making 3-pole contactor assemblies** | | | | | | |
| 3RA2913-2AA1  | 3RT201 | **S00** | The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, Wiring modules on the top and bottom<br>• For main, auxiliary and control circuits | **3RA2913-2AA1** | **3RA2913-2AA2** | 1 kit |
| 3RA2923-2AA2  | 3RT202 | **S0** | The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, Wiring modules on the top and bottom<br>• For main, auxiliary and control circuits [1]<br>• Only for main circuit [2] | **3RA2923-2AA1**<br>— | —<br>**3RA2923-2AA2** | 1 kit<br>1 kit |
| 3RA2933-2AA1 | 3RT203 | **S2** | The installation kit contains: 2 connecting clips for 2 contactors, Wiring modules on the top and bottom<br>• Only for main circuit [3] | **3RA2933-2AA1**<br>— | —<br>**3RA2933-2AA2** | 1 kit<br>1 kit |
| 3RA2943-2AA1 | 3RT204 | **S3** | The installation kit contains: 2 connecting clips for 2 contactors, Wiring modules on the top and bottom and the mechanical interlock | **3RA2943-2AA1** | — | |
| 3RA19 53-2A   | 3RT105 | **S6** | The installation kit contains: Wiring modules on the top and bottom (for connection with box terminal) | **3RA19 53-2A** | — | 1 kit |
|   | 3RT105<br>3RT1. 6<br>3RT1. 7 | **S6**<br>**S10**<br>**S12** | The installation kit contains: Wiring modules on the top and bottom (for connection without box terminals) | **3RA1953-2M**<br>**3RA1963-2A**<br>**3RA1973-2A** | | 1 kit |

1) Use of the 3RA2923-2AA1 assembly kit in conjunction with the 3RT202.-.....-3MA0 contactors is limited because the auxiliary switches in the basic unit are not allowed to be used on account of the permanently mounted auxiliary switch block.

2) Version in size S0 with spring-type terminals: Only the wiring modules for the main circuit are included. No connectors are included for the auxiliary and control circuit.

3) Version in size S2 with spring-type terminals in the auxiliary and control circuits: Only the wiring modules for the main circuit are included. A cable set is included for the auxiliary circuit.

## Accessories

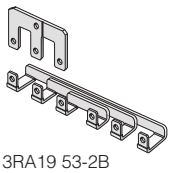
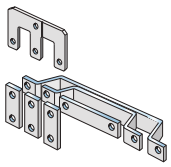
| | For contactors Type | Size | Contactor gap for interlock | Version | Screw Terminals Order No. | Spring Terminals Order No. | Pkg. qty. |
|---|---|---|---|---|---|---|---|
| **Wiring modules** | | | | | | | |
| 3RA2913-3DA1 | 3RT201 | **S00-S00** | 0 mm | Top (in-phase)<br>Bottom (phase reversal) | **3RA2913-3DA1**<br>**3RA2913-3EA1** | **3RA2913-3DA2**<br>**3RA2913-3EA2** | 1<br>1 |
| | 3RT202 | **S0-S0** | 0 mm | Top (in-phase)<br>Bottom (phase reversal) | **3RA2923-3DA1**<br>**3RA2923-3EA1** | **3RA2923-3DA2**<br>**3RA2923-3EA2** | 1<br>1 |
| 3RA2913-3EA1 | 3RT203 | **S2-S2** | 10 mm | Top (in-phase)<br>Bottom (phase reversal) | **3RA1933-3D**<br>**3RA1933-3E** | **3RA1933-3D**<br>**3RA1933-3E** | 1<br>1 |
| | 3RT204 | **S3-S3** | 10 mm | Top (in-phase)<br>Bottom (phase reversal) | **3RA1943-3D**<br>**3RA1943-3E** | **3RA1943-3D**<br>**3RA1943-3E** | 1<br>1 |
| 3RA1953-3D  | 3RT105 | **S6-S6** | 10 mm | Top (in-phase, for connection with box terminal) | **3RA1953-3D** | **3RA1953-3D** | 1 |
| 3RA1953-3P  | | | | Top (with phase reversal, for connection without box terminal) | **3RA1953-3P** | **3RA1953-3P** | 1 |

| | For contactors Type | Size | Contactor gap for interlock | Interlock Type | Version | Order No. | Pkg. qty. |
|---|---|---|---|---|---|---|---|
| **Mechanical connectors**[1] | | | | | | | |
| 3RA29. 2-2H | 3RT201 | **S00-S00** | 0 mm | Laterally mountable | For 3-pole contactors and 4-pole contactors | **3RA2912-2H** | 1 set |
| | 3RT202 | **S0-S0** | 0 mm | Laterally mountable | For 3-pole contactors and 4-pole contactors | **3RA2922-2H** | 1 set |
| 3RA2932-2C | 3RT203 | **S2-S2** | 0 mm | Laterally mountable | For 3-pole contactors | **3RA2932-2C** | 5 sets |
| | | | 10 mm | Laterally mountable | For 3-pole contactors | **3RA2932-2D** | 5 sets |
| 3RA2932-2D | 3RT233 | | | Laterally mountable | For 4-pole contactors | **3RA2932-2G** | 5 sets |
| | 3RT2. 4 | **S3-S3** | 0 mm | Mountable on front | For 3-pole contactors | **3RA2932-2C** | 10 sets |
| 3RA2932-2G | | | 10 mm | Laterally mountable | For 3-pole contactors | **3RA2932-2D** | 10 sets |
| | | | | | For 4-pole contactors | **3RA2942-2G** | 10 sets |
| 3RA1942-2G | 3RT1. 5 | **S6-S6** | 10 mm | Laterally mountable | Top (with phase reversal, for connection without box terminal) | **3RA1932-2D** | 10 sets |

**Note:** Standard package quantities may change. Check Industry Mall for current package quantities.

1) 1 set for 1 contactor. Size S00 & S0: 1 set includes 2 connectors and 1 interlock. **Size S2: The mechanical interlock must be ordered separately.** S3-S6: 1 set includes 2 connectors; one connector for top and one connector for bottom.

## Accessories

| | Design | Sizes | Order No. | | Weight approx. kg |
|---|---|---|---|---|---|
| **Installation kits**[1) 2)] | | | | | |
|  3RA19 53-2B | The installation kit contains: Mechanical interlock, 4 connecting clips, WYE jumper, Wiring connectors on the top and bottom,- For main, auxiliary, and control circuits [3)] | **S00-S00-S00** | **3RA2913-2BB1** | 1 set | 0.05 |
| | The installation kit contains: mechanical interlock, 4 connecting clips, WYE jumper, wiring connectors on the top and bottom - For main, auxiliary, and control circuits [3)] | **S0-S0-S0** | **3RA2923-2BB1** | 1 set | 0.10 |
| | | **S2-S2-S0** | **3RA2933-2C** | 1 set | 0.16 |
| | | **S2-S2-S2** | **3RA2933-2BB1** | | 0.16 |
|  3RA19 53-2N, 3RA19 63-2B, 3RA19 73-2B | The installation kit contains: WYE jumper on the top Wiring jumper on the bottom (The wiring connector on the top is not included in the scope of supply. A double infeed between the line contactor and the delta contactor is recommended.) | **S3-S3-S2** | **3RA2943-2C** | | 0.33 |
| | | **S3-S3-S3** | **3RA2943-2BB1** | | 0.16 |
| | | **S6-S6-S6** | **3RA1953-2B** | | 0.85 |
| | | **S6-S6-S6** | **3RA1953-2N** | | 0.60 |
| | | **S10-S10-S10** | **3RA1963-2B** | | 1.80 |
| | | **S12-S12-S12** | **3RA1973-2B** | | 2.20 |
| **3-phase feeder terminal** | | | | | |
| | Feeder terminal block for the line contactor for large conductor cross-sections | | | 1 unit | |
| | Conductor cross-section: 6 mm², 10 AWG | **S00** | **3RA2913-3K** | | 0.02 |
| | Conductor cross-section: 16 mm², 6 AWG | **S0** | **3RV2925-5AB** | | 0.04 |
| | Conductor cross-section: 70 mm², 2/0 AWG | **S2** | **3RV2935-5A** | | 0.10 |
| **1-phase feeder terminals** | | | | | |
| | Conductor cross-section: 95 mm² | **S3** | **3RA2943-3L** | | 0.280 |
| **3-phase busbar** | | | | | |
| | For in-phase bridging of all input terminals of the line contactor (K1) | | | 1 unit | |
| | | **S0** | **3RV1915-1AB** | | 0.03 |
| | and the delta contactor (K3) | **S2** | **3RV2935-5E** | | 0.15 |
| **Link for paralleling, 3-pole (WYE jumpers)** | | | | | |
| 3RT19 26-4BA31 | Without terminal (the links for paralleling can be reduced by one pole) | **S00**[1)] | **3RT1916-4BA31** | 1 unit | 0.010 |
| | | **S0**[1)] | **3RT1926-4BA31** | | 0.020 |
| | | **S2** | **3RT1936-4BA31** | | 0.02 |
| | | **S3** | **3RT1946-4BA31** | | 0.02 |
| | | **S6**[4)] | **3RT1956-4BA31** | | 0.15 |
| | | **S10, S12**[4)] | **3RT1966-4BA31** | | |
| **Baseplates** | | | | | |
| | For customer assembly of WYE-delta contactor assemblies with a **laterally mounted** time-delay | | | 1 unit | |
| | Side-by-side mounting | S2 S2 S0 | **3RA2932-2F** | | 0.45 |
| | 10 mm clearance between K3 and K2 | S2 S2 S2 | **3RA2932-2F** | | 0.48 |
| | Side-by-side mounting | S3 S3 S2 | **3RA2942-2F** | | 0.72 |
| | Side-by-side mounting | S3 S3 S3 | **3RA2942-2F** | | 0.72 |
| | 10 mm clearance between K1, K3 and K2 | S. S. S. | | 1 unit | |
| | | **S6 S6 S3** | **3RA1952-2E** | | 2.0 |
| | | **S6 S6 S6** | **3RA1952-2F** | | 2.1 |
| | | **S10 S10 S6** | **3RA1962-2E** | | |
| | | **S10 S10 S10** | **3RA1962-2F** | | |
| | | **S12 S12 S10** | **3RA1972-2E** | | |
| | | **S12 S12 S12** | **3RA1972-2F** | | |

1) Size S00, S0 and S2 installation kits for paralleling are available in spring-type terminals. Change the last digit of the order number to a "2".

2) When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required. See page 2/51 for more information.

3) Also requires quantity (1) 3RA2816-0EW20 function module set for all control functions. See page 2/51.

4) The 3RT19 56-4EA1 (S6) or 3RT19 66-4EA1 (S10, S12) cover can be used for shock-hazard protection.

## Accessories

Overview graphic for 3RT135 to 3RT137 contactors with mountable accessories, see page 4/23.

**More information**

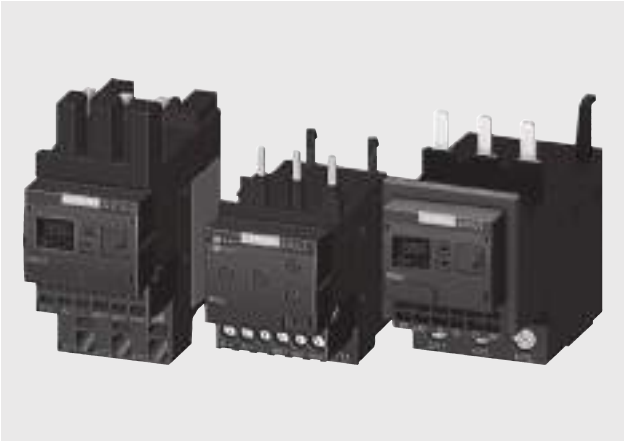
Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/view/60306557

| For contactors Type | Auxiliary contacts Version NO | NC | Left | Right | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Second auxiliary switch (1 NO + 1 NC)** | | | | | | | | |
| | Lateral mounting on the right and/or the left, 2-pole | | | | **Screw terminals** | | | |
| 3RH1951-1SA11 | 3RT135 ... 3RT137 1 | 1 | 53 61 54 62 | 71 83 72 84 | **3RH1951-1SA11** | | 1 | 1 unit |
| **Terminal covers** | | | | | | | | |
| | Two units required per contactor (1 set = 2 units) | | | | | | | |
| | Either bus connectors offset or terminal covers can be used. | | | | | | | |
| 3RT1956-4EB10 | 3RT135 -- | -- | -- | -- | **3RT1956-4EB10** | | 1 | 1 unit |
| | 3RT136 -- | -- | -- | -- | **3RT1966-4EB10** | | 1 | 1 unit |
| 3RT1966-4EB10 | 3RT137 -- | -- | -- | -- | **3RT1976-4EB10** | | 1 | 1 unit |
| 3RT1976-4EB10 | | | | | | | | |
| **Bus connectors offset** | | | | | | | | |
| | (Two units required per contactor) | | | | | | | |
| | Either terminal covers or bus connectors offset can be used. | | | | | | | |
| 3RT1966-4D | 3RT136 -- | -- | -- | -- | **3RT1966-4D** | | 1 | 1 unit |
| | 3RT137 -- | -- | -- | -- | **3RT1976-4D** | | 1 | 1 unit |
| 3RT1976-4D | | | | | | | | |
| **Mechanical interlocks for contactor assemblies** | | | | | | | | |
| | Enables two 3RT13 contactors of the same size (S6, S10 and S12) to be interlocked with each other. The laterally mounted auxiliary switches of the contactor must be removed beforehand. | | | | | | | |
| | The mechanical interlock cannot be used in conjunction with the bus connectors offset. | | | | | | | |
| 3RA1954-3A | 3RT135 ... 3RT137 -- | -- | -- | -- | **3RA1954-3A** | | 1 | 1 unit |

## Spare parts

| For contactors Type | Auxiliary contacts Version NO | NC | Left | Right | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **First auxiliary switch (1 NO + 1 NC)** | | | | | | | | |
| | Lateral mounting on the right and/or the left, 2-pole | | | | | | | |
| 3RH1951-1TA11 | 3RT135 ... 3RT137 1 | 1 | 13 21 14 22 | 31 43 32 44 | **3RH1951-1TA11** | | 1 | 1 unit |

## Overview



SIRIUS 3RR2242, 3RR2142 and 3RR2243 current monitoring relays

The SIRIUS 3RR2 current monitoring relays are suitable for the load monitoring of motors or other loads. In two or three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR2 current monitoring relays can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal supports for stand-alone installation are available for separate standard rail mounting.

### *Versions*

Basic versions

The basic versions with two-phase apparent current monitoring, a CO contact output and analog adjustability provide a high level of monitoring reliability especially in the rated and overload range.

Standard versions

The standard versions monitor the current in three phases with selectable active current monitoring. They have additional diagnostics options such as residual current monitoring and phase sequence monitoring, and they are also suitable for monitoring motors below the rated torque. These devices have an additional independent semiconductor output, an actual value indicator, and are digitally adjustable.

Both versions are available optionally with screw or spring-type terminals, in each case for sizes S00 and S0. With variants of size S2 the main current paths always have screw terminals; the control current side can have screw or spring-type terminals.

Note:

In addition to the features of the standard versions, 3RR24 monitoring relays for mounting onto 3RT2 contactors for IO-Link also offer the possibility of transmitting the measured values and diagnostics data to a controller via an IO-Link. Furthermore, the devices can be parameterized on the devices themselves or via IO-Link.

## Benefits

- Can be mounted directly on 3RT2 contactors and 3RA23 reversing contactor assemblies, in other words, there is no need for additional wiring in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw terminals or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for broken cables, phase failure, phase sequence, residual current and motor blocking

## Application

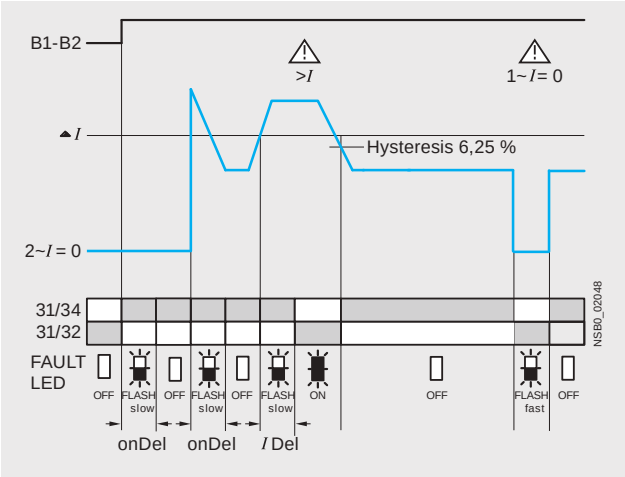
- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on conveyor belts or cranes due to an excessive load
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. caused by damaged insulation or moisture

## Technical specifications

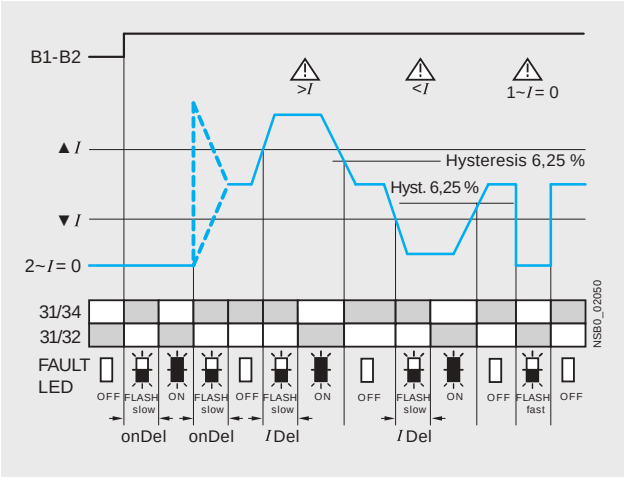
### *Function charts of 3RR214.-.A.30 basic variants, analog dial adjustable*

Closed-circuit principle upon application of the control supply voltage

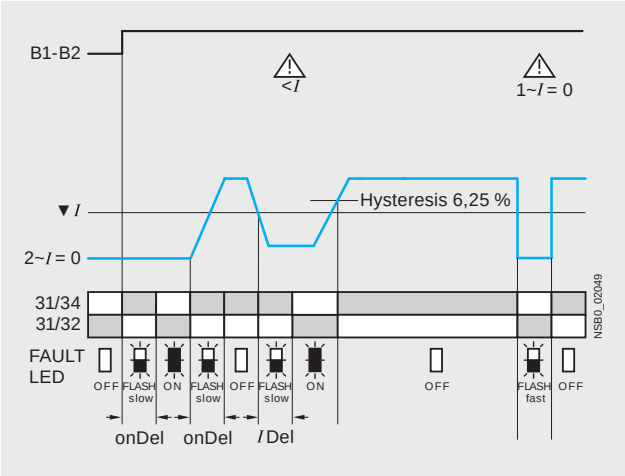
Current overshoot



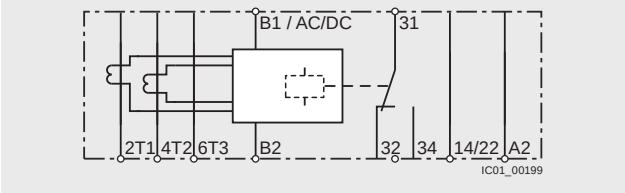

Range monitoring



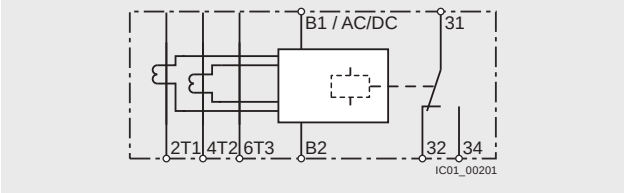

Current undershoot




### *Circuit diagrams*




3RR2141-1A.30




3RR2141-2A.30, 3RR2142-.A.30, 3RR2143-.A.30

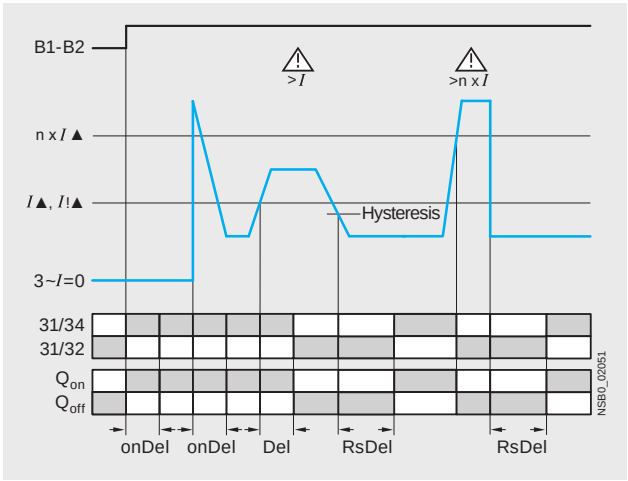
Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

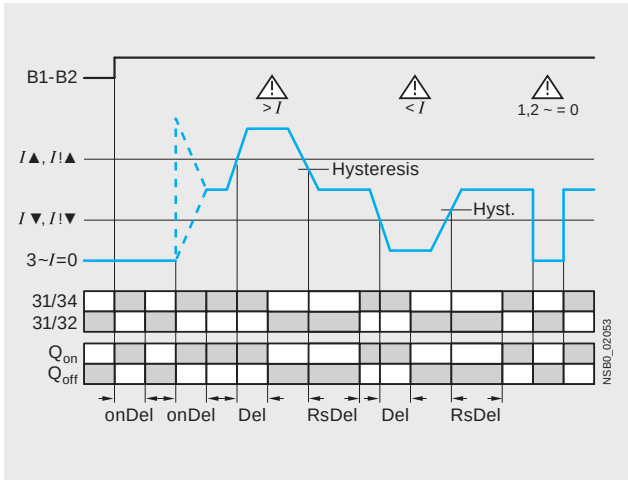
### *Function charts of 3RR224.-.F.30 standard versions, digitally adjustable*

With the closed-circuit principle selected upon application of the control supply voltage

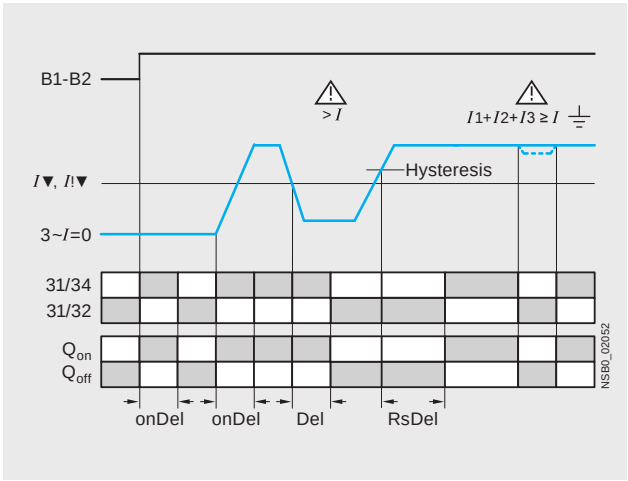
Current overshoot



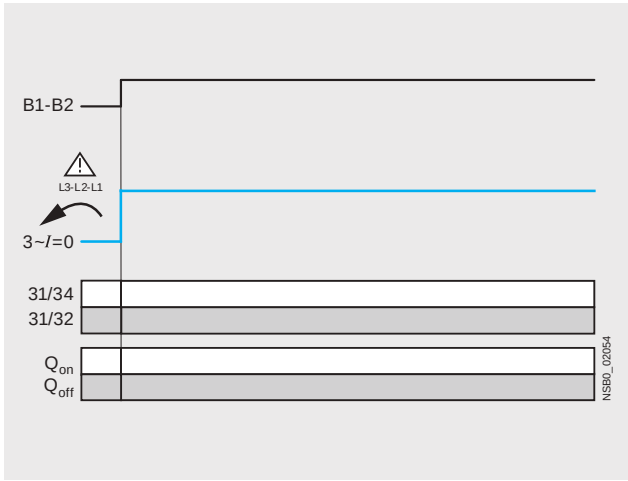

Range monitoring



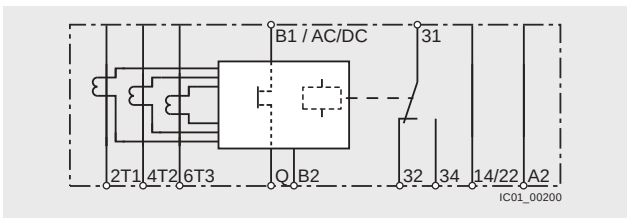

Current undershoot with residual current monitoring



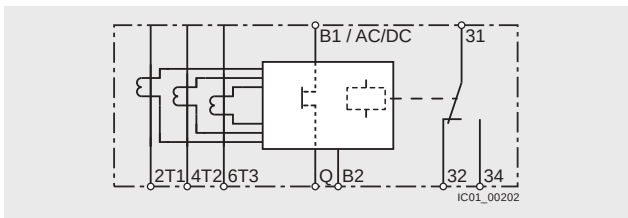

Phase sequence monitoring




### *Circuit diagrams*




3RR2241-1F.30




3RR2241-2F.30, 3RR2242-.F.30, 3RR2243-.F.30

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

## Selection and ordering data

### *SIRIUS 3RR21/3RR22 current monitoring relays*

- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
- Starting and tripping delay can be adjusted separately
- Tripping delay 0 to 30 s
- Auto or Manual RESET

3RR2141-1AW30

3RR2142-1AW30

3RR2241-1FW30

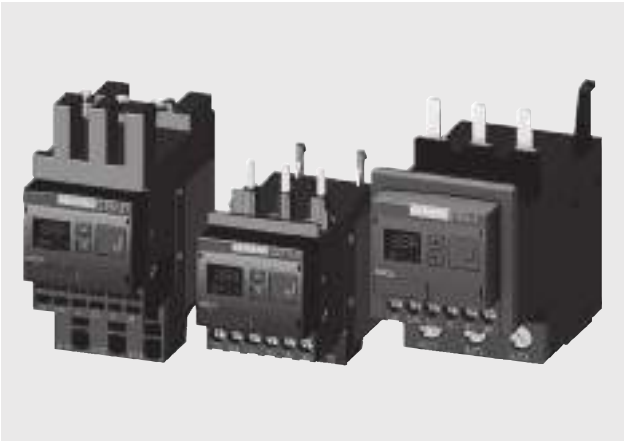
3RR2242-1FW30

3RR2141-2AA30

3RR2243-3FW30

| Size | Measuring range | Hysteresis | Control supply voltage $U_s$ | Screw terminals | Spring-type terminals |
|---|---|---|---|---|---|
| | A | A | V | Order No. | Order No. |
| **Basic versions** | | | | | |
| • Analogically adjustable<br>• Closed-circuit principle<br>• 1 CO contact<br>• 2-phase current monitoring<br>• Apparent current monitoring<br>• Start-up delay 0 ... 60 s | | | | | |
| **S00** | 1.6 ... 16 | 6.25 % of threshold value | 24 AC/DC<br>24 ... 240 AC/DC | **3RR2141-1AA30**<br>**3RR2141-1AW30** | **3RR2141-2AA30**<br>**3RR2141-2AW30** |
| **S0** | 4 ... 40 | 6.25 % of threshold value | 24 AC/DC<br>24 ... 240 AC/DC | **3RR2142-1AA30**<br>**3RR2142-1AW30** | **3RR2142-2AA30**<br>**3RR2142-2AW30** |
| **S2** | 8 ... 80 | 6.25 % of threshold value | 24 AC/DC<br>24 ... 240 AC/DC | **3RR2143-1AA30**<br>**3RR2143-1AW30** | **3RR2143-3AA30**<br>**3RR2143-3AW30** |
| **Standard versions** | | | | | |
| • Digitally adjustable<br>• LC display<br>• Open or closed-circuit principle<br>• 1 CO contact<br>• 1 semiconductor output<br>• 3-phase current monitoring<br>• Active current or apparent current monitoring<br>• Phase sequence monitoring<br>• Residual current monitoring<br>• Blocking current monitoring<br>• Reclosing delay time 0 ... 300 min<br>• Start-up delay 0 ... 99 s<br>• Separate settings for warning and alarm thresholds | | | | | |
| **S00** | 1.6 ... 16 | 0.1 ... 3 | 24 AC/DC<br>24 ... 240 AC/DC | **3RR2241-1FA30**<br>**3RR2241-1FW30** | **3RR2241-2FA30**<br>**3RR2241-2FW30** |
| **S0** | 4 ... 40 | 0.1 ... 8 | 24 AC/DC<br>24 ... 240 AC/DC | **3RR2242-1FA30**<br>**3RR2242-1FW30** | **3RR2242-2FA30**<br>**3RR2242-2FW30** |
| **S2** | 8 ... 80 | 0.2 ... 16 | 24 AC/DC<br>24 ... 240 AC/DC | **3RR2243-1FA30**<br>**3RR2243-1FW30** | **3RR2243-3FA30**<br>**3RR2243-3FW30** |

## Overview



SIRIUS 3RR2441, 3RR2442 and 3RR2443 current monitoring relays

The SIRIUS 3RR24 current monitoring relays for IO-Link are suitable for the load monitoring of motors or other loads. In three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option, which is also selectable, can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR24 current monitoring relays for IO-Link can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal supports for stand-alone installation are available for separate standard rail mounting.

The SIRIUS 3RR24 current monitoring relays for IO-Link also offer many other options based upon the monitoring functions of the conventional SIRIUS 3RR2 monitoring relays:

- Measured value transmission to a controller, including resolution and unit, may be parameterizable as to which value is cyclically transmitted
- Transmission of alarm flags to a controller
- Full diagnosis capability by inquiry as to the cause of the fault in the diagnosis data record
- Remote parameterization is also possible, in addition to or instead of local parameterization
- Rapid parameterization of the same devices by duplication of the parameterization in the controller
- Parameter transmission by upload to a controller by IO-Link call or by parameter server (if IO-Link master from IO-Link Specification V 1.1 and higher is used)
- Consistent central data storage in the event of parameter change locally or via a controller
- Automatic reparameterizing when devices are exchanged
- Blocking of local parameterization via IO-Link possible
- Faults are saved in parameterizable and non-volatile fashion to prevent an automatic start up after voltage failure and to make sure diagnostics data is not lost
- By integration into the automation level the option exists of parameterizing the monitoring relay at any time via a display unit or displaying the measured values in a control room or locally at the machine/control cabinet

Even without communication via IO-Link the devices continue to function fully autonomously:

- Parameterization can take place locally at the device, independently of a controller
- In the event of failure or before the controller becomes available the monitoring relays work as long as the control supply voltage (24 V DC) is present
- If the monitoring relays are operated without the controller, the 3RR24 monitoring relays for IO-Link have, thanks to the integrated SIO mode, an additional semiconductor output, which switches when the adjustable warning threshold is exceeded

Thanks to the combination of autonomous monitoring relay function and integrated IO-Link communication, redundant sensors and/or analog signal converters – which previously took over the transmission of measured values to a controller, leading to considerable extra cost and wiring outlay – are no longer needed.

Because the output relays are still present, the monitoring relays increase the functional reliability of the system, since only the controller can fulfill the control tasks if the current measured values are available, whereas the output relays can also be used for the disconnection of the system if limit values that cannot be reached during operation are exceeded.

For further information on the IO-Link communication system, see Chapter 14.

## Benefits

- Can be mounted directly on 3RT2 contactors and 3RA23 reversing contactor assemblies, in other words, there is no need for additional wiring in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for current unbalance, broken cables, phase failure, phase sequence, residual current and motor blocking
- Integrated counter for operating cycles and operating hours to support requirements-based maintenance of the monitored machine or application
- Simple cyclical transmission of the current measured values, relay switching states and events to a controller
- Remote parameterization
- Automatic reparameterizing when devices are exchanged
- Simple duplication of identical or similar parameterizations
- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Cost saving and space saving in control cabinet due to the elimination of AI and IO modules as well as analog signal converters and duplicated sensors

## Application

- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on pumps due to a dirty filter system
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. caused by damaged insulation or moisture

The use of SIRIUS monitoring relays for IO-Link is particularly recommended for machines and plant in which these relays, in addition to their monitoring function, are to be connected to the automation level for the rapid, simple and fault-free provision of the current measured values and/or for remote parameterization.

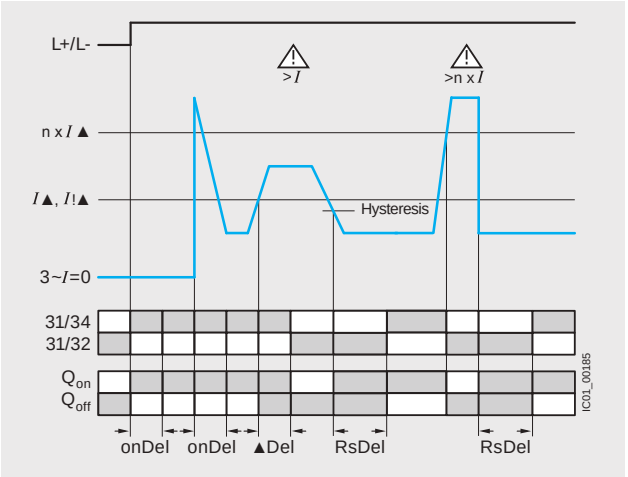
The monitoring relays can either relieve the controller of monitoring tasks or, as a second monitoring entity in parallel to and independent of the controller, increase the reliability in the process or in the system. In addition, the elimination of AI and IO modules allows the width of the controller to be reduced despite significantly expanded functionality.

## Technical specifications

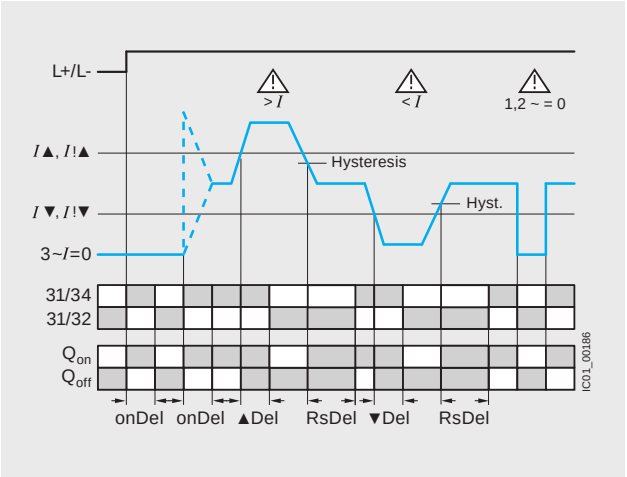
***Function charts of 3RR24 for IO-Link, digitally adjustable***

With the closed-circuit principle selected upon application of the control supply voltage

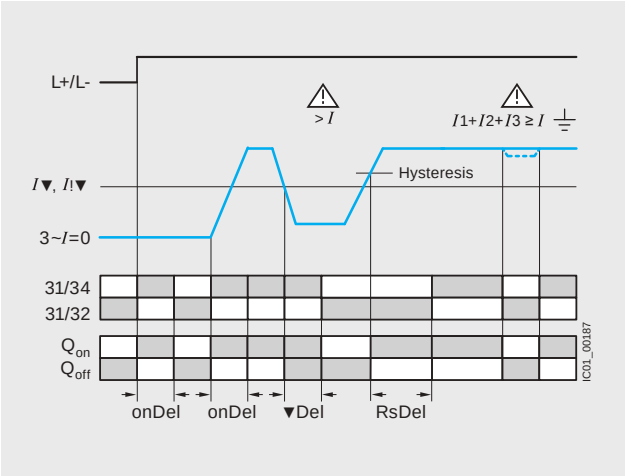
Current overshoot



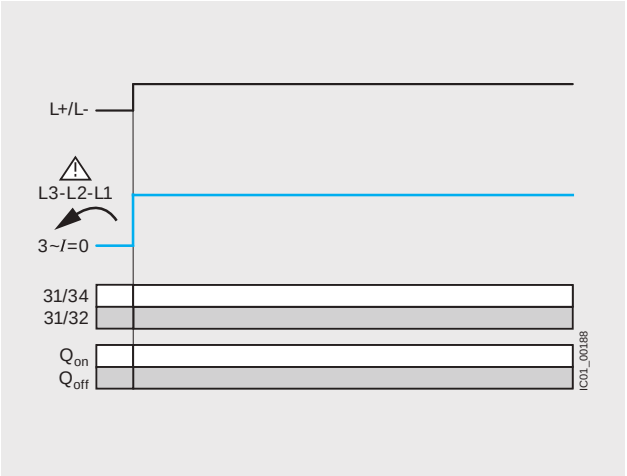

Range monitoring



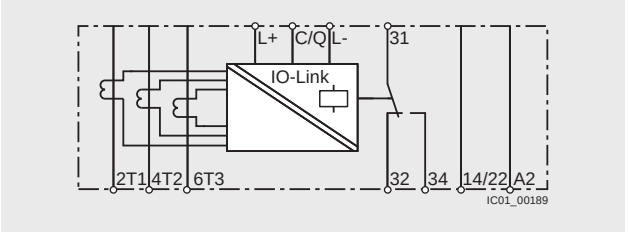

Current undershoot with residual current monitoring



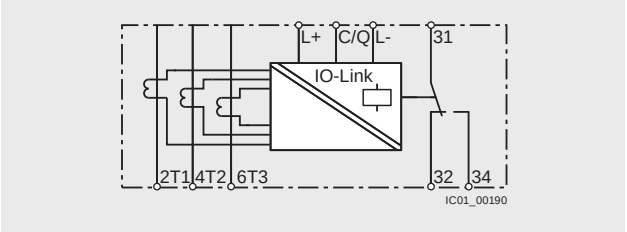

Phase sequence monitoring




***Circuit diagrams***




3RR2441-1AA40




3RR2441-2AA40, 3RR2442-.AA40, 3RR2443-.AA40

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

## Selection and ordering data

### *SIRIUS 3RR24 current monitoring relays for IO-Link*

- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
- Starting and tripping delay can be adjusted separately
- Tripping delay 0 to 999.9 s
- Auto or Manual RESET

3RR2441-1AA40

3RR2442-1AA40

3RR2441-2AA40

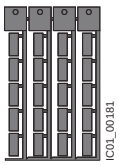
3RR2442-2AA40

3RR2443-1AA40

3RR2443-3AA40

| Size | Measuring range | Hysteresis | Control supply voltage $U_s$ | **Screw terminals** | **Spring-type terminals** |
|---|---|---|---|---|---|
| | A | A | V | Order No. | Order No. |
| • Digitally adjustable<br>• LC display<br>• Open or closed-circuit principle<br>• 1 CO contact<br>• 1 semiconductor output (in SIO mode)<br>• 3-phase current monitoring<br>• Active current or apparent current monitoring<br>• Current unbalance monitoring<br>• Phase sequence monitoring<br>• Residual current monitoring<br>• Blocking current monitoring<br>• Operating hours counter<br>• Operating cycles counter<br>• Reclosing delay time 0 ... 300 min<br>• Start-up delay 0 ... 999.9 s<br>• Separate settings for warning and alarm thresholds | | | | | |
| **S00** | 1.6 ... 16 | 0.1 ... 3 | 24 DC | **3RR2441-1AA40** | **3RR2441-2AA40** |
| **S0** | 4 ... 40 | 0.1 ... 8 | 24 DC | **3RR2442-1AA40** | **3RR2442-2AA40** |
| **S2** | 8 ... 80 | 0.2 ... 16 | 24 DC | **3RR2443-1AA40** | **3RR2443-3AA40** |

## Accessories

| | Use | Version | Size | Order No. | Standard Pack Quantity |
|---|---|---|---|---|---|
| **Terminal supports for stand-alone installation**[1] | | | | | |
| 3RU2916-3AA01 | For 3RR21, 3RR22, 3RR24 | For separate mounting of the overload relays or monitoring relays; screw and snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 | | **Screw terminals** | |
| | | • Screw connection | S00 | **3RU2916-3AA01** | 1 unit |
| | | | S0 | **3RU2926-3AA01** | 1 unit |
| | | | S2 | **3RU2936-3AA01** | 1 unit |
| 3RU2926-3AC01 | | | | **Spring-type terminals** | |
| | | • Spring-type connection | S00 | **3RU2916-3AC01** | 1 unit |
| | | | S0 | **3RU2926-3AC01** | 1 unit |
| **Blank labels** | | | | | |
|  3RT2900-1SB20 | For 3RR21, 3RR22, 3RR24 | **Unit labeling plates**[2] For SIRIUS devices 20 mm x 7 mm, titanium gray | | **3RT2900-1SB20** | 340 units |
| **Sealable covers** | | | | | |
| 3RR2940 | For 3RR21, 3RR22, 3RR24 | **Sealable covers** For securing against unintentional or unauthorized adjustment of settings | | **3RR2940** | 5 units |
| | For 3RR21 | **Sealing foil** For securing against unauthorized adjustment of setting knobs | | **3TK2820-0AA00** | 1 unit |
| **Tools for opening spring-type terminals** | | | | | |
| 3RA2908-1A | For auxiliary circuit connections | **Screwdrivers** For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated | | **Spring-type terminals** **3RA2908-1A** | 1 unit |

1) The accessories are identical to those of the 3RU21 thermal overload relays and the 3RB3 electronic overload relays, see Chapter 3 "Overload Relays".

2) PC labeling system for individual inscription of unit labeling plates available from: Systems, Inc. www.murrplastic.com

## Selection and ordering data

*** NEMA Type 1 Enclosures**
*** Lift off cover**
*** Accepts SIRIUS power control components**
  *** Non-reversing contactors**
  *** Reversing contactors**
  *** Starters with thermal overload relays**
  *** Starters with solid-state overload relays**

### Application

The 49EC14*B separate enclosures are designed for field assembly of a wide range of Siemens SIRIUS open style control components and field modification kits as listed in the charts below. Note that certain components require the addition of a DIN Rail kit for proper mounting in the enclosure.

### NEMA 1 Enclosures

| Max. current | Contactor | | Max. current | Overload relay | | Required DIN rail kit | NEMA 1 Enclosure |
|---|---|---|---|---|---|---|---|
| A | Non-reversing | Reversing | A | Thermal | Solid-state | Order No. | Order No. |
| 16 | 3RT201 | 3RA231 | 16 | 3RU2116 | 3RB3016 | **MTR5** | **49EC14EB110705R** |
| 38 | 3RT202 | 3RA232 | 40 | 3RU2126 | 3RB3026 | **MTR5** | |
| 50 | 3RT203 | | 50 | 3RU2136 | 3RB3036 | — | **49EC14GB140807R** |
| 12 | | 3RA231 | 12 | 3RU2116 | 3RB3016 | **MTR5** | |
| 25 | | 3RA232 | 25 | 3RU2126 | 3RB3036 | **MTR5** | |
| 50 | | 3RA233 | 50 | 3RU2136 | 3RB3036 | — | |
| 95 | 3RT204 | | 100 | 3RU2146 | 3RB3046 | — | **49EC14IB201208R** |
| 95 | | 3RA234 | 100 | 3RU2146 | 3RB3046 | — | |

### Accessories for NEMA 1 Enclosures

| Accessory type | Description | Legends | Voltage | Order No. |
|---|---|---|---|---|
| Push buttons | Momentary | Start - Stop | none | **49SDPB5** |
| | Monentary | Reset (blue) | | **49MBRS** |
| Selector Switch | 2 position | Off - On | none | **49SDSB4** |
| | 3 position | Hand - Off - Auto | none | **49SDSB1** |
| | | For - Off - Rev | | **49SDSB2** |
| | | High - Off - Low | | **49SDSB3** |
| Pilot light | Light module and lens color: RED, GREEN, and AMBER" | ON, RUN, OFF, OL TRIPPED | 24 to 240 AC DC | **49SDLBU** |
| | | | 277V AC | **49SDLBL** |
| | Light module and lens color: RED, RED | REV - FOR or HIGH - LOW | 24 to 240 AC DC | **49SDLB7RU** |
| | | | 277V AC | **49SDLB7RL** |
| | Light module and lens color: GREEN, GREEN | REV - FOR or HIGH - LOW | 24 to 240 AC DC | **49SDLB7GU** |
| | | | 277V AC | **49SDLB7GL** |

For 3RT contactors, see page 2/8.
For 3RA reversing, see pages 2/43.
For thermal overloads, see page 3/10.
For solidstate overloads, see pages 3/22.
For enclosure dimensions, see figures 1, 2, and 3 on page 9/150.

## Selection and ordering data

### *For screw, spring-type and ring lug terminal connection*

3RT29 24-5A.01

| For contactors | | Rated control supply voltage $U_s$ | | | Order No. | Weight approx. |
|---|---|---|---|---|---|---|
| Size | Type | 50 Hz | 50/60 Hz | 60 Hz | | |
| | | V | V | V | | kg |
| **Solenoid coils · AC operation** | | | | | | |
| **S0** | 3RT20 23, 3RT20 24, 3RT20 25 | 24 | -- | -- | **3RT29 24-5AB01** | 0.100 |
| | | 42 | -- | -- | **3RT29 24-5AD01** | 0.100 |
| | | 48 | -- | -- | **3RT29 24-5AH01** | 0.100 |
| | | 110 | -- | -- | **3RT29 24-5AF01** | 0.100 |
| | | 230 | -- | -- | **3RT29 24-5AP01** | 0.100 |
| | | 400 | -- | -- | **3RT29 24-5AV01** | 0.100 |
| | | -- | 24 | -- | **3RT29 24-5AC21** | 0.100 |
| | | -- | 42 | -- | **3RT29 24-5AD21** | 0.100 |
| | | -- | 48 | -- | **3RT29 24-5AH21** | 0.100 |
| | | -- | 110 | -- | **3RT29 24-5AG21** | 0.100 |
| | | -- | 220 | -- | **3RT29 24-5AN21** | 0.100 |
| | | -- | 230 | -- | **3RT29 24-5AL21** | 0.100 |
| | | 110 | -- | 120 | **3RT29 24-5AK61** | 0.100 |
| | | 220 | -- | 240 | **3RT29 24-5AP61** | 0.100 |
| | | -- | 100 | 110 | **3RT29 24-5AG61** | 0.100 |
| | | -- | 200 | 220 | **3RT29 24-5AN61** | 0.100 |
| | | -- | 400 | 440 | **3RT29 24-5AR61** | 0.100 |
| **S0** | 3RT20 26, 3RT20 27, 3RT20 28 | 24 | -- | -- | **3RT29 26-5AB01** | 0.100 |
| | | 42 | -- | -- | **3RT29 26-5AD01** | 0.100 |
| | | 48 | -- | -- | **3RT29 26-5AH01** | 0.100 |
| | 3RT23 25, 3RT23 26, 3RT23 27 | 110 | -- | -- | **3RT29 26-5AF01** | 0.100 |
| | | 230 | -- | -- | **3RT29 26-5AP01** | 0.100 |
| | | 400 | -- | -- | **3RT29 26-5AV01** | 0.100 |
| | 3RT25 26 | -- | 24 | -- | **3RT29 26-5AC21** | 0.100 |
| | | -- | 42 | -- | **3RT29 26-5AD21** | 0.100 |
| | | -- | 48 | -- | **3RT29 26-5AH21** | 0.100 |
| | | -- | 110 | -- | **3RT29 26-5AG21** | 0.100 |
| | | -- | 208 | -- | **3RT29 26-5AM21** | 0.100 |
| | | -- | 220 | -- | **3RT29 26-5AN21** | 0.100 |
| | | -- | 230 | -- | **3RT29 26-5AL21** | 0.100 |
| | | 110 | -- | 120 | **3RT29 26-5AK61** | 0.100 |
| | | 220 | -- | 240 | **3RT29 26-5AP61** | 0.100 |
| | | -- | 100 | 110 | **3RT29 26-5AG61** | 0.100 |
| | | -- | 200 | 220 | **3RT29 26-5AN61** | 0.100 |
| | | -- | 400 | 440 | **3RT29 26-5AR61** | 0.100 |
| | | 500 | -- | | **3RT29 26-5AQ21** | 0.100 |
| | | | 277 | | **3RT29 26-5AU61** | 0.100 |
| | | | 480 | | **3RT29 26-5AV61** | 0.100 |
| | | | 600 | | **3RT29 26-5AT61** | 0.100 |

Note:

Contactors with AC and AC/DC coils have different depths. It is only possible to replace the coils on AC contactors with AC coils, and on AC/DC contactors with AC/DC coils. It is not possible to replace the coils on DC contactors in the S0 frame.

***Screw terminals and spring-type terminals***

3RT2934-5A.01

3RT2934-5N.31

| For contactors | Rated control supply voltage $U_s$ | | | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|---|---|
| | 50 Hz | 50/60 Hz | 60 Hz | DC | | | | | | |
| Type | V | V | V | | d | | | | | |
| **Solenoid coils · AC operation** | | | | | | | | | | |
| ***Size S2*** | | | | | | | | | | |
| 3RT203.-.A, 3RT233.-.A, 3RT253.-.A | 24 | -- | -- | -- | 5 | **3RT2934-5AB01** | | 1 | 1 unit | 41B |
| | 42 | -- | -- | -- | 5 | **3RT2934-5AD01** | | 1 | 1 unit | 41B |
| | 48 | -- | -- | -- | 5 | **3RT2934-5AH01** | | 1 | 1 unit | 41B |
| | 110 | -- | -- | -- | 5 | **3RT2934-5AF01** | | 1 | 1 unit | 41B |
| | 230 | -- | -- | -- | 5 | **3RT2934-5AP01** | | 1 | 1 unit | 41B |
| | 400 | -- | -- | -- | 5 | **3RT2934-5AV01** | | 1 | 1 unit | 41B |
| | -- | 24 | -- | -- | 5 | **3RT2934-5AC21** | | 1 | 1 unit | 41B |
| | -- | 42 | -- | -- | 5 | **3RT2934-5AD21** | | 1 | 1 unit | 41B |
| | -- | 48 | -- | -- | 5 | **3RT2934-5AH21** | | 1 | 1 unit | 41B |
| | -- | 110 | -- | -- | 5 | **3RT2934-5AG21** | | 1 | 1 unit | 41B |
| | -- | 220 | -- | -- | 5 | **3RT2934-5AN21** | | 1 | 1 unit | 41B |
| | -- | 230 | -- | -- | 5 | **3RT2934-5AL21** | | 1 | 1 unit | 41B |
| | 110 | -- | 120 | -- | 5 | **3RT2934-5AK61** | | 1 | 1 unit | 41B |
| | 220 | -- | 240 | -- | 5 | **3RT2934-5AP61** | | 1 | 1 unit | 41B |
| | -- | -- | 480 | -- | 5 | **3RT2934-5AV61** | | 1 | 1 unit | 41B |
| | -- | -- | 600 | -- | 5 | **3RT2934-5AT61** | | 1 | 1 unit | 41B |
| | -- | 100 | 110 | -- | 5 | **3RT2934-5AG61** | | 1 | 1 unit | 41B |
| | -- | 200 | 220 | -- | 5 | **3RT2934-5AN61** | | 1 | 1 unit | 41B |
| | -- | 400 | 440 | -- | 5 | **3RT2934-5AR61** | | 1 | 1 unit | 41B |
| ***Size S3*** NEW | | | | | | | | | | |
| 3RT2.4.-.A | 24 | -- | -- | -- | X | **3RT2944-5AB01** | | 1 | 1 unit | 41B |
| | 42 | -- | -- | -- | X | **3RT2944-5AD01** | | 1 | 1 unit | 41B |
| | 48 | -- | -- | -- | X | **3RT2944-5AH01** | | 1 | 1 unit | 41B |
| | 110 | -- | -- | -- | X | **3RT2944-5AF01** | | 1 | 1 unit | 41B |
| | 230 | -- | -- | -- | X | **3RT2944-5AP01** | | 1 | 1 unit | 41B |
| | 400 | -- | -- | -- | X | **3RT2944-5AV01** | | 1 | 1 unit | 41B |
| | -- | 24 | -- | -- | X | **3RT2944-5AC21** | | 1 | 1 unit | 41B |
| | -- | 42 | -- | -- | X | **3RT2944-5AD21** | | 1 | 1 unit | 41B |
| | -- | 48 | -- | -- | X | **3RT2944-5AH21** | | 1 | 1 unit | 41B |
| | -- | 110 | -- | -- | X | **3RT2944-5AG21** | | 1 | 1 unit | 41B |
| | -- | 220 | -- | -- | X | **3RT2944-5AN21** | | 1 | 1 unit | 41B |
| | -- | 230 | -- | -- | X | **3RT2944-5AL21** | | 1 | 1 unit | 41B |
| | 110 | -- | 120 | -- | X | **3RT2944-5AK61** | | 1 | 1 unit | 41B |
| | 220 | -- | 240 | -- | X | **3RT2944-5AP61** | | 1 | 1 unit | 41B |
| | -- | -- | 480 | -- | X | **3RT2944-5AV61** | | 1 | 1 unit | 41B |
| | -- | -- | 600 | -- | X | **3RT2944-5AT61** | | 1 | 1 unit | 41B |
| | -- | 100 | 110 | -- | X | **3RT2944-5AG61** | | 1 | 1 unit | 41B |
| | -- | 200 | 220 | -- | X | **3RT2944-5AN61** | | 1 | 1 unit | 41B |
| | -- | 400 | 440 | -- | X | **3RT2944-5AR61** | | 1 | 1 unit | 41B |
| **Solenoid coils · AC/DC operation, with varistor** | | | | | | | | | | |
| ***Size S2*** | | | | | | | | | | |
| 3RT203.-.A, 3RT233.-.A, 3RT253.-.A | -- | 20 ... 33 | -- | 20 ... 33 | 5 | **3RT2934-5NB31** | | 1 | 1 unit | 41B |
| | -- | 30 ... 42 | -- | 30 ... 42 | 5 | **3RT2934-5ND31** | | 1 | 1 unit | 41B |
| | -- | 48 ... 80 | -- | 48 ... 80 | 5 | **3RT2934-5NE31** | | 1 | 1 unit | 41B |
| | -- | 83 ... 155 | -- | 83 ... 155 | 5 | **3RT2934-5NF31** | | 1 | 1 unit | 41B |
| | -- | 175 ... 280 | -- | 175 ... 280 | 5 | **3RT2934-5NP31** | | 1 | 1 unit | 41B |
| ***Size S3*** NEW | | | | | | | | | | |
| 3RT2.4.-.A | -- | 20 ... 33 | -- | 20 ... 33 | X | **3RT2944-5NB31** | | 1 | 1 unit | 41B |
| | -- | 30 ... 42 | -- | 30 ... 42 | X | **3RT2944-5ND31** | | 1 | 1 unit | 41B |
| | -- | 48 ... 80 | -- | 48 ... 80 | X | **3RT2944-5NE31** | | 1 | 1 unit | 41B |
| | -- | 83 ... 155 | -- | 83 ... 155 | X | **3RT2944-5NF31** | | 1 | 1 unit | 41B |
| | -- | 175 ... 280 | -- | 175 ... 280 | X | **3RT2944-5NP31** | | 1 | 1 unit | 41B |

Note:
It is only possible to replace the coils on AC contactors with AC coils, and on AC/DC contactors with AC/DC coils.

## Selection and ordering data

| | For contactor Size | Type | Rated control supply voltage $U_s$ | Screw connection Order No. | Spring-type connection Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|
| **Coils · AC operation** | | | | | | |
| 3RT19 24-5A . 01 | **S0** | 3RT10 2 ., 3RT13 2 ., 3RT15 2 . | 24 V, 50 Hz | **3RT19 24-5AB01** | **3RT19 24-5AB02** | 0.069 |
| | | | 42 V, 50 Hz | **3RT19 24-5AD01** | **3RT19 24-5AD02** | |
| | | | 48 V, 50 Hz | **3RT19 24-5AH01** | **3RT19 24-5AH02** | |
| | | | 110 V, 50 Hz | **3RT19 24-5AF01** | **3RT19 24-5AF02** | |
| | | | 230 V, 50 Hz | **3RT19 24-5AP01** | **3RT19 24-5AP02** | |
| | | | 400 V, 50 Hz | **3RT19 24-5AV01** | **3RT19 24-5AV02** | |
| | | | 24 V, 50/60 Hz | **3RT19 24-5AC21** | **3RT19 24-5AC22** | |
| | | | 42 V, 50/60 Hz | **3RT19 24-5AD21** | **3RT19 24-5AD22** | |
| | | | 48 V, 50/60 Hz | **3RT19 24-5AH21** | **3RT19 24-5AH22** | |
| | | | 110 V, 50/60 Hz | **3RT19 24-5AG21** | **3RT19 24-5AG22** | |
| | | | 208 v, 50/60 Hz | **3RT19 24-5AM21** | **3RT19 24-5AM22** | |
| | | | 220 V, 50/60 Hz | **3RT19 24-5AN21** | **3RT19 24-5AN22** | |
| | | | 230 V, 50/60 Hz | **3RT19 24-5AL21** | **3RT19 24-5AL22** | |
| | | | 110 V, 50 Hz/120 V, 60 Hz | **3RT19 24-5AK61** | **3RT19 24-5AK62** | |
| | | | 220 V, 50 Hz/240 V, 60 Hz | **3RT19 24-5AP61** | **3RT19 24-5AP62** | |
| | | | 277 V, 60 Hz | **3RT19 24-5AU61** | **3RT19 24-5AU62** | |
| | | | 480 V, 60 Hz | **3RT19 24-5AV61** | **3RT19 24-5AV62** | |
| | | | 600 V, 60 Hz | **3RT19 24-5AT61** | **3RT19 24-5AT62** | |
| | | | 100 V, 50/60 Hz/110 V, 60 Hz | **3RT19 24-5AG61** | **3RT19 24-5AG62** | |
| | | | 200 V, 50/60 Hz/220 V, 60 Hz | **3RT19 24-5AN61** | **3RT19 24-5AN62** | |
| | | | 400 V, 50/60 Hz/440 V, 60 Hz | **3RT19 24-5AR61** | **3RT19 24-5AR62** | |
| 3RT19 24-5A . 02 | **S2** | 3RT10 33 3RT10 34 | 24 V, 50 Hz | **3RT19 34-5AB01** | **3RT19 34-5AB02** | 0.088 |
| | | | 42 V, 50 Hz | **3RT19 34-5AD01** | **3RT19 34-5AD02** | |
| | | | 48 V, 50 Hz | **3RT19 34-5AH01** | **3RT19 34-5AH02** | |
| | | | 110 V, 50 Hz | **3RT19 34-5AF01** | **3RT19 34-5AF02** | |
| | | | 230 V, 50 Hz | **3RT19 34-5AP01** | **3RT19 34-5AP02** | |
| | | | 400 V, 50 Hz | **3RT19 34-5AV01** | **3RT19 34-5AV02** | |
| | | | 42 V, 50/60 Hz | **3RT19 34-5AD21** | **3RT19 34-5AD22** | |
| | | | 48 V, 50/60 Hz | **3RT19 34-5AH21** | **3RT19 34-5AH22** | |
| | | | 24 V, 50/60 Hz | **3RT19 34-5AC21** | **3RT19 34-5AC22** | |
| | | | 110 V, 50/60 Hz | **3RT19 34-5AG21** | **3RT19 34-5AG22** | |
| | | | 208 V, 50/60 Hz | **3RT19 34-5AM21** | **3RT19 34-5AM22** | |
| | | | 220 V, 50/60 Hz | **3RT19 34-5AN21** | **3RT19 34-5AN22** | |
| | | | 230 V, 50/60 Hz | **3RT19 34-5AL21** | **3RT19 34-5AL22** | |
| | | | 110 V, 50 Hz/120 V, 60 Hz | **3RT19 34-5AK61** | **3RT19 34-5AK62** | |
| | | | 220 V, 50 Hz/240 V, 60 Hz | **3RT19 34-5AP61** | **3RT19 34-5AP62** | |
| | | | 277 V, 60 Hz | **3RT19 34-5AU61** | **3RT19 34-5AU62** | |
| | | | 480 V, 60 Hz | **3RT19 34-5AV61** | **3RT19 34-5AV62** | |
| | | | 600 V, 60 Hz | **3RT19 34-5AT61** | **3RT19 34-5AT62** | |
| | | | 100 V, 50/60 Hz/110 V, 60 Hz | **3RT19 34-5AG61** | **3RT19 34-5AG62** | |
| | | | 200 V, 50/60 Hz/220 V, 60 Hz | **3RT19 34-5AN61** | **3RT19 34-5AN62** | |
| | | | 400 V, 50/60 Hz/440 V, 60 Hz | **3RT19 34-5AR61** | **3RT19 34-5AR62** | |
| 3RT19 34-5A . 01 | | 3RT10 35, 3RT10 36, 3RT13 3 ., 3RT15 3 . | 24 V, 50 Hz | **3RT19 35-5AB01** | **3RT19 35-5AB02** | 0.088 |
| | | | 42 V, 50 Hz | **3RT19 35-5AD01** | **3RT19 35-5AD02** | |
| | | | 48 V, 50 Hz | **3RT19 35-5AH01** | **3RT19 35-5AH02** | |
| | | | 110 V, 50 Hz | **3RT19 35-5AF01** | **3RT19 35-5AF02** | |
| | | | 230 V, 50 Hz | **3RT19 35-5AP01** | **3RT19 35-5AP02** | |
| | | | 400 V, 50 Hz | **3RT19 35-5AV01** | **3RT19 35-5AV02** | |
| | | | 24 V, 50/60 Hz | **3RT19 35-5AC21** | **3RT19 35-5AC22** | |
| | | | 42 V, 50/60 Hz | **3RT19 35-5AD21** | **3RT19 35-5AD22** | |
| | | | 48 V, 50/60 Hz | **3RT19 35-5AH21** | **3RT19 35-5AH22** | |
| | | | 110 V, 50/60 Hz | **3RT19 35-5AG21** | **3RT19 35-5AG22** | |
| | | | 208 V, 50/60 Hz | **3RT19 35-5AM21** | **3RT19 35-5AM22** | |
| | | | 220 V, 50/60 Hz | **3RT19 35-5AN21** | **3RT19 35-5AN22** | |
| | | | 230 V, 50/60 Hz | **3RT19 35-5AL21** | **3RT19 35-5AL22** | |
| | | | 110 V, 50 Hz/120 V, 60 Hz | **3RT19 35-5AK61** | **3RT19 35-5AK62** | |
| | | | 220 V, 50 Hz/240 V, 60 Hz | **3RT19 35-5AP61** | **3RT19 35-5AP62** | |
| | | | 277 V, 60 Hz | **3RT19 35-5AU61** | **3RT19 35-5AU62** | |
| | | | 480 V, 60 Hz | **3RT19 35-5AV61** | **3RT19 35-5AV62** | |
| | | | 600 V, 60 Hz | **3RT19 35-5AT61** | **3RT19 35-5AT62** | |
| | | | 100 V, 50/60 Hz/110 V, 60 Hz | **3RT19 35-5AG61** | **3RT19 35-5AG62** | |
| | | | 200 V, 50/60 Hz/220 V, 60 Hz | **3RT19 35-5AN61** | **3RT19 35-5AN62** | |
| | | | 400 V, 50/60 Hz/440 V, 60 Hz | **3RT19 35-5AR61** | **3RT19 35-5AR62** | |

## Selection and ordering data

| | For contactor Size | Type | Rated control supply voltage $U_s$ | Screw connection Order No. | Spring-type connection Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|
| **Coils · AC operation** | | | | | | |
| 3RT19 44-5A . 01 | **S3** | 3RT10 44 | 24 V, 50 Hz | **3RT19 44-5AB01** | **3RT19 44-5AB02** | 0.130 |
| | | | 42 V, 50 Hz | **3RT19 44-5AD01** | **3RT19 44-5AD02** | |
| | | | 48 V, 50 Hz | **3RT19 44-5AH01** | **3RT19 44-5AH02** | |
| | | | 110 V, 50 Hz | **3RT19 44-5AF01** | **3RT19 44-5AF02** | |
| | | | 230 V, 50 Hz | **3RT19 44-5AP01** | **3RT19 44-5AP02** | |
| | | | 400 V, 50 Hz | **3RT19 44-5AV01** | **3RT19 44-5AV02** | |
| | | | 24 V, 50/60 Hz | **3RT19 44-5AC21** | **3RT19 44-5AC22** | |
| | | | 42 V, 50/60 Hz | **3RT19 44-5AD21** | **3RT19 44-5AD22** | |
| | | | 48 V, 50/60 Hz | **3RT19 44-5AH21** | **3RT19 44-5AH22** | |
| | | | 110 V, 50/60 Hz | **3RT19 44-5AG21** | **3RT19 44-5AG22** | |
| | | | 208 V, 50/60 Hz | **3RT19 44-5AM21** | **3RT19 44-5AM22** | |
| | | | 220 V, 50/60 Hz | **3RT19 44-5AN21** | **3RT19 44-5AN22** | |
| | | | 230 V, 50/60 Hz | **3RT19 44-5AL21** | **3RT19 44-5AL22** | |
| | | | 110 V, 50 Hz/120 V, 60 Hz | **3RT19 44-5AK61** | **3RT19 44-5AK62** | |
| | | | 220 V, 50 Hz/240 V, 60 Hz | **3RT19 44-5AP61** | **3RT19 44-5AP62** | |
| | | | 277 V, 60 Hz | **3RT19 44-5AU61** | **3RT19 44-5AU62** | |
| | | | 480 V, 60 Hz | **3RT19 44-5AV61** | **3RT19 44-5AV62** | |
| | | | 600 V, 60 Hz | **3RT19 44-5AT61** | **3RT19 44-5AT62** | |
| | | | 100 V, 50/60 Hz/110 V, 60 Hz | **3RT19 44-5AG61** | **3RT19 44-5AG62** | |
| | | | 200 V, 50/60 Hz/220 V, 60 Hz | **3RT19 44-5AN61** | **3RT19 44-5AN62** | |
| | | | 400 V, 50/60 Hz/440 V, 60 Hz | **3RT19 44-5AR61** | **3RT19 44-5AR62** | |
| 3RT19 45-5A . 01 3RT19 45-5AP02 | | 3RT10 45, 3RT10 46, 3RT13 4 ., 3RT14 46 | 24 V, 50 Hz | **3RT19 45-5AB01** | **3RT19 45-5AB02** | 0.130 |
| | | | 42 V, 50 Hz | **3RT19 45-5AD01** | **3RT19 45-5AD02** | |
| | | | 48 V, 50 Hz | **3RT19 45-5AH01** | **3RT19 45-5AH02** | |
| | | | 110 V, 50 Hz | **3RT19 45-5AF01** | **3RT19 45-5AF02** | |
| | | | 230 V, 50 Hz | **3RT19 45-5AP01** | **3RT19 45-5AP02** | |
| | | | 400 V, 50 Hz | **3RT19 45-5AV01** | **3RT19 45-5AV02** | |
| | | | 24 V, 50/60 Hz | **3RT19 45-5AC21** | **3RT19 45-5AC22** | |
| | | | 42 V, 50/60 Hz | **3RT19 45-5AD21** | **3RT19 45-5AD22** | |
| | | | 48 V, 50/60 Hz | **3RT19 45-5AH21** | **3RT19 45-5AH22** | |
| | | | 110 V, 50/60 Hz | **3RT19 45-5AG21** | **3RT19 45-5AG22** | |
| | | | 208 V, 50/60 Hz | **3RT19 45-5AM21** | **3RT19 45-5AM22** | |
| | | | 220 V, 50/60 Hz | **3RT19 45-5AN21** | **3RT19 45-5AN22** | |
| | | | 230 V, 50/60 Hz | **3RT19 45-5AL21** | **3RT19 45-5AL22** | |
| | | | 110 V, 50 Hz/120 V, 60 Hz | **3RT19 45-5AK61** | **3RT19 45-5AK62** | |
| | | | 220 V, 50 Hz/240 V, 60 Hz | **3RT19 45-5AP61** | **3RT19 45-5AP62** | |
| | | | 277 V, 60 Hz | **3RT19 45-5AU61** | **3RT19 45-5AU62** | |
| | | | 480 V, 60 Hz | **3RT19 45-5AV61** | **3RT19 45-5AV62** | |
| | | | 600 V, 60 Hz | **3RT19 45-5AT61** | **3RT19 45-5AT62** | |
| | | | 100 V, 50/60 Hz/110 V, 60 Hz | **3RT19 45-5AG61** | **3RT19 45-5AG62** | |
| | | | 200 V, 50/60 Hz/220 V, 60 Hz | **3RT19 45-5AN61** | **3RT19 45-5AN62** | |
| | | | 400 V, 50/60 Hz/440 V, 60 Hz | **3RT19 45-5AR61** | **3RT19 45-5AR62** | |
| **Coils · DC operation** | | | | | | |
| 3RT19 44-5BM42 | **S2** | 3RT10 3 ., 3RT13 3 ., 3RT15 3 . | 24 V | **3RT19 34-5BB41** | **3RT19 34-5BB42** | 0.558 |
| | | | 42 V | **3RT19 34-5BD41** | **3RT19 34-5BD42** | |
| | | | 48 V | **3RT19 34-5BW41** | **3RT19 34-5BW42** | |
| | | | 60 V | **3RT19 34-5BE41** | **3RT19 34-5BE42** | |
| | | | 110 V | **3RT19 34-5BF41** | **3RT19 34-5BF42** | |
| | | | 125 V | **3RT19 34-5BG41** | **3RT19 34-5BG42** | |
| | | | 220 V | **3RT19 34-5BM41** | **3RT19 34-5BM42** | |
| | | | 230 V | **3RT19 34-5BP41** | **3RT19 34-5BP42** | |
| | **S3** | 3RT10 4 ., 3RT13 4 ., 3RT14 4 . | 24 V | **3RT19 44-5BB41** | **3RT19 44-5BB42** | 0.916 |
| | | | 42 V | **3RT19 44-5BD41** | **3RT19 44-5BD42** | |
| | | | 48 V | **3RT19 44-5BW41** | **3RT19 44-5BW42** | |
| | | | 60 V | **3RT19 44-5BE41** | **3RT19 44-5BE42** | |
| | | | 110 V | **3RT19 44-5BF41** | **3RT19 44-5BF42** | |
| | | | 125 V | **3RT19 44-5BG41** | **3RT19 44-5BG42** | |
| | | | 220 V | **3RT19 44-5BM41** | **3RT19 44-5BM42** | |
| | | | 230 V | **3RT19 44-5BP41** | **3RT19 44-5BP42** | |

## Selection and ordering data

| For contactor Size | Type | Rated control supply voltage $U_{s\,min}$ to $U_{s\,max}$ AC/DC V | Order No. | Weight approx. kg |
|---|---|---|---|---|
| **Withdrawable coils** | | | | |
| **Conventional operating mechanism** | | | | |
| 3RT19 55-5A . . . | | | | |
| **S6** | 3RT10 5, 3RT14 5 | 23 ... 26<br>42 ... 48<br>110 ... 127<br>200 ... 220<br>220 ... 240<br>240 ... 277<br>380 ... 420<br>440 ... 480<br>500 ... 550<br>575 ... 600 | **3RT19 55-5AB31**<br>**3RT19 55-5AD31**<br>**3RT19 55-5AF31**<br>**3RT19 55-5AM31**<br>**3RT19 55-5AP31**<br>**3RT19 55-5AU31**<br>**3RT19 55-5AV31**<br>**3RT19 55-5AR31**<br>**3RT19 55-5AS31**<br>**3RT19 55-5AT31** | 0.49 |
| **S10** | 3RT10 6, 3RT14 6 | 23 ... 26<br>42 ... 48<br>110 ... 127<br>200 ... 220<br>220 ... 240<br>240 ... 277<br>380 ... 420<br>440 ... 480<br>500 ... 550<br>575 ... 600 | **3RT19 65-5AB31**<br>**3RT19 65-5AD31**<br>**3RT19 65-5AF31**<br>**3RT19 65-5AM31**<br>**3RT19 65-5AP31**<br>**3RT19 65-5AU31**<br>**3RT19 65-5AV31**<br>**3RT19 65-5AR31**<br>**3RT19 65-5AS31**<br>**3RT19 65-5AT31** | 0.65 |
| | 3RT12 6 Vacuum contactor | 23 ... 26<br>42 ... 48<br>110 ... 127<br>200 ... 220<br>220 ... 240<br>240 ... 277<br>380 ... 420<br>440 ... 480<br>500 ... 550<br>575 ... 600 | **3RT19 66-5AB31**<br>**3RT19 66-5AD31**<br>**3RT19 66-5AF31**<br>**3RT19 66-5AM31**<br>**3RT19 66-5AP31**<br>**3RT19 66-5AU31**<br>**3RT19 66-5AV31**<br>**3RT19 66-5AR31**<br>**3RT19 66-5AS31**<br>**3RT19 66-5AT31** | |
| **S12** | 3RT10 7, 3RT14 7, 3RT12 7 Vacuum contactor | 23 ... 26<br>42 ... 48<br>110 ... 127<br>200 ... 220<br>220 ... 240<br>240 ... 277<br>380 ... 420<br>440 ... 480<br>500 ... 550<br>575 ... 600 | **3RT19 75-5AB31**<br>**3RT19 75-5AD31**<br>**3RT19 75-5AF31**<br>**3RT19 75-5AM31**<br>**3RT19 75-5AP31**<br>**3RT19 75-5AU31**<br>**3RT19 75-5AV31**<br>**3RT19 75-5AR31**<br>**3RT19 75-5AS31**<br>**3RT19 75-5AT31** | 1.1 |
| **Withdrawable coils** | | | | |
| **Solid-state operating mechanism · for DC 24 V PLC output** | | | | |
| 3RT19 55-5N . . . | | | | |
| **S6** | 3RT10 5, 3RT14 5 | 21 ... 27.3<br>96 ... 127<br>200 ... 277 | **3RT19 55-5NB31**<br>**3RT19 55-5NF31**<br>**3RT19 55-5NP31** | 0.49 |
| **S10** | 3RT10 6, 3RT14 6 | 21 ... 27.3<br>96 ... 127<br>200 ... 277 | **3RT19 65-5NB31**<br>**3RT19 65-5NF31**<br>**3RT19 65-5NP31** | 0.65 |
| | 3RT12 6 Vacuum contactor | 21 ... 27.3<br>96 ... 127<br>200 ... 277 | **3RT19 66-5NB31**<br>**3RT19 66-5NF31**<br>**3RT19 66-5NP31** | |
| **S12** | 3RT10 7, 3RT14 7, 3RT12 7 Vacuum contactor | 21 ... 27.3<br>96 ... 127<br>200 ... 277 | **3RT19 75-5NB31**<br>**3RT19 75-5NF31**<br>**3RT19 75-5NP31** | 1.1 |
| **Solid-state operating mechanism · for DC 24 V PLC output/PLC relay output, with remaining lifetime indication** (withdrawable coil with lateral electronics module) | | | | |
| **S6** | 3RT10 5, 3RT14 5 | 96 ... 127<br>200 ... 277 | **3RT19 55-5PF31**<br>**3RT19 55-5PP31** | 1.1 |
| **S10** | 3RT10 6, 3RT14 6 | 96 ... 127<br>200 ... 277 | **3RT19 65-5PF31**<br>**3RT19 65-5PP31** | 1.1 |
| **S12** | 3RT10 7, 3RT14 7 | 96 ... 127<br>200 ... 277 | **3RT19 75-5PF31**<br>**3RT19 75-5PP31** | 1.1 |

## Selection and ordering data

| For contactor Size | Type | Design | Order No. | Weight approx. kg | Pack. |
|---|---|---|---|---|---|
| **Arc chutes** | | | | | |
| **S2** | 3RT20 3 .<br>3RT20 3 . | For AC coil contactors only<br>For UC (AC/DC) coil contactors only | **3RT29 36-7A**<br>**3RT29 36-7B** | | 1 unit |
| **S3** | 3RT10 4 .,<br>3RT14 46 | | **3RT19 46-7A** | | |
| **S6** | 3RT10 54<br>3RT10 55<br>3RT10 56 | | **3RT19 54-7A**<br>**3RT19 55-7A**<br>**3RT19 56-7A** | 0.72 | |
| **S10** | 3RT10 64<br>3RT10 65<br>3RT10 66 | | **3RT19 64-7A**<br>**3RT19 65-7A**<br>**3RT19 66-7A** | 1.24 | |
| **S12** | 3RT10 75<br>3RT10 76 | | **3RT19 75-7A**<br>**3RT19 76-7A** | 1.4 | |
| **S6**<br>**S10**<br>**S12** | 3RT14 56<br>3RT14 66<br>3RT14 76 | | **3RT19 56-7B**<br>**3RT19 66-7B**<br>**3RT19 76-7B** | 0.72<br>1.24<br>1.4 | |
| **Contacts with fixing parts** | | | | | |
| **• for contactors with 3 main contacts** | | | | | |
| **S2** | 3RT20 35<br>3RT20 36<br>3RT20 37<br>3RT20 38 | Main contacts (3 NO)<br>for AC-3 utilization category<br>(1 set = 3 moving and 6 fixed contacts<br>with fixing parts) | **3RT29 35-6A**<br>**3RT29 36-6A**<br>**3RT29 37-6A**<br>**3RT29 38-6A** | | 1 set |
| **S3** | 3RT10 44<br>3RT10 45<br>3RT10 46 | | **3RT19 44-6A**<br>**3RT19 45-6A**<br>**3RT19 46-6A** | | |
| **S6** | 3RT10 54<br>3RT10 55<br>3RT10 56 | | **3RT19 54-6A**<br>**3RT19 55-6A**<br>**3RT19 56-6A** | 0.28 | |
| **S10** | 3RT10 64<br>3RT10 65<br>3RT10 66 | | **3RT19 64-6A**<br>**3RT19 65-6A**<br>**3RT19 66-6A** | 0.48 | |
| **S12** | 3RT10 75<br>3RT10 76 | | **3RT19 75-6A**<br>**3RT19 76-6A** | 0.9 | |
| **S3** | 3RT14 46 | Main contacts (3 NO)<br>for AC-1 utilization category<br>(1 set = 3 moving and 6 fixed contacts<br>with fixing parts) | **3RT19 46-6D** | | |
| **S6**<br>**S10**<br>**S12** | 3RT14 56<br>3RT14 66<br>3RT14 76 | | **3RT19 56-6D**<br>**3RT19 66-6D**<br>**3RT19 76-6D** | 0.28<br>0.48<br>0.9 | |
| **• for 3RT12 vacuum contactors** | | | | | |
| **S10** | 3RT12 64<br>3RT12 65<br>3RT12 66 | 3 vacuum interrupters<br>with fixing parts | **3RT19 64-6V**<br>**3RT19 65-6V**<br>**3RT19 66-6V** | 1.4 | 1 set |
| **S12** | 3RT12 75<br>3RT12 76 | | **3RT19 75-6V**<br>**3RT19 76-6V** | 1.5 | |
| **• for contactors with 4 main contacts** | | | | | |
| **S2** | 3RT23 36<br>3RT23 37 | Main contacts (4 NO contacts)<br>for utilization category AC-1 | **3RT29 36-6E**<br>**3RT29 37-6E** | | 1 set |
| **S3** | 3RT13 44<br>3RT13 46 | (1 set = 4 moving and 8 fixed contacts<br>with fixing parts) | **3RT19 44-6E**<br>**3RT19 46-6E** | | |

## Selection and ordering data

| Coil type<br>Rated control supply voltage $U_s$ | Control supply voltage at | 3TY6 503-0A..<br>3TY6 523-0A..<br>3TY6 543-0A..<br>3TY6 566-0A.. | 3TB50<br>3TB52<br>3TB54<br>3TB56 | 3TY7 683-0C..<br>3TY7 693-0C.. | 3TF68<br>3TF69 |
|---|---|---|---|---|---|
| **Rated control supply voltages (changes to 10th and 11th positions of the Order No.)** | | | | | |
| ***AC operation*** | | | | | |
| **Coils for 50 Hz**<br>50 Hz | 60 Hz | | | | |
| **AC 24 V** | **AC 39 V** | **B0** | | **–** | |
| **AC 32 V** | **AC 28 V** | **–** | | **–** | |
| **AC 36 V** | **AC 42 V** | **G0** | | **–** | |
| **AC 42 V** | **AC 50 V** | **D0** | | **–** | |
| **AC 48 V** | **AC 58 V** | **H0** | | **–** | |
| **AC 60 V** | **AC 72 V** | **E0** | | **–** | |
| **AC 110 V** | **AC 132 V** | **F0** | | **–** | |
| **AC 125/127 V** | **AC 150/152 V** | **L0** | | **–** | |
| **AC 230/220 V** | **AC 277 V** | **P0** [1] | | **–** | |
| **AC 240 V** | **AC 288 V** | **U0** | | **–** | |
| **AC 400/380 V** | **AC 480/460 V** | **V0** [1] | | **–** | |
| **AC 415 V** | **AC 500 V** | **R0** | | **–** | |
| **AC 500 V** | **AC 600 V** | **S0** | | **–** | |
| **Coils for 50/60 Hz** | | | | | |
| **AC 110 V ... 132 V** | | **–** | | **F7** | |
| **AC 200 V ... 240 V** | | **–** | | **M7** | |
| **AC 230 V ... 277 V** | | **–** | | **P7** [2] | |
| **AC 380 V ... 460 V** | | **–** | | **Q7** | |
| **AC 500 V ... 600 V** | | **–** | | **S7** | |

| Coil type<br>Rated control supply voltage $U_s$ | 3TY6 503-0B..<br>3TY6 523-0B..<br>3TY6 543-0B..<br>3TY6 563-0B.. | 3TB50<br>3TB52<br>3TB54<br>3TB56 | 3TY7 683-0D..<br>3TY7 693-0D.. | 3TF68<br>3TF69 |
|---|---|---|---|---|
| **Rated control supply voltages (changes to 10th and 11th positions of the Order No.)** | | | | |
| ***DC operation*** | | | | |
| **DC 24 V** | **B4** | | **B4** | |
| **DC 30 V** | **C4** | | **–** | |
| **DC 36 V** | **V4** | | **–** | |
| **DC 42 V** | **D4** | | **–** | |
| **DC 48 V** | **W4** | | **–** | |
| **DC 60 V** | **E4** | | **–** | |
| **DC 110 V** | **F4** | | **F4** | |
| **DC 125 V** | **G4** | | **G4** | |
| **DC 180 V** | **K4** | | **–** | |
| **DC 220 V** | **M4** | | **M4** | |
| **DC 230 V** | **P4** | | **P4** | |

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

1) Coil voltage tolerance at 220 V or 380 V: 0.85 to 1.15 x $U_s$; lower tolerance range limit acc. to IEC 60 947.

2) Lower tolerance range limit at 220 V: 0.85 x $U_s$ acc. to IEC 60 947.

## Coils, AC[1)]

3TY6463-0AK6

| Frame Size | Catalog No | | | | | | |
|---|---|---|---|---|---|---|---|
| | 24V AC | 120V AC | 208V AC | 220/240V AC | 277V AC | 480V AC | 600V AC |
| 3TB40–44 | 3TY7403-0AC2 | 3TY7403-0AK6 | 3TY7403-0AM1 | 3TY7403-0AP6 | 3TY7403-0AU1 | 3TY7403-0AV0 | 3TY7403-0AS0 |
| 3TB47–48 | 3TY6483-0AC1 | 3TY6483-0AK6 | 3TY6483-0AM1 | 3TY6483-0AP6 | 3TY6483-0AP0 | 3TY6483-0AV0 | 3TY6483-0AS0 |
| 3TB52 | — | 3TY6523-0AK6 | 3TY6523-0AM1 | 3TY6523-0AP6 | 3TY6523-0AP0 | 3TY6523-0AV0 | — |
| 3TB56 | — | — | — | — | 3TY6566-0AP0 | 3TY6566-0AV0 | 3TY6566-0AS0 |

## Coils, DC

3TY6483-0BB4

| Frame Size | Catalog No | | | | | | |
|---|---|---|---|---|---|---|---|
| | 12V DC | 24V DC | 42V DC | 48V DC | 110V DC | 125V DC | 240V DC |
| 3TB40–43 | 3TY4803-0BA4 | 3TY4803-0BB4 | 3TY4803-0BD4 | 3TY4803-0BW4 | 3TY4803-0BF4 | 3TY4803-0BG4 | 3TY4803-0BQ4 |
| 3TB44 | 3TY6443-0BA4 | 3TY6443-0BB4 | 3TY6443-0BD4 | 3TY6443-0BW4 | 3TY6443-0BF4 | 3TY6443-0BG4 | 3TY6443-0BQ4 |
| 3TB46 | — | — | 3TY6463-0BD4 | 3TY6463-0BW4 | 3TY6463-0BF4 | — | 3TY6463-0BQ4 |
| 3TB47–48 | — | 3TY6483-0BB4 | 3TY6483-0BD4 | 3TY6483-0BW4 | 3TY6483-0BF4 | 3TY6483-0BG4 | — |
| 3TB50 | — | 3TY6503-0BB4 | 3TY6503-0BD4 | 3TY6503-0BW4 | 3TY6503-0BF4 | 3TY6503-0BG4 | 3TY6503-0BQ4 |
| 3TB52 | — | 3TY6523-0BB4 | 3TY6523-0BD4 | — | 3TY6523-0BF4 | 3TY6523-0BG4 | — |
| 3TB54 | — | 3TY6543-0BB4 | 3TY6543-0BD4 | 3TY6543-0BW4 | 3TY6543-0BF4 | — | 3TY6543-0BQ4 |
| 3TB56 | — | 3TY6563-0BB4 | 3TY6563-0BD4 | — | 3TY6563-0BF4 | 3TY6563-0BG4 | 3TY6563-0BQ4 |
| 3TB58 | — | — | — | — | — | — | — |

## Main Contacts (Includes 3 Moving and 6 Fixed Contacts)[2)]

3TY6500-0A

| Frame Size | Catalog No |
|---|---|
| 3TB40–43 | Not Replaceable |
| 3TB44 | 3TY6440-0A |
| 3TB46 | 3TY6460-0A |
| 3TB47 | 3TY6470-0A |
| 3TB48 | 3TY6480-0A |
| 3TB50 | 3TY6500-0A |
| 3TB52 | 3TY6520-0A |
| 3TB54 | 3TY6540-0A |
| 3TB56 | 3TY6560-0A |
| 3TB58 | 3TY6580-0A |

| Select Complete Catalog Number From Above[1)] | |
|---|---|
| Old Number | New Number |
| 3TY6465-0A†† | 3TY6463-0A†† |
| 3TY6485-0A†† | 3TY6483-0A†† |
| 3TY6505-0A†† | 3TY6503-0A†† |
| 3TY6525-0A†† | 3TY6523-0A†† |
| 3TY6545-0A†† | 3TY6543-0A†† |
| 3TY6565-0A†† | 3TY6566-0A†† |

| Coil Voltages | |
|---|---|
| Old Number | New Number |
| A8 | K6 |
| B8 | M1 |
| C8 | P6 |
| D8 | Q0 |
| E8 | S0 |
| F8 | C1 |
| G8 | P0 |

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

1)Some old 3TB coil catalog numbers have been superceded. Cross to current catalog number from these tables.
2)Main contact kits for size 3TB47 and larger include springs. Smaller sizes do not.

## Coils, AC Type 3TF and CRLtF

3TY7403-0AK6

3TY7483-0AK6

| Frame Size | Catalog No | | | | | | |
|---|---|---|---|---|---|---|---|
| | 24V AC, 60Hz<br>24V AC, 50Hz | 120V AC, 60Hz<br>110V AC, 50Hz | 208V AC, 60Hz<br>173V AC, 50Hz | 240V AC, 60Hz<br>220V AC, 50Hz | 277V AC, 60Hz<br>220V AC, 50Hz | 460V AC, 60Hz<br>380V AC, 50Hz | 600V AC, 60Hz<br>500V AC, 50Hz |
| 3TF40–43 | 3TY7403-0AC2 | 3TY7403-0AK6 | 3TY7403-0AM1 | 3TY7403-0AP6 | 3TY7403-0AU1 | 3TY7403-0AV0 | 3TY7403-0AS0 |
| 3TF34–35,<br>3TF44–45 | 3TY7443-0AC2 | 3TY7443-0AK6 | 3TY7443-0AM1 | 3TY7443-0AP6 | 3TY7443-0AU1 | 3TY7443-0AV0 | 3TY7443-0AS0 |
| 3TF46–47 | 3TY7463-0AC2 | 3TY7463-0AK6 | 3TY7463-0AM1 | 3TY7463-0AP6 | 3TY7463-0AU1 | 3TY7463-0AV0 | 3TY7463-0AS0 |
| 3TF48–49 | 3TY7483-0AC2 | 3TY7483-0AK6 | 3TY7483-0AM1 | 3TY7483-0AP6 | 3TY7483-0AU1 | 3TY7483-0AV0 | 3TY7483-0AS0 |
| 3TF50–51 | 3TY7503-0AC2 | 3TY7503-0AK6 | 3TY7503-0AM1 | 3TY7503-0AP6 | 3TY7503-0AU1 | 3TY7503-0AV0 | 3TY7503-0AS0 |
| 3TF52–53 | 3TY7523-0AC2 | 3TY7523-0AK6 | 3TY7523-0AM1 | 3TY7523-0AP6 | 3TY7523-0AU1 | 3TY7523-0AV0 | 3TY7523-0AS0 |
| 3TF54–55 | 3TY7543-0AC2 | 3TY7543-0AK6 | 3TY7543-0AM1 | 3TY7543-0AP6 | 3TY7543-0AU1 | 3TY7543-0AV0 | 3TY7543-0AS0 |
| 3TF56 | 3TY7563-0AC2 | 3TY7563-0AK6 | 3TY7563-0AM1 | 3TY7563-0AP6 | 3TY7563-0AU1 | 3TY7563-0AV0 | 3TY7563-0AS0 |
| 3TF57 | — | 3TY7573-0CF7 | — | 3TY7573-0CM7 | — | 3TY7573-0CQ7 | — |
| 3TF68 | — | 3TY7683-0CF7 | — | 3TY7683-0CM7 | — | 3TY7683-0CQ7 | 3TY7683-0CS7 |
| 3TF69 | — | 3TY7693-0CF7 | — | 3TY7693-0CM7 | — | 3TY7693-0CQ7 | 3TY7693-0CS7 |

## Coils, DC Type 3TF and CRLtF

3TY4803-0BB4

| Frame Size | Catalog No | | | | | | |
|---|---|---|---|---|---|---|---|
| | 12V DC | 24V DC | 42V DC | 48V DC | 110V DC | 125V DC | 240V DC |
| DC Solenoid | | | | | | | |
| 3TF30–33<br>3TF40–43 | 3TY4803-0BA4 | 3TY4803-0BB4 | 3TY4803-0BD4 | 3TY4803-0BW4 | 3TY4803-0BF4 | 3TY4803-0BG4 | 3TY4803-0BQ4 |
| 3TF34–35,<br>3TF44–45 | 3TY7443-0BA4 | 3TY7443-0BB4 | 3TY7443-0BD4 | 3TY7443-0BW4 | 3TY7443-0BF4 | 3TY7443-0BG4 | — |
| 3TF46–47 | — | 3TY7463-0BB4 | 3TY7463-0BD4 | 3TY7463-0BW4 | — | 3TY7463-0BG4 | 3TY7463-0BQ4 |
| DC Economy Circuit (Replacement coils only. Does not include interlock or interposing relay.) | | | | | | | |
| 3TF46–47 | — | 3TY7463-0DB4 | 3TY7463-0DD4 | 3TY7463-0DW4 | 3TY7463-0DF4 | 3TY7463-0DG4 | 3TY7463-0DQ4 |
| 3TF48–49 | — | — | 3TY7483-0DD4 | 3TY7483-0DW4 | 3TY7483-0DF4 | 3TY7483-0DG4 | 3TY7483-0DQ4 |
| 3TF50–51 | — | 3TY7503-0DB4 | 3TY7503-0DD4 | 3TY7503-0DW4 | 3TY7503-0DF4 | 3TY7503-0DG4 | 3TY7503-0DQ4 |
| 3TF52–53 | — | 3TY7523-0DB4 | 3TY7523-0DD4 | 3TY7523-0DW4 | 3TY7523-0DF4 | 3TY7523-0DG4 | 3TY7523-0DQ4 |
| 3TF54–55 | — | — | 3TY7543-0DD4 | 3TY7543-0DW4 | 3TY7543-0DF4 | 3TY7543-0DG4 | 3TY7543-0DQ4 |
| 3TF56 | — | 3TY7563-0DB4 | 3TY7563-0DD4 | 3TY7563-0DW4 | — | 3TY7563-0DG4 | 3TY7563-0DQ4 |
| 3TF57 | — | 3TY7573-0DB4 | 3TY7573-0DD4 | 3TY7573-0DW4 | 3TY7573-0DF4 | 3TY7573-0DG4 | 3TY7573-0DQ4 |
| 3TF68 | — | 3TY7683-0DB4 | — | — | 3TY7683-0DF4 | — | — |

## Main Contacts (Includes 3 Moving and 6 Fixed Contacts)

3TY7460-0A

| Frame Size | Catalog No | List Price $ |
|---|---|---|
| 3TF30–35 | Not Replaceable | |
| 3TF40–43 | Not Replaceable | |
| 3TF44 | 3TY7440-0A | |
| 3TF45 | 3TY7450-0A | |
| 3TF46 | 3TY7460-0A | |
| 3TF47 | 3TY7470-0A | |
| 3TF48 | 3TY7480-0A | |
| 3TF49 | 3TY7490-0A | |
| 3TF50 | 3TY7500-0A | |
| 3TF51 | 3TY7510-0A | |
| 3TF52 | 3TY7520-0A | |
| 3TF53 | 3TY7530-0A | |
| 3TF54 | 3TY7540-0A | |
| 3TF55 | 3TY7550-0A | |
| 3TF56 | 3TY7560-0A | |
| 3TF57 | 3TY7570-0A | |
| 3TF68 | 3TY7680-0B[1]) | |
| 3TF69 | 3TY7690-0B[1]) | |

## Arc Chutes

3TY7482-0A

| Frame Size | Catalog No |
|---|---|
| 3TF30–35 | Not Replaceable |
| 3TF40–43 | Not Replaceable |
| 3TF44 | 3TY7442-0A |
| 3TF45 | 3TY7452-0A |
| 3TF46 | 3TY7462-0A |
| 3TF47 | 3TY7472-0A |
| 3TF48 | 3TY7482-0A |
| 3TF50 | 3TY7502-0A |
| 3TF51 | 3TY7512-0A |
| 3TF52 | 3TY7522-0A |
| 3TF53 | 3TY7532-0A |
| 3TF54 | 3TY7542-0A |
| 3TF55 | 3TY7552-0A |
| 3TF56 | 3TY7562-0A |
| 3TF57 | 3TY7572-0A |
| 3TF68 | Not Available |
| 3TF69 | Not Available |

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

1) Vacuum bottles with mounting hardware.

## Auxiliary Contact Blocks

3TY7561-1A

| Illustration | Frame Size | Auxiliary Contacts NO | Auxiliary Contacts NC | NO/Early Make | NC/Early Break | Auxiliary Contact Mounting Position | Position | Block Location | Obsolete Catalog No | Current Catalog |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3TF30 to 3TF35, 3TH3 | 1 | — | — | — | | — | Top | — | 3TX4010-2A |
| | | — | 1 | — | — | | — | Top | — | 3TX4001-2A |
| | | — | — | 1 | — | | — | Top | — | 3TX4010-4A |
| | | — | — | — | 1 | | — | Top | — | 3TX4001-4A |
| | 3TF40 to 3TF43 | Not Replaceable | | | | | | | | |
| | 3TF44 to 3TF68 | 1 | 1 | — | — | | 1 | Left | 3TY7561-1A | 3TY7561-1AA00 |
| | | 1 | 1 | — | — | | 2 | Right | 3TY7561-1B | 3TY7561-1AA00 |
| | | 1 | — | — | 1 | | 4 | Right | 3TY7561-1K | 3TY7561-1EA00 |
| | 3TF46 to 3TF68 | 1 | 1 | — | — | | 3 | Left | 3TY7561-1K | 3TY7561-1KA00 |
| | 2nd Aux Contact Block | 1 | 1 | — | — | | 4 | Right | 3TY7561-1L | 3TY75611KA00 |
| | 3TF46 to 3TF68 | 1 | 1 | — | — | | 3 | Left | 3TY7561-1U | 3TY7561-1UA00 |
| | For Electronic Circuits | 1 | 1 | — | — | | 4 | Right | 3TY7561-1V | 3TY7561-1UA00 |

## Mechanical Interlocks

3TX7466-1A

| Frame Size | Catalog No |
|---|---|
| 3TF44-54 | 3TX7466-1A |

## Arc Chutes

3TY6462-0A

| Type | Frame Size | Catalog No | List Price $ | Frame Size | Catalog No |
|---|---|---|---|---|---|
| | 3TB40–43 | Not Replaceable | | 3TB50 | 3TY6502-0A |
| | 3TB44 | — | | 3TB52 | 3TY6522-0A |
| 3TB | 3TB46 | — | | 3TB54 | 3TY6542-0A |
| | 3TB47 | — | | 3TB56 | 3TY6562-0A |
| | 3TB48 | 3TY6482-0A | | 3TB58 | — |

## Control Relays, Type 3TH3, 3TH4 Coils, AC

3TY7403-0AK6

| Type | Frame Size | Catalog No 24V AC | 120V AC | 208V AC | 220/240V AC | 277V AC | 480V AC | 600V AC |
|---|---|---|---|---|---|---|---|---|
| 3TH | 3TH30–33<br>3TH40–43 | 3TY7403-0AC2 | 3TY7403-0AK6 | 3TY7403-0AM1 | 3TY7403-0AP6 | 3TY7403-0AU1 | 3TY7403-0AV0 | 3TY7403-0AS0 |

## Coils, DC

| Type | Frame Size | Catalog No 12V DC | 24V DC | 42V DC | 48V DC | 110V DC | 125V DC | 240V DC |
|---|---|---|---|---|---|---|---|---|
| 3TH | 3TH30–33<br>3TH40–43 | 3TY4803-0BA4 | 3TY4803-0BB4 | 3TY4803-0BD4 | 3TY4803-0BW4 | 3TY4803-0BF4 | 3TY4803-0BG4 | 3TY4803-0BQ4 |

## Auxiliary Contact Blocks[1)]

| Type | Frame Size | Auxiliary Contacts NO | Auxiliary Contacts NC | Normally Open/ Early Make | Normally Closed/ Late Break | Block Location | Catalog No |
|---|---|---|---|---|---|---|---|
| | | 1 | — | — | — | Top | 3TX4010-2A |
| 3TH | 3TH3 | — | 1 | — | — | Top | 3TX4001-2A |
| | | — | — | 1 | — | Top | 3TX4010-4A |
| | | — | — | — | 1 | Top | 3TX4001-4A |

## Control Relays, Type 3TH8 Coils, AC

| Type | Frame Size | Catalog No 24V AC | 120V AC | 208V AC | 220/240V AC | 277V AC | 480V AC | 600V AC |
|---|---|---|---|---|---|---|---|---|
| 3TH | 3TH80–83 | 3TY7403-0AC2 | 3TY7403-0AK6 | 3TY7403-0AM1 | 3TY7403-0AP6 | 3TY7403-0AU1 | 3TY7403-0AV0 | 3TY7403-0AS0 |

## Coils, DC

| Type | Frame Size | Catalog No 12V AC | 24V AC | 42V AC | 48V AC | 110V AC | 125V AC | 240V AC |
|---|---|---|---|---|---|---|---|---|
| 3TH | 3TH80–83 | 3TY4803-0BA4 | 3TY4803-0BB4 | 3TY4803-0BD4 | 3TY4803-0BW4 | 3TY4803-0BF4 | 3TY4803-0BG4 | 3TY4803-0BQ4 |

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

1) Maximum 4 blocks per relay.

## AC and DC operation

IEC 60 947, EN 60 947 (VDE 0660), UL 508

## Design

The 3RT contactors are suitable for use in any climate. They are safe from touch to DIN VDE 0106 Part 100.

The 3RT contactors are available screw, spring-type, or ring lug connections.

An auxiliary contact is integrated in the basic unit of size S00 contactors. The basic units of sizes S0 to S3 only contain the main conducting paths.

All the basic units can be extended with auxiliary switch blocks. Cabinet units with 2 NO + 2 NC (terminal designations acc. to EN 50 012) are available as of size S0; the auxiliary switch block is removable.

The size S3 contactors have removable box terminals for the main conductor connections. Ring cable lugs or bars can thus also be connected.

## Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of 3RT contactors and 3RH contactor relays should be used to ensure good contact stability.

These auxiliary contacts are suitable for electronic circuits with currents ≥ 1 mA at a voltage of 17 V.

## Short-circuit protection of contactors

For the short-circuit protection of contactors without an overload relay, see the technical data.

For the short-circuit protection of contactors with an overload relay, see section 3.

## Motor protection

3RU overload relays can be mounted onto the 3RT contactors for protection against overloads. The overload relays must be ordered separately (see section 3).

## Surge suppression

The 3RT contactors can be retrofitted with RC elements, varistors, diodes or diode assemblies (combination of an interference suppression diode and a Zener diode for short tripping times) for suppressing opening surges in the coil.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

With all size S0 to S3 contactors, varistors and RC elements can be plugged on directly at the coil terminals, either on the top or underneath. Diode assemblies are available in two different designs with different polarities. Depending on the application, they can be attached either only on the bottom (assembly with circuit-breaker) or only on the top (assembly with overload relay).

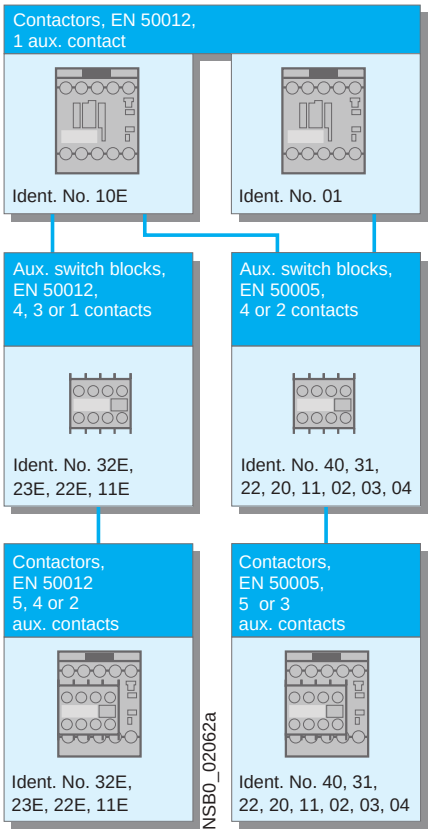
The plug-in direction of the diodes and diode assemblies is determined by a coding device. Exceptions: 3RT29 26-1E.00 and 3RT19 36-1T.00; in these cases the plug-in direction is identified by "+" and "–".

Coupling relays are supplied either without surge suppression or with a varistor or diode connected as standard, according to the design.

*Note*

*The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (interference suppression diode 6 to 10 times; diode assemblies 2 to 6 times; varistor +2 ms to 5 ms).*

**3RT20 1. contactors (size S00),**
Terminal designations acc. to EN 50 012 or DIN 50 005.




## Auxiliary switch blocks

The 3RT basic units can be extended with various auxiliary switch blocks, depending on the application:

***Size S00 (3RT201)***

Contactors with one NO contact as the auxiliary contact and with either screw or spring-type connections, identification number 10E, can be extended to obtain contactors with 2, 4 or 5 auxiliary contacts in accordance with EN 50 012 using auxiliary switch blocks. The identification numbers 11E, 22E, 23E and 32E on the auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks cannot be combined with contactors that have an NC contact in their basic unit, identification number 01, as these are coded.

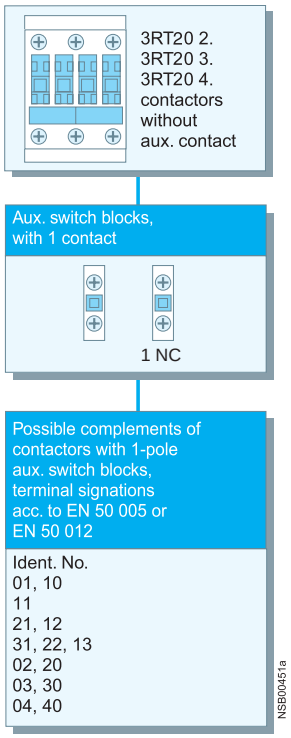
All size S00 contactors with one auxiliary contact, identification number 10E or 01, and the contactors with 4 main contacts can be extended to obtain contactors with 3 or 5 auxiliary contacts (contactors with 4 main contacts: 2 or 4 auxiliary contacts) according to EN 50 005 using auxiliary switch blocks with identification numbers 40 to 02. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary contacts.

Single or 2-pole auxiliary switch blocks that can be connected on either the top or the bottom facilitate quick, straightforward wiring, especially when assembling feeders. These auxiliary switch blocks are only available with screw-type terminals.

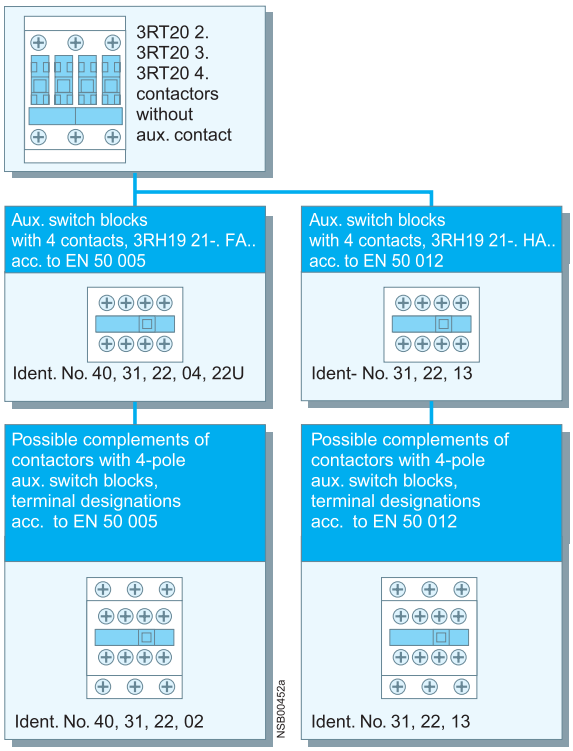
The solid-state compatible 3RH29 11-1NF.. auxiliary switch blocks for size S00 contactors contain two enclosed contact elements. They are ideal for switching low voltages and currents (hard gold-plated contacts) or for use in dusty atmosphere. The contacts do not have positively-driven operation.

All the above-mentioned auxiliary switch variants can be snapped into the location holes on the front of the contactors. The auxiliary switch block has a centrally positioned release lever for disassembly.

**3RT20 2. to 3RT20 4. contactors (sizes S0 to S3), single-pole auxiliary switch blocks,**
terminal designations acc. to EN 50 005 or EN 50 012.




**3RT20 2. to 3RT20 4. contactors (sizes S0 to S3), single-pole auxiliary switch blocks,**
terminal designations acc. to EN 50 005 or EN 50 012.




### *Sizes S0 to S3 (3RT202 to 3RT204)*

An extensive range of auxiliary switch blocks is available for various applications. The contactors themselves do not have an integrated auxiliary conducting path.

### *The auxiliary switch variants are identical for all size S0 to S3 contactors.*

One 4-pole or up to four single-pole auxiliary switch blocks (with screw or spring-type connections) can be snapped onto the front of the contactors. When the contactors are energized, the NC contacts open before the NO contacts close.

The terminal designations of the single-pole auxiliary switch blocks consist of location digits on the basic unit and function digits on the auxiliary switch blocks.

In addition, 2-pole auxiliary switch blocks (screw-type terminals) are provided for cable entries from above or below in the style of a four-connector block (feeder auxiliary switch).

If the available installation depth is restricted, 2-pole auxiliary switch blocks (screw or spring-type connections) can be mounted laterally on the left or right.

The auxiliary switch blocks designed for mounting onto the front can be disassembled with the aid of a centrally positioned release lever; the laterally mountable auxiliary switch blocks can be removed easily by pressing on the fluted grips.

The terminal designations of the individual auxiliary switch blocks comply with EN 50 005 or EN 50 012, while those of the complete contactors with an auxiliary switch block with 2 NO + 2 NC comply with EN 50 012.

The laterally mountable auxiliary switch blocks to EN 50 012 can only be used if no 4-pole auxiliary switch blocks are snapped onto the front. If single-pole auxiliary switch blocks are used in addition, the location digits on the contactor must be noted.

Two enclosed contact elements and two standard contact elements are available for the 3RH29 21-.FE22 solid-state compatible auxiliary switch block mountable on the front. The laterally mountable 3RH29 21-2DE11 solid-state compatible auxiliary switch block contains 2 enclosed contact elements (1 NO + 1 NC). The enclosed contact elements are ideal for switching low voltages and currents (hard gold-plated contacts) or for use in a dusty atmosphere. The contacts are positively driven.

### *Sizes S0 and S2 (3RT202 and 3RT203)*

Up to four auxiliary contacts can be mounted, whereby any design of the auxiliary switch blocks is permitted. If two 2-pole, laterally mounted, auxiliary switch blocks are used, one must be mounted on the left and one on the right for the sake of symmetry.

Under certain circumstances, more auxiliary contacts are allowed for size S2 (please ask for details).

With regard to 3RT23 and 3RT24 4-pole contactors, please refer to pages 2/12 to 2/14.

### *Sizes S3 to S12 (3RT204 to 3RT107)*

Up to eight auxiliary contacts can be mounted, whereby the following points must be noted:

- Of these eight auxiliary contacts, no more than four must be NC contacts.
- If laterally mounted auxiliary switch blocks are used, they must be symmetrical.

With regard to 3RT15 4-pole contactors, please refer to pages 2/13 to 2/18.

## Overview

### Design

- 3RT10 contactors for switching motors
- 3RT12 vacuum contactors for switching motors
- 3RT14 contactors for AC-1 applications

**Operating mechanism**

Two types of solenoid-operated mechanism are available:

- Conventional operating mechanism
- Solid-state operating mechanism (with 3 performance levels)

**UC operation**

The contactors can be AC (40 to 60 Hz) and DC driven.

**Withdrawable coils**

To allow easy coil changing, for example if the application is changed, the magnetic coil can be pulled out upwards without tools after the release mechanism has been actuated, and can be replaced by any other required coil of the same size.

**Auxiliary contact complement**

The contactors can be equipped with a maximum of 8 auxiliary contacts, with identical auxiliary switch blocks from S0 to S12. Of these, no more than 4 are permitted to be NC contacts.

- 3RT10 and 3RT14 contactors: auxiliary contacts mounted laterally and on front
- 3RT12 vacuum contactors: auxiliary contact mounted laterallv

### Contactors with conventional operating mechanism

***3RT1...-.A:***

The magnetic coil is switched on and off directly with the control supply voltage $U_s$ via terminals A1/A2.

Multi-voltage range for the control supply voltage $U_s$:
Several closely adjacent control supply voltages, available around the world, are covered by just one coil, for example UC 110-115-120-127 V or UC 220-230-240 V.

In addition, allowance is also made for a coil voltage tolerance of 0.8 times the lower rated control supply voltage ($U_{s\,min}$) and 1.1 times the upper rated control supply voltage ($U_{s\,max}$), within which the contactor switches reliably and no thermal overloading occurs.

### Contactors with solid-state operating mechanism

The power required for reliable switching and holding is supplied selectively to the magnetic coil by series-connected control electronics.

***Features:***

- Extended voltage range for the control supply voltage $U_s$:
  Compared with the conventional operating mechanism, the solid-state operating mechanism covers an even broader range of globally available control supply voltages within one coil variant. For example, the globally available voltages 200-208-220-230-240-254-277 V are covered with the coil for UC 200 to 277 V ($U_{s\,min}$ to $U_{s\,max}$).
- Extended coil voltage tolerance 0.7 to 1.25 × $U_s$:
  On account of the broad range for the rated control supply voltage and the additionally allowed coil voltage tolerance of 0.8 × $U_{s\,min}$ to 1.1 × $U_{s\,max}$, an extended coil voltage tolerance of at least 0.7 to 1.25 × $U_s$, within which the contactors will operate reliably, is available for the most common control supply voltages of 24, 110 and 230 V.
- Bridging short-time voltage dips:
  Control voltage failures dipping to 0 V (at A1/A2) are bridged for up to approx. 25 ms, therefore preventing unintentional disconnection.
- Defined ON and OFF thresholds:
  As of voltages ≥ 0.8 × $U_{s\,min}$, the electronics reliably switch the contactor on and as of ≤ 0.5 × $U_{s\,min}$ it is reliably switched off. The differential travel in the switching thresholds prevents chattering of the main contacts and hence increased wear or welding when operated in weak, unstable networks. Similarly, thermal overloading of the contactor coil is prevented if the voltage applied is too low – the contactor is not switched on and is operated with overexcitation.
- Low control power consumption when closing and in closed state.

***Electromagnetic compatibility (EMC)***

The contactors with solid-state operating mechanism conform to the requirements for operation in industrial plants.

- **Noise immunity**
  – Burst (IEC 61 000-4-4): 4 kV
  – Surge (IEC 61 000-4-5): 4 kV
  – Electrostatic discharge, ESD (IEC 61 000-4-2): 8/15 kV
  – Electromagnetic field (IEC 61 000-4-3): 10 V/m
- **Emitted interference**
  Limiting value class A to EN 55 011

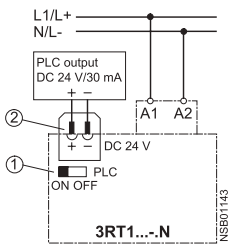
Note:
In connection with converters, the control cables should be installed separately from the load cables to the converter.

***3RT1...-.N: for DC 24 V PLC output***

**2 control options:**

- Control without an interface directly via a DC 24 V /≥ 30 mA PLC output (EN 61 131-2). Connection via a 2-pole plug-in connection; the connector, using screwless spring-force technology, is included in the scope of supply. The control supply voltage for supplying power to the solenoid operating mechanism must be connected to A1/A2.

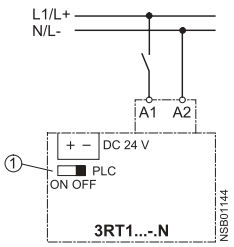
Note:
Before start-up, the sliding-dolly switch for PLC operation must be moved to the "PLC ON" position (setting ex works: "PLC OFF").




① Sliding-dolly switch, must be in PLC "ON" position
② Plug-in connection, 2-pole

- Conventional control by applying the control supply voltage at A1/A2 via a switching contact.

Note:
The sliding-dolly switch must be in the "PLC OFF" position (= setting ex works).

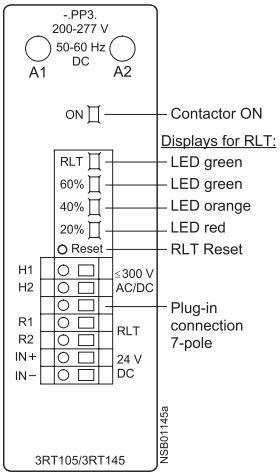



$ Sliding-dolly switch, must be in PLC "OFF" position

## Overview

### Contactors with solid-state operating mechanism

***3RT1...-.P: for DC 24 V PLC output or PLC relay output, with indication of remaining lifetime***
(Indication of remaining lifetime RLT: see 2/69.)




To supply power to the solenoid operating mechanism and the remaining lifetime indication, the control supply voltage $U_s$ must be run to terminals A1/A2 of the laterally mounted electronics module. The control inputs of the contactor are brought out to a 7-pole plug-in connection; the connector, using screwless spring-force technology, is included in the scope of supply.

- The remaining lifetime RLT status signal is available at terminals R1/R2 via a floating relay contact (hard gold-plated, enclosed) and can be processed for example via SIMOCODE-DP or PLC inputs or elsewhere.

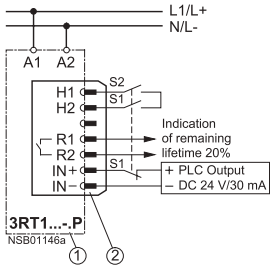
  Permissible current carrying capacity of relay output R1/R2:
  - $I_e$/AC-15/24 to 230 V: 3 A
  - $I_e$/DC-13/24 V: 1 A

- LED indicators

  The following statuses are indicated by LEDs on the laterally mounted electronics module:
  - Contactor ON (energized state):
    Green LED ("ON")
  - Indication of remaining lifetime (see 2/69)

**2 control options:**

- Contactor control without an interface directly via a DC 24 V /≥ 30 mA PLC output (EN 61 131-2) via terminals IN+/IN-.

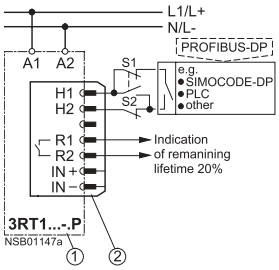



Electronics module of 3RT1 ...-.P contactor
Plug-in connection, 7-pole
S1 Changeover switch from automatic control via PLC semiconductor output to local control
S2 Local control option

Possibility of switching from automatic control to local control via terminals H1/H2, i.e. automatic control via a PLC or SIMOCODE-DP/PROFIBUS-DP can be deactivated, for example during start-up or in the event of a fault, and the contactor can be controlled manually.

- Contactor control via relay outputs, e.g. by
  – PLC
  – SIMOCODE-DP 3UF5
  via terminals H1/H2.
  Contact loading:
  $U_s$/approx. 5 mA.

When operated via SIMOCODE-DP, a communication link to PROFIBUS-DP is also provided.




Electronics module of 3RT1 ...-.P contactor
Plug-in connection, 7-pole
S1 Changeover switch from automatic control, e.g. via SIMOCODE-DP or PLC relay output to local control
S2 Local control option

### 3RT12 vacuum contactors

In contrast with the 3RT10 contactors – the main contacts operate in air under atmospheric conditions – the contact gaps of the 3RT12 vacuum contactors are contained in hermetically enclosed vacuum contact tubes. Neither arcs nor arcing gases are produced. The particular benefit of 3RT12 vacuum contactors, however, is that their electrical endurance is at least twice as long as that of 3RT10 contactors.

They are therefore particularly well suited to frequent switching in jogging/mixed operation, for example in crane control systems.

Advantages:
- Very long electrical endurance
- High short-time current-carrying capacity for heavy starting
- No open arcs, no arcing gases, i.e. no minimum clearances from earthed parts required either
- Longer maintenance intervals
- Increased plant availability

Notes on operation:
– Switching motors with rated operational voltages $U_e$ > 500 V:
In order to damp overvoltages and protect the motor winding insulation against multiple reignition when switching off three-phase motors, it is recommended to fit the contactors on the outgoing side (T1/T2/T3) with the 3RT19 66-1PV. surge suppression module – RC varistor – (accessory).

This additional equipment is not required for operation in circuits with converters. It might be damaged by the voltage peaks and harmonics generated.

– Switching DC voltage:
Vacuum contactors are basically unsuitable for switching DC voltage.

## Overview

The contactor assemblies for star-delta starting can be ordered as follows:

- Sizes S00-S0 as assemblies. (see pages 2/47-2/48)
- Sizes S2-S12 as components for customer assembly

| Calculated horsepower ratings at 460 V AC | | | Size | | | | Accessories for customer assembly | |
|---|---|---|---|---|---|---|---|---|
| **HP** | Operat. current $I_e$ A | Motor current A | | Line/delta contactor | WYE contactor | | Time-delay relay | Installation kit A double infeed |
| **30** | 50 | 9.5 ... 13.8<br>12.1 ... 17.2<br>15.5 ... 21.5<br>19 ... 27.6<br>24.1 ... 34<br>31 ... 43<br>37.9 ... 55.2<br>48.3 ... 65 | **S2-S2-S0** | 3RT2028<br><br><br><br><br><br><br>3RT2935 | 3RT2026 | | 3RP2574-1N.30 | 3RA2933-2C[3]) |
| **50**<br>**60** | 80<br>86 | 62.1 ... 77.8<br>69 ... 86 | **S2-S2-S2** | <br>3RT2036 | 3RT2035 | | | 3RA2933-2BB1[3]) |
| **75** | 115 | 31 ... 43.1<br>37.9 ... 55.2<br>48.3 ... 69<br>62.1 ... 77.6<br>77.6 ... 108.6 | **S3-S3-S2** | 3RT2045 | 3RT2035 | | 3RP2574-1N.30 | 3RA2943-2C[3]) |
| **100** | 150 | 98.3 ... 129.3<br>120.7 ... 150 | | 3RT2045 | 3RT2036 | | | |
| **125** | 160 | 86 ... 160 | **S6-S6-S3** | 3RT1054 | 3RT2045 | | 3RP2574-1N.30 | |
| **150** | 195 | 86 ... 195 | | | | | | |
| **190** | 230 | 86 ... 230 | | 3RT1055 | 3RT2046 | | | |
| **200** | 280 | 86 ... 280 | | 3RT1056 | 3RT2046 | | | |
| **250** | 350 | 95 ... 350 | **S10-S10-S6** | 3RT1064 | 3RT1054 | | 3RP2574-1N.30 | |
| **300** | 430 | 95 ... 430 | | 3RT1065 | 3RT1056 | | | |
| **400** | 540 | 347 ... 540 | **S12-S12-S10** | 3RT1075 | 3RT1064 | | 3RP2574-1N.30 | |
| **450** | 610 | 347 ... 610 | | | | | | |
| **500** | 690 | 347 ... 690 | | | 3RT1065 | | | |
| **650** | 850 | 347 ... 850 | | 3RT1076 | 3RT1066 | | | |

For accessories, see page 2/89.
For circuit diagrams, see page 2/207.

1) The installation kit contains mechanical interlock; 3 connecting clips; wiring connectors on the top (connection between line contactor and delta contactor) and the bottom (connection between delta contactor and star contactor); WYE jumper.

2) The installation kit contains 5 connecting clips; wiring connectors on the top (connection between line contactor and delta contactor) and the bottom (connection between delta contactor and WYE contactor); star jumper.

| | | | Overload relay, thermal | | Overload relay, solid-state | |
|---|---|---|---|---|---|---|
| Installation kit B for single infeed | WYE jumper | Baseplates | Range of overload relay, thermal [A] | Order No. overload relay, thermal | Range of overload relay, solid-state [A] | Order No. overload relay, solid-state |
| 3RA1933-3D[4]) | 3RT1926-4BA31 | 3RA2932-2E | 5.5 ... 8 | 3RU2136-1HB | – | – |
| | | | 7 ... 10 | 3RU2136-1JB0 | 12.5 ... 50 | 3RB3036-1UB0 |
| | | | 9 ... 12.5 | 3RU2136-1KB0 | | |
| | | | 11 ... 16 | 3RU2136-4AB0 | | |
| | | | 14 ... 20 | 3RU2136-4BB0 | | |
| | | | 18 ... 25 | 3RU2136-4DB0 | | |
| | | | 22 ... 32 | 3RU2136-4EB0 | 20 ... 80 | 3RB3036-1WB0 |
| | | | 28 ... 40 | 3RU2136-4FB0 | | |
| | 3RT1936-4BA31 | 3RA2932-2F | 36 ... 45 | 3RU2136-4GB0 | | |
| | | | 40 ... 50 | 3RU2136-4HB0 | | |
| 3RA1943-3D[4]) | 3RT1946-4BA31 | 3RA2942-2E | 28 ... 40 | 3RU2146-4FB0 | 12.5 ... 50 | 3RB3046-1UB0 |
| | | | 36 ... 45 | 3RU2146-4HB0 | | |
| | | | 45 ... 63 | 3RU2146-4JB0 | | |
| | | | 57 ... 75 | 3RU2146-4KB0 | | |
| | | | 70 ... 90 | 3RU2146-4LB0 | 32 ... 115 | 3RB3046-1XB0 |
| | | | 80 ... 100[7]) | 3RU2146-4MB0 | | |
| 3RA1953-3D[5]) | 3RT1946-4BA31 | 3RA1952-2E | – | – | 50 ... 200 | 3RB2056-1FC2 |

3) Installation kit contains wiring connector on the bottom (connection between delta contactor and WYE contactor) and WYE jumper.

4) Wiring connector on top from reversing contactor assembly (note conductor cross-sections).

5) A mechanical interlock adapter, 3RA1954-2G, is required to use the standard 3RA1954-2A mechanical interlock for the AC version of the S6-S6-S3 WYE-Delta starter. The S6-S6-S3 WYE-Delta DC version would require a special custom build spacer, which is not manufactured, to allow the mechanical interlock to operate.

6) Only use wiring connector on the top from reversing contactor assembly (note conductor cross-sections); order WYE jumper in addition.

7) For overload relays >100A, see 3RB2 electronic Section 3, page 23.

## Application

WYE-delta starting can only be used either if the motor normally operates in a Δ (delta) connection or starts softly or if the load torque during Y starting is low and does not increase sharply. On the Y step the motors can carry approximately 50 % (class KL 16) or 30 % (class KL 10) of their rated torque; the starting torque is approximately $^1/_3$ of that during direct on-line starting. The starting current is approximately 2 to 2.7 times the rated motor current.

The changeover from Y to Δ must not be effected until the motor has run up to rated speed. Drives which require this changeover to be performed earlier are unsuitable for WYE-delta starting.

The ratings given in the above table are only applicable to motors with a starting current ratio of $I_A \leq 8.4 \times I_N$ and using either a 3RT19 16-2G or 3RT19 26-2G solid-state time-delay auxiliary switch block with a WYE-delta function or a 3RP1574 WYE-delta time-delay relay with a dead interval of approximately 50 ms on reversing.

For the circuit diagrams for the main and control circuits, see page 2/161. The size selected for the installation kits for WYE-delta starting is determined by the line contactor.

## Design

### *Components for customer assembly*

Installation kits with wiring connectors and, if necessary, mechanical connectors are available for contactor assemblies for WYE-delta starting. Contactors, overload relays, star-delta time-delay relays and auxiliary switches for the electrical interlock – if required also feeder terminals, mechanical interlocks [1]) and baseplates – must be ordered separately.

The wiring installation kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta contactors (top) and between the delta and WYE contactors (bottom).

In the case of sizes S2 to S12 only the bottom main conducting path connection between the delta and WYE contactors is included in the wiring connector, owing to the larger conductor cross-section at the infeed.

### *Motor protection*

Overload relays or thermistor motor protection tripping units can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

## Surge suppression

Sizes S00 to S3

All contactor assemblies can be fitted with RC elements, varistors or diode assemblies for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the top of the contactors (S00) or fitted onto the coil terminals on the top or bottom (S0 to S3).

Sizes S6 to S12

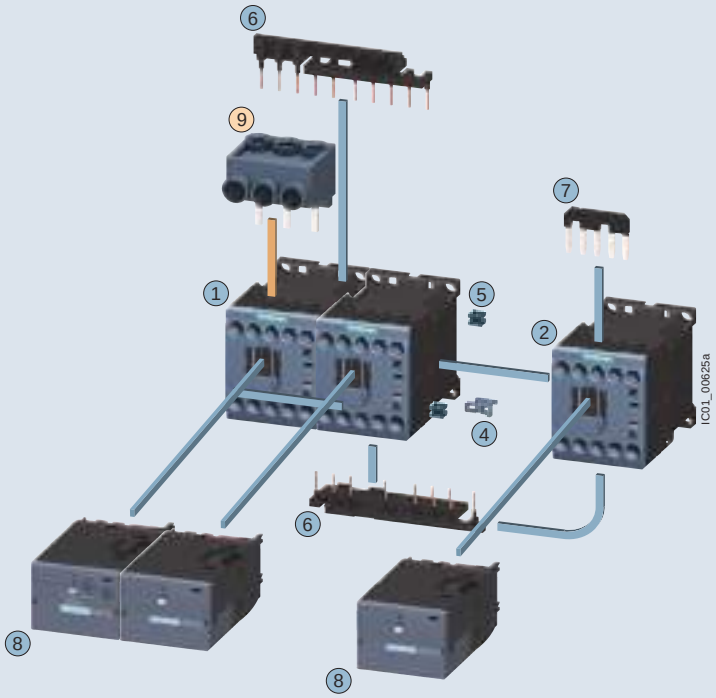
The contactors are fitted with varistors as standard.

1) Exception:
The mechanical interlock between the delta and WYE contactors is included in the installation kit for size S00 contactor assemblies.

## Selection and ordering data

***Fully wired and tested contactor assemblies · Size S00-S00-S00 · Up to 11 kW***

The figure shows the version with screw terminals




### Mountable accessories (optional)

| To be ordered separately | Type | Page |
|---|---|---|
| (9) Three-phase infeed terminal[1] | 3RA2913-3K | 2/89 |

### Complete contactor assembly for star-delta (wye-delta) starting

| Individual parts | | Type Q11[2] | Q13 | Q12 | Page |
|---|---|---|---|---|---|
| (1)(2)(3) | Contactors, 5.5 kW | 3RT2015 | 3RT2015 | 3RT2015 | 2/8 |
| (1)(2)(3) | Contactors, 7.5 kW | 3RT2017 | 3RT2017 | 3RT2015 | 2/8 |
| (1)(2)(3) | Contactors, 11 kW | 3RT2018 | 3RT2018 | 3RT2016 | 2/8 |
| (4) ... (7) | Assembly kit S00-S00-S00 comprising: | 3RA2913-2BB1 | | | 2/89 |
| | (4) Mechanical interlock | | | | |
| | (5) Four connecting clips for three contactors | | | | |
| | (6) Wiring modules on top and bottom for connecting the main and auxiliary circuits | | | | |
| | (7) Star jumper | | | | |
| (8) | Function modules for star-delta (wye-delta) starting | 3RA2816-0EW20 | | | 2/33 |

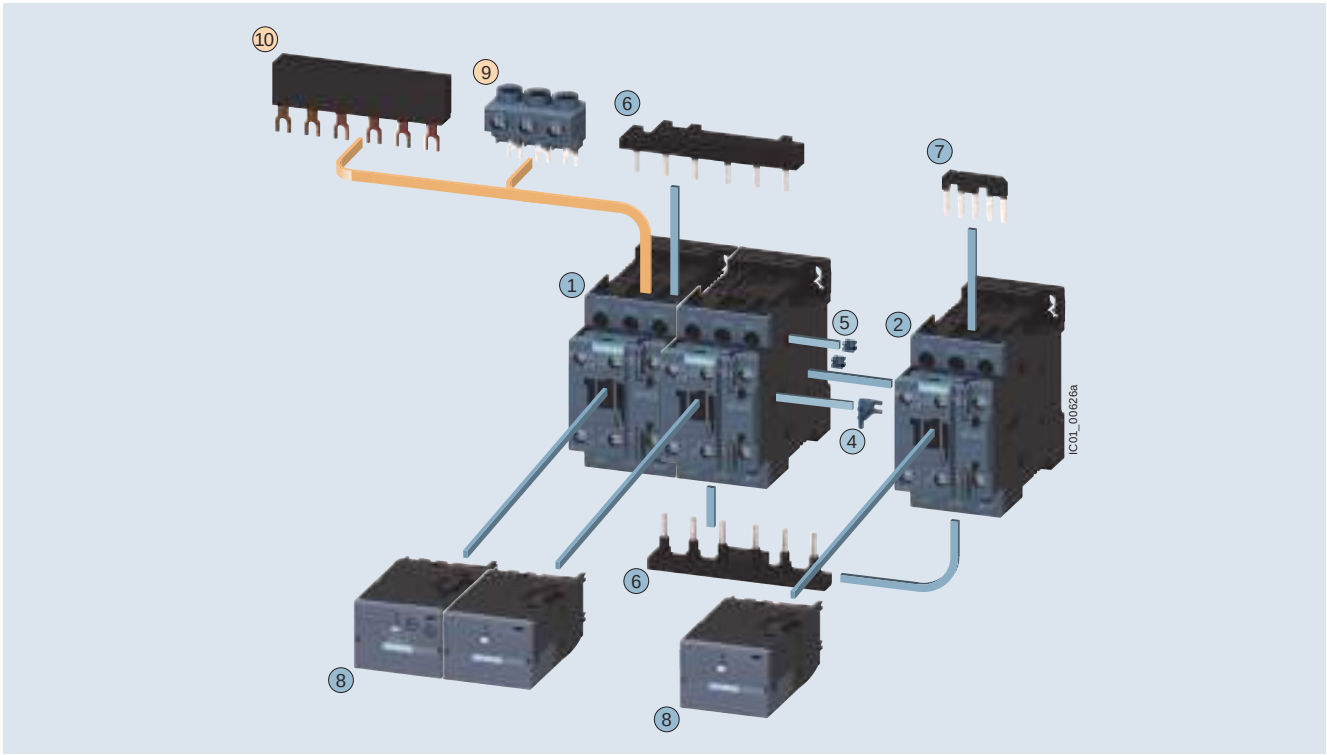
[1] Part (9) can only be mounted in the case of contactors with screw terminal.
[2] The version with 1 NO is required for momentary-contact operation.

*Note:*

*When the function modules for contactor assemblies for wye-delta starting are used, no other auxiliary switches are allowed to be mounted on the basic units.*

***Fully wired and tested contactor assemblies · Size S0-S0-S0 · Up to 22 kW***

The figure shows the version with screw terminals




## Mountable accessories (optional)

| To be ordered separately | Type | Page |
|---|---|---|
| 9 Three-phase infeed terminal[1)] | 3RV2925-5AB | 2/89 |
| 10 Three-phase busbar[1)] | 3RV1915-1AB | 1/8 |

## Complete contactor assembly for star-delta (wye-delta) starting

| Individual parts | Type | | | Page |
|---|---|---|---|---|
| | Q11 | Q13 | Q12 | |
| 1 2 3 Contactors, 11 kW | 3RT2024 | 3RT2024 | 3RT2024 | 2/8 |
| 1 2 3 Contactors, 15/18.5 kW | 3RT2026 | 3RT2026 | 3RT2024 | 2/8 |
| 1 2 3 Contactors, 22 kW | 3RT2027 | 3RT2027 | 3RT2026 | 2/8 |
| 4 ... 7 Assembly kit S0-S0-S0 comprising: | 3RA2923-2BB1 | | | 2/89 |
| 4 Mechanical interlock | | | | |
| 5 Four connecting clips for three contactors | | | | |
| 6 Wiring modules on top and bottom for connecting the main and auxiliary circuits | | | | |
| 7 Star jumper | | | | |
| 8 Function modules for star-delta (wye-delta) starting | 3RA2816-0EW20 | | | 2/33 |

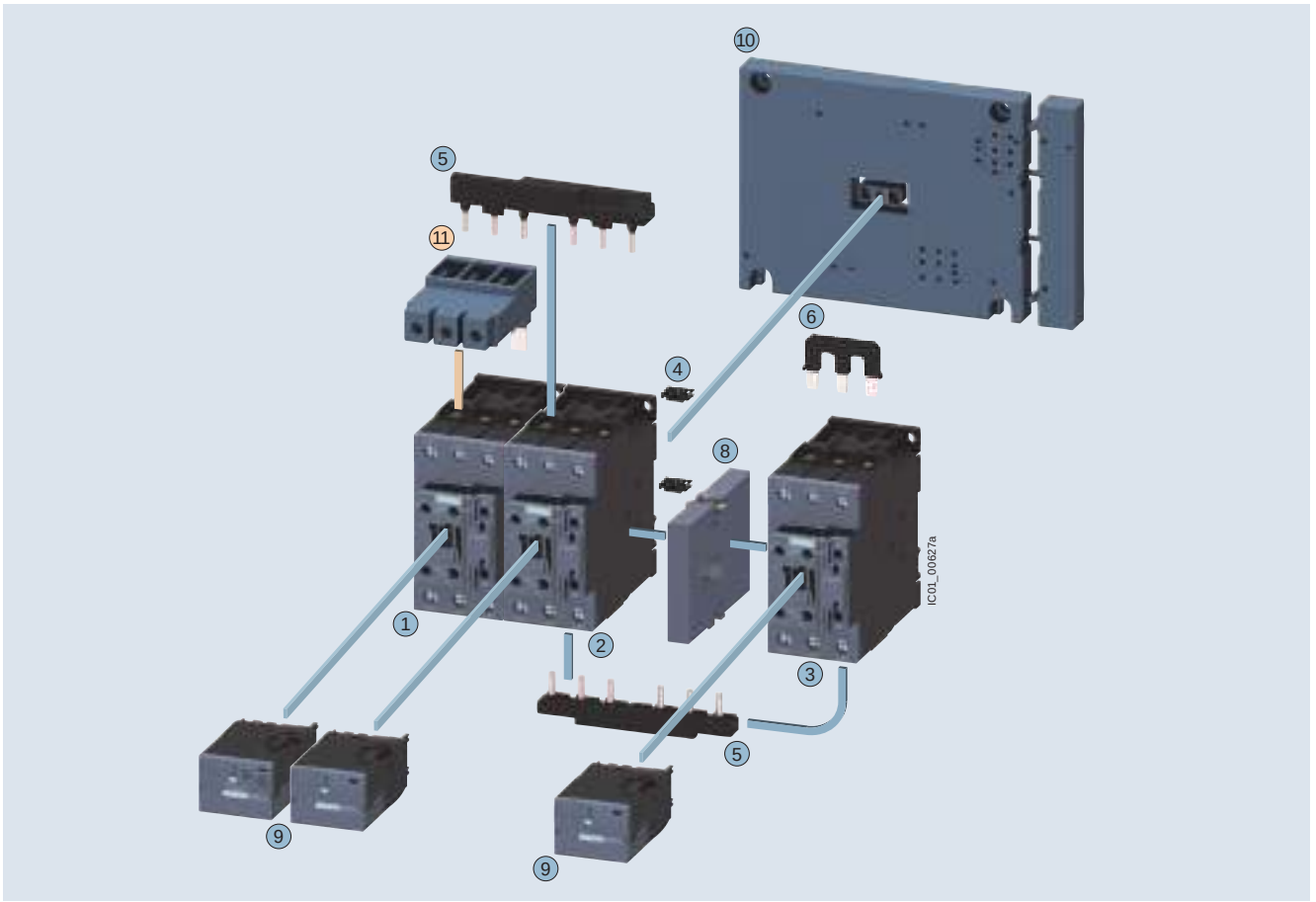
[1)] The parts 9 and 10 can only be mounted with contactors with screw terminal, the 6 wiring modules must be removed beforehand.

*Note:*

*When the function modules for contactor assemblies for wye-delta starting are used, no other auxiliary switches are allowed to be mounted on the basic units.*

***Size S2-S2-S0 · up to 65 A, 30 HP***

The figure shows the version with screw terminals in S2-S2-S2




## Mountable accessories (optional)

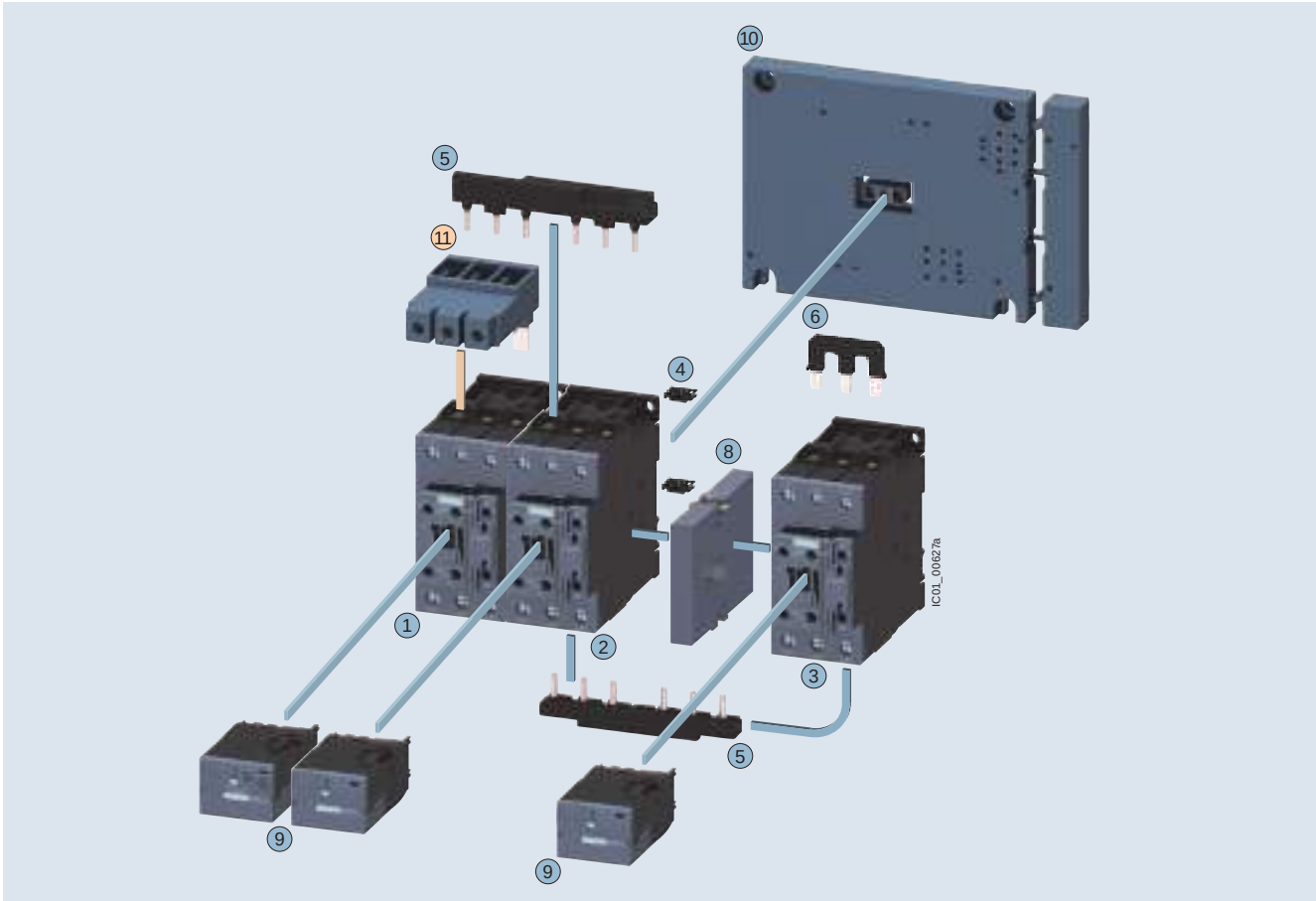
| To be ordered separately | Type |
|---|---|
| 11 Three-phase infeed terminal | 3RV2935-5A |

## Complete contactor assembly for star-delta (wye-delta) starting

| Individual parts | | Type | | |
|---|---|---|---|---|
| | | Q11 | Q13 | Q12 |
| 1 2 3 | Contactors, 22/30 kW | 3RT2035 | 3RT2035 | 3RT2026 |
| 1 2 3 | Contactors, 37 kW | 3RT2035 | 3RT2035 | 3RT2027 |
| 1 2 3 | Contactors, 45 kW | 3RT2036 | 3RT2036 | 3RT2028 |
| 4 ... 7 | Assembly kit S2-S2-S0 comprising: | 3RA2933-2C | | |
| | 4 Four connectors for three contactors (not required for fully pre-wired contactor assemblies for star-delta (wye-delta) starting) | | | |
| | 5 Wiring modules on top and bottom for connecting the main and auxiliary circuits | | | |
| | 6 Star jumper S2 | | | |
| | 7 Cable for connecting the A2 coil contact from the line contactor with the A2 coil contact of the delta contactor (not shown in the drawing) | | | |
| 8 | Mechanical interlock | 3RA2934-2B | | |
| 9 | Function modules for star-delta (wye-delta) starting | 3RA2816-0EW20 | | |
| 10 | Base plate star-delta (wye-delta) | 3RA2932-2F | | |

For overview, see page 2/117.
For circuit diagrams, see page 2/207.

*Size S2-S2-S2 · up to 86 A, 60 HP*




## Mountable accessories (optional)

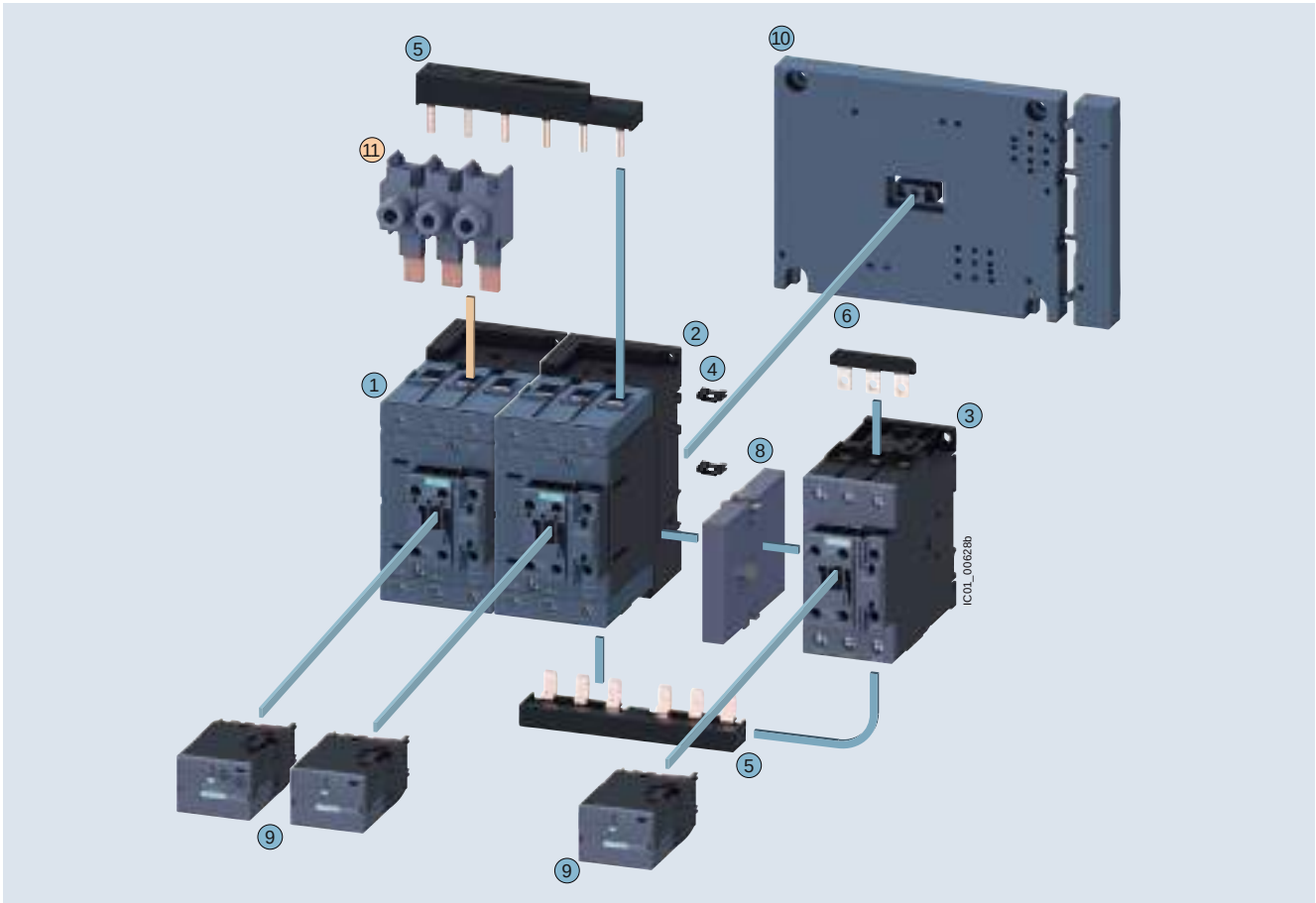
| To be ordered separately | Type |
|---|---|
| 11 Three-phase infeed terminal | 3RV2935-5A |

## Complete contactor assembly for star-delta (wye-delta) starting

| Individual parts | | Type | | |
|---|---|---|---|---|
| | | Q11 | Q13 | Q12 |
| 1 2 3 | Contactors, 55 kW | 3RT2037 | 3RT2037 | 3RT2035 |
| 4 ... 7 | Assembly kit S2-S2-S2 comprising: | 3RA2933-2BB1 | | |
| | 4 Four connectors for three contactors (not required for fully pre-wired contactor assemblies for star-delta (wye-delta) starting) | | | |
| | 5 Wiring modules on top and bottom for connecting the main and auxiliary circuits | | | |
| | 6 Star jumper S2 | | | |
| | 7 Cable for connecting the A2 coil contact from the line contactor with the A2 coil contact of the delta contactor (not shown in the drawing) | | | |
| 8 | Mechanical interlock | 3RA2934-2B | | |
| 9 | Function modules for star-delta (wye-delta) starting | 3RA2816-0EW20 | | |
| 10 | Base plate star-delta (wye-delta) | 3RA2932-2F | | |

For overview, see page 2/117.
For circuit diagrams, see page 2/207.

*Size S3-S3-S2 · up to 150 A, 100 HP*




## Mountable accessories (optional)

| To be ordered separately | Type |
|---|---|
| (11) Single-phase infeed terminal (3 units are required) | 3RA2943-3L |

## Complete contactor assembly for star-delta (wye-delta) starting

| Individual parts | Type | | |
|---|---|---|---|
| | Q11 | Q13 | Q12 |
| (1)(2)(3) Contactors, 55 kW | 3RT2045 | 3RT2045 | 3RT2035 |
| (1)(2)(3) Contactors, 75 kW | 3RT2045 | 3RT2045 | 3RT2036 |
| (1)(2)(3) Contactors, 90 kW | 3RT2046 | 3RT2046 | 3RT2037 |
| (4) ... (7) Assembly kit S3-S3-S2 comprising: | 3RA2943-2C | | |
| (4) Two connectors for three contactors (not required for fully pre-wired contactor assemblies for star-delta (wye-delta) starting) | | | |
| (5) Wiring modules on top and bottom (S3-S2) for connecting the main and auxiliary circuits and a cable set for the auxiliary circuit | | | |
| (6) Star jumper S2 | | | |
| (7) Cable for connecting the A2 coil contact from the line contactor with the A2 coil contact of the delta contactor (not shown in the drawing) | | | |
| (8) Mechanical interlock | 3RA2934-2B | | |
| (9) Function modules for star-delta (wye-delta) starting | 3RA2816-0EW20 | | |
| (10) Base plate star-delta (wye-delta) | 3RA2942-2F | | |

[1] Contactor assembly for star-delta (wye-delta) starting for customer assembly in size S3-S3-S3 (not shown): The 3RA2943-2BB. assembly kit is to be used here, see page 3/106.

For overview, see page 2/117.
For circuit diagrams, see page 2/207.

### AC and DC operation

IEC 60947, EN 60947.

The 3RH2 contactor relays have screw, ring lug terminal or spring-type terminals. Four contacts are available in the basic unit.

The 3RH2 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274. The devices with ring lug terminal connection comply with degree of protection IP20 when fitted with the related terminal cover.

### Contact reliability

High contact stability at low voltages and currents, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of 17 V.

### Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) can be plugged onto all contactor relays from the front for damping opening surges in the coil. The plug-in direction is determined by a coding device.

*Note:*
*The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assemblies 2 to 6 times, varistor +2 to 5 ms).*

### Auxiliary switch blocks

The 3RH2 contactor relays can be expanded by up to four contacts by the addition of snap-on auxiliary switch blocks.

The auxiliary switch block can easily be snapped onto the front of the contactors. The auxiliary switch block has a centrally positioned release lever for disassembly.

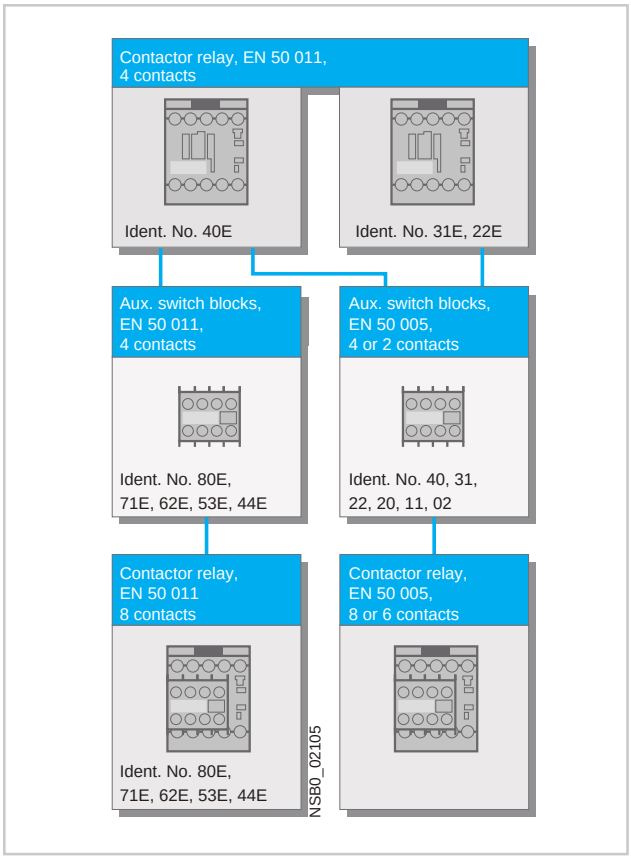
The contactor relays with 4 contacts according to EN 50011, with the identification number 40E, can be extended with 80E to 44E auxiliary switch blocks to obtain contactor relays with 8 contacts according to EN 50011. The identification numbers 80E to 44E on the auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks (3RH29 11–1GA..) cannot be combined with contactor relays with identification numbers 31E and 22E; they are coded.

All contactor relays with 4 contacts according to EN 50011, identification numbers 40E to 22E, can be extended with auxiliary switch blocks 40 to 02 to obtain contactor relays with 6 or 8 contacts in accordance with EN 50005. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary switch blocks.

In addition, fully mounted 3RH22 8-pole contactor relays are available; the mounted 4-pole auxiliary switch block in the 2nd tier is not removable. The terminal designations are according to EN 50011.

These versions are built according to special Swiss regulations SUVA and are distinguished externally by a red labeling plate.

Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted.




## 3RH24 latched control relays, size S00

### Application

#### AC and DC operation

IEC 60 947, EN 60 947 (VDE 0660)

The terminal designations comply with EN 50 011.

The relay coil and the coil of the release solenoid are both designed for continuous duty.

The number of auxiliary contacts can be extended by means of auxiliary switch blocks (up to 4 poles).

RC elements, varistors, diodes or diode assemblies can be plugged onto both coils from the front for damping opening surges.

The control relay can also be switched on and released manually.

## Design

EN 60 947-4-1
(VDE 0660 Part 102).

The 3TF contactors are suitable for use in any climate. They are safe from touch according to DIN VDE 0106 Part 100. Terminal covers (see accessories) may have to be fitted onto the connecting bars, depending on the configuration with other devices.

### *Main contacts*

**Contact erosion indication with 3TF68/69 vacuum contactors**

The contact erosion of the vacuum interrupters can be monitored in the closed position by means of three white double slides on the contactor base.

The vacuum interrupter must be replaced if the distance indicated by one of the double slides is less than 0.5 mm while the contactor is in the closed position.

It is advisable to replace all three interrupters in order to ensure maximum reliability.

### *Auxiliary contacts*

The terminal designations comply with EN 50 012.

When the contactors are energized, the NC contacts open before the NO contacts close.

**Contact reliability**

The auxiliary contacts are extremely reliable and as such are suitable for electronic circuits

- with currents ≥ 1 mA,
- at voltages greater than 17 V.

## Surge suppression

### *Control circuit*

Protection of the coil circuits against surges:

### *AC operation*

- fitted with varistors as standard.

### *DC operation*

Retrofitting options:

- varistors.

## Electromagnetic compatibility (EMC)

3TF68/69..-.**C** contactors for AC operation are equipped with an electronically controlled solenoid mechanism with a high level of immunity to interference (see table opposite).

**Note:**
In operation in installations where it is not possible to observe the emitted interference limits, e.g. as an output contactor in static frequency changers, use of 3TF68/69..-.**Q** contactors (NS E catalogue, available in German) is recommended, without a main conductor path circuit (for further information refer also to the description below).

| Contactor Type | Rated control supply voltage $U_s$ | Overvoltage type (IEC 60 801) | Severity to IEC 60 801 | Surge strength |
|---|---|---|---|---|
| 3TF68 44-.C..,<br>3TF69 44-.C.. | 110 V ... 132 V | Burst<br>Surge | 3<br>4 | 2 kV<br>6 kV |
| | 200 V ... 276 V | Burst<br>Surge | 4<br>4 | 4 kV<br>5 kV |
| | 380 V ... 600 V | Burst<br>Surge | 4<br>4 | 4 kV<br>6 kV |

## Circuit of the main conducting paths

An integrated RC varistor circuit in the main conducting paths of the contactors damps the rate of rise of switching overvoltages to uncritical values. Multiple restriking of the switching arcs is thereby prevented.

The operator of an installation can thus assume that the danger to the motor winding arising from switching overvoltages with a high rate of rise is ruled out.

The contactors can therefore be used without reservation for all AC switching applications, including three-phase motors with the demanding AC-4 utilization category.

**Important note**

The surge suppression circuit is not necessary when 3TF68/69 contactors are used in circuits with e.g. d.c. choppers, frequency converters or variable-speed drives.

It might be damaged by the voltage peaks and harmonics generated. This may also cause phase-to-phase short-circuits in the contactors.

Remedy: Order the special contactor design without surge suppression. In this case the Order No. must be supplemented with **"-Z"** and the order code **"A02"**. No additional charge is made.

## Short-circuit protection of contactors

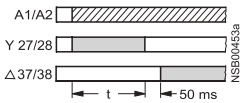
For assembling fuseless load feeders, please select a circuit-breaker/contactor combination according to the brochure entitled "Verbraucherabzweige in sicherungsloser Bauweise", Order No. E20001-P285-A726 (available in German only).

The timer module, which is available in "ON-delay" and "OFF-delay" designs, allows time-delayed functions up to 100 s (3 distinct delay ranges).

It contains a relay with one NO contact and one NC contact; the relay is switched either after an ON-delay or after an OFF-delay.

The timer module with a WYE-DELTA function is equipped with one delayed and one instantaneous NO contact, with an interval time of 50 ms between the two (see diagram). The delay time of the NO contact can be set between 1.5 s and 30 s.

**WYE-delta function**




The contactor on which the solid-state, time-delay auxiliary switch block is mounted operates without a delay.

### *Size S00 (3RT201)*

The solid-state, time-delay auxiliary switch block is fitted onto the front of the contactor. The timer module is supplied with power directly by plug-in contacts via the coil terminals of the contactor, in parallel with A1/A2. The time function is activated by closing the contactor on which the auxiliary switch block is mounted. The OFF-delay variant operates without an auxiliary power supply. Minimum ON period: 200 ms.

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

The solid-state, time-delay auxiliary switch block cannot be mounted on size S00 coupling relays.

### *Sizes S0 to S12 (3RT202 to 3RT107)*

The solid-state, time-delay auxiliary switch block is fitted onto the front of the contactor.

The timer module is supplied with power via two terminals (A1/A2); the time delay of the auxiliary switch block can be activated either by a parallel link to any contactor coil or by any power source.

The OFF-delay variant operates without an auxiliary power supply. Minimum ON period: 200 ms.

A single-pole auxiliary switch block can be snapped onto the front of the contactor in addition to the timer module.

The timer module has no integrated components for damping opening surges.

## Solid-state time-delay block with semiconductor output

The timer module, which is available in "ON-delay" and "OFF-delay" with auxiliary power supply designs, allows time-delayed functions up to 100 s (3 distinct delay ranges). Contactors fitted with a time-delay block close or open after a delay according to the set time.

The ON-delay variant of the time-delay relay is connected in series with the contactor coil; terminal A1 of this coil must not be connected.

With the OFF-delay variant of the time-delay relay, the contactor coil is contacted directly via the relay; terminals A1 and A2 of the coil must not be connected.

The time-delay relays are suitable for both AC and DC operation.

### *Size S00 (3RT201)*

The variant for size S00 contactors is fitted onto the front of the contactor (with the supply voltage switched off) and then slid into its latched position; at the same time, the time-delay relay is connected by means of plug-in contacts to coil terminals A1 and A2 of the contactor. Any contactor coil terminals which are not required are sealed off by means of covers on the enclosure of the time-delay block, to prevent them from being connected inadvertently (for circuit diagrams, see page 2/149).

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

The solid-state, time-delay block cannot be mounted on size S00 coupling relays.

### *Sizes S0 to S3 (3RT202 to 3RT107)*

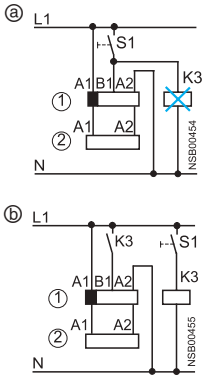
The time-delay block for size S0 to S3 contactors is plugged into coil terminals A1 and A2 on top of each contactor; the time-delay relay is connected both electrically and mechanically by means of pins.

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

**Configuration note**

Activation of loads parallel to the start input is not permitted with AC operation (see ⓐ).

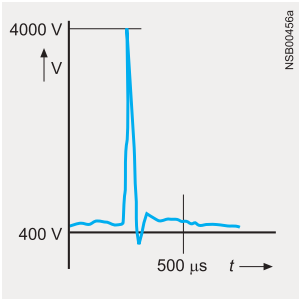
The 3RT19 16-2D .../3RT19 26-2D ... time-delay blocks with an OFF delay have a voltage-carrying start input B1. This means that if there is a parallel load on terminal B1, activation can be simulated with AC voltage. In this case, the additional load (e. g. contactor K3) must be wired as shown in ⓑ.




Time-delay block
Contactor

## 3-phase EMC interference suppression module for size S00 contactor

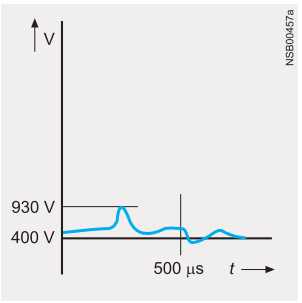
A so-called backr-e.m.f. (electromotive force) is produced when motors or various inductive loads are turned off. Voltage peaks of up to 4 000 V may occur as a result, with a frequency spectrum from 1 kHz to 10 MHz and a rate of voltage variation from 0.1 to 20 V/ns.

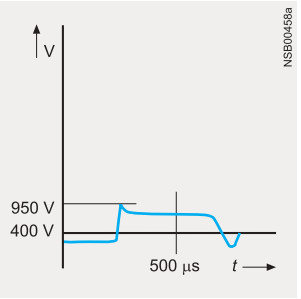



The connection between the main conducting path and the EMC interference suppression module enables contact arcing, which is responsible for contact erosion and the majority of clicking noises, to be reduced; this in turn is conducive to an electromagnetically compatible design.

Since the EMC interference suppression module achieves a significant reduction in radio-frequency components and the voltage level in three phases, the contact endurance is also improved considerably. This makes an important contribution towards enhancing the reliability and availability of the system as a whole.

There is no need for fine graduations within each performance class, as smaller motors inherently have a higher inductance, so that one solution for all fixed-speed drives up to 7.5 HP is adequate.




Two electrical variants are available:

The advantages of the RC circuit lie mainly in the reduction in the rate of rise and in its RF damping ability. The selected values ensure effective interference suppression over a wide range.

The varistor circuit is able to absorb high energy levels and is also suitable for frequencies from 10 to 400 Hz (variable-speed drives). There is no limiting below the knee-point voltage, however.

## OFF-delay device for size S00 to S3 contactors

***AC and DC operation***

IEC 60 947, EN 60 947

For screwing and snapping onto 35 mm standard mounting rail. The OFF-delay devices have screw connections.

### Application

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies the necessary power for a series-connected, DC-operated contactor during a voltage dip to ensure that the contactor does not open. The 3RT19 16/3RT29 16 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays of the SIRIUS series.

### Principle of operation

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version for DC operation only). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the contactor coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF delay only applies in the event of failure of the mains voltage.

***Operation***

In the case of the versions for rated control supply voltages of 110 V and 230 V, either AC voltage or DC voltage can be applied on the line side, where as the variant for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output in accordance with the input voltage that is applied.

The mean value of the OFF delay is approximately 1.5 times the specified minimum time.

## Interface for mounting on size S0 to S3 contactors

### Application

***DC operation***

IEC 60 947 and EN 60 947

The interface is suitable for use in any climate. It is safe from touch to DIN VDE 0106 Part 100. The terminal designations conform to EN 50 005.

### Functions

***Design***

System-compatible operation with DC 24 V, coil voltage tolerance 17 V to 30 V.

Low power consumption in conformity with the technical data of the electronic systems.
A light-emitting diode indicates the circuit state.

***Surge suppression***

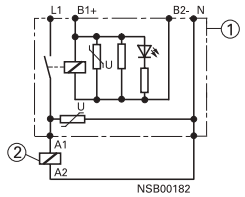
The 3RH29 24-1GP11 interface has an integrated surge suppressor (varistor) for the contactor coil being switched.

***Mounting***

The 3RH29 24-1GP11 interface is mounted directly on the contactor coil.

### Terminal diagram

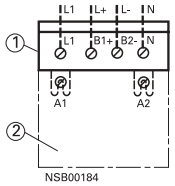
**3RH19/29 24-1GP1**
with surge suppression




①Interface
②Contactor

### Connection example

**3RH19/29 24-1GP1**
with surge suppression




①Interface
②Contactor

## More information

| Contactors | Type<br>Size<br>Width | | mm | 3RT2<br>S00 and S0<br>45 |
|---|---|---|---|---|
| **Rated data of the auxiliary contacts** | | | | |
| **According to IEC 60947-5-1/EN 60947-5-1**<br>The data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactor sizes S00 to S0[1)] | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 690 |
| **Conventional thermal current $I_{th}$ =<br>Rated operational current $I_e$/AC-12** | | | A | 10 |
| **AC load** | | | | |
| **Rated operational current $I_e$/AC-15/AC-14** | | | | |
| • For rated operational voltage $U_e$ | | 24 V | A | 10[1)] |
| | | 110 V | A | 10[1)] |
| | | 125 V | A | 10[1)] |
| | | 220 V | A | 10[1)] |
| | | 230 V | A | 10[1)] |
| | | 380 V | A | 3 |
| | | 400 V | A | 3 |
| | | 500 V | A | 2 |
| | | 660 V | A | 1 |
| | | 690 V | A | 1 |
| **DC load** | | | | |
| **Rated operational current $I_e$/DC-12** | | | | |
| • For rated operational voltage $U_e$ | | 24 V | A | 6 |
| | | 60 V | A | 6 |
| | | 110 V | A | 3 |
| | | 125 V | A | 2 |
| | | 220 V | A | 1 |
| | | 440 V | A | 0.3 |
| | | 600 V | A | 0.15 |
| **Rated operational current $I_e$/DC-13** | | | | |
| • For rated operational voltage $U_e$ | | 24 V | A | 6 |
| | | 60 V | A | 2 |
| | | 110 V | A | 1 |
| | | 125 V | A | 0.9 |
| | | 220 V | A | 0.3 |
| | | 440 V | A | 0.14 |
| | | 600 V | A | 0.1 |
| **Contact reliability at 17 V, 1 mA**<br>acc. to EN 60947-5-4 | | | | Frequency of contact faults $<10^{-8}$ i. e. <1 fault per 100 million operating cycles |

### Endurance of the auxiliary contacts

It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The contact endurance is mainly dependent on the breaking current.

The characteristic curves apply to:
- Integrated auxiliary contacts on 3RT20
- Auxiliary switch blocks 3RH 29 11, 3RH29 21 for contactors size S00 and S0.

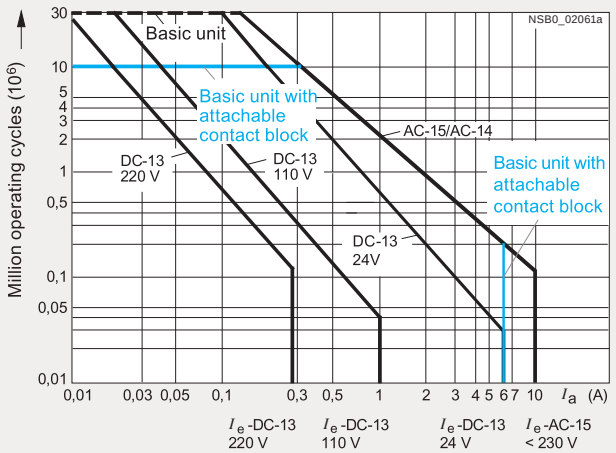



Diagram legend:
$I_a$ = Breaking current
$I_e$ = Rated operational current

[1)] Integrated auxiliary contacts in size S0, auxiliary switches for snapping onto the front and for mounting onto the side in size S00 and S0: $I_e$ = 6 A at AC-14/AC-15.

## Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The rated operational current $I_e$ complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200,000 operating cycles.

If a shorter endurance is sufficient, the rated operational current $I_e$/AC-4 can be increased. $I_e$

**If the contacts are used for mixed operation**, i. e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

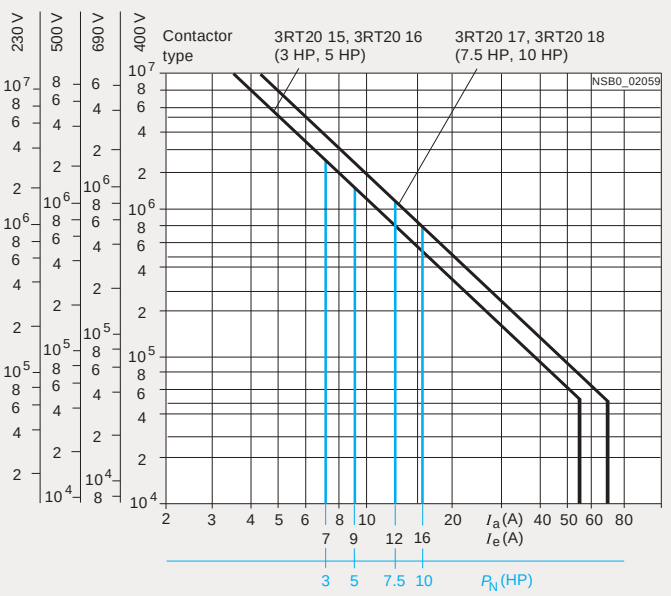
$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- $X$ Contact endurance for mixed operation in operating cycles
- $A$ Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- $B$ Contact endurance for inching ($I_a$ = multiple of $I_e$) in operating cycles
- $C$ Inching operations as a percentage of total switching operations

### Size S00

Operating cycles at




### Size S0

Operating cycles at

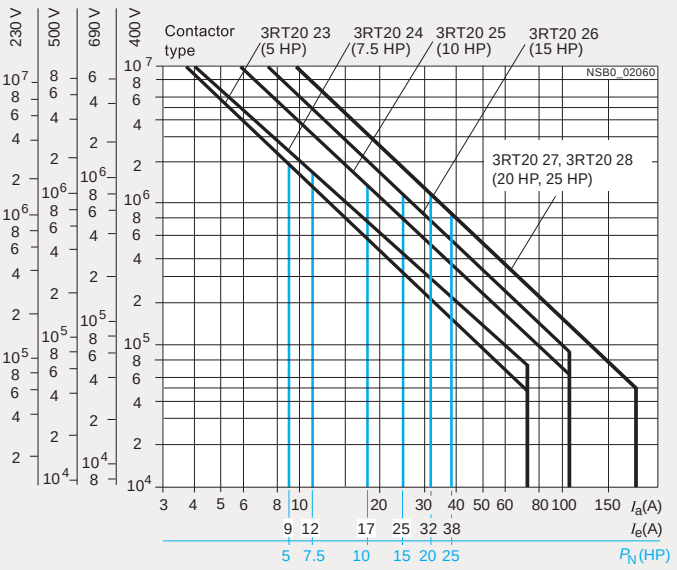
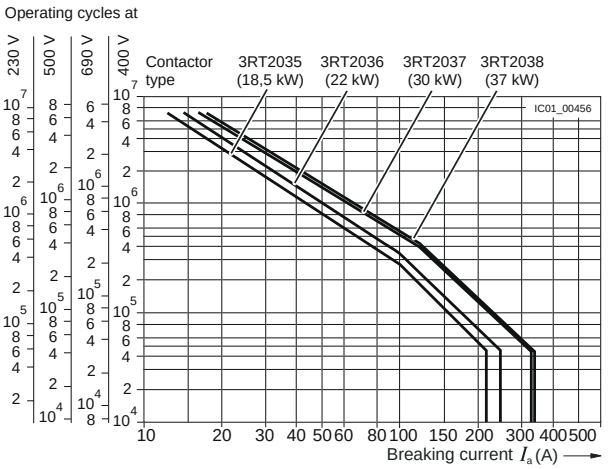



Diagram legend:
$P_N$= Rated power for squirrel-cage motors at 460 V
$I_a$ = Breaking current
$I_e$ = Rated operational current

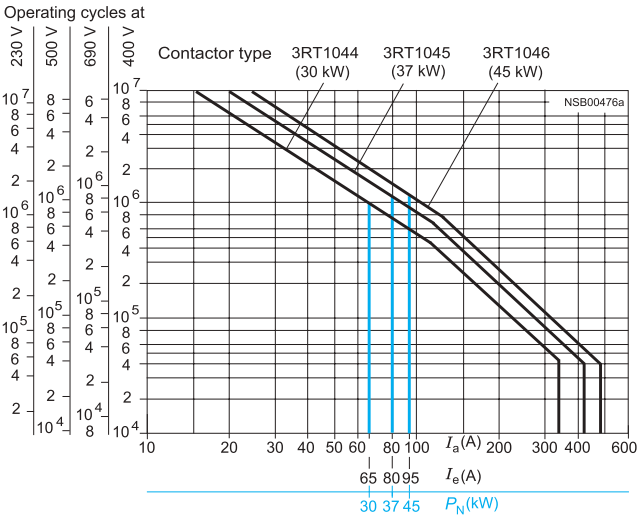
## Technical data

### Endurance of the main contacts

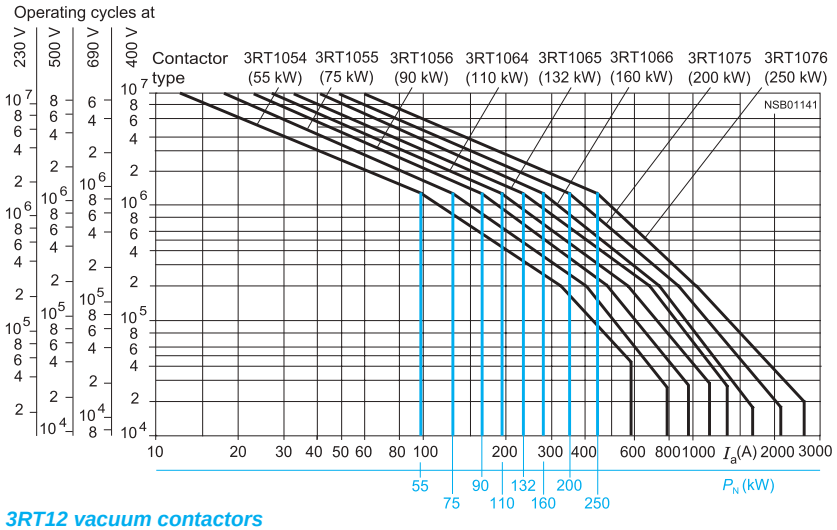
#### Size S2



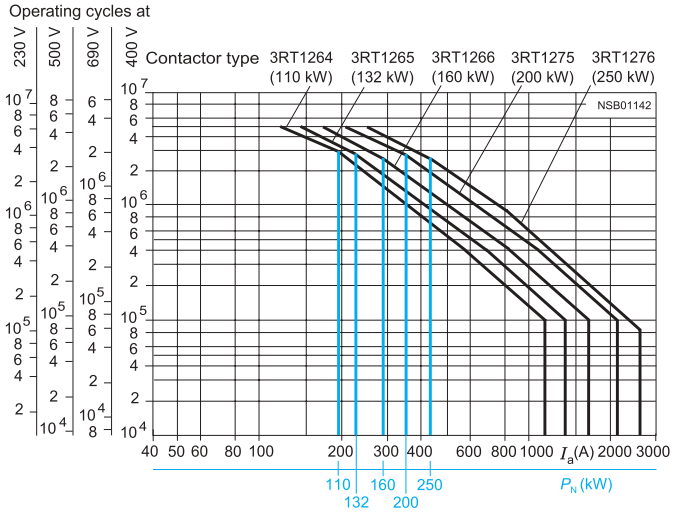

#### Size S3




#### Sizes S6 to S12




#### 3RT12 vacuum contactors
#### Sizes S10 and S12




Legend:
$P_N$ = Ratings of three-phase motors with squirrel-cage rotor at 400 V
$I_a$ = Breaking current
$I_e$ = Rated operational current

| Contactors | Type | | | 3RT20 15 | 3RT20 16 | 3RT20 17 | 3RT20 18 |
|---|---|---|---|---|---|---|---|
| | Size | | | S00 | S00 | S00 | S00 |
| | Width | | mm | 45 | 45 | 45 | 45 |
| **cULus and cULus rated data** | | | | | | | |
| **Rated insulation voltage** | | | V AC | 600 | | | |
| **Uninterrupted current,** at 40 °C | • Open and enclosed | | A | 20 | | | |
| **Maximum horsepower ratings** (cULus and cULus approved values) | | | | | | | |
| • Rated power for induction motors at 60 Hz | | At 200 V | hp | 1.5 | 2 | 3 | 3 |
| | | 230 V | hp | 2 | 3 | 3 | 5 |
| | | 460 V | hp | 3 | 5 | 7.5 | 10 |
| | | 575 V | hp | 5 | 7.5 | 10 | 10 |
| **Short-circuit protection**[1] (contactor or overload relay) | | At 600 V | kA | 5 | 5 | 5 | 5 |
| | • Fuse CLASS J[2] | | A | 40 | 40 | 40 | 40 |
| | • Circuit breakers with overload protection according to UL 489 | | A | 50 | 50 | 50 | 50 |
| • Combination motor controllers type E according to UL 508 | | | | --[3] | --[3] | --[3] | --[3] |
| **NEMA/EEMAC ratings** | | | | | | | |
| NEMA/EEMAC size | | | | -- | | | 0 |
| • Uninterrupted current | - Open | | A | -- | | | 18 |
| | - Enclosed | | A | -- | | | 18 |
| • Rated power for induction motors at 60 Hz | | At 200 V | hp | -- | | | 3 |
| | | 230 V | hp | -- | | | 3 |
| | | 460 V | hp | -- | | | 5 |
| | | 575 V | hp | -- | | | 5 |
| **Overload relays** | • Type | | | 3RU21 1 | / 3RB30 1 | | |
| | • Setting range | | A | 0.11 ... 16 | / 0.1 ... 16 | | |

| Contactors | Type | | | 3RT20 23 | 3RT20 24 | 3RT20 25 | 3RT20 26 | 3RT20 27 | 3RT20 28 |
|---|---|---|---|---|---|---|---|---|---|
| | Size | | | S0 | S0 | S0 | S0 | S0 | S0 |
| | Width | | mm | 45 | 45 | 45 | 45 | 45 | 45 |
| **cULus and cULus rated data** | | | | | | | | | |
| **Rated insulation voltage** | | | V AC | 600 | | | | 600 | |
| **Uninterrupted current,** at 40 °C | • Open and enclosed | | A | 35 | | | | 42 | |
| **Maximum horsepower ratings** (cULus and cULus approved values) | | | | | | | | | |
| • Rated power for induction motors at 60 Hz | | At 200 V | hp | 2 | 3 | 5 | 7.5 | 10 | 10 |
| | | 230 V | hp | 3 | 3 | 5 | 7.5 | 10 | 10 |
| | | 460 V | hp | 5 | 7.5 | 10 | 15 | 20 | 25 |
| | | 575 V | hp | 7.5 | 10 | 15 | 20 | 25 | 25 |
| **Short-circuit protection**[1] (contactor or overload relay) | | At 600 V | kA | 5 | 5 | 5 | 5 | 5 | 5 |
| | • Fuse CLASS J[2] | | A | 45 | 45 | 45 | 70 | 110 | 110 |
| | • Circuit breakers with overload protection according to UL 489 | | A | 70 | 70 | 70 | 100 | 100 | 100 |
| • Combination motor controllers type E according to UL 508 | | | | | | | | | |
| | - At 480 V | | Type | 3RV20 2 | | | | | |
| | | | A | -- | | | | | |
| | | | kA | --[3] | | | | | |
| | - At 600 V | | Type | 3RV20 2 | | | | | |
| | | | A | -- | | | | | |
| | | | kA | --[3] | | | | | |
| **NEMA/EEMAC ratings** | | | | | | | | | |
| NEMA/EEMAC size | | | | -- | | | | 1 | |
| • Uninterrupted current | - Open | | A | -- | | | | 27 | |
| | - Enclosed | | A | -- | | | | 27 | |
| • Rated power for induction motors at 60 Hz | | At 200 V | hp | -- | | | | 7.5 | |
| | | 230 V | hp | -- | | | | 7.5 | |
| | | 460 V | hp | -- | | | | 10 | |
| | | 575 V | hp | -- | | | | 10 | |
| **Overload relays** | • Type | | | 3RU21 2 | / 3RB30 2 | | | | |
| | • Setting range | | A | 1.8 ... 40 | / 0.1 ... 40 | | | | |

[1] For more information about short-circuit values, e. g. for protection against short-circuit currents, see UL reports (http://support.automation.siemens.com) for the individual devices.
[2] Values for RK5 fuses on request.
[3] Values on request.

## cULus and cULus ratings of the contactors

| Contactor | Size<br>Type | | S2<br>3RT20 35 | S2<br>3RT20 36 | S2<br>3RT20 37 | S2<br>3RT20 38 | S3<br>3RT20 45 | S3<br>3RT20 46 | S3<br>3RT20 47 |
|---|---|---|---|---|---|---|---|---|---|
| **Rated Insulation Voltage** | | AC V | 600 | | | | 600 | | |
| **Continuous current**, at 40 °C<br>Free air and enclosed | | A | 55 | 60 | 80 | 90 | 90 | 105 | |
| **Maximum horsepower ratings** | Ratings at 115 V<br>single at 230 V<br>phase motors<br>at 50/60 Hz | hp<br>hp | 3<br>7.5 | 3<br>10 | 5<br>10 | 5<br>15 | 5<br>15 | 7.5<br>15 | 10<br>- |
| cULus approved values | | | | | | | | | |
| Ratings<br>of three-phase motors<br>at 50/60 Hz | at 200 V<br>230 V<br>460 V<br>575 V | hp<br>hp<br>hp<br>hp | 10<br>15<br>30<br>40 | 15<br>15<br>40<br>50 | 20<br>20<br>50<br>50 | 20<br>25<br>50<br>60 | 20<br>25<br>50<br>60 | 25<br>30<br>60<br>75 | 30<br>30<br>75<br>100 |
| **Short-circuit protection** | Fuse or circuit-<br>breaker<br>acc. to UL 489 | kA<br>A<br>A | 5<br>150<br>150 | 10<br>200<br>200 | 10<br>250<br>200 | 10<br>250<br>200 | 5<br>250<br>250 | 10<br>300<br>300 | 10<br>350<br>400 |
| **NEMA/EEMAC ratings**<br>Conventional thermal current | NEMA/EEMAC Size<br>Free air<br>Enclosed | <br>A<br>A | <br>-<br>- | 2<br>45<br>45 | <br>-<br>- | <br><br> | <br>-<br>- | <br><br> | 3<br>90<br>90 |
| Ratings<br>of three-phase motors<br>at 60 Hz | at 200 V<br>230 V<br>460 V<br>575 V | hp<br>hp<br>hp<br>hp | -<br>-<br>-<br>- | 10<br>15<br>25<br>25 | -<br>-<br>-<br>- | <br><br><br> | -<br>-<br>-<br>- | <br><br><br> | 25<br>30<br>50<br>50 |
| **Overload Relay** | Type<br>Setting Range | A | 3RU213 / 3RB303<br>11 … 80 / 12 … 80 | | | | 3RU11 4<br>18 … 100 | | |
| **Contactor Size** | | | S00 - S0<br>Screw and<br>Spring connection<br>Integrated or<br>snap-on aux.<br>switch block | | Screw and<br>Spring connection<br>Laterally mountable<br>aux. switch block | | S2 - S12<br>Screw and<br>Spring connection<br>Single pole and<br>4-pole Snap-on<br>aux. switch block | | Screw and<br>Spring con-<br>nection<br>Laterally<br>mountable<br>aux. switch<br>block |

## cULus and cULus ratings of the auxilary contactors

| | | | | | | |
|---|---|---|---|---|---|---|
| **Rated Voltage** | | AC | 600 | 600 | 600 | 600 |
| **Switching Capacity**<br>**Uninterrupted current** | At 240 VAC | A | A 600, P 600<br>10 | A 600, Q 600<br>10 | A 600, P 300<br>10 | A 300, Q 300<br>10 |

## Technical data

| Contactor | Size<br>Type | | | S6<br>3RT10 54 | S6<br>3RT10 55 | S6<br>3RT10 56 | S10<br>3RT10 64 | S10<br>3RT10 65 | S10<br>3RT10 66 |
|---|---|---|---|---|---|---|---|---|---|
| **cULus and CSA ratings of the contactors** | | | | | | | | | |
| **Rated insulation voltage** | | | AC V | 600 | | | 600 | | |
| **Continuous current**, at 40 °C | Free air and enclosed | | A | 140 | 195 | 195 | 250 | 330 | 330 |
| **Maximum horsepower ratings** (cULus and CSA-approved values) | Ratings single phase motors at 50/60 Hz | at 115 V 230 V | HP | 25 | 30 | 30 | | | |
| Ratings of three-phase motors at 50/60 Hz | | 200 V | HP | 40 | 50 | 60 | 60 | 75 | 100 |
| | | 230 V | HP | 50 | 60 | 75 | 75 | 100 | 125 |
| | | 460 V | HP | 100 | 125 | 150 | 150 | 200 | 250 |
| | | 575 V | HP | 125 | 150 | 200 | 200 | 250 | 300 |
| **Short-circuit protection** | | | kA | 10 | 10 | 10 | 10 | 18 | 18 |
| | CLASS RK5 fuse | | A | 450 | 500 | 500 | 700 | 800 | 800 |
| | Circuit-breaker acc. to UL 489 | | A | 350 | 450 | 500 | 500 | 700 | 800 |
| **NEMA/EEMAC ratings** | NEMA/EEMAC SIZE | | | – | 4 | – | – | – | 5 |
| Conventional thermal current | Free air | | A | – | 150 | – | – | – | 300 |
| | Enclosed | | A | – | 135 | – | – | – | 270 |
| Ratings of three-phase motors at 60 Hz | | at 200 V | HP | – | 40 | – | – | – | 75 |
| | | 230 V | HP | – | 50 | – | – | – | 100 |
| | | 460 V | HP | – | 100 | – | – | – | 200 |
| | | 575 V | HP | – | 100 | – | – | – | 200 |
| **Overload relay** | Type | | | 3RB20 56 | | | 3RB20 66 | | |

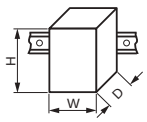
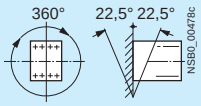
| Contactor | Size<br>Type | | | S12<br>3RT10 75 | S12<br>3RT10 76 |
|---|---|---|---|---|---|
| **Rated insulation voltage** | | | AC V | 600 | |
| **Continuous current**, at 40 °C | Free air and enclosed | | A | 400 | 540 |
| **Maximum horsepower ratings** (cULus and CSA-approved values) | | | | | |
| Ratings of three-phase motors at 50/60 Hz | | at 200 V | HP | 125 | 150 |
| | | 230 V | HP | 150 | 200 |
| | | 460 V | HP | 300 | 400 |
| | | 575 V | HP | 400 | 500 |
| **Short-circuit protection** | | | kA | 18 | 30 |
| | CLASS RK5 fuse | | A | 1000 | 1200 |
| | Circuit-breaker acc. to UL 489 | | A | 900 | 900 |
| **NEMA/EEMAC ratings** | NEMA/EEMAC SIZE | | | – | 6 |
| Conventional thermal current | Free air | | A | – | 600 |
| | Enclosed | | A | – | 540 |
| Ratings of three-phase motors at 60 Hz | | at 200 V | HP | – | 150 |
| | | 230 V | HP | – | 200 |
| | | 460 V | HP | – | 400 |
| | | 575 V | HP | – | 400 |
| **Overload relay** | Type | | | 3RB20 66 | |

## Technical data

| Contactor | Size<br>Type | | | S10<br>3RT12 64 | S10<br>3RT12 65 | S10<br>3RT12 66 | S12<br>3RT12 75 | S12<br>3RT12 76 |
|---|---|---|---|---|---|---|---|---|
| **CSA and UL ratings of the contactors** | | | | | | | | |
| **Rated insulation voltage** | | | AC V | 600 | | | 600 | |
| **Continuous current**, at 40 °C | Free air and enclosed | | A | 330 | | | 540 | |
| **Maximum horsepower ratings**<br>(CSA and UL-approved values) | | | | | | | | |
| Ratings<br>of three-phase motors<br>at 50/60 Hz | | at 200 V<br>230 V<br>460 V<br>575 V | HP<br>HP<br>HP<br>HP | 60<br>75<br>150<br>200 | 75<br>100<br>200<br>250 | 100<br>125<br>250<br>300 | 125<br>150<br>300<br>400 | 150<br>200<br>400<br>500 |
| **Short-circuit protection** | | | kA | 10 | 18 | 18 | 18 | 30 |
| | CLASS RK5 fuse | | A | 700 | 800 | 800 | 1200 | 1200 |
| | Circuit-breaker<br>acc. to UL 489 | | A | 500 | 700 | 900 | 1000 | 1200 |
| **NEMA/EEMAC ratings** | NEMA/EEMAC SIZE | | | – | | 5 | – | 6 |
| Conventional thermal current | Free air<br>Enclosed | | A<br>A | –<br>– | | | –<br>– | |
| Ratings<br>of three-phase motors<br>at 60 Hz | | at 200 V<br>230 V<br>460 V<br>575 V | HP<br>HP<br>HP<br>HP | –<br>–<br>–<br>– | | | –<br>–<br>–<br>– | |
| **Overload relay** | Type | | | 3RB20 66 | | | 3RB20 66 | |

| Contactor | Size<br>Type | S3<br>3RT14 46 | S6<br>3RT14 56 | S10<br>3RT14 66 | S12<br>3RT14 76 |
|---|---|---|---|---|---|
| **Rated insulation voltage** | AC V | 600 | | | |
| **Maximum UL resistive load ratings** | A | 110 | 210 | 360 | 580 |

| Contactor | Size<br>Type | S00<br>3RT23 15 | S00<br>3RT23 16 | S00<br>3RT23 17 | S0<br>3RT23 24 | S0<br>3RT23 25 | S0<br>3RT23 26 | S0<br>3RT23 27 | S2<br>3RT23 36 | S3<br>3RT13 44 | S3<br>3RT13 46 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rated insulation voltage** | AC V | 600 | | | | | | | | | |
| **Maximum UL resistive load ratings** | A | 16 | 18 | 20 | 30 | 30 | 35 | 42 | 60 | 100 | 110 |

| | | | | |
|---|---|---|---|---|
| Type | | | 3RT20 15, 3RT20 16 | 3RT20 17, 3RT20 18 |
| Size | | | S00 | S00 |
| Dimensions (W x H x D)[1] |  | mm | 45 x 57.5 x 73 / 45 x 70 x 73 | |
| • With mounted auxiliary switch block | | mm | 45 x 57.5 x 116 / 45 x 70 x 121 | |
| • With mounted function block | | mm | 45 x 57.5 x 142 / 45 x 70 x 142 | |
| **General data** | | | | |
| **Permissible mounting positions**<br>The contactors are designed for operation on a vertical mounting surface. | | AC and DC operation |  | |
| Upright mounting position | | AC and DC operation | Special design required. Positions 13 to 16 of the Order No. must be changed to **-1AA0**. Additional charge. | |
| **Mechanical endurance** | | | | |
| • Basic unit | | Operating cycles | 30 million | |
| • Basic unit with snap-on auxiliary switch block | | Operating cycles | 10 million | |
| • Solid-state compatible auxiliary switch block | | Operating cycles | 5 million | |
| **Electrical endurance** | | | [2] | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | |
| **Protective separation** between the coil and the main contacts acc. to EN 60947-1, Appendix N | | V | 400 | |
| **Mirror contacts**<br>A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact. | | | | |
| • 3RT20 1., 3RT23 1. (removable auxiliary switch block) | | | Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to EN 60947-4-1, Appendix F | |
| • 3RT20 1., 3RT23 1. (permanently mounted auxiliary switch block) | | | Yes, acc. to EN 60947-4-1, Appendix F | |
| • 3RH29 19-.NF.. solid-state compatible auxiliary switch blocks have no mirror contacts. | | | | |
| **Ambient temperature** | | | | |
| • During operation | | °C | -25 ... +60 | |
| • During storage | | °C | -55 ... +80 | |
| **Protection class IP on the front** acc. to IEC 60529 | | | IP20, coil assembly IP40 | |
| **Touch protection on the front** acc. To IEC 60529 | | | Finger-safe, for vertical contact from the front (screw and spring-type terminal) | |
| **Shock resistance** rectangular pulse | | | | |
| • AC operation | | *g*/ms | 6.7/5 and 4.2/10 | 7.3/5 and 4.7/10 |
| • DC operation | | *g*/ms | 6.7/5 and 4.2/10 | 7.3/5 and 4.7/10 |
| **Shock resistance** sine pulse | | | | |
| • AC operation | | *g*/ms | 10.5/5 and 6.6/10 | 11.4/5 and 7.3/10 |
| • DC operation | | *g*/ms | 10.5/5 and 6.6/10 | 11.4/5 and 7.3/10 |
| **Conductor cross-sections** | | | [3] | |
| **Short-circuit protection for contactors without overload relays** | | | | |
| | | | For short-circuit protection for contactors with overload relays see Section 3: Overload Relays<br>For short-circuit protection for fuseless load feeders see Section 4: Combination Starters | |
| **Main circuit** | | | | |
| • Fuse links, operational class gG : NH 3NA, DIAZED 5SB, NEOZED 5SE acc. to IEC 60947-4-1/ EN 60947-4-1 | | | | |
| - Type of coordination "1" | | A | 35 | 50 |
| - Type of coordination "2" | | A | 20 | 25 |
| - Weld-free[4] | | A | 10 | 10 |
| • Miniature circuit breakers (up to 230 V) with C characteristic Short-circuit current 1 kA, type of coordination "1" | | A | 10 | 10 |
| **Auxiliary circuit** | | | | |
| • Fuse links, operational class gG : DIAZED 5SB, NEOZED 5SE (weld-free protection for $I_k \geq 1$ kA) | | A | 10 | |
| • Miniature circuit breakers up to 230 V with C characteristic Short-circuit current $I_k < 400$ A | | A | 6 | |

[1] Dimensions for devices with screw terminals / spring-type terminals.
[2] For endurance of the main contacts see page 2/129.
[3] For conductor cross-sections see page 2/137 .
[4] Test conditions according to IEC 60947-4-1.

| Contactors | Type<br>Size<br>Width | | mm | 3RT20 15, 3RT20 16<br>S00<br>45 | 3RT20 17, 3RT20 18<br>S00<br>45 |
|---|---|---|---|---|---|
| **Control** | | | | | |
| **Solenoid coil operating range** | | | | | |
| • AC operation | | 50 Hz<br>60 Hz | | 0.8 ... 1.1 x $U_s$<br>0.85 ... 1.1 x $U_s$ | |
| • DC operation | | Up to 50 °C<br>Up to 60 °C | | 0.8 ... 1.1 x $U_s$<br>0.85 ... 1.1 x $U_s$ | |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | | |
| • AC operation, 50/60 Hz, standard version | - Closing<br>- P.f.<br>- Closed<br>- P.f. | | VA<br><br>VA<br> | 27/24.3<br>0.8/0.75<br>4.2/3.3<br>0.25/0.25 | 37/33<br>0.8/0.75<br>5.7/4.4<br>0.25/0.25 |
| • AC operation, 50 Hz, USA/Canada | - Closing<br>- P.f. for closing<br>- Closed<br>- P.f. for closed | | VA<br><br>VA<br> | 26.4<br>0.81<br>4.4<br>0.24 | 36<br>0.8<br>5.9<br>0.24 |
| • AC operation, 60 Hz, USA/Canada | - Closing<br>- P.f. for closing<br>- Closed<br>- P.f. for closed | | VA<br><br>VA<br> | 31.7<br>0.81<br>4.8<br>0.25 | 43<br>0.8<br>6.5<br>0.25 |
| • DC operation | Closing = Closed | | W | 4 | 4 |
| **Permissible residual current of the electronics** (with 0 signal) | | | | | |
| | • AC operation | | | <3 mA x (230 V/$U_s$)[1] | <4 mA x (230 V/$U_s$)[1] |
| | • DC operation | | | <10 mA x (24 V/$U_s$)[1] | |
| **Operating times**[2] | | | | | |
| Total break time = Opening delay + Arcing time | | | | | |
| • AC operation at 0.8 ... 1.1 x $U_s$ | - Closing delay<br>- Opening delay | | ms<br>ms | 9 ... 35<br>3.5 ... 14 | 8 ... 33<br>4 ... 15 |
| • DC operation at 0.85 ... 1.1 x $U_s$ | - Closing delay<br>- Opening delay | | ms<br>ms | 30 ... 100<br>7 ... 13 | 30 ... 100<br>7 ... 13 |
| • Arcing time | | | ms | 10 ... 15 | 10 ... 15 |
| **Operating times for 1.0 x $U_s$**[2] | | | | | |
| • AC operation | - Closing delay<br>- Opening delay | | ms<br>ms | 9.5 ... 24<br>4 ... 14 | 9 ... 22<br>4.5 ... 15 |
| • DC operation | - Closing delay<br>- Opening delay | | ms<br>ms | 35 ... 50<br>7 ... 12 | 35 ... 50<br>7 ... 12 |

1) The 3RT29 16-1GA00 additional load module is recommended for higher residual currents.

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assemblies 2 to 6 times, varistor +2 to 5 ms).

| Contactors | Type<br>Size | | | 3RT20 15<br>S00 | 3RT20 16<br>S00 | 3RT20 17<br>S00 | 3RT20 18<br>S00 |
|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | |
| ***AC capacity*** | | | | | | | |
| **Utilization category AC-1**<br>**Switching resistive loads** | | | | | | | |
| • Rated operational current $I_e$ | At 40 °C up to 690 V<br>At 60 °C up to 690 V | | A<br>A | 18<br>16 | 22<br>20 | 22<br>20 | 22<br>20 |
| • Rated power for AC loads[1]<br>P.f.= 0.95 (at 60 °C) | 230 V<br>400 V<br>500 V<br>690 V | | kW<br>kW<br>kW<br>kW | 6.3<br>11<br>13.8<br>19 | 7.5<br>13<br>17<br>22 | 7.5<br>13<br>17<br>22 | 7.5<br>13<br>17<br>22 |
| • Minimum conductor cross-section for loads with $I_e$ | At 40 °C<br>At 60 °C | | $mm^2$<br>$mm^2$ | 2.5<br>2.5 | 2.5<br>2.5 | 2.5<br>2.5 | 2.5<br>2.5 |
| **Utilization category AC-3** | | | | | | | |
| • Rated operational currents $I_e$ | Up to 400 V<br>440 V<br>500 V<br>690 V | | A<br>A<br>A<br>A | 7<br>7<br>6<br>4.9 | 9<br>9<br>7.7<br>6.7 | 12<br>11<br>9.2<br>6.7 | 16<br>15<br>12.4<br>8.8 |
| • Rated power for slipring or squirrel-cage motors at 50 and 60 Hz | At 200 V<br>230 V<br>460 V<br>575 V | | HP<br>HP<br>HP<br>HP | 1.5<br>2<br>3<br>5 | 2<br>3<br>5<br>7.5 | 3<br>3<br>7.5<br>10 | 3<br>5<br>10<br>10 |
| **Thermal load capacity** | 10 s current[2] | | A | 56 | 72 | 96 | 128 |

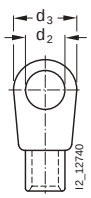
1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
For rated values for various start-up conditions see Section 3 --> "Overload Relays".

| Contactors | Type<br>Size<br>Width | | mm | 3RT20 15<br>S00<br>45 | 3RT20 16<br>S00<br>45 | 3RT20 17<br>S00<br>45 | 3RT20 18<br>S00<br>45 |
|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | |
| ***AC capacity*** | | | | | | | |
| **Power loss per conducting path** | At $I_e$/AC-3 | | W | 0.42 | 0.7 | 1.24 | 2.2 |
| **Utilization category AC-4** (for $I_a$ = 6 x $I_e$)[1] | | | | | | | |
| • Rated operational current $I_e$ | Up to 400 V | | A | 6.5 | 8.5 | 8.5 | 11.5 |
| • Rated power for squirrel-cage motors with 50 Hz and 60 Hz | Up to 400 V | | kW | 3 | 4 | 4 | 5.5 |
| • The following applies to a contact endurance of about 200000 operating cycles: | | | | | | | |
| - Rated operational currents $I_e$ | Up to 400 V<br>690 V | | A<br>A | 2.6<br>1.8 | 4.1<br>3.3 | 4.1<br>3.3 | 5.5<br>4.4 |
| - Rated power for squirrel-cage motors with 50 Hz and 60 Hz | At 230 V<br>400 V<br>500 V<br>690 V | | kW<br>kW<br>kW<br>kW | 0.67<br>1.15<br>1.45<br>1.15 | 1.1<br>2<br>2<br>2.5 | 1.1<br>2<br>2<br>2.5 | 1.5<br>2.5<br>3<br>3.5 |
| ***Switching frequency*** | | | | | | | |
| **Switching frequency z** in operating cycles/hour | | | | | | | |
| • Contactors without overload relays | No-load switching frequency AC | | $h^{-1}$ | 10000 | | | |
| Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$:<br>$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$ | No-load switching frequency DC<br>Rated operation<br>AC-1 (AC/DC)<br>AC-2 (AC/DC)<br>AC-3 (AC/DC)<br>AC-4 (AC/DC) | | $h^{-1}$<br><br>$h^{-1}$<br>$h^{-1}$<br>$h^{-1}$<br>$h^{-1}$ | 10000<br><br>1000<br>750<br>750<br>250 | | | |
| • Contactors with overload relays (mean value) | | | $h^{-1}$ | 15 | | | |

[1] The data only apply to 3RT25 16 and 3RT25 17 (2 NO + 2 NC) up to a rated operational voltage of 400 V.

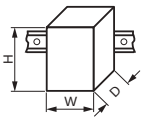
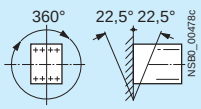
| Contactors | Type<br>Size | | mm | 3RT20 15<br>S00<br>45 | 3RT20 16<br>S00<br>45 | 3RT20 17<br>S00<br>45 | 3RT20 18<br>S00<br>45 |
|---|---|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | | | |
| **Main conductors and auxiliary conductors**<br>(1 or 2 conductors can be connected) | | | | **Screw terminals** | | | |
| • Solid | | | $mm^2$ | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (0.5 ... 4) | | | |
| • Finely stranded with end sleeve | | | $mm^2$ | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] | | | |
| • AWG cables, solid or stranded | | | AWG | 2 x (20 ... 16)[1]; 2 x (18 ... 14)[1]; 2 x 12 | | | |
| • Terminal screw | | | | M3 (for standard screwdriver size 2 and Pozidriv 2) | | | |
| • Tightening torque | | | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | | |
| **Main conductors, auxiliary conductors and coil terminals**<br>(1 or 2 conductors can be connected) | | | | **Spring-type terminals** | | | |
| • Operating devices | | | mm | 3.0 x 0.5; 3.5 x 0.5 | | | |
| • Solid | | | $mm^2$ | 2 x (0.5 ... 4) | | | |
| • Finely stranded with end sleeve | | | $mm^2$ | 2 x (0.5 ... 2.5) | | | |
| • Finely stranded without end sleeve | | | $mm^2$ | 2 x (0.5 ... 2.5) | | | |
| • AWG cables, solid or stranded | | | AWG | 1 x (20 ... 12) | | | |
| **Auxiliary conductors for front and laterally mounted auxiliary switches**<br>(1 or 2 conductors can be connected) | | | | | | | |
| • Operating devices | | | mm | 3.0 x 0.5; 3.5 x 0.5 | | | |
| • Solid | | | $mm^2$ | 2 x (0.5 ... 2.5) | | | |
| • Finely stranded with end sleeve | | | $mm^2$ | 2 x (0.5 ... 1.5) | | | |
| • Finely stranded without end sleeve | | | $mm^2$ | 2 x (0.5 ... 1.5) | | | |
| • AWG cables, solid or stranded | | | AWG | 2 x (20 ... 14) | | | |
| **Main conductors and auxiliary conductors** | | | | **Ring lug terminal connection** | | | |
| • Terminal screw | | | | M3, Pozidriv 2 | | | |
| • Operating devices | | | mm | Ø 5 ... 6 | | | |
| • Tightening torque | | | Nm | 0.8 ... 1.2 | | | |
| • Usable ring terminal lugs | | | mm | $d_2$ = min. 3.2 | | | |
| - DIN 46234 without insulation sleeve<br>- DIN 46225 without insulation sleeve<br>- DIN 46237 with insulation sleeve<br>- JIS C2805 Type R without insulation sleeve<br>- JIS C2805 Type RAV with insulation sleeve<br>- JIS C2805 Type RAP with insulation sleeve | | | mm | $d_3$ = max. 7.5 | | | |




For tool for opening the spring-type terminals (see Accessories on page 2/85).
Maximum external diameter of the conductor insulation: 3.6 mm.

An "insulation stop" must be used for conductor cross-sections ≤ 1 $mm^2$ (see Accessories on page 2/85).

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Type | | | 3RT20 23 | 3RT20 24 | 3RT20 25 | 3RT20 26 | 3RT20 27 | 3RT20 28 |
| Size | | | S0 | S0 | S0 | S0 | S0 | S0 |
| Dimensions (W x H x D) for AC operation[1] |  | mm | 45 x 85 x 97 / 45 x 101.5 x 97 | | | | | |
| • With mounted auxiliary switch block | | mm | 45 x 85 x 141 / 45 x 101.5 x 144 | | | | | |
| • With mounted function block | | | 45 x 85 x 166 / 45 x 101.5 x 166 | | | | | |
| Dimensions (W x H x D) for DC operation[1] | | mm | 45 x 85 x 107 / 45 x 101.5 x 107 | | | | | |
| • With mounted auxiliary switch block | | mm | 45 x 85 x 151 / 45 x 101.5 x 154 | | | | | |
| • With mounted function block | | | 45 x 85 x 176 / 45 x 101.5 x 176 | | | | | |
| **General data** | | | | | | | | |
| **Permissible mounting positions**<br>The contactors are designed for operation on a vertical mounting surface. |  | | | | | | | |
| Upright mounting position | | AC and D operation | Special version required, also applies to 3RT20 2.-.K.40. coupling relays. | | | | | |
| **Mechanical endurance** | | | | | | | | |
| • Basic unit | | Operating cycles | 10 million | | | | | |
| • Basic unit with snap-on auxiliary switch block | | Operating cycles | 10 million | | | | | |
| • Solid-state compatible auxiliary switch block | | Operating cycles | 5 million | | | | | |
| **Electrical endurance** | | | [2] | | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | | | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | | | | |
| **Protective separation** between the coil and the main contacts (acc. to EN 60947-1, Appendix N) | | V | 400 | | | | | |
| **Mirror contacts**<br>A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact. | | | | | | | | |
| • 3RT20 2., 3RT23 2. (removable auxiliary switch block) | | | Yes, acc. to EN 60947-4-1, Appendix F | | | | | |
| • 3RT20 2., 3RT23 2. (permanently mounted auxiliary switch block) | | | Yes, acc. to EN 60947-4-1, Appendix F | | | | | |
| **Permissible ambient temperature** | | | | | | | | |
| • During operation | | °C | -25 ... +60 | | | | | |
| • During storage | | °C | -55 ... +80 | | | | | |
| **Protection class IP on the front** acc. to IEC 60529 | | | IP20, coil assembly IP20 | | | | | |
| **Touch protection on the front** acc. to IEC 60529 | | | Finger-safe, for vertical contact from the front (screw and spring-type terminal) | | | | | |
| **Shock resistance** rectangular pulse | | | | | | | | |
| • AC operation | | g/ms | 7.5/5 and 4.7/10 | | | 8.3/5 and 5.310 | | |
| • DC operation | | g/ms | >10/5 and 7.5/10 | | | >10/5 and 7.5/10 | | |
| **Shock resistance** sine pulse | | | | | | | | |
| • AC operation | | g/ms | 11.8/5 and 7.4/10 | | | 13.5/5 and 8.3/10 | | |
| • DC operation | | g/ms | >15/5 and >10/10 | | | >15/5 and >10/10 | | |
| **Conductor cross-sections** | | | [3] | | | | | |
| **Short-circuit protection for contactors without overload relays** | | | | | | | | |
| **Main circuit** | | | For short-circuit protection for contactors with overload relays see "Protection Equipment --> Overload Relays". For short-circuit protection for fuseless load feeders see "Motor Starters". | | | | | |
| • Fuse links, operational class gG : Type NH 3NA, DIAZED 5SB, NEOZED 5SE acc. to IEC 60947-4-1/ EN 60947-4-1 | | | | | | | | |
| - Type of coordination "1" | | A | 63 | | | 100 | 125 | |
| - Type of coordination "2" | | A | 25 | | | 35 | 50 | |
| - Weld-free[4] | | A | 10 | | | 16 | 16 | |
| • Miniature circuit breakers with C characteristic (short-circuit current 3 kA, type of coordination "1") | | A | 25 | | | 32 | 40 | |
| **Auxiliary circuit** | | | | | | | | |
| • Fuse links, operational class gG : DIAZED 5SB, NEOZED 5SE (weld-free protection for $I_k \geq 1$ kA) | | A | 10 | | | | | |
| • Miniature circuit breaker with C characteristic (short-circuit current $I_k < 400$ A) | | A | 10 | | | | | |

1) Dimensions for devices with screw terminals / spring-type terminals.
2) For endurance of the main contacts see page 2/129.
3) For conductor cross-sections page 2/141.
4) Test conditions according to IEC 60947-4-1.

| Contactors | Type | | 3RT20 23 ... 3RT20 25 | 3RT20 26 ... 3RT20 28 | 3RT20 2. -.NB3 | 3RT20 2. -.NF3.. | 3RT20 2. -.NP3 |
|---|---|---|---|---|---|---|---|
| | Size | | S0 | S0 | S0 | S0 | S0 |
| | Width | mm | 45 | 45 | 45 | 45 | 45 |
| **Control** | | | | | | | |
| **Solenoid coil operating range** | AC/DC | | 0.8 ... 1.1 x $U_s$ | | 0.7 ... 1.3 x $U_s$ | | |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | | | | |
| • AC operation, 50 Hz, standard version | - Closing | VA | 65 | 77 | 6.5 | 13.6 | 16.1 |
| | - P.f. | | 0.82 | 0.82 | 0.98 | 0.98 | 0.98 |
| | - Closed | VA | 7.6 | 9.8 | 1.26 | 1.91 | 3.41 |
| | - P.f. | | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| • AC operation, 50/60 Hz, standard version | - Closing | VA | 68/67 | 81/79 | 6.5/5.7 | 13.6/13.2 | 16.1/15.9 |
| | - P.f. | | 0.72/0.74 | 0.72/0.74 | 0.98/0.96 | 0.98/0.99 | 0.99/0.99 |
| | - Closed | VA | 7.9/6.5 | 10.5/8.5 | 1.26/1.30 | 1.91/1.90 | 3.41/3.58 |
| | - P.f. | | 0.25/0.28 | 0.25/0.28 | 0.78/0.8 | 0.61/0.61 | 0.36/0.45 |
| • AC operation, 50 Hz, USA/Canada | - Closing | VA | 65 | 77 | -- | -- | -- |
| | - P.f. | | 0.82 | 0.82 | -- | -- | -- |
| | - Closed | VA | 7.6 | 9.8 | -- | -- | -- |
| | - P.f. | | 0.25 | 0.28 | -- | -- | -- |
| • AC operation, 60 Hz, USA/Canada | - Closing | VA | 73 | 87 | -- | -- | -- |
| | - P.f. | | 0.76 | 0.76 | -- | -- | -- |
| | - Closed | VA | 7.2 | 9.4 | -- | -- | -- |
| | - P.f. | | 0.28 | 0.28 | -- | -- | -- |
| • DC operation | Closing/closed | W | 5.9/5.9 | 5.9/5.9 | 6.7/0.8 | 13.2/1.56 | 15/1.83 |
| **Permissible residual current of the electronics** (with 0 signal) | | | | | | | |
| | • AC operation | mA | < 6 mA x (230 V/$U_s$) | < 7 mA x (230 V/$U_s$) | | | |
| | • DC operation | mA | < 16 mA x (24 V/$U_s$) | | | | |
| **Operating times for 0.8 ... 1.1 x $U_s$** [1] | | | | | | | |
| Total break time = Opening delay + Arcing time | | | | | | | |
| • AC operation | - Closing delay | ms | 9 ... 38 | 8 ... 40 | 60 ... 80 | 50 ... 70 | 60 ... 80 |
| | - Opening delay | ms | 4 ... 16 | 4 ... 16 | 30 ... 45 | 35 ... 45 | 35 ... 45 |
| • DC operation | - Closing delay | ms | 50 ... 170 | 50 ... 170 | 60 ... 75 | 50 ... 70 | 50 ... 75 |
| | - Opening delay | ms | 15 ... 17.5 | 15 ... 17.5 | 30 ... 45 | 35 ... 45 | 40 ... 50 |
| • Arcing time | | ms | 10 | 10 | 10 | 10 | 10 |
| **Operating times for 1.0 x $U_s$** [1] | | | | | | | |
| • AC operation | - Closing delay | ms | 10 ... 18 | 10 ... 17 | 65 ... 80 | 50 ... 70 | 60 ... 80 |
| | - Opening delay | ms | 4 ... 16 | 4 ... 16 | 30 ... 45 | 35 ... 45 | 30 ... 50 |
| • DC operation | - Closing delay | ms | 55 ... 80 | 55 ... 80 | 60 ... 80 | 56 ... 70 | 60 ... 80 |
| | - Opening delay | ms | 16 ... 17 | 16 ... 17 | 30 ... 45 | 35 ... 45 | 30 ... 50 |

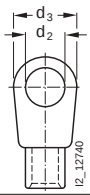
[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

| Contactors | Type | | | 3RT20 23 | 3RT20 24 | 3RT20 25 | 3RT20 26 | 3RT20 27 | 3RT20 28 |
|---|---|---|---|---|---|---|---|---|---|
| | Size | | | S0 | S0 | S0 | S0 | S0 | S0 |
| | Width | | mm | 45 | 45 | 45 | 45 | 45 | 45 |
| **Main circuit** | | | | | | | | | |
| ***AC capacity*** | | | | | | | | | |
| **Utilization category AC-1, switching resistive loads** | | | | | | | | | |
| • Rated operational current $I_e$ | At 40 °C up to 690 V | | A | 40 | | | | 50 | |
| | At 60 °C up to 690 V | | A | 35 | | | | 42 | |
| • Rated power for AC loads[1] P.f. = 0.95 (at 60 °C) | 230 V | | kW | 13.3 | | | | 15.5 | |
| | 400 V | | kW | 23 | | | | 27.5 | |
| | 500 V | | kW | 29 | | | | 35 | |
| | 690 V | | kW | 40 | | | | 47.5 | |
| • Minimum conductor cross-section for loads with $I_e$ | At 40 °C | | $mm^2$ | 10 | | | | 10 | |
| | At 60 °C | | $mm^2$ | 10 | | | | 10 | |
| **Utilization category AC-3** | | | | | | | | | |
| • Rated operational currents $I_e$ | Up to 400 V | | A | 9 | 12 | 17 | 25 | 32 | 38 |
| | 440 V | | A | 9 | 12 | 17 | 22 | 32 | 35 |
| | 500 V | | A | 9 | 12 | 17 | 18 | 32 | 32 |
| | 690 V | | A | 9 | 9 | 13 | 13 | 21 | 21 |
| • Rated power for slipring or squirrel-cage motors at 50 and 60 Hz | At 230 V | | HP | 3 | 3 | 5 | 7.5 | 10 | 10 |
| | 460 V | | HP | 5 | 7.5 | 10 | 15 | 20 | 25 |
| | 575 V | | HP | 7.5 | 10 | 15 | 20 | 25 | 25 |
| **Thermal load capacity** | 10 s current[2] | | A | 80 | 110 | 150 | 200 | 260 | 300 |
| **Power loss per conducting path** | at $I_e$/AC-3 | | W | 0.4 | 0.5 | 0.9 | 1.6 | 2.7 | 3.8 |
| **Utilization category AC-4** (for $I_a$ = 6 x $I_e$) | | | | | | | | | |
| • Rated operational current $I_e$ | Up to 400 V | | A | 8.5 | 12.5 | 15.5 | 15.5 | 22 | |
| • Rated power for squirrel-cage motors with 50 and 60 Hz | At 400 V | | kW | 4 | 5.5 | 7.5 | 7.5 | 11 | |
| • The following applies to a contact endurance of about 200000 operating cycles: | | | | | | | | | |
| - Rated operational currents $I_e$ | Up to 400 V | | A | 4.1 | 5.5 | 7.7 | 9 | 12 | |
| | 690 V | | A | 3.3 | 5.5 | 7.7 | 9 | 12 | |
| - Rated power for squirrel-cage motors with 50 and 60 Hz | At 110 V | | kW | 0.5 | 0.73 | 1 | 1.2 | 1.6 | |
| | At 230 V | | kW | 1.1 | 1.5 | 2 | 2.5 | 3.4 | |
| | 400 V | | kW | 2 | 2.6 | 3.5 | 4.4 | 6 | |
| | 500 V | | kW | 2 | 3.3 | 4.6 | 5.6 | 7.5 | |
| | 690 V | | kW | 2.5 | 4.6 | 6 | 7.7 | 10.3 | |
| ***Switching frequency*** | | | | | | | | | |
| **Switching frequency *z*** in operating cycles/hour | | | | | | | | | |
| • Contactors without overload relays | No-load switching frequency AC | | $h^{-1}$ | 5000 | | | | | |
| | No-load switching frequency DC | | $h^{-1}$ | 1500 | | | | | |
| Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$: $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$ | | AC-1 (AC/DC) | $h^{-1}$ | 1000 | | | | | |
| | | AC-2 (AC/DC) | $h^{-1}$ | 1000 | | | 750 | | |
| | | AC-3 (AC/DC) | $h^{-1}$ | 1000 | | | 750 | | |
| | | AC-4 (AC/DC) | $h^{-1}$ | 300 | | | 250 | | |
| • Contactors with overload relays (mean value) | | | $h^{-1}$ | 15 | | | | | |

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

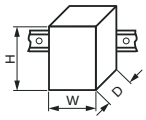
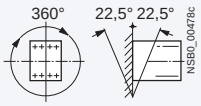
2) According to IEC 60947-4-1.
For rated values for various start-up conditions see Section 3 --> "Overload Relays" .

| Contactors | Type | | 3RT20 23 | 3RT20 24 | 3RT20 25 | 3RT20 26 | 3RT20 27 | 3RT20 28 |
|---|---|---|---|---|---|---|---|---|
| | Size | | S0 | S0 | S0 | S0 | S0 | S0 |
| | Width | mm | 45 | 45 | 45 | 45 | 45 | 45 |
| **Conductor cross-sections (1 or 2 conductors connectable)** | | | | | | | | |
| **Main conductors** | | | **Screw terminals** | | | | | |
| Conductor cross-section | | | | | | | | |
| • Solid | | $mm^2$ | 2 x (1 ... 2.5)[1]; 2 x (2.5 ... 10)[1] according to IEC 60947 | | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (1 ... 2.5)[1]; 2 x (2.5 ... 6)[1]; 1 x 10 | | | | | |
| • AWG cables, solid or stranded | | AWG | 2 x (16 ... 12); 2 x (14 ... 8) | | | | | |
| • Terminal screws | | | M4 (Pozidriv size 2) | | | | | |
| - Tightening torque | | Nm | 2 ... 2.5 (18 ... 22 lb.in) | | | | | |
| **Auxiliary conductors** | | | | | | | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] according to IEC 60947 | | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] | | | | | |
| • Solid or stranded AWG (2 x) | | AWG | 2 x (20 ... 16)[1]; 2 x (18 ... 14)[1]; 1 x 12 | | | | | |
| • Terminal screws | | | M3 | | | | | |
| - Tightening torque | | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | | | | |
| **Main conductors** | | | **Spring-type terminals** | | | | | |
| • Operating devices | | mm | 3.0 x 0.5; 3.5 x 0.5 | | | | | |
| • Solid | | $mm^2$ | 2 x (1 ... 10) | | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (1 ... 6) | | | | | |
| • Finely stranded without end sleeve | | $mm^2$ | 2 x (1 ... 6) | | | | | |
| • AWG cables, solid or stranded | | AWG | 2 x (18 ... 8) | | | | | |
| **Auxiliary conductors** | | | | | | | | |
| • Operating devices | | | 3.0 x 0.5; 3.5 x 0.5 | | | | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 2.5) | | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5) | | | | | |
| • Finely stranded without end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5) | | | | | |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) | | | | | |
| **Main conductors** | | | **Ring lug terminal connection** | | | | | |
| • Terminal screw | | mm | M4, Pozidriv size 2 | | | | | |
| • Operating devices | | mm | Ø 5 ... 6 | | | | | |
| • Tightening torque | | Nm | 2 ... 2.5 | | | | | |
| • Usable ring lug terminals | | mm | $d_2$ = min. 4.3 | | | | | |
| - DIN 46234 without insulation sleeve<br>- DIN 46225 without insulation sleeve<br>- DIN 46237 with insulation sleeve<br>- JIS C2805 Type R without insulation sleeve<br>- JIS C2805 Type RAV with insulation sleeve<br>- JIS C2805 Type RAP with insulation sleeve | | mm | $d_3$ = max. 12.2 | | | | | |
| **Auxiliary conductors** | | | | | | | | |
| • Terminal screw | | | M3, Pozidriv size 2 | | | | | |
| • Operating devices | | mm | Ø 5 ... 6 | | | | | |
| • Tightening torque | | Nm | 0.8 ... 1.2 | | | | | |
| • Usable ring terminal lugs | | mm | $d_2$ = min. 3.2 | | | | | |
| | | mm | $d_3$ = max. 7.5 | | | | | |




[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

| Contactors | Size | | S00 | S0 | |
|---|---|---|---|---|---|
| | | | Screw or spring-type terminals | Screw or spring-type terminals | Screw or spring-type terminals |
| | | | Integrated or snap-on auxiliary switch block | 1- and 4-pole snap-on auxiliary switch block | Laterally mountable auxiliary switch block |
| **cULus and cULus rated data of the auxiliary contacts** | | | | | |
| Rated voltage | | V AC | 600 | 600 | 600 |
| Switching capacity | | | A 600, Q 600 | A 600, Q 600 | A 300, Q 300 |
| Uninterrupted current | • At 240 V AC | A | 10 | 10 | 10 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Type |  | | 3RT2035 | 3RT2036 | 3RT2037 | 3RT2038 |
| Size | | | S2 | S2 | S2 | S2 |
| Dimensions (W x H x D) | | mm | 55 x 114 x 130 | | | |
| • With mounted auxiliary switch block[1] | | mm | 55 x 114 x 174 / 55 x 114 x 178 | | | |
| • With mounted function module[1] | | mm | 55 x 114 x 199 / 55 x 114 x 202 | | | |
| **General data** | | | | | | |
| **Permissible mounting position** | | | | | | |
| The contactors are designed for operation on a vertical mounting surface. | | |  | | | |
| Upright mounting position | | | Special version required | | | |
| **Mechanical endurance** | | | | | | |
| • Basic units | Operating cycles | | 10 million | | | |
| • Basic units with snap-on auxiliary switch block | Operating cycles | | 10 million | | | |
| • Solid-state compatible auxiliary switch block | Operating cycles | | 5 million | | | |
| **Electrical endurance** | | | [2] | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | | |
| **Protective separation** between the coil and the main contacts (acc. to IEC 60947-1, Appendix N) | | V | 400 | | | |
| **Mirror contacts** | | | | | | |
| A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact. | | | | | | |
| • Integrated auxiliary switches | | | Yes, acc. to IEC 60947-4-1, Appendix F | | | |
| • 3RT202., 3RT232. (removable auxiliary switch block) | | | Yes, acc. to IEC 60947-4-1, Appendix F | | | |
| • 3RT202., 3RT232. (permanently mounted auxiliary switch block) | | | Yes, acc. to IEC 60947-4-1, Appendix F | | | |
| **Permissible ambient temperature** | | | | | | |
| • During operation | | °C | -25 ... +60 | | | |
| • During storage | | °C | -55 ... +80 | | | |
| **Protection class IP on the front** acc. to IEC 60529 | | | IP20 | | | |
| **Connection range** | | | IP00/open (where applicable, use additional terminal covers) | | | |
| **Touch protection on the front** acc. To IEC 60529 | | | Finger-safe, for vertical contact from the front (screw and spring-type terminal) | | | |
| **Shock resistance** rectangular pulse | | | | | | |
| • AC operation | | *g*/ms | 11.8/5 and 7.4/10 | | | |
| • AC/DC operation | | *g*/ms | 7.7/5 and 4.5/10 | | | |
| **Shock resistance** sine pulse | | | | | | |
| • AC operation | | *g*/ms | 18.5/5 and 11.6/10 | | | |
| • AC/DC operation | | *g*/ms | 12/5 and 7/10 | | | |
| **Conductor cross-sections** | | | [3] | | | |
| **Short-circuit protection** | | | | | | |
| **Main circuit** | | | Short-circuit protection for contactors with overload relays<br>See Configuration Manual "Configuring SIRIUS Innovations" [4]<br>Short-circuit protection for fuseless load feeders<br>See Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA2 Load Feeders" | | | |
| • Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1 | | | | | | |
| - Type of coordination "1" | | A | 160 | 160 | 250 | 250 |
| - Type of coordination "2" | | A | 80 | 80 | 125 | 160 |
| - Weld-free[5] | | A | On request | | | |
| **Auxiliary circuit** | | | | | | |
| • Fuse links, operational class gG: DIAZED, type 5SB; NEOZED, type 5SE (weld-free protection $I_k \leq 1$ kA) | | A | 10 | | | |
| • Miniature circuit breakers 230 V, C characteristic (short-circuit current $I_k < 400$ A) | | A | 10 | | | |

1) Dimensions for devices with screw terminals / spring-type terminals.
2) For contact endurance of the main contacts, see page 3/17.
3) For conductor cross-sections, see page 3/28.
4) See http://support.automation.siemens.com/WW/view/en/39714188
5) Test conditions according to IEC 60947-4-1.

| Type | | | | 3RT2035 | 3RT2036 | 3RT2037 | 3RT2038 |
|---|---|---|---|---|---|---|---|
| Size | | | | S2 | S2 | S2 | S2 |
| **Control** | | | | | | | |
| **Type of operating mechanism** | | | | AC | | | AC/DC |
| **Solenoid coil operating range** | | | | | | | |
| • AC operation, 50 Hz | | | | 0.8 ... 1.1 x $U_s$ | 0.8 ... 1.1 x $U_s$ | 0.8 ... 1.1 x $U_s$ | 0.8 ... 1.1 x $U_s$ |
| • AC operation, 60 Hz | | | | -- | 0.85 ... 1.1 x $U_s$ | 0.8 ... 1.1 x $U_s$ | 0.8 ... 1.1 x $U_s$ |
| • DC operation | | | | -- | | | 0.8 ... 1.1 x $U_s$ |
| **Power consumption of the solenoid coils** (for cold coil and 1.0 x $U_s$) | | | | | | | |
| • AC operation, 50 Hz, standard version | - Closing | | VA | 190 | -- | | |
| | - P.f. | | | 0.72 | -- | | |
| | - Closed | | VA | 16 | -- | | |
| | - P.f. | | | 0.37 | -- | | |
| • AC operation, 50/60 Hz, standard version | - Closing | | VA | -- | 210/188 | -- | |
| | - P.f. | | | -- | 0.69/0.65 | -- | |
| | - Closed | | VA | -- | 17.2/16.5 | -- | |
| | - P.f. | | | -- | 0.36/0.39 | -- | |
| • AC operation, 50/60 Hz, for USA/Canada | - Closing | | VA | -- | | 212/188 | -- |
| | - P.f. | | | -- | | 0.67/0.65 | -- |
| | - Closed | | VA | -- | | 18.516.5 | -- |
| | - P.f. | | | -- | | 0.37/0.39 | -- |
| • AC/DC operation | - Closing for AC operation | | VA | -- | | | 40 |
| | - P.f. | | | -- | | | 0.64/0.5 |
| | - Closed for AC operation | | VA | -- | | | 2 |
| | - P.f. | | | -- | | | 0.36/0.39 |
| | - Closing for DC operation | | W | -- | | | 23 |
| | - Closed for DC operation | | W | -- | | | 1 |
| **Permissible residual current of the electronics** (with 0 signal) | | | | | | | |
| • AC operation | | | mA | <20 | | | |
| • DC operation | | | mA | <20 | | | |
| **Operating times for 0.8 ... 1.1 x $U_s$** [1] | | | | | | | |
| Total break time = Opening delay + Arcing time | | | | | | | |
| • AC operation | - Closing delay | | ms | 10 ... 80 | | | 45 ... 70 |
| | - Opening delay | | ms | 10 ... 18 | | | 35 ... 55 |
| • DC operation | - Closing delay | | ms | -- | | | 45 ... 60 |
| | - Opening delay | | ms | -- | | | 35 ... 55 |
| • Arcing time | | | ms | 10 ... 20 | | | 10 ... 20 |
| **Operating times for 1.0 x $U_s$** [1] | | | | | | | |
| • AC operation | - Closing delay | | ms | 12 ...22 | | | 50 ... 60 |
| | - Opening delay | | ms | 10 ...18 | | | 40 ... 50 |
| • DC operation | - Closing delay | | ms | -- | | | 45 ... 55 |
| | - Opening delay | | ms | -- | | | 40 ... 50 |
| **Main circuit** | | | | | | | |
| ***Load rating with AC*** | | | | | | | |
| **Utilization category AC-1, switching resistive loads** | | | | | | | |
| • Rated operational current $I_e$ | At 40 °C up to 690 V | | A | 60 | 70 | 80 | 90 |
| | At 60 °C up to 690 V | | A | 55 | 60 | 70 | 80 |
| • Rated power for AC loads [2] | 230 V | | kW | 23 | 26 | 30 | 34 |
| P.f. = 0.95 (at 60 °C) | 400 V | | kW | 39 | 46 | 53 | 59 |
| | 690 V | | kW | 68 | 79 | 91 | 102 |
| • Minimum conductor | At 40 °C | | $mm^2$ | 16 | 25 | 25 | 35 |
| cross-section for loads with $I_e$ | At 60 °C | | $mm^2$ | 16 | 16 | 25 | 25 |
| **Utilization categories AC-2 and AC-3** | | | | | | | |
| • Rated operational currents $I_e$ | Up to 400 V | | A | 40 | 50 | 65 | 80 |
| | 440 V | | A | 40 | 50 | 65 | 80 |
| | 500 V | | A | 40 | 50 | 65 | 80 |
| | 690 V | | A | 24 | 24 | 47 | 58 |
| • Rated power for slipring | At 230 V | | kW | 11 | 15 | 18.5 | 22 |
| or squirrel-cage motors | 400 V | | kW | 18.5 | 22 | 30 | 37 |
| at 50 and 60 Hz | 690 V | | kW | 22 | 22 | 37 | 45 |
| **Thermal load capacity** | 10 s current [3] | | A | 400 | 420 | 520 | 640 |
| **Power loss per conducting path** | At $I_e$/AC-3 | | W | 2.2 | 4 | 3.8 | 5.7 |

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

[2] Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

[3] According to IEC 60947-4-1.
Rated values for various start-up conditions,
see Chapter 7, "Protection Equipment" → "Overload Relays".

| Type | | | | 3RT2035 | 3RT2036 | 3RT2037 | 3RT2038 |
|---|---|---|---|---|---|---|---|
| Size | | | | S2 | S2 | S2 | S2 |
| **Main circuit** | | | | | | | |
| ***Load rating with AC*** | | | | | | | |
| **Utilization category AC-4** (for $I_a$ = 6 x $I_e$) | | | | | | | |
| • Maximum values: | | | | | | | |
| - Rated operational current $I_e$ | Up to 400 V | A | | 35 | 41 | 55 | 55 |
| - Rated power for squirrel-cage motors with 50 Hz and 60 Hz | At 400 V | kW | | 18.5 | 22 | 30 | 30 |
| • The following applies to a contact endurance of about 200 000 operating cycles: | | | | | | | |
| - Rated operational currents $I_e$ | Up to 400 V | A | | 22 | 24 | 28 | 30 |
| | 690 V | A | | 18.5 | 20 | 22 | 24 |
| - Rated power for squirrel-cage motors with 50 Hz and 60 Hz | At 110 V | kW | | 3.2 | 3.5 | 4.1 | 4.3 |
| | 230 V | kW | | 6.7 | 7.3 | 8.5 | 9.1 |
| | 400 V | kW | | 11.6 | 12.6 | 14.7 | 15.8 |
| | 690 V | kW | | 16.8 | 18.2 | 20 | 21.8 |
| ***Load rating with DC*** | | | | | | | |
| **Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)** | | | | | | | |
| • Rated operational currents $I_e$ (at 60 °C) | | | | | | | |
| - 1 conducting path | Up to 24 V | A | | 55 | | | |
| | 60 V | A | | 23 | | | |
| | 110 V | A | | 4.5 | | | |
| | 220 V | A | | 1 | | | |
| | 440 V | A | | 0.4 | | | |
| | 600 V | A | | 0.25 | | | |
| - 2 conducting paths in series | Up to 24 V | A | | 55 | | | |
| | 60 V | A | | 45 | | | |
| | 110 V | A | | 25 | | | |
| | 220 V | A | | 5 | | | |
| | 440 V | A | | 1 | | | |
| | 600 V | A | | 0.8 | | | |
| - 3 conducting paths in series | Up to 24 V | A | | 55 | | | |
| | 60 V | A | | 55 | | | |
| | 110 V | A | | 55 | | | |
| | 220 V | A | | 45 | | | |
| | 440 V | A | | 2.9 | | | |
| | 600 V | A | | 1.4 | | | |
| **Utilization category DC-3/DC-5, shunt-wound and series-wound motors (*L/R* ≤ 15 ms)** | | | | | | | |
| • Rated operational currents $I_e$ (at 60 °C) | | | | | | | |
| - 1 conducting path | Up to 24 V | A | | 35 | | | |
| | 60 V | A | | 6 | | | |
| | 110 V | A | | 2.5 | | | |
| | 220 V | A | | 2 | | | |
| | 440 V | A | | 0.1 | | | |
| | 600 V | A | | 0.06 | | | |
| - 2 conducting paths in series | Up to 24 V | A | | 55 | | | |
| | 60 V | A | | 45 | | | |
| | 110 V | A | | 25 | | | |
| | 220 V | A | | 5 | | | |
| | 440 V | A | | 0.27 | | | |
| | 600 V | A | | 0.16 | | | |
| - 3 conducting paths in series | Up to 24 V | A | | 55 | | | |
| | 60 V | A | | 55 | | | |
| | 110 V | A | | 55 | | | |
| | 220 V | A | | 25 | | | |
| | 440 V | A | | 0.6 | | | |
| | 600 V | A | | 0.35 | | | |
| ***Switching frequency*** | | | | | | | |
| **Switching frequency *z*** in operating cycles/hour | | | | | | | |
| Contactors without overload relays | | | | | | | |
| • No-load switching frequency | AC | $h^{-1}$ | | 5 000 | | | |
| | AC/DC | $h^{-1}$ | | 1 500 | | | |
| • Switching frequency *z* during rated operation[1)] | | | | | | | |
| - $I_e$/AC-1 | At 400 V | $h^{-1}$ | | 1 200 | 1 000 | 800 | 700 |
| - $I_e$/AC-2 | At 400 V | $h^{-1}$ | | 750 | 600 | 400 | 350 |
| - $I_e$/AC-3 | At 400 V | $h^{-1}$ | | 1 000 | 800 | 700 | 500 |
| - $I_e$/AC-4 | At 400 V | $h^{-1}$ | | 300 | 250 | 200 | 150 |
| Contactors with overload relays | | | | | | | |
| • Mean value | | $h^{-1}$ | | 15 | | | |

1) Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*:
$z' = z \times (I_e/I') \times (400\ V/U')^{1.5} \times 1/h$

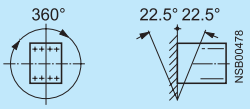
| Type | | 3RT2035 | 3RT2036 | 3RT2037 | 3RT2038 |
|---|---|---|---|---|---|
| Size | | S2 | S2 | S2 | S2 |
| **Conductor cross-sections (1 or 2 conductors connectable)** | | | | | |
| **Main conductors** | | Screw terminals | | | |
| • Solid or stranded | mm² | 2 x (1 ... 35)[1]; 1 x (1 ... 50)[1] | | | |
| • Finely stranded with end sleeve | mm² | 2 x (1 ... 25)[1]; 1 x (1 ... 35)[1] | | | |
| • AWG cables, solid or stranded | AWG | 2 x (18 ... 2)[1]; 1 x (18 ... 1)[1] | | | |
| • Terminal screws<br>- Tightening torque | Nm | Pozidriv size 2; ∅ 5 ... 6<br>3 ... 4.5 (27 ... 40 lb.in) | | | |
| **Auxiliary and control conductors** | | | | | |
| • Solid or stranded | mm² | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] | | | |
| • Finely stranded with end sleeve | mm² | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] | | | |
| • Solid or stranded AWG (2 x) | AWG | 2 x (20 ... 16)[1]; 2 x (18 ... 14)[1] | | | |
| • Terminal screws<br>- Tightening torque | Nm | M3 (for Pozidriv size 2, ∅ 5 ... 6)<br>0.8 ... 1.2 (7 ... 10.3 lb.in) | | | |
| **Auxiliary and control conductors**[2] | | Spring-type terminals | | | |
| • Operating devices[3] | mm | 3.0 x 0.5 | | | |
| • Solid or stranded | mm² | 2 x (0.5 ... 2.5) | | | |
| • Finely stranded with end sleeve | mm² | 2 x (0.5 ... 1.5) | | | |
| • Finely stranded without end sleeve | mm² | 2 x (0.5 ... 2.5) | | | |
| • AWG cables, solid or stranded | AWG | 2 x (20 ... 14) | | | |

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

2) Max. external diameter of the cable insulation: 3.6 mm.
On spring-type terminals with conductor cross-sections ≤ 1 mm², an insulation stop must be used, see Accessories, page 3/76.

3) Tool for opening the spring-type terminals;
see "Accessories", page 3/76.

## Technical data

| Contactor / Size / Type | | | | S3 3RT20 45 | S3 3RT20 46 | S3 3RT20 47 |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Permissible mounting position** The contactors are designed for operation on a vertical mounting surface. | | AC and DC operation | |   For DC operation and forward inclination up to 22.5°: coil voltage tolerance 0.85 ... 1.1 x $U_s$ | | |
| Upright mounting position: | | AC and DC operation | | Special design required. Positions 13 to 16 of the Order No. must be changed to **-1AA0**. Additional charge. | | |
| **Mechanical endurance** | Basic units | | Oper. cycles | 10 million | | |
| | Basic unit with snap-on auxiliary switch block | | | 10 million | | |
| | Solid-state compatible aux. switch block | | | 5 million | | |
| **Electrical endurance** | | | | See page 2/130. | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 6 | | |
| **Safe isolation** between coil and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | | |
| **Positively driven operation** There is positively driven operation if the NC and NO contacts cannot be closed at the same time | | 3RT20 4 ., 3RT23 4 ., 3RT24 5 . (removable aux. switch block) | | Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC) | | |
| | | 3RT20 4 ., 3RT23 4 ., 3RT24 5 . (permanent aux. switch block) | | in accordance with Swiss regulations (SUVA) on request. | | |
| **Permissible ambient temperature** | | in operation | °C | –25 ... +60 | | |
| | | when stored | °C | –55 ... +80 | | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 20 (terminal compartment IP 00), coil system IP 40 | | |
| **Shock resistance** | Rectangular pulse | AC and DC operation | *g*/ms | 6.8/5 and 4/10 | | |
| | Sine pulse | AC and DC operation | *g*/ms | 10.6/5 and 6.2/10 | | |
| **Conductor cross-sections** | | | | See page 2/149. | | |
| **Short-circuit protection of contactors without overload relays** | | | | For short-circuit protection of contactors with overload relays, see Section 3. For short-circuit protection of fuseless load feeders, see Section 4. | | |
| **Main circuit** Fuse links, utilization category gL/gG NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE – acc. to IEC 60 947-4/ EN 60 947-4-4 (VDE 0660 Part 102) | | Type of coord. "1" [1] | A | 250 | 250 | |
| | | Type of coord. "2" [1] | A | 125 | 160 | |
| | | Weld-free [2] | A | 63 | 100 | |
| **Auxiliary circuit** Fuse links, utilization category gL/gG DIAZED Type 5SB, NEOZED Type 5SE (weld-free protection at $I_k \geq 1$ kA) | | | A | 10 | | |
| or miniature circuit-breaker with C-characteristic (short-circuit current $I_k < 400$ A) | | | A | 10 | | |

1) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.

## Technical data

| Contactor | Size / Type | | | S3 3RT20 45 | S3 3RT20 46 | S3 3RT20 47 |
|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | |
| **Coil voltage tolerance** | | AC/DC | | 0.8 to 1.1 × $U_s$ | | |
| **Power consumption of the coils** (with coil in cold state and 1.0 × $U_s$) | | | | **Standard design** | | |
| AC operation | | | Hz | 50 / 50/60 | 50 / 50/60 | |
| | Closing | | VA | 218 / 247 /211 | 270 / 298 /274 | |
| | p.f. | | | 0.61 / 0.62/ 0.57 | 0.68 / 0.7/ 0.62 | |
| | Closed | | VA | 21 / 25 / 18 | 22 / 27 / 20 | |
| | p.f. | | | 0.26 / 0.27/ 0.3 | 0.27 / 0.29/ 0.31 | |
| | | | | **For USA and Canada** | | |
| | | | Hz | 50 / 60 | 50 / 60 | |
| | Closing | | VA | 218 / 232 | 270 / 300 | |
| | p.f. | | | 0.61 / 0.55 | 0.68 / 0.52 | |
| | Closed | | VA | 21 / 20 | 22 / 21 | |
| | p.f. | | | 0.26 / 0.28 | 0.27 / 0.29 | |
| DC operation | closing = closed | | W | 15 | 15 | |
| **Permissible residual current of the electronics** (with 0 signal) | | | | | | |
| | AC operation | | mA | < 25 mA × (230 V / $U_s$) | | |
| | DC operation | | mA | < 43 mA × (24 V / $U_s$) | | |
| **Operating times at 0.8 to 1.1 × $U_s$** [1] Break-time = opening time + arcing time | | | | | | |
| AC operation | closing time | | ms | 16 ... 57 | 17 ... 90 | |
| | opening time | | ms | 10 ... 19 | 10 ... 25 | |
| DC operation | closing time | | ms | 90 ... 230 | 90 ... 230 | |
| | opening time | | ms | 14 ... 20 | 14 ... 20 | |
| Arcing time | | | ms | 10 ... 15 | 10 ... 15 | |
| **Operating times at 1.0 × $U_s$** [1] | | | | | | |
| AC operation | closing time | | ms | 18 ... 34 | 18 ... 30 | |
| | opening time | | ms | 11 ... 18 | 11 ... 23 | |
| DC operation | closing time | | ms | 100 ... 120 | 100 ... 120 | |
| | opening time | | ms | 16 ... 20 | 16 ... 20 | |
| **Main circuit** | | | | | | |
| ***Load ratings with AC*** | | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | | |
| Rated operational currents $I_e$ | | at 40 °C up to 690 V | A | 100 | 120 | 120 |
| | | 1000 V | A | 50 | 60 | 70 |
| | | at 60 °C up to 690 V | A | 90 | 100 | 100 |
| | | 1000 V | A | 40 | 50 | 60 |
| Ratings of three-phase loads [2] p.f. = 0.95 (at 60 °C) | | at 230 V | kW | 34 | 38 | 38 |
| | | 400 V | kW | 59 | 66 | 66 |
| | | 500 V | kW | 74 | 82 | 82 |
| | | 690 V | kW | 102 | 114 | 114 |
| | | 1000 V | kW | 66 | 82 | 98 |
| Minimum conductor cross-section with $I_{e\ load}$ | | at 40 °C | mm² | 35 | 50 | 50 |
| | | 60 °C | mm² | 35 | 35 | 35 |
| **AC-2 and AC-3 utilization categories** | | | | | | |
| Rated operational currents $I_e$ | | up to 400 V | A | 65 | 80 | 95 |
| | | 500 V | A | 65 | 80 | 95 |
| | | 690 V | A | 47 | 58 | 58 |
| | | 1000 V | A | 25 | 30 | 30 |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz | | at 230 V | kW | 18.5 | 22 | 22 |
| | | 400 V | kW | 30 | 37 | 45 |
| | | 500 V | kW | 37 | 45 | 55 |
| | | 690 V | kW | 55 | 55 | 55 |
| | | 1000 V | kW | 30 | 37 | 37 |
| **Thermal loading capacity** | | 10 s current [3] | A | 600 | 760 | 760 |
| **Power loss per conducting path** | | at $I_e$/AC-3 | W | 4.6 | 7.7 | 10.8 |

1) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms, diode assem-

2) Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

3) Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

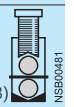
## Technical data

| Contactor / Size / Type | | | | S3 3RT20 45 | | S3 3RT20 46 | | S3 3RT20 47 | |
|---|---|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | | | |
| ***Load ratings with AC*** | | | | | | | | | |
| **AC-4 utilization category** (at $I_a = 6 \times I_e$) | | | | | | | | | |
| Rated operational current $I_e$ | up to 400 V | A | | 55 | | 66 | | 80 | |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 400 V | kW | | 30 | | 37 | | 45 | |
| • For a contact endurance of approx. 200 000 operating cycles: | | | | | | | | | |
| Rated operational currents $I_e$ | up to 400 V | A | | 28 | | 34 | | 42 | |
| | 690 V | A | | 28 | | 34 | | 42 | |
| | 1000 V | A | | 20 | | 23 | | 23 | |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 8.7 | | 10.4 | | 12 | |
| | 400 V | kW | | 15.1 | | 17.9 | | 22 | |
| | 500 V | kW | | 18.4 | | 22.4 | | 27 | |
| | 690 V | kW | | 25.4 | | 30.9 | | 38 | |
| | 1000 V | kW | | 22 | | 30 | | 30 | |
| **AC-5a utilization category, switching gas discharge lamps** per main conducting path at 230 V | | | | | | | | | |
| Rating per lamp | Rated operational current per lamp (A) | | | | | | | | |
| uncorrected | | | | | | | | | |
| L 18 W | 0.37 | Units | | 243 | | 270 | | | |
| L 36 W | 0.43 | Units | | 209 | | 232 | | | |
| L 58 W | 0.67 | Units | | 134 | | 149 | | | |
| lead-lag | | | | | | | | | |
| L 18 W | 0.11 | Units | | 818 | | 909 | | | |
| L 36 W | 0.21 | Units | | 428 | | 476 | | | |
| L 58 W | 0.32 | Units | | 281 | | 312 | | | |
| **Switching gas discharge lamps with correction, electronic ballast** per main conducting path at 230 V | | | | | | | | | |
| Rating per lamp | Capacitor (µF) | Rated operational current per lamp (A) | | | | | | | |
| Parallel correction | | | | | | | | | |
| L 18 W | 4.5 | 0.11 | Units | 160 | | 197 | | 234 | |
| L 36 W | 4.5 | 0.21 | Units | 160 | | 197 | | 234 | |
| L 58 W | 7 | 0.32 | Units | 103 | | 127 | | 150 | |
| With electronic ballast, single lamp | | | | | | | | | |
| L 18 W | 6.8 | 0.10 | Units | 455 | | 560 | | 665 | |
| L 36 W | 6.8 | 0.18 | Units | 253 | | 311 | | 369 | |
| L 58 W | 10 | 0.27 | Units | 168 | | 207 | | 246 | |
| With electronic ballast, twin lamp | | | | | | | | | |
| L 18 W | 10 | 0.18 | Units | 253 | | 311 | | 369 | |
| L 36 W | 10 | 0.35 | Units | 130 | | 160 | | 190 | |
| L 58 W | 22 | 0.52 | Units | 88 | | 108 | | 128 | |
| **AC-5b utilization category, switching incandescent lamps** per main conducting path at 230/220 V | | | kW | 9 | | 14.6 | | 17.3 | |
| **AC-6a utilization category, switching three-phase transformers** with inrush | | | n | 30 | 20 | 30 | 20 | 30 | 20 |
| Rated operational current $I_e$ | up to 400 V | A | | 42.3 | 63.5 | 56.3 | 80 | 56.3 | 84.4 |
| | 690 V | A | | 42.3 | 47 | 56.3 | 58 | 56.3 | 58 |
| Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x: $P_x = P_{n30} \cdot \frac{30}{x}$ | at 230 V | kVA | | 16.8 | 25.3 | 22.4 | 31.9 | 22.4 | 33.6 |
| | 400 V | kVA | | 29.3 | 43.9 | 39 | 55.4 | 39 | 58 |
| | 500 V | kVA | | 36.6 | 54.9 | 48.7 | 69.3 | 48.7 | 73.1 |
| | 690 V | kVA | | 50.3 | 56.2 | 67.3 | 69.3 | 67.3 | 69.3 |
| **AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors** Ambient temperature 40 °C | | | | | | | | | |
| Rated operational currents $I_e$ | up to 400 V | A | | 57 | | 72 | | | |
| Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and | at 230 V | kvar | | 24 | | 29 | | | |
| | 400 V | kvar | | 40 | | 50 | | | |
| | 525 V | kvar | | 50 | | 65 | | | |
| | 690 V | kvar | | 40 | | 50 | | | |

## Technical data

| Contactor | Size<br>Type | | S3<br>3RT20 45 | | | S3<br>3RT20 46 | | | S3<br>3RT20 47 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | | | | | |
| ***Load ratings with DC*** | | | | | | | | | | | |
| **DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)** | | | | | | | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | | | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| | up to 24 V | A | 90 | 90 | 90 | 100 | 100 | 100 | 100 | 100 | 100 |
| | 60 V | A | 23 | 90 | 90 | 60 | 100 | 100 | 60 | 100 | 100 |
| | 110 V | A | 4.5 | 90 | 90 | 9 | 100 | 100 | 9 | 100 | 100 |
| | 220 V | A | 1 | 5 | 70 | 2 | 10 | 80 | 2 | 10 | 80 |
| | 440 V | A | 0.4 | 1 | 2.9 | 0.6 | 1.8 | 1.8 | 0.6 | 1.8 | 4.5 |
| | 600 V | A | 0.26 | 0.8 | 1.4 | 0.4 | 1 | 1 | 0.4 | 1 | 2.6 |
| **DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)** | | | | | | | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | | | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| | up to 24 V | A | 40 | 90 | 90 | 40 | 100 | 100 | 40 | 100 | 100 |
| | 60 V | A | 6 | 90 | 90 | 6.5 | 100 | 100 | 6.5 | 100 | 100 |
| | 110 V | A | 2.5 | 90 | 90 | 2.5 | 100 | 100 | 2.5 | 100 | 100 |
| | 220 V | A | 1 | 7 | 35 | 1 | 7 | 35 | 1 | 7 | 35 |
| | 440 V | A | 0.15 | 0.42 | 0.8 | 0.15 | 0.42 | 0.8 | 0.15 | 0.42 | 0.8 |
| | 600 V | A | 0.06 | 0.16 | 0.35 | 0.06 | 0.16 | 0.35 | 0.06 | 0.16 | 0.35 |
| ***Operating frequency*** | | | | | | | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | AC | DC | | AC | DC | | AC | DC | |
| Contactors without overload relays | No-load operating frequency | 1/h | 5000 | 1000 | | 5000 | 1000 | | 5000 | 1000 | |
| Dependence of the operating frequency $z'$ on the operational current $I'$ and the operational voltage $U'$: | | | AC/DC | | | AC/DC | | | AC/DC | | |
| $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h | for AC-1 | 1/h | 1000 | | | 900 | | | 900 | | |
| | for AC-2 | 1/h | 400 | | | 400 | | | 350 | | |
| | for AC-3 | 1/h | 1000 | | | 1000 | | | 850 | | |
| | for AC-4 | 1/h | 300 | | | 300 | | | 250 | | |
| Contactors with overload relays (mean value) | | 1/h | 15 | | | 15 | | | 15 | | |

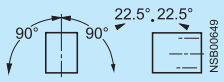
| Contactor | Size<br>Type | | S3<br>3RT20 4. | | |
|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | |
| **Screw connections** (1 or 2 conductor connections possible) | **Main conductor:** With box terminal | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | mm² | 2.5 ... 35 | 2.5 ... 50 | max. 2 × 35 |
| | Finely stranded without end sleeve | mm² | 4 ... 50 | 10 ... 50 | max. 2 × 35 |
| | Solid | mm² | 2.5 ... 16 | 2.5 ... 16 | max. 2 × 16 |
| | Stranded | mm² | 4 ... 70 | 10 ... 70 | max. 2 × 50 |
| | Ribbon cable (qty. × width × thickness) | mm | 6 × 9 × 0.8 | 6 × 9 × 0.8 | 2 × (6 × 9 × 0.8) |
| | AWG conductor connections, solid and stranded | AWG | 10 ... 2/0 | 10 ... 2/0 | 2 × (10 ... 1/0) |
| | – Terminal screws | | M 6 (hexagon socket) | | |
| | – Tightening torque | Nm | 4 ... 6 (36 ... 53 lb.in) | | |
| Connection for drilled copper bars | max. width | mm | 10 | If bars larger than 12 × 10 mm are connected, a 3RT19 46-4EA1 terminal cover is to comply with the phase clearance. | |
| Without box terminal<br>With cable lugs<br>(1 or 2 conductor connections possible) | Finely stranded with cable lug | mm² | 10 ... 50[1] | If conductors larger than 25 mm² are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance. | |
| | Stranded with cable lug | mm² | 10 ... 70[1] | | |
| | AWG conductor connections, solid or stranded | | 7 ... 1/0 | | |
| | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (20 ... 16); 2 × (18 ... 14); 1 × 12 | | |
| | – Terminal screws | | M 3 | | |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |
| **Cage Clamp connections** (1 or 2 conductor connections possible) | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.25 ... 2.5) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.25 ... 1.5) | | |
| | Finely stranded without end sleeve | mm² | 2 × (0.25 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (24 ... 14) | | |




- For tool for opening the Cage Clamp connection, see on accessories page 2/85
- An "insulation stop" must be used for conductor cross-sections ≤1 mm2, see accessories on page 2/85.
- Max. outer diameter of conductor insulation: 3.6 mm.
- For information about Cage Clamp connections, see Appendix page 19/17.

1) Only crimping cable lugs acc. to DIN 46 234

## Technical data

| Contactor / Size / Type | | | | S6 3RT10 54 | S6 3RT10 55 | S6 3RT10 56 |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  | | |
| **Mechanical endurance** | | | Oper. cycles | 10 million | | |
| **Electrical endurance** | | | | See page 2/130 | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | | |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | | |
| **Positively driven operation**<br>There is positively driven operation if the NC and NO contacts cannot be closed at the same time | | | | Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC) | | |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 | | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 | | |
| **Shock resistance** | Rectangular pulse<br>Sine pulse | | *g*/ms<br>*g*/ms | 8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 | | |
| **Conductor cross-sections** | | | | See page 2/152 | | |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 | | |
| **Short-circuit protection of contactors without overload relays** | | | | See Part 4. | | |
| **Main circuit**<br>Fuse links, utilization category gL/gG<br>NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE<br>– acc. to IEC 60 947-4-1/EN 60 947-4-1 | | Type of coord. "1" [1]<br>Type of coord. "2" [1]<br>Weld-free [2] | A<br>A<br>A | 355<br>315<br>80 | 355<br>315<br>160 | |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG<br>(weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_k < 400$ A) | | | A | 10 | | |

| Contactor / Size / Type | | | | S6 3RT10 5. | | | |
|---|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | | |
| **Coil voltage tolerance** | | AC/DC (UC) | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | | | |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism | | Solid-state op. mechanism | |
| | | | | $U_{s\,min}$ | $U_{s\,max}$ | $U_{s\,min}$ | $U_{s\,max}$ |
| AC operation | Closing<br>p.f.<br>Closed<br>p.f. | | VA<br><br>VA<br> | 250<br>0.9<br>4.8<br>0.8 | 300<br>0.9<br>5.8<br>0.8 | 190<br>0.8<br>3.5<br>0.5 | 280<br>0.8<br>4.4<br>0.4 |
| DC operation | Closing<br>Closed | | W<br>W | 300<br>4.3 | 360<br>5.2 | 250<br>2.3 | 320<br>2.8 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA | | | |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism | | Solid-state op. mechanism Operation via A1/A2 | PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 20 ... 95<br>40 ... 60 | | 95 ... 135<br>80 ... 90 | 35 ... 75<br>80 ... 90 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 25 ... 50<br>40 ... 60 | | 100 ... 120<br>80 ... 90 | 40 ... 60<br>80 ... 90 |
| Arcing time | | | ms | 10 ... 15 | | 10 ... 15 | 10 ... 15 |

1) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.

## Technical data

| Contactor / Size / Type | | | | S6 3RT10 54 | S6 3RT10 55 | S6 3RT10 56 |
|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | |
| ***Load ratings with AC*** | | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 690 V | A | | 160 | 185 | 215 |
| | at 60 °C up to 690 V | A | | 140 | 160 | 185 |
| | at 60 °C up to 1000 V | A | | 80 | 90 | 100 |
| Ratings of three-phase loads [1] p.f. = 0.95 (at 60 °C) | at 230 V | kW | | 53 | 60 | 70 |
| | 400 V | kW | | 92 | 105 | 121 |
| | 500 V | kW | | 115 | 131 | 152 |
| | 690 V | kW | | 159 | 181 | 210 |
| | 1000 V | kW | | 131 | 148 | 165 |
| Minimum conductor cross-section with $I_{e\ load}$ | at 40 °C | $mm^2$ | | 70 | 95 | 95 |
| | 60 °C | $mm^2$ | | 50 | 70 | 95 |
| **AC-2 and AC-3 utilization categories** | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | | 115 | 150 | 185 |
| | 690 V | A | | 115 | 150 | 170 |
| | 1000 V | A | | 53 | 65 | 65 |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 37 | 50 | 61 |
| | 400 V | kW | | 64 | 84 | 104 |
| | 500 V | kW | | 81 | 105 | 132 |
| | 690 V | kW | | 113 | 146 | 167 |
| | 1000 V | kW | | 75 | 90 | 90 |
| **Thermal loading capacity** | 10 s current [2] | A | | 1100 | 1300 | 1480 |
| **Power loss per conducting path** | at $I_e$/AC-3/500 V | W | | 7 | 9 | 13 |
| **AC-4 utilization category** (at $I_a = 6 \times I_e$) | | | | | | |
| Rated operational current $I_e$ | up to 400 V | A | | 97 | 132 | 160 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 400 V | kW | | 55 | 75 | 90 |
| • For a contact endurance of approx. 200 000 operating cycles: | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | | 54 | 68 | 81 |
| | 690 V | A | | 48 | 57 | 65 |
| | 1000 V | A | | 34 | 38 | 42 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 16 | 20 | 25 |
| | 400 V | kW | | 29 | 38 | 45 |
| | 500 V | kW | | 37 | 47 | 57 |
| | 690 V | kW | | 48 | 55 | 65 |
| | 1000 V | kW | | 49 | 55 | 60 |
| **AC-6a utilization category, switching three-phase transformers** with inrush | | | n | 30 / 20 | 30 / 20 | 30 / 20 |
| Rated operational current $I_e$ | up to 690 V | A | | 90 / 115 | 99 / 148 | 99 / 148 |
| Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x: $P_x = P_{n30} \cdot \frac{30}{x}$ | at 230 V | kVA | | 35 / 45 | 39 / 58 | 39 / 58 |
| | 400 V | kVA | | 62 / 79 | 68 / 102 | 68 / 102 |
| | 500 V | kVA | | 77 / 99 | 85 / 128 | 85 / 128 |
| | 690 V | kVA | | 107 / 137 | 118 / 176 | 118 / 176 |
| | 1000 V | kVA | | 80 / 80 | 98 / 98 | 117 / 117 |
| **AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors** Ambient temperature 40 °C | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | | 105 | 125 | 145 |
| Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and | at 230 V | kvar | | 42 | 50 | 58 |
| | 400 V | kvar | | 72 | 86 | 100 |
| | 500 V | kvar | | 90 | 108 | 125 |
| | 690 V | kvar | | 72 | 86 | 100 |

1) Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

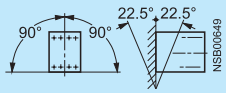
2) Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

## Technical data

| Contactor | Size / Type | | S6 3RT10 54 | S6 3RT10 55 | S6 3RT10 56 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| ***Load ratings with DC*** | | | | | |
| **DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)** | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 |
| | up to 24 V | A | 160 | 160 | 160 |
| | 60 V | A | 160 | 160 | 160 |
| | 110 V | A | 18 | 160 | 160 |
| | 220 V | A | 3.4 | 20 | 160 |
| | 440 V | A | 0.8 | 3.2 | 1.4 |
| | 600 V | A | 0.5 | 1.6 | 0.75 |
| **DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)** | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 |
| | up to 24 V | A | 160 | 160 | 160 |
| | 60 V | A | 7.5 | 160 | 160 |
| | 110 V | A | 2.5 | 160 | 160 |
| | 220 V | A | 0.6 | 2.5 | 160 |
| | 440 V | A | 0.17 | 0.65 | 11.5 |
| | 600 V | A | 0.12 | 0.37 | 4 |
| ***Operating frequency*** | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | |
| Contactors without overload relays | No-load operating frequency | 1/h | 2000 | | 2000 |
| Dependence of the operating frequency *z'* on the operational current *I'* and the operational voltage *U'*: | for AC-1 | 1/h | 800 | | 800 |
| | for AC-2 | 1/h | 400 | | 300 |
| | for AC-3 | 1/h | 1000 | | 750 |
| | for AC-4 | 1/h | 130 | | 130 |
| $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h | | | | | |
| Contactors with overload relays (mean value) | | 1/h | 60 | | 60 |

| Contactor | Size / Type | | S6 3RT10 5. |
|---|---|---|---|
| **Conductor cross-sections** | | | |
| **Screw connections** | **Main conductor:** with 3RT19 55-4G box terminal (75 HP) | | Front terminal connected / Back terminal connected / Both terminals connected |
| | finely stranded with end sleeve | mm² | 16 ... 70 / 16 ... 70 / max. 1 × 50, 1 × 70 |
| | Finely stranded without end sleeve | mm² | 16 ... 70 / 16 ... 70 / max. 1 × 50, 1 × 70 |
| | Stranded | mm² | 16 ... 70 / 16 ... 70 / max. 2 × 70 |
| | AWG conductor connections, solid/stranded | | 6 ... 2/0 / 6 ... 2/0 / max. 2 × 1/0 |
| | Ribbon cable (qty. x width × thickness) | mm | min. 3 × 9 × 0.8 / min. 3 × 9 × 0.8 |
| | | mm | max. 6 × 15.5 × 0.8 / max. 6 × 15.5 × 0.8 / max. 2 × (6 × 15,5 × 0.8) |
| | with 3RT19 56-4G box terminal | | |
| | Finely stranded with end sleeve | mm² | 16 ... 120 / 16 ... 120 / max. 1 × 95, 1 × 120 |
| | Finely stranded without end sleeve | mm² | 16 ... 120 / 16 ... 120 / max. 1 × 95, 1 × 120 |
| | Stranded | mm² | 16 ... 120 / 16 ... 120 / max. 2 × 120 |
| | AWG conductor connections, solid/stranded | | 6 ... 250 kcmil / 6 ... 250 kcmil / max. 2 × 3/0 |
| | Ribbon cable (qty. × width × thickness) | mm | min. 3 × 9 × 0.8 |
| | | mm | max. 10 × 15.5 × 0.8 / max. 10 × 15.5 × 0.8 / max. 2 × (10 × 15.5 × 0.8) |
| | – Terminal screws | | M 10 (hexagon socket, A/F4) |
| | – Tightening torque | Nm | 10 ... 12 (90 ... 110 lb.in) |
| | Without box terminal/busbar connection | | |
| | Finely stranded with cable lug | mm² | 16 ... 95 |
| | Stranded with cable lug | mm² | 25 ... 120 |
| | | | If cable lugs acc. to DIN 46 235 are connected, as of a conductor cross-section of 95 mm² a 3RT19 56-4EA1 terminal cover is necessary to comply with the phase clearance. |
| | AWG conductor connections, solid or stranded | AWG | 4 ... 250 kcmil |
| | Connecting bar (max. width) | mm | 17 |
| | – Terminal screws | | M 8 × 25 (A/F 13) |
| | – Tightening torque | Nm | 10 ... 14 (89 ... 124 lb.in) |
| | **Auxiliary conductor:** | | |
| | Solid | mm² | 2 × (0.5 ...1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) |
| | AWG conductor connections, solid or stranded | AWG | 2 × (18 ... 14) |
| | – Terminal screws | | M 3 (PZ 2) |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) |

## Technical data

| Contactor | Size<br>Type | | | S10<br>3RT10 64 | S10<br>3RT10 65 | S10<br>3RT10 66 |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  | | |
| **Mechanical endurance** | | | Oper. cycles | 10 million | | |
| **Electrical endurance** | | | | See page 2/130 | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | | |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | | |
| **Positively driven operation**<br>There is positively driven operation if the NC and NO contacts cannot be closed at the same time | | | | Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC) | | |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 | | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 | | |
| **Shock resistance** | Rectangular pulse<br>Sine pulse | | g/ms<br>g/ms | 8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 | | |
| **Conductor cross-sections** | | | | See page 2/155 | | |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 | | |
| **Short-circuit protection** | | | | | | |
| **Main circuit**<br>Fuse links, utilization category gL/gG<br>NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE<br>– acc. to IEC 60 947-4-1/EN 60 947-4-1 | | Type of coord. "1" [1]<br>Type of coord. "2" [1]<br>Weld-free [2] | A<br>A<br>A | 500<br>400<br>250 | | |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG<br>(weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_k < 400$ A) | | | A | 10 | | |

| Contactor | Size<br>Type | | | S10<br>3RT10 6. | | | |
|---|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | | |
| **Coil voltage tolerance** | | AC/DC (UC) | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | | | |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism | | Solid-state op. mechanism | |
| | | | | $U_{s\,min}$ | $U_{s\,max}$ | $U_{s\,min}$ | $U_{s\,max}$ |
| AC operation | closing<br>p.f.<br>closed<br>p.f. | | VA<br><br>VA<br> | 490<br>0.9<br>5.6<br>0.9 | 590<br>0.9<br>6.7<br>0.9 | 400<br>0.8<br>4<br>0.5 | 530<br>0.8<br>5<br>0.4 |
| DC operation | closing<br>closed | | W<br>W | 540<br>6.1 | 650<br>7.4 | 440<br>3.2 | 580<br>3.8 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V /≤ 30 mA | | | |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism | | Solid-state op. mechanism<br>Operation via<br>A1/A2 | PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 30 ... 95<br>40 ... 80 | | 105 ... 145<br>80 ... 100 | 45 ... 80<br>80 ... 100 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 35 ... 50<br>50 ... 80 | | 110 ... 130<br>80 ... 100 | 50 ... 65<br>80 ... 100 |
| Arcing time | | | ms | 10 ... 15 | | 10 ... 15 | 10 ... 15 |

1) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.

## Technical data

| Contactor / Size / Type | | | S10 3RT10 64 | S10 3RT10 65 | S10 3RT10 66 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| ***Load ratings with AC*** | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 690 V | A | 275 | 330 | |
| | at 60 °C up to 690 V | A | 250 | 300 | |
| | at 60 °C up to 1000 V | A | 100 | 150 | |
| Ratings of three-phase loads [1] p.f. = 0.95 (at 60 °C) | at 230 V | kW | 94 | 113 | |
| | 400 V | kW | 164 | 197 | |
| | 500 V | kW | 205 | 246 | |
| | 690 V | kW | 283 | 340 | |
| | 1000 V | kW | 164 | 246 | |
| Minimum conductor cross-section with $I_{e\ load}$ | at 40 °C | mm² | 150 | 185 | |
| | 60 °C | mm² | 120 | 185 | |
| **AC-2 and AC-3 utilization categories** | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | 225 | 265 | 300 |
| | 690 V | A | 225 | 265 | 280 |
| | 1000 V | A | 68 | 95 | 95 |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | 73 | 85 | 97 |
| | 400 V | kW | 128 | 151 | 171 |
| | 500 V | kW | 160 | 189 | 215 |
| | 690 V | kW | 223 | 265 | 280 |
| | 1000 V | kW | 90 | 132 | 132 |
| **Thermal loading capacity** | 10 s current [2] | A | 1800 | 2400 | 2400 |
| **Power loss per conducting path** | at $I_e$/AC-3/500 V | W | 17 | 18 | 22 |
| **AC-4 utilization category** (at $I_a = 6 \times I_e$) | | | | | |
| Rated operational current $I_e$ | up to 400 V | A | 195 | 230 | 280 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 400 V | kW | 110 | 132 | 160 |
| • For a contact endurance of approx. 200 000 operating cycles: | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | 96 | 117 | 125 |
| | 690 V | A | 85 | 105 | 115 |
| | 1000 V | A | 42 | 57 | 57 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | 30 | 37 | 40 |
| | 400 V | kW | 54 | 66 | 71 |
| | 500 V | kW | 67 | 82 | 87 |
| | 690 V | kW | 82 | 102 | 112 |
| | 1000 V | kW | 59 | 80 | 80 |
| **AC-6a utilization category, switching three-phase transformers** with inrush | | n | 30 / 20 | 30 / 20 | 30 / 20 |
| Rated operational current $I_e$ | up to 690 V | A | 151 / 227 | 182 / 265 | 182 / 273 |
| Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x: $P_x = P_{n30} \cdot \frac{30}{x}$ | at 230 V | kVA | 60 / 90 | 72 / 105 | 72 / 109 |
| | 400 V | kVA | 105 / 157 | 126 / 183 | 126 / 189 |
| | 500 V | kVA | 130 / 196 | 158 / 229 | 158 / 236 |
| | 690 V | kVA | 180 / 271 | 217 / 317 | 217 / 326 |
| | 1000 V | kVA | 117 / 117 | 164 / 164 | 164 / 164 |
| **AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors** Ambient temperature 40 °C | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | 183 | 220 | |
| Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and | at 230 V | kvar | 73 | 88 | |
| | 400 V | kvar | 127 | 152 | |
| | 500 V | kvar | 159 | 191 | |
| | 690 V | kvar | 127 | 152 | |

1) Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

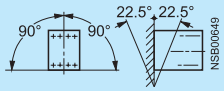
2) Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

## Technical data

| Contactor | Size<br>Type | | S10<br>3RT10 64 | | | S10<br>3RT10 65 | | | S10<br>3RT10 66 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | | | | | |
| ***Load ratings with DC*** | | | | | | | | | | | |
| **DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)** | | | | | | | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | | | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| | up to 24 V | A | 200 | 200 | 200 | 300 | 300 | 300 | | | |
| | 60 V | A | 200 | 200 | 200 | 300 | 300 | 300 | | | |
| | 110 V | A | 18 | 200 | 200 | 33 | 300 | 300 | | | |
| | 220 V | A | 3.4 | 20 | 200 | 3.8 | 300 | 300 | | | |
| | 440 V | A | 0.8 | 3.2 | 11.5 | 0.9 | 4 | 11 | | | |
| | 600 V | A | 0.5 | 1.6 | 4 | 0.6 | 2 | 5.2 | | | |
| **DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)** | | | | | | | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | | | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| | up to 24 V | A | 200 | 200 | 200 | 300 | 300 | 300 | | | |
| | 60 V | A | 7.5 | 200 | 200 | 11 | 300 | 300 | | | |
| | 110 V | A | 2.5 | 200 | 200 | 3 | 300 | 300 | | | |
| | 220 V | A | 0.6 | 2.5 | 200 | 0.6 | 2.5 | 300 | | | |
| | 440 V | A | 0.17 | 0.65 | 1.4 | 0.18 | 0.65 | 1.4 | | | |
| | 600 V | A | 0.12 | 0.37 | 0.75 | 0.125 | 0.37 | 0.75 | | | |
| ***Operating frequency*** | | | | | | | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | | | | | | | |
| Contactors without overload relays | No-load operating frequency | 1/h | 2000 | | | 2000 | | | 2000 | | |
| Dependence of the operating frequency *z'* on the operational current *I'* and the operational voltage *U'*: | for AC-1 | 1/h | 750 | | | 800 | | | 750 | | |
| | for AC-2 | 1/h | 250 | | | 300 | | | 250 | | |
| | for AC-3 | 1/h | 500 | | | 700 | | | 500 | | |
| | for AC-4 | 1/h | 130 | | | 130 | | | 130 | | |
| $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h | | | | | | | | | | | |
| Contactors with overload relays (mean value) | | 1/h | 60 | | | 60 | | | 60 | | |

| Contactor | Size<br>Type | | S10<br>3RT10 6. | | |
|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | |
| **Screw connections** | **Main conductor:**<br>with 3RT19 66-4G box terminal | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Finely stranded without end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Stranded | mm² | 95 ... 300 | 120 ... 240 | min. 2 × 70, max. 2 × 240 |
| | AWG conductor connections, solid or stranded | AWG | 3/0 ... 600 kcmil | 250 ... 500 kcmil | min. 2 × 2/0, max. 2 × 500 kcmil |
| | Ribbon cable (qty. × width × thickness) | mm | min. 6 × 9 × 0.8 | min. 6 × 9 × 0.8 | |
| | – Terminal screws | mm | max. 20 × 24 × 0.5<br>M 12 (hexagon sokket, A/F 5) | max. 20 × 24 × 0.5 | max. 2 × (20 × 24 × 0.5) |
| | – Tightening torque | Nm | 20 ... 22 (180 ... 195 lb.in) | | |
| | Without box terminal/busbar connection | | | | |
| | Finely stranded with cable lug | mm² | 50 ... 240 | If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross-section of 240 mm² and acc. to DIN 46 235 as of a conductor cross-section of 185 mm² a 3RT19 66-4EA1 terminal cover is necessary to comply with the phase clearance. | |
| | Stranded with cable lug | mm² | 70 ... 240 | | |
| | AWG conductor connections, solid or stranded | AWG | 2/0 ... 500 kcmil | | |
| | Connecting bar (max. width) | mm | 25 | | |
| | – Terminal screws | | M 10 × 30 (A/F 17) | | |
| | – Tightening torque | Nm | 14 ... 24 (124 ... 210 lb.in) | | |
| | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (18 ... 14) | | |
| | – Terminal screws | | M 3 (PZ 2) | | |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |

## Technical data

| Contactor / Size / Type | | | | S12 3RT10 75 | S12 3RT10 76 |
|---|---|---|---|---|---|
| **General data** | | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  | |
| **Mechanical endurance** | | | Oper. cycles | 10 million | |
| **Electrical endurance** | | | | See page 2/130 | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | |
| **Positively driven operation**<br>There is positively driven operation if the NC and NO contacts cannot be closed at the same time | | | | Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC) | |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 | |
| **Shock resistance** | Rectangular pulse<br>Sine pulse | | *g*/ms<br>*g*/ms | 8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 | |
| **Conductor cross-sections** | | | | See page 2/158 | |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 | |
| **Short-circuit protection** | | | | | |
| **Main circuit**<br>Fuse links, utilization category gL/gG<br>NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE<br>– to IEC 60 947-4/EN 60 947-4-4 (VDE 0660 Part 102) | Type of coord. "1" [1]<br>Type of coord. "2" [1]<br>Weld-free [2] | | A<br>A<br>A | 630<br>500<br>250 | 630<br>500<br>315 |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG<br>(weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_k < 400$ A) | | | A | 10 | |
| **Control circuit** | | | | | |
| **Coil voltage tolerance** | | AC/DC (UC) | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism<br>$U_{s\,min}$ / $U_{s\,max}$ | Solid-state op. mechanism<br>$U_{s\,min}$ / $U_{s\,max}$ |
| AC operation | closing<br>p.f.<br>closed<br>p.f. | | VA<br><br>VA<br> | 700 / 830<br>0.9 / 0.9<br>7.6 / 9.2<br>0.9 / 0.9 | 560 / 750<br>0.8 / 0.8<br>5.4 / 7<br>0.8 / 0.8 |
| DC operation | closing<br>closed | | W<br>W | 770 / 920<br>8.5 / 10 | 600 / 800<br>4 / 5 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA | |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism | Solid-state op. mechanism<br>Operation via<br>A1/A2 / PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 45 ... 100<br>60 ... 100 | 120 ... 150 / 60 ... 90<br>80 ... 100 / 80 ... 100 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 50 ... 70<br>70 ... 100 | 125 ... 150 / 65 ... 80<br>80 ... 100 / 80 ... 100 |
| Arcing time | | | ms | 10 ... 15 | 10 ... 15 / 10 ... 15 |

1) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.

## Technical data

| Contactor / Size / Type | | | | S12 3RT10 75 | | S12 3RT10 76 | |
|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | |
| ***Load ratings with AC*** | | | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 690 V | | A | 430 | | 610 | |
| | at 60 °C up to 690 V | | A | 400 | | 550 [3] | |
| | at 60 °C up to 1000 V | | A | 200 | | 200 | |
| Ratings of three-phase loads [1] p.f. = 0.95 (at 60 °C) | at 230 V | | kW | 151 | | 208 | |
| | 400 V | | kW | 263 | | 362 | |
| | 500 V | | kW | 329 | | 452 | |
| | 690 V | | kW | 454 | | 624 | |
| | 1000 V | | kW | 329 | | 329 | |
| Minimum conductor cross-section with $I_{e\ load}$ | at 40 °C | | $mm^2$ | 2 × 150 | | 2 × 185 | |
| | 60 °C | | $mm^2$ | 240 | | 2 × 185 | |
| **AC-2 and AC-3 utilization categories** | | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | | A | 400 | | 500 [4] | |
| | 690 V | | A | 400 | | 450 | |
| | 1000 V | | A | 180 | | 180 | |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | | kW | 132 | | 164 | |
| | 400 V | | kW | 231 | | 291 | |
| | 500 V | | kW | 291 | | 363 | |
| | 690 V | | kW | 400 | | 453 | |
| | 1000 V | | kW | 250 | | 250 | |
| **Thermal loading capacity** | 10 s current [2] | | A | 3200 | | 4000 | |
| **Power loss per conducting path** | at $I_e$/AC-3/500 V | | W | 35 | | 55 | |
| **AC-4 utilization category** (at $I_a = 6 \times I_e$) | | | | | | | |
| Rated operational current $I_e$ | up to 400 V | | A | 350 | | 430 | |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 400 V | | kW | 200 | | 250 | |
| • For a contact endurance of approx. 200 000 operating cycles: | | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | | A | 150 | | 175 | |
| | 690 V | | A | 135 | | 150 | |
| | 1000 V | | A | 80 | | 80 | |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | | kW | 48 | | 56 | |
| | 400 V | | kW | 85 | | 98 | |
| | 500 V | | kW | 105 | | 123 | |
| | 690 V | | kW | 133 | | 148 | |
| | 1000 V | | kW | 113 | | 113 | |
| **AC-6a utilization category, switching three-phase transformers** with inrush | | | n | 30 | 20 | 30 | 20 |
| Rated operational current $I_e$ | up to 690 V | | A | 251 | 377 | 270 | 404 |
| Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x: $P_x = P_{n\,30} \cdot \frac{30}{x}$ | at 230 V | | kVA | 100 | 150 | 107 | 161 |
| | 400 V | | kVA | 173 | 261 | 187 | 280 |
| | 500 V | | kVA | 217 | 326 | 234 | 350 |
| | 690 V | | kVA | 300 | 450 | 323 | 483 |
| | 1000 V | | kVA | 311 | 311 | 311 | 311 |
| **AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors** Ambient temperature 40 °C | | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | | A | 287 | | 407 | |
| Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and | at 230 V | | kvar | 114 | | 162 | |
| | 400 V | | kvar | 199 | | 282 | |
| | 500 V | | kvar | 248 | | 352 | |
| | 690 V | | kvar | 199 | | 282 | |

1) Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

2) Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

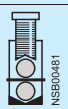
3) Ambient temperature 50 °C for 3RT10 76-.N contactor

4) Ambient temperature 55 °C for 3RT10 76-.N contactor

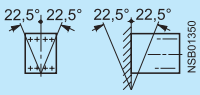
## Technical data

| Contactor | Size / Type | | S12 3RT10 75 | | | S12 3RT10 76 |
|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | |
| ***Load ratings with DC*** | | | | | | |
| **DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)** | | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 | |
| | up to 24 V | A | 400 | 400 | 400 | |
| | 60 V | A | 330 | 400 | 400 | |
| | 110 V | A | 33 | 400 | 400 | |
| | 220 V | A | 3.8 | 400 | 400 | |
| | 440 V | A | 0.9 | 4 | 11 | |
| | 600 V | A | 0.6 | 2 | 5.2 | |
| **DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)** | | | | | | |
| **Rated operational current $I_e$** (at 60 °C) | | | | | | |
| | Number of conducting paths connected in series | | 1 | 2 | 3 | |
| | up to 24 V | A | 400 | 400 | 400 | |
| | 60 V | A | 11 | 400 | 400 | |
| | 110 V | A | 3 | 400 | 400 | |
| | 220 V | A | 0.6 | 2.5 | 400 | |
| | 440 V | A | 0.18 | 0.65 | 1.4 | |
| | 600 V | A | 0.125 | 0.37 | 0.75 | |
| ***Operating frequency*** | | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | | |
| Contactors without overload relays | No-load operating frequency | 1/h | 2000 | | | 2000 |
| Dependence of the operating frequency *z'* on the operational current *I'* and the operational voltage *U'*: | for AC-1 | 1/h | 700 | | | 500 |
| | for AC-2 | 1/h | 200 | | | 170 |
| | for AC-3 | 1/h | 500 | | | 420 |
| | for AC-4 | 1/h | 130 | | | 130 |
| $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h | | | | | | |
| Contactors with overload relays (mean value) | | 1/h | 60 | | | 60 |

| Contactor | Size / Type | | S12 3RT10 7. | | |
|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | |
| **Screw connections** | **Main conductor:** with 3RT19 66-4G box terminal | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Finely stranded without end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Stranded | mm² | 95 ... 300 | 120 ... 240 | min. 2 × 70, max. 2 × 240 |
| | AWG conductor connections, solid or stranded | AWG | 3/0 ... 600 kcmil | 250 ... 500 kcmil | min. 2 × 2/0, max. 2 × 500 kcmil |
| | Ribbon cable (qty. × width × thickness) | mm | min. 6 × 9 × 0.8 | min. 6 × 9 × 0.8 | |
| | | mm | max. 20 × 24 × 0.5 | max. 20 × 24 × 0.5 | max. 2 × (20 × 24 × 0.5) |
| | – Terminal screws | | M 12 (hexagon socket, A/F 5) | | |
| | – Tightening torque | Nm | 20 ... 22 (180 ... 195 lb.in) | | |
| | Without box terminal/busbar connection | | | | |
| | Finely stranded with cable lug | mm² | 50 ... 240 | If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross-section of 240 mm² and acc. to DIN 46 235 as of a conductor cross-section of 185 mm² a 3RT19 66-4EA1 terminal cover is necessary to comply with the phase clearance. | |
| | Stranded with cable lug | mm² | 70 ... 240 | | |
| | AWG conductor connections, solid or stranded | AWG | 2/0 ... 500 kcmil | | |
| | Connecting bar (max. width) | mm | 25 | | |
| | – Terminal screws | | M 10 × 30 (A/F 17) | | |
| | – Tightening torque | Nm | 14 ... 24 (124 ... 210 lb.in) | | |
| | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (18 ... 14) | | |
| | – Terminal screws | | M 3 (PZ 2) | | |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |



## Technical data

| Contactor / Size / Type | | | | S10 3RT12 64 | S10 3RT12 65 | S10 3RT12 66 |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  | | |
| **Mechanical endurance** | | | Oper. cycles | 10 million | | |
| **Electrical endurance** | | | | See page 2/130 | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | | |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | | |
| **Positively driven operation**<br>There is positively driven operation if the NC and NO contacts cannot be closed at the same time | | | | Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC) | | |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 | | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 | | |
| **Shock resistance** | Rectangular pulse<br>Sine pulse | | g/ms<br>g/ms | 8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 | | |
| **Conductor cross-sections** | | | | See page 2/161 | | |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 | | |
| **Short-circuit protection** | | | | | | |
| **Main circuit**<br>Fuse links, utilization category gL/gG<br>NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE<br>– to IEC 60 947-4/EN 60 947-4-4 (VDE 0660Part 102) | Type of coord. "1" [1]<br>Type of coord. "2" [1]<br>Weld-free [2] | | A<br>A<br>A | 500<br>500<br>400 | | |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG<br>(weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_k < 400$ A) | | | A | 10 | | |
| **Control circuit** | | | | | | |
| **Coil voltage tolerance** | | AC/DC (UC) | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | | |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism | | Solid-state op. mechanism | |
| | | | | $U_{s\,min}$ | $U_{s\,max}$ | $U_{s\,min}$ | $U_{s\,max}$ |
| AC operation | closing<br>p.f.<br>closed<br>p.f. | | VA<br><br>VA<br> | 530<br>0.9<br>6.1<br>0.9 | 630<br>0.9<br>7.4<br>0.9 | 420<br>0.8<br>4.3<br>0.8 | 570<br>0.8<br>5.6<br>0.8 |
| DC operation | closing<br>closed | | W<br>W | 580<br>6.8 | 700<br>8.2 | 460<br>3.4 | 630<br>4.2 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA | | | |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism | | Solid-state op. mechanism<br>Operation via<br>A1/A2 | PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 30 ... 95<br>40 ... 80 | | 105 ... 145<br>80 ... 100 | 45 ... 80<br>80 ... 100 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 35 ... 50<br>50 ... 80 | | 110 ... 130<br>80 ... 100 | 50 ... 65<br>80 ... 100 |
| Arcing time | | | ms | 10 ... 15 | | 10 ... 15 | 10 ... 15 |

1) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.

## Technical data

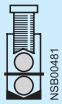
| Contactor / Size / Type | | | | S10 3RT12 64 | S10 3RT12 65 | S10 3RT12 66 |
|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | |
| ***Load ratings with AC*** | | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 1000 V | A | | 330 | | |
| | at 60 °C up to 1000 V | A | | 300 | | |
| Ratings of three-phase loads [1] p.f. = 0.95 (at 60 °C) | at 230 V | kW | | 113 | | |
| | 400 V | kW | | 197 | | |
| | 500 V | kW | | 246 | | |
| | 690 V | kW | | 340 | | |
| | 1000 V | kW | | 492 | | |
| Minimum conductor cross-section with $I_{e\ load}$ | at 40 °C | $mm^2$ | | 185 | | |
| | 60 °C | $mm^2$ | | 185 | | |
| **AC-2 and AC-3 utilization categories** | | | | | | |
| Rated operational currents $I_e$ | up to 1000 V | A | | 225 | 265 | 300 |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 73 | 85 | 97 |
| | 400 V | kW | | 128 | 151 | 171 |
| | 500 V | kW | | 160 | 189 | 215 |
| | 690 V | kW | | 223 | 265 | 288 |
| | 1000 V | kW | | 320 | 378 | 428 |
| **Thermal loading capacity** | 10 s current [2] | A | | 1800 | 2120 | 2400 |
| **Power loss per conducting path** | at $I_e$/AC-3 | W | | 9 | 12 | 14 |
| **AC-4 utilization category** (at $I_a = 6 \times I_e$) | | | | | | |
| Rated operational current $I_e$ | up to 690 V | A | | 195 | 230 | 280 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 400 V | kW | | 110 | 132 | 160 |
| • For a contact endurance of approx. 400 000 operating cycles: | | | | | | |
| Rated operational currents $I_e$ | up to 690 V | A | | 97 | 115 | 140 |
| | 1000 V | A | | 68 | 81 | 98 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 30 | 37 | 45 |
| | 400 V | kW | | 55 | 65 | 79 |
| | 500 V | kW | | 68 | 81 | 98 |
| | 690 V | kW | | 94 | 112 | 138 |
| | 1000 V | kW | | 95 | 114 | 140 |
| **AC-6a utilization category, switching three-phase transformers** with inrush | | | n | 30 | 20 | |
| Rated operational current $I_e$ | up to 690 V | A | | 185 | 278 | |
| Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x: | at 230 V | kVA | | 74 | 111 | |
| | 400 V | kVA | | 128 | 193 | |
| | 500 V | kVA | | 160 | 241 | |
| | 690 V | kVA | | 221 | 332 | |
| | 1000 V | kVA | | 320 | 482 | |
| $P_x = P_{n\,30} \cdot \frac{30}{x}$ | | | | | | |
| **AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors** Ambient temperature 40 °C | | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | | 220 | | |
| Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and | at 230 V | kvar | | 88 | | |
| | 400 V | kvar | | 152 | | |
| | 500 V | kvar | | 191 | | |
| | 690 V | kvar | | 152 | | |
| ***Operating frequency*** | | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | | |
| Contactors without overload relays | No-load operating frequency | 1/h | | 2000 | 2000 | |
| Dependence of the operating frequency $z'$ on the operational current $I'$ and the operational voltage $U'$: | for AC-1 | 1/h | | 800 | 750 | |
| | for AC-2 | 1/h | | 300 | 250 | |
| | for AC-3 | 1/h | | 750 | 750 | |
| | for AC-4 | 1/h | | 250 | 250 | |
| $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h | | | | | | |
| Contactors with overload relays (mean value) | | 1/h | | 60 | 60 | |

1) Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

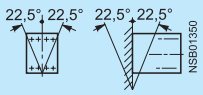
2) Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

## Technical data

| Contactor | Size<br>Type | | S10<br>3RT12 6. | | |
|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | |
| **Screw connections** | **Main conductor:**<br>with 3RT19 66-4G box terminal | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Finely stranded without end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Stranded | mm² | 95 ... 300 | 120 ... 240 | min. 2 × 70, max. 2 × 240 |
| | AWG conductor connections, solid or stranded | AWG | 3/0 ... 600 kcmil | 250 ... 500 kcmil | min. 2 × 2/0, max. 1 × 500 kcmil |
| | Ribbon cable (qty. × width × thickness) | mm<br>mm | min. 6 × 9 × 0.8<br>max. 20 × 24 × 0.5 | min. 6 × 9 × 0.8<br>max. 20 × 24 × 0.5 | max. 2 × (20 × 24 × 0.5) |
| | – Terminal screws | | M 12 (hexagon socket, A/F 5) | | |
| | – Tightening torque | Nm | 20 ... 22 (180 ... 195 lb.in) | | |
| | Without box terminal/busbar connection | | | | |
| | Finely stranded with cable lug | mm² | 50 ... 240 | If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross-section of 240 mm² and acc. to DIN 46 235 as of a conductor cross-section of 185 mm² a 3RT19 66-4EA1 terminal cover is necessary to comply with the phase clearance. | |
| | Stranded with cable lug | mm² | 70 ... 240 | | |
| | AWG conductor connections, solid or stranded | AWG | 2/0 ... 500 kcmil | | |
| | Connecting bar (max. width) | mm | 25 | | |
| | – Terminal screws | | M 10 × 30 (A/F 17) | | |
| | – Tightening torque | Nm | 14 ... 24 (124 ... 210 lb.in) | | |
| | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (18 ... 14) | | |
| | – Terminal screws | | M 3 (PZ 2) | | |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |



## Technical data

| Contactor | Size<br>Type | | | S12<br>3RT12 75 | S12<br>3RT12 76 |
|---|---|---|---|---|---|
| **General data** | | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  | |
| **Mechanical endurance** | | | Oper. cycles | 10 million | |
| **Electrical endurance** | | | | See page 2/130 | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | |
| **Positively driven operation**<br>There is positively driven operation if the NC and NO contacts cannot be closed at the same time | | | | Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC) | |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 | |
| **Shock resistance** | Rectangular pulse<br>Sine pulse | | *g*/ms<br>*g*/ms | 8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 | |
| **Conductor cross-sections** | | | | See page 2/164 | |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 | |
| **Short-circuit protection** | | | | | |
| **Main circuit**<br>Fuse links, utilization category gL/gG<br>NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE<br>– to IEC 60 947-4/EN 60 947-4-4 (VDE 0660Part 102) | Type of coord. "1" [1]<br>Type of coord. "2" [1]<br>Weld-free [2] | | A<br>A<br>A | 800<br>800<br>500 | |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG<br>(weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_K < 400$ A) | | | A | 10 | |
| **Control circuit** | | | | | |
| **Coil voltage tolerance** | | AC/DC (UC) | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism | Solid-state op. mechanism |
| | | | | $U_{s\,min}$ / $U_{s\,max}$ | $U_{s\,min}$ / $U_{s\,max}$ |
| AC operation | closing<br>p.f.<br>closed<br>p.f. | | VA<br><br>VA<br> | 700 / 830<br>0.9 / 0.9<br>7.6 / 9.2<br>0.9 / 0.9 | 560 / 750<br>0.8 / 0.8<br>5.4 / 7<br>0.8 / 0.8 |
| DC operation | closing<br>closed | | W<br>W | 770 / 920<br>8.5 / 10 | 600 / 800<br>4 / 5 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA | |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism | Solid-state op. mechanism<br>Operation via<br>A1/A2 / PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 45 ... 100<br>60 ... 100 | 120 ... 150 / 60 ... 90<br>80 ... 100 / 80 ... 100 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time<br>opening time | | ms<br>ms | 50 ... 70<br>70 ... 100 | 125 ... 150 / 65 ... 80<br>80 ... 100 / 80 ... 100 |
| Arcing time | | | ms | 10 ... 15 | 10 ... 15 / 10 ... 15 |

1) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.

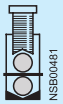
## Technical data

| Contactor / Size / Type | | | | S12 3RT12 75 | S12 3RT12 76 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| ***Load ratings with AC*** | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 1000 V | A | | 610 | |
| | at 60 °C up to 1000 V | A | | 550 | |
| Ratings of three-phase loads [1] p.f. = 0.95 (at 60 °C) | at 230 V | kW | | 208 | |
| | 400 V | kW | | 362 | |
| | 500 V | kW | | 452 | |
| | 690 V | kW | | 624 | |
| | 1000 V | kW | | 905 | |
| Minimum conductor cross-section with $I_{e\ load}$ | at 40 °C | $mm^2$ | | 2 × 185 | |
| | 60 °C | $mm^2$ | | 2 × 185 | |
| **AC-2 and AC-3 utilization categories** | | | | | |
| Rated operational currents $I_e$ | up to 1000 V | A | | 400 | 500 |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 132 | 164 |
| | 400 V | kW | | 231 | 291 |
| | 500 V | kW | | 291 | 363 |
| | 690 V | kW | | 400 | 507 |
| | 1000 V | kW | | 578 | 728 |
| **Thermal loading capacity** | 10 s current [2] | A | | 3200 | 4000 |
| **Power loss per conducting path** | at $I_e$/AC-3 | W | | 21 | 32 |
| **AC-4 utilization category** (at $I_a = 6 \times I_e$) | | | | | |
| Rated operational current $I_e$ | up to 690 V | A | | 350 | 430 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 400 V | kW | | 200 | 250 |
| • For a contact endurance of approx. 400 000 operating cycles: | | | | | |
| Rated operational currents $I_e$ | up to 690 V | A | | 175 | 215 |
| | 1000 V | A | | 123 | 151 |
| Ratings of squirrel-cage motors at 50 Hz and 60 Hz | at 230 V | kW | | 56 | 70 |
| | 400 V | kW | | 98 | 122 |
| | 500 V | kW | | 124 | 153 |
| | 690 V | kW | | 172 | 212 |
| | 1000 V | kW | | 183 | 217 |
| **AC-6a utilization category, switching three-phase transformers** with inrush | | n | | 30 | 20 |
| Rated operational current $I_e$ | up to 690 V | A | | 279 | 419 |
| Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x: $P_x = P_{n\,30} \cdot \frac{30}{x}$ | at 230 V | kVA | | 111 | 167 |
| | 400 V | kVA | | 193 | 290 |
| | 500 V | kVA | | 241 | 363 |
| | 690 V | kVA | | 332 | 501 |
| | 1000 V | kVA | | 482 | 726 |
| **AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors** Ambient temperature 40 °C | | | | | |
| Rated operational currents $I_e$ | up to 500 V | A | | 407 | |
| Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and | at 230 V | kvar | | 162 | |
| | 400 V | kvar | | 282 | |
| | 500 V | kvar | | 352 | |
| | 690 V | kvar | | 282 | |
| ***Operating frequency*** | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | |
| Contactors without overload relays | No-load operating frequency | 1/h | | 2000 | |
| Dependence of the operating frequency $z'$ on the operational current $I'$ and the operational voltage $U'$: $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h | for AC-1 | 1/h | | 700 | |
| | for AC-2 | 1/h | | 250 | |
| | for AC-3 | 1/h | | 750 | |
| | for AC-4 | 1/h | | 250 | |
| Contactors with overload relays (mean value) | | 1/h | | 60 | |

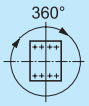
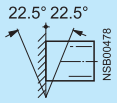
1) Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

2) Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

## Technical data

| Contactor | Size<br>Type | | S12<br>3RT12 7. | | |
|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | |
| **Screw connections** | **Main conductor:**<br>with 3RT19 66-4G box terminal | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185  |
| | Finely stranded without end sleeve | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Stranded | mm² | 95 ... 300 | 120 ... 240 | min. 2 × 70, max. 2 × 240 |
| | AWG conductor connections, solid or stranded | AWG | 3/0 ... 600 kcmil | 250 ... 500 kcmil | min. 2 × 2/0, max. 2 × 500 kcmil |
| | Ribbon cable (qty. × width × thickness) | mm | min. 6 × 9 × 0.8 | min. 6 × 9 × 0.8 | |
| | | mm | max. 20 × 24 × 0.5 | max. 20 × 24 × 0.5 | max. 2 × (20 × 24 × 0.5) |
| | – Terminal screws | | M 12 (hexagon socket, A/F 5) | | |
| | – Tightening torque | Nm | 20 ... 22 (180 ... 195 lb.in) | | |
| | Without box terminal/busbar connection | | | | |
| | Finely stranded with cable lug | mm² | 50 ... 240 | If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross-section of 240 mm² and acc. to DIN 46 235 as of a conductor cross-section of 185 mm² a 3RT19 66-4EA1 terminal cover is necessary to comply with the phase clearance. | |
| | Stranded with cable lug | mm² | 70 ... 240 | | |
| | AWG conductor connections, solid or stranded | AWG | 2/0 ... 500 kcmil | | |
| | Connecting bar (max. width) | mm | 25 | | |
| | – Terminal screws | | M 10 × 30 (A/F 17) | | |
| | – Tightening torque | Nm | 14 ... 24 (124 ... 210 lb.in) | | |
| | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (18 ... 14) | | |
| | – Terminal screws | | M 3 (PZ 2) | | |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |

## Technical data

| | | | | |
|---|---|---|---|---|
| Contactor | Size<br>Type | | | **S3**<br>**3RT24 46** |
| **General data** | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | AC and DC operation | |   For DC operation and forward inclination up to 22.5°: coil voltage tolerance 0.85 ... 1.1 × $U_s$ |
| Upright mounting position: | | | | |
| | | AC operation | | Special design required.<br>Positions 13 ... 16 of the Order No. must be changed to **-1AA0**.<br>Additional charge. |
| | | DC operation | | – |
| **Mechanical endurance** | | | Oper. cycles | 10 million |
| **Electrical endurance**<br>AC-1 utilization category at $I_e$ | | | Oper. cycles | 0.5 million |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 6 |
| **Safe isolation** between coil and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60<br>–55 ... +80 |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 20 (terminal compartment IP 00), coil system IP 40 |
| **Shock resistance** | | | | |
| Rectangular pulse | AC and DC operation | | *g*/ms | 6.8/5 and 4/10 |
| Sine pulse | AC and DC operation | | *g*/ms | 10.6/5 and 6.2/10 |
| **Conductor cross-sections** | | | | See page 2/167 |
| **Short-circuit protection of contactors without overload relays** | | | | |
| **Main circuit** | | | | |
| Fuse links, utilization category gL/gG NH, Type 3NA | | Type of coord. "1" [2] | A | 250 |
| Fuse links, utilization category gR SITOR, Type 3NE | | Type of coord. "2" [2] | A | 250 |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG (weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE | | | A | 10 |
| or miniature circuit-breaker with C-characteristic ($I_k$ < 400 A) | | | A | 10 |
| **Control circuit** | | | | |
| **Coil voltage tolerance** | | AC/DC | | 0.8 ... 1.1 × $U_s$ |
| **Power consumption of the coils** (with coil in cold state and 1.0 × $U_s$) | | | | **Standard design** \| **For USA and Canada** |
| AC operation | | | Hz | 50 \| 50/60 \| 50 \| 60 |
| | closing<br>p.f.<br>closed<br>p.f. | | VA<br><br>VA<br> | 270<br>0.68<br>22<br>0.27 \| 298 /274<br>0.7 / 0.62<br>27 / 20<br>0.29/ 0.31 \| 270<br>0.68<br>22<br>0.27 \| 300<br>0.52<br>21<br>0.29 |
| DC operation | closing = closed | | W | 15 |
| **Operating times at 0.8 ... 1.1 × $U_s$** [1]<br>Break-time = opening time + arcing time | | | | |
| AC operation | closing time<br>opening time | | ms<br>ms | 17 ... 90<br>10 ... 25 |
| DC operation | closing time<br>opening time | | ms<br>ms | 90 ... 230<br>14 ... 20 |
| Arcing time | | | ms | 10 ... 15 |
| **Operating times at 1.0 × $U_s$** [1] | | | | |
| AC operation | closing time<br>opening time | | ms<br>ms | 18 ... 30<br>11 ... 23 |
| DC operation | closing time<br>opening time | | ms<br>ms | 100 ... 120<br>16 ... 20 |

1) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks: varistor +2 ms to 5 ms, diode assemblies 2 to 6 times.

2) According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

## Technical data

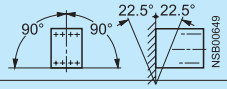
| Contactor / Size / Type | | | | S3 3RT24 46 | | |
|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | |
| ***Load ratings with AC*** | | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 690 V | A | | 140 | | |
| | at 60 °C up to 690 V | A | | 130 | | |
| | at 1000 V | A | | 60 | | |
| Ratings of three-phase loads p.f. = 0.95 (at 60 °C) | at 230 V | kW | | 50 | | |
| | 400 V | kW | | 86 | | |
| | 500 V | kW | | 107 | | |
| | 690 V | kW | | 148 | | |
| | 1000 V | kW | | 98 | | |
| Minimum conductor cross-section with $I_{e\ load}$ | at 40 °C | $mm^2$ | | 50 | | |
| | at 60 °C | $mm^2$ | | 50 | | |
| **AC-2 and AC-3 utilization categories** With an electrical endurance of 1.3 million operating cycles | | | | | | |
| Rated operational current $I_e$ | up to 690 V | A | | 44 | | |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz (at 60 °C) | at 230 V | kW | | 12.7 | | |
| | 400 V | kW | | 22 | | |
| | 500 V | kW | | 29.9 | | |
| | 690 V | kW | | 38.2 | | |
| **Power loss per conducting path** | at $I_e$/AC-1 | W | | 12.5 | | |
| ***Load ratings with DC*** | | | | | | |
| **DC-1 utilization category, switching resistive load L/R ≤ 1 ms)** Number of conducting paths when connected in series | | | | 1 | 2 | 3 |
| Rated operational currents $I_e$ (at 60 °C) | up to 24 V | A | | 130 | 130 | 130 |
| | 60 V | A | | 80 | 130 | 130 |
| | 110 V | A | | 12 | 130 | 130 |
| | 220 V | A | | 2.5 | 13 | 130 |
| | 440 V | A | | 0.8 | 2.4 | 6 |
| | 600 V | A | | 0.48 | 1.3 | 3.4 |
| **DC-3 and DC-5 utilization categories, shunt and series motors** Number of conducting paths when connected in series | | | | 1 | 2 | 3 |
| Rated operational currents $I_e$ (at 60 °C) | up to 24 V | A | | 6 | 130 | 130 |
| | 60 V | A | | 3 | 130 | 130 |
| | 110 V | A | | 1.25 | 130 | 130 |
| | 220 V | A | | 0.35 | 1.75 | 4 |
| | 440 V | A | | 0.15 | 0.42 | 0.8 |
| | 600 V | A | | 0.1 | 0.27 | 0.45 |
| ***Operating frequency*** | | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | AC operation | DC operation | |
| Contactors without overload relays | No-load operating frequency | 1/h | | 5000 | 1000 | |
| Rated operation | for AC-1 | 1/h | | 650 | 650 | |
| | for AC-3 | 1/h | | 1000 | 1000 | |
| Dependence of the operating frequency $z'$ on the operational current $I'$ and the operational voltage $U'$: | | | | | | |

$$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\,V}{U'}\right)^{1.5}\ 1/h$$

## Technical data

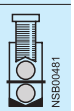
| Contactor | Size / Type | | S3 3RT24 46 | | |
|---|---|---|---|---|---|
| **Conductor cross-sections** | | | | | |
| **Screw connections** (1 or 2 conductor connections possible) | **Main conductor:** With box terminal | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | mm² | 2.5 ... 50 | 2.5 ... 50 | max. 2×35 |
| | Finely stranded without end sleeve | mm² | 4 ... 50 | 10 ... 50 | max. 2×35 |
| | Solid | mm² | 2.5 ... 16 | 2.5 ... 16 | max. 2×16 |
| | Stranded | mm² | 4 ... 70 | 10 ... 70 | max. 2×50 |
| | Ribbon cable (qty. × width × thickness) | mm | 6 × 9 × 0.8 | 6 × 9 × 0.8 | 2×(6×9×0.8) |
| | AWG conductor connections | AWG | 10 ... 2/0 | 10 ... 2/0 | 2 × (10 ... 1/0) |
| | – Terminal screws | | M 6 (hexagon socket) | | |
| | – Tightening torque | Nm | 4 ... 6 (36 ... 53 lb.in) | | |
| Connection for drilled copper bars | max. width | mm | 10 | If bars larger than 12 × 10 mm are connected, a 3RT19 46-4EA1 terminal cover is necessary to comply with the phase clearance | |
| | Without box terminal with cable lugs | | | | |
| | Finely stranded with cable lug | mm² | 10 ... 50[1]) | If conductors larger than 25 mm² are connected, a 3RT19 46-4EA1 terminal cover is necessary to comply with the phase clearance | |
| | Stranded with cable lug | mm² | 10 ... 70[1]) | | |
| | AWG conductor connections, solid or stranded | AWG | 7 ... 1/0 | | |
| | **Auxiliary conductor:** | | | | |
| | Solid | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | AWG | 2 × (20 ... 16); 2 × (18 ... 14); 1 × 12 | | |
| | – Terminal screws | | M 3 | | |
| | – Tightening torque | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |

## Technical data

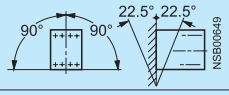
| Contactor / Size / Type | | | | S6 3RT14 56 |
|---|---|---|---|---|
| **General data** | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  |
| **Mechanical endurance** | | | Oper. cycles | 10 million |
| **Electrical endurance**<br>AC-1 utilization category at $I_e$ | | | Oper. cycles | 0.5 million |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 |
| **Shock resistance**<br>Rectangular pulse<br>Sine pulse | | | <br>*g*/ms<br>*g*/ms | <br>8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 |
| **Conductor cross-sections** | | | | See page 2/169 |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 |
| **Short-circuit protection** | | | | |
| **Main circuit** | | | | |
| Fuse links, utilization category gL/gG, NH, Type 3NA | Type of coordination "1" | | A | 355 |
| Fuse links, utilization category gR, SITOR, Type 3NE | Type of coordination "2" | | A | 350 |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG (weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_k < 400$ A) | | | A | 10 |
| **Control circuit** | | | | |
| **Coil voltage tolerance** | AC/DC (UC) | | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism: $U_{s\,min}$ / $U_{s\,max}$; Solid-state op. mechanism: $U_{s\,min}$ / $U_{s\,max}$ |
| AC operation | closing | | VA | 250 / 300 / 190 / 280 |
| | p.f. | | | 0.9 / 0.9 / 0.8 / 0.8 |
| | closed | | VA | 4.8 / 5.8 / 3.5 / 4.4 |
| | p.f. | | | 0.8 / 0.8 / 0.5 / 0.4 |
| DC operation | closing | | W | 300 / 360 / 250 / 320 |
| | closed | | W | 4.3 / 5.2 / 2.3 / 2.8 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism; Solid-state op. mechanism Operation via A1/A2; Solid-state op. mechanism Operation via PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time | | ms | 20 ... 95 / 95 ... 135 / 35 ... 75 |
| | opening time | | ms | 40 ... 60 / 80 ... 90 / 80 ... 90 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time | | ms | 25 ... 50 / 100 ... 120 / 40 ... 60 |
| | opening time | | ms | 40 ... 60 / 80 ... 90 / 80 ... 90 |
| Arcing time | | | ms | 10 ... 15 / 10 ... 15 / 10 ... 15 |
| **Main circuit** | | | | |
| ***Load ratings with AC*** | | | | |
| **AC-1 utilization category, switching resistive load** | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 690 V | | A | 275 |
| | at 60 °C up to 690 V | | A | 250 |
| | at 1000 V | | A | 100 |
| Ratings of three-phase loads p.f. = 0.95 (at 60 °C) | at 230 V | | kW | 95 |
| | 400 V | | kW | 165 |
| | 500 V | | kW | 205 |
| | 690 V | | kW | 285 |
| | 1000 V | | kW | 165 |
| Minimum conductor cross-section with $I_{e\,load}$ | at 40 °C | | mm² | 2 × 70 |
| | at 60 °C | | mm² | 120 |
| **Power loss per conducting path** | at $I_e$/AC-1 | | W | 20 |

## Technical data

| Contactor / Size / Type | | | | S6 3RT14 56 | | |
|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | |
| ***Load ratings with AC*** | | | | | | |
| **AC-2 and AC-3 utilization category** With an electrical endurance of 1.3 million operating cycles | | | | | | |
| Rated operational current $I_e$ | up to 690 V | A | | 97 | | |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz (at 60 °C) | at 230 V | kW | | 30 | | |
| | 400 V | kW | | 55 | | |
| | 500 V | kW | | 55 | | |
| | 690 V | kW | | 90 | | |
| ***Load ratings with DC*** | | | | | | |
| **DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)** | | | | | | |
| Number of conducting paths connected in series | | | | 1 | 2 | 3 |
| Rated operational currents $I_e$ (at 60 °C) | up to 24 V | A | | 315 | 315 | 315 |
| | 60 V | A | | 315 | 315 | 315 |
| | 110 V | A | | 18 | 315 | 315 |
| | 220 V | A | | 3.4 | 20 | 315 |
| | 440 V | A | | 0.8 | 3.2 | 11.5 |
| | 600 V | A | | 0.5 | 1.6 | 4 |
| **DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)** | | | | | | |
| Number of conducting paths connected in series | | | | 1 | 2 | 3 |
| Rated operational currents $I_e$ (at 60 °C) | up to 24 V | A | | 315 | 315 | 315 |
| | 60 V | A | | 7.5 | 315 | 315 |
| | 110 V | A | | 2.5 | 315 | 315 |
| | 220 V | A | | 0.6 | 2.5 | 315 |
| | 440 V | A | | 0.17 | 0.65 | 1.4 |
| | 600 V | A | | 0.12 | 0.37 | 0.75 |
| ***Operating frequency*** | | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | | |
| Contactors without overload relays | No-load op. frequency | 1/h | | 2000 | | |
| | for AC-1 | 1/h | | 600 | | |
| | for AC-3 | 1/h | | 1000 | | |
| Dependence of the operating frequency $z'$ on the operational current $I'$ and operational voltage $U'$: $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\,V}{U'}\right)^{1.5}$ 1/h | | | | | | |
| **Conductor cross-sections** | | | | | | |
| **Screw connections** | **Main conductor:** with 3RT19 55-4G box terminal | | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | | mm² | 10 ... 70 | 10 ... 70 | max. 1×50, 1×70 |
| | Finely stranded without end sleeve | | mm² | 10 ... 70 | 10 ... 70 | max. 1×50, 1×70 |
| | Stranded | | mm² | 16 ... 70 | 16 ... 70 | max. 2 × 70 |
| | AWG conductor connections, solid or stranded | | | 6 ... 2/0 | 6 ... 2/0 | max. 2 × 1/0 |
| | Ribbon cable (qty. × width × thickness) | | mm | min. 3 × 9 × 0.8 | min. 3 × 9 × 0.8 | |
| | | | mm | max. 6 × 15.5 × 0.8 | max. 6 × 15.5 × 0.8 | max. 2 × (6 × 15.5 × 0.8) |
| | with 3RT19 56-4G box terminal | | | | | |
| | Finely stranded with/without end sleeve | | mm² | 10 ... 120 | 10 ... 120 | max. 1 × 95, 1 × 120 |
| | Stranded | | mm² | 16 ... 120 | 16 ... 120 | max. 2 × 120 |
| | AWG conductor connections, solid or stranded | | AWG | 6 ... 250 kcmil | 6 ... 250 kcmil | max. 2 × 3/0 |
| | Ribbon cable (qty. × width × thickness) | | mm | min. 3 × 9 × 0.8 | min. 3 × 9 × 0.8 | |
| | | | mm | max. 10 × 15.5 × 0.8 | max. 10 × 15.5 × 0.8 | max. 2 × (10 × 15.5 × 0.8) |
| | – Terminal screws | | | M 10 (hexagon socket, A/F4) | | |
| | – Tightening torque | | Nm | 10 ... 12 (90 ... 110 lb.in) | | |
| | Without box terminal/busbar connection | | | | | |
| | Finely stranded with cable lug | | mm² | 16 ... 95 | If cable lugs acc. to DIN 46 235 are connected, as of a conductor cross-section of 95 mm² a 3RT19 56-4EA1 terminal cover is necessary to comply with the phase clearance. | |
| | Stranded with cable lug | | mm² | 25 ... 120 | | |
| | AWG conductor connections, solid or stranded | | AWG | 4 ... 250 kcmil | | |
| | Connecting bar (max. width) | | mm | 17 | | |
| | – Terminal screws | | | M 8 × 25 (A/F 13) | | |
| | – Tightening torque | | Nm | 10 ... 14 (89 ... 124 lb.in) | | |
| | **Auxiliary conductor:** | | | | | |
| | Solid | | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | | AWG | 2 × (18 ... 14) | | |
| | – Terminal screws | | | M 3 (PZ2) | | |
| | – Tightening torque | | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |



## Technical data

| Contactor / Size / Type | | | | S10 3RT14 66 | S12 3RT14 76 |
|---|---|---|---|---|---|
| **General data** | | | | | |
| **Permissible mounting position**<br>The contactors are designed for operation on a vertical mounting surface. | | | |  | |
| **Mechanical endurance** | | | Oper. cycles | 10 million | |
| **Electrical endurance**<br>AC-1 utilization category at $I_e$ | | | Oper. cycles | 0.5 million | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1000 | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | |
| **Safe isolation** between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) | | | V | 690 | |
| **Permissible ambient temperature** | | in operation<br>when stored | °C<br>°C | –25 ... +60/+55 with AS-Interface<br>–55 ... +80 | |
| **Degree of protection** acc. to IEC 60 947-1 and DIN 40 050 | | | | IP 00/open type, coil system IP 20 | |
| **Shock resistance**<br>Rectangular pulse<br>Sine pulse | | | <br>*g*/ms<br>*g*/ms | <br>8.5/5 and 4.2/10<br>13.4/5 and 6.5/10 | |
| **Conductor cross-sections** | | | | See page 2/172 | |
| **Electromagnetic compatibility (EMC)** | | | | See page 2/113 | |
| **Short-circuit protection** | | | | | |
| **Main circuit** | | | | | |
| Fuse links, utilization category gL/gG, NH, Type 3NA | Type of coordination "1" | | A | 500 | 800 |
| Fuse links, utilization category gR, SITOR, Type 3NE | Type of coordination "2" | | A | 500 | 710 |
| **Auxiliary circuit**<br>Fuse links, utilization category gL/gG (weld-free protection at $I_k \geq 1$ kA)<br>DIAZED Type 5SB, NEOZED Type 5SE<br>or miniature circuit-breaker with C-characteristic ($I_k < 400$ A) | | | A | 10 | |

| Contactor / Size / Type | | | | S10 3RT14 66 | | | |
|---|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | | |
| **Coil voltage tolerance** | AC/DC (UC) | | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | | | |
| **Power consumption of solenoid mechanism**<br>(with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism | | Solid-state op. mechanism | |
| | | | | $U_{s\,min}$ | $U_{s\,max}$ | $U_{s\,min}$ | $U_{s\,max}$ |
| AC operation | | closing<br>p.f.<br>closed<br>p.f. | VA<br><br>VA<br> | 490<br>0.9<br>5.6<br>0.9 | 590<br>0.9<br>6.7<br>0.9 | 400<br>0.8<br>4<br>0.5 | 530<br>0.8<br>5<br>0.4 |
| DC operation | | closing<br>closed | W<br>W | 540<br>6.1 | 650<br>7.4 | 440<br>3.2 | 580<br>3.8 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA | | | |
| **Operating times**<br>(Break-time = opening time + arcing time) | | | | Conventional op. mechanism | | Solid-state op. mechanism Operation via | |
| | | | | | | A1/A2 | PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | | closing time<br>opening time | ms<br>ms | 30 ... 95<br>40 ... 80 | | 105 ... 145<br>80 ... 200 | 45 ... 80<br>80 ... 100 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | | closing time<br>opening time | ms<br>ms | 35 ... 50<br>50 ... 80 | | 110 ... 130<br>80 ... 100 | 50 ... 65<br>80 ... 100 |
| Arcing time | | | ms | 10 ... 15 | | 10 ... 15 | 10 ... 15 |

## Technical data

| Contactor / Size / Type | | | | S12 3RT14 76 | | | |
|---|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | | |
| **Coil voltage tolerance** | AC/DC (UC) | | | 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | | | |
| **Power consumption of solenoid mechanism** (with coil in cold state and rated range $U_{s\,min}$ ... $U_{s\,max}$) | | | | Conventional op. mechanism | | Solid-state op. mechanism | |
| | | | | $U_{s\,min}$ | $U_{s\,max}$ | $U_{s\,min}$ | $U_{s\,max}$ |
| AC operation | closing | | VA | 700 | 830 | 560 | 750 |
| | p.f. | | | 0.9 | 0.9 | 0.8 | 0.8 |
| | closed | | VA | 7.6 | 9.2 | 5.4 | 7 |
| | p.f. | | | 0.9 | 0.9 | 0.8 | 0.8 |
| DC operation | closing | | W | 770 | 920 | 600 | 800 |
| | closed | | W | 8.5 | 10 | 4 | 5 |
| **PLC control input** (EN 61 131-2/Type 2) | | | | DC 24 V/≤ 30 mA | | | |
| **Operating times** (Break-time = opening time + arcing time) | | | | Conventional op. mechanism | | Solid-state op. mechanism Operation via A1/A2 | PLC input |
| – at 0.8 × $U_{s\,min}$ ... 1.1 × $U_{s\,max}$ | closing time | | ms | 45 ... 100 | | 120 ... 150 | 60 ... 90 |
| | opening time | | ms | 60 ... 100 | | 80 ... 100 | 80 ... 100 |
| – at $U_{s\,min}$ ... $U_{s\,max}$ | closing time | | ms | 50 ... 70 | | 125 ... 150 | 65 ... 80 |
| | opening time | | ms | 70 ... 100 | | 80 ... 100 | 80 ... 100 |
| Arcing time | | | ms | 10 ... 15 | | 10 ... 15 | 10 ... 15 |

| Contactor / Size / Type | | | | S10 3RT14 66 | | | S12 3RT14 76 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | | | |
| ***Load ratings with AC*** | | | | | | | | | |
| **AC-1 utilization category, switching resistive load** | | | | | | | | | |
| Rated operational currents $I_e$ | at 40 °C up to 690 V | | A | 400 | | | 690 | | |
| | at 60 °C up to 690 V | | A | 380 | | | 650 [1] | | |
| | at 1000 V | | A | | | | | | |
| Ratings of three-phase loads p.f. = 0.95 (at 60 °C) | at 230 V | | kW | 145 | | | 245 | | |
| | 400 V | | kW | 250 | | | 430 | | |
| | 500 V | | kW | 315 | | | 535 | | |
| | 690 V | | kW | 430 | | | 740 | | |
| | 1000 V | | kW | | | | | | |
| Minimum conductor cross-section with $I_{e\,load}$ | at 40 °C | | mm² | 240 | | | 2 × 240 | | |
| | at 60 °C | | mm² | 240 | | | 2 × 240 | | |
| **Power loss per conducting path** | at $I_e$/AC-1 | | W | 27 | | | 55 | | |
| **AC-2 and AC-3 utilization categories** With an electrical endurance of 1.3 million operating cycles | | | | | | | | | |
| Rated operational current $I_e$ | up to 690 V | | A | 138 | | | 170 | | |
| Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz (at 60 °C) | at 230 V | | kW | 37 | | | 55 | | |
| | 400 V | | kW | 75 | | | 90 | | |
| | 500 V | | kW | 90 | | | 110 | | |
| | 690 V | | kW | 132 | | | 160 | | |
| ***Load ratings with DC*** | | | | | | | | | |
| **DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)** Number of conducting paths connected in series | | | | 1 | 2 | 3 | 1 | 2 | 3 |
| Rated operational currents $I_e$ (at 60 °C) | up to 24 V | | A | 380 | 380 | 380 | 500 | 500 | 500 |
| | 60 V | | A | 380 | 380 | 380 | 500 | 500 | 500 |
| | 110 V | | A | 33 | 380 | 380 | 33 | 500 | 500 |
| | 220 V | | A | 3.8 | 380 | 380 | 3.8 | 500 | 500 |
| | 440 V | | A | 0.9 | 4 | 11 | 0.9 | 4 | 11 |
| | 600 V | | A | 0.6 | 2 | 5.2 | 0.6 | 2 | 5.2 |
| **DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)** Number of conducting paths connected in series | | | | 1 | 2 | 3 | 1 | 2 | 3 |
| Rated operational currents $I_e$ (at 60 °C) | up to 24 V | | A | 380 | 380 | 380 | 500 | 500 | 500 |
| | 60 V | | A | 11 | 380 | 380 | 11 | 500 | 500 |
| | 110 V | | A | 3 | 380 | 380 | 3 | 500 | 500 |
| | 220 V | | A | 0.6 | 2.5 | 380 | 0.6 | 2.5 | 500 |
| | 440 V | | A | 0.18 | 0.65 | 1.4 | 0.18 | 0.65 | 1.4 |
| | 600 V | | A | 0.125 | 0.37 | 0.75 | 0.125 | 0.37 | 0.75 |

1) Ambient temperature 50 °C for 3RT14 76-.N contactor

## Technical data

| Contactor | Size<br>Type | | | S10<br>3RT14 66 | S12<br>3RT14 76 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| ***Operating frequency*** | | | | | |
| **Operating frequency *z*** in operating cycles per hour | | | | | |
| Contactors without overload relays | | No-load op. frequency<br>for AC-1<br>for AC-3 | 1/h<br>1/h<br>1/h | 2000<br>600<br>1000 | |
| Dependence of the operating frequency $z'$ on the operational current $I'$ and operational voltage $U'$: $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\,V}{U'}\right)^{1.5}$ 1/h | | | | | |
| **Conductor cross-sections** | | | | | |
| **Screw connections** | **Main conductor:**<br>with 3RT19 66-4G box terminal | | | Front terminal connected | Back terminal connected | Both terminals connected |
| | Finely stranded with end sleeve | | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Finely stranded without end sleeve | | mm² | 70 ... 240 | 120 ... 185 | min. 2 × 50, max. 2 × 185 |
| | Stranded | | mm² | 95 ... 300 | 120 ... 240 | min. 2 × 70, max. 2 × 240 |
| | AWG conductor connections, solid or stranded | | | 3/0 ... 600 kcmil | 250 ... 500 kcmil | min. 2 × 2/0, max. 2 × 500 kcmil |
| | Ribbon cable (qty. × width × thickness) | | mm<br>mm | min. 6 × 9 × 0.8<br>max. 20 × 24 × 0.5 | min. 6 × 9 × 0.8<br>max. 20 × 24 × 0.5 | max. 2 × (20 × 24 × 0.5) |
| | – Terminal screws | | | M 12 (hexagon socket, A/F 5) | | |
| | – Tightening torque | | Nm | 20 ... 22 (180 ... 195 lb.in) | | |
| | Without box terminal/busbar connection | | | | | |
| | Finely stranded with cable lug | | mm² | 50 ... 240 | If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross-section of 240 mm² and DIN 46 235 as of a conductor cross-section of 185 mm², a 3RT19 66-4EA1 terminal cover is necessary to comply with the phase clearance. | |
| | Stranded with cable lug | | mm² | 70 ... 240 | | |
| | AWG conductor connections, solid or stranded | | AWG | 2/0 ... 500 kcmil | | |
| | Connecting bar (max. width) | | mm | 25 | | |
| | – Terminal screws | | | M 10 × 30 (A/F 17) | | |
| | – Tightening torque | | Nm | 14 ... 24 (124 ... 210 lb.in) | | |
| | **Auxiliary conductor:** | | | | | |
| | Solid | | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) acc. to IEC 60 947; max. 2 × (0.75 ... 4) | | |
| | Finely stranded with end sleeve | | mm² | 2 × (0.5 ... 1.5); 2 × (0.75 ... 2.5) | | |
| | AWG conductor connections, solid or stranded | | AWG | 2 × (18 ... 14) | | |
| | – Terminal screws | | | M 3 (PZ3) | | |
| | – Tightening torque | | Nm | 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |

## More information

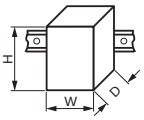
| Contactors | Type | | 3RT23 16 | 3RT23 17 | 3RT23 25 | 3RT23 26 | 3RT23 27 |
|---|---|---|---|---|---|---|---|
| | Size | | S00 | | S0 | | |
| Dimensions (W x H x D)[3] | Width | mm | 45 x 57.5 x 73 | | 60 x 85 x 97 | | |
| **General data** | | | | | | | |
| **Permissible mounting position**[1] | | | | | | | |
| **Mechanical endurance** | | Operating cycles | 30 million | | 10 million | | |
| **Electrical endurance at $I_e$/AC-1** | | Operating cycles | Approx. 0.5 million | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | | | | |
| **Permissible ambient temperature** | • During operation<br>• During storage | °C<br>°C | -25 ... +60<br>-55 ... +80 | | | | |
| **Degree of protection**<br>Acc. to EN 60947-1, Appendix C | Device<br>Connection range | | IP20 | | | | IP20<br>IP00 |
| **Touch protection** acc.to EN 50274 | | | Finger-safe | | | | |
| **Short-circuit protection of contactors without overload relays** | | | | | | | |
| **Main circuit**<br>Fuse links, gG operational class:<br>LV HRC 3NA, DIAZED 5SB, NEOZED 5SE<br>according to IEC 60947-4-1/<br>EN 60947-4-1 | • Type of coordination "1"[1]<br>• Type of coordination "2"[1]<br>• Weld-free | A<br>A<br>A | 35<br>20<br>10 | | 63<br>20<br>16 | | |
| **Control** | | | | | | | |
| **Solenoid coil operating range** | | | | | | | |
| • AC operation | - At 50 Hz<br>- At 60 Hz | | 0.8 ... 1.1 x $U_s$<br>0.85 ... 1.1 x $U_s$ | | --<br>-- | | |
| • DC operation | - At 50 °C<br>- At 60 °C | | 0.8 ... 1.1 x $U_s$<br>0.85 ... 1.1 x $U_s$ | | --<br>-- | | |
| • AC/DC operation | | | -- | | 0.8 ... 1.1 x $U_s$ | | |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | | | | |
| • AC operation, 50 Hz, standard version | - Closing<br>- P.f.<br>- Closed<br>- P.f. | VA<br><br>VA<br> | --<br>--<br>--<br>-- | | 77<br>0.82<br>9.8<br>0.25 | | |
| • AC operation, 50/60 Hz, standard version | - Closing<br>- P.f.<br>- Closed<br>- P.f. | VA<br><br>VA<br> | 27/24.3<br>0.8/0.75<br>4.2/3.3<br>0.25/0.25 | 37/33<br>0.8/0.75<br>5.7/4.4<br>0.25/0.25 | 81/79<br>0.72/0.74<br>10.5/8.5<br>0.25/0.28 | | |
| • AC operation, 60 Hz, USA, Canada | - Closing<br>- P.f.<br>- Closed<br>- P.f. | VA<br><br>VA<br> | 31.7<br>0.77<br>4.8<br>0.25 | 43<br>0.77<br>6.5<br>0.25 | 87<br>0.76<br>9.4<br>0.28 | | |
| • DC operation | - Closing = Closed | W | 4 | | 5.9 | | |
| **Operating times for 0.8 ... 1.1 x $U_s$**[2]<br>Total break time = Opening delay + Arcing time | | | | | | | |
| • AC operation | - Closing delay<br>- Opening delay | ms<br>ms | 8 ... 35<br>3.5 ... 14 | 8 ... 33<br>4 ... 15 | 9 ... 38<br>4 ... 16 | 8 ... 40<br>4 ... 16 | |
| • DC operation | - Closing delay<br>- Opening delay | ms<br>ms | 30 ... 100<br>7 ... 13 | | 50 ... 170<br>15 ... 17.5 | | |
| • Arcing time | | ms | 10 ... 15 | | 10 | | |
| **Main circuit** | | | | | | | |
| ***AC capacity*** | | | | | | | |
| **Utilization category AC-1, switching resistive loads** | | | | | | | |
| • Rated operational currents $I_e$ | At 40 °C, up to 690 V<br>At 60 °C, up to 690 V | A<br>A | 18<br>16 | 22<br>20 | 35<br>30 | 40<br>35 | 50<br>42 |
| • Rated power for AC loads<br>P.f. = 0.95 (at 40 °C) | At 460 V | HP | 5 | 5 | 10 | 10 | 10 |
| • Minimum conductor cross-section for loads with $I_e$ | At 40 °C<br>At 60 °C | $mm^2$<br>$mm^2$ | 2.5<br>2.5 | 2.5<br>2.5 | 10<br>10 | 10<br>10 | 10<br>10 |
| **Utilization category AC-3** | | | | | | | |
| • Rated operational currents $I_e$ | At 60 °C, up to 400 V | A | 9 | 12 | 15.5 | 17 | 17 |
| • Rated power for slipring or squirrel-cage motors at 60 Hz | At 460 V | HP | 5 | 5 | 10 | 10 | 10 |

[1] In accordance with the corresponding 3-pole 3RT2. contactors.

[2] With size S00, DC operation: Operating times at 0.85 ... 1.1 x $U$ .

[3] Dimensions for devices with screw terminals. Size S0 for AC operation. DC operation: Depth + 10mm.

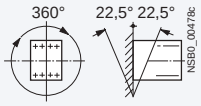
## Technical specifications




| | | | 3RT23 36 | 3RT23 44 | 3RT23 46 |
|---|---|---|---|---|---|
| Type | | | | | |
| Size | | | S2 | S3 | S3 |
| Dimensions (W x H x D) | | mm | 74.5 x 113.5 x 130 / 74.5 x 113.5 x 130 | 73 x 112 x 110 | 93 x 146 x 134 |
| • With mounted auxiliary switch block | | mm | 74.5 x 113.5 x 173.5 / 74.5 x 113.5 x 177.5 | 73 x 112 x 160 | 93 x 146 x 183 |
| **General technical specifications** | | | | | |
| **Permissible mounting position**[1] | | | | | |
| **Mechanical endurance** | | Operating cycles | 10 million | | |
| **Electrical endurance at $I_e$/AC-1** | | Operating cycles | Approx. 0.5 million | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | | |
| **Permissible ambient temperature** | | | | | |
| • During operation | | °C | -25 ... +60 | | |
| • During storage | | °C | -55 ... +80 | | |
| **Degree of protection** acc. to IEC 60947-1, Appendix C | Device<br>Connection range | | IP20 | | |
| **Touch protection** acc. to EN 50274 | | | Finger-safe | | |
| **Short-circuit protection of contactors without overload relays** | | | | | |
| **Main circuit** | | | | | |
| Fuse links, operational class gG:<br>LV HRC, 3NA; DIAZED, 5SB; NEOZED, 5SE<br>according to IEC 60947-4-1/EN 60947-4-1 | • Type of coordination "1"[1]<br>• Type of coordination "2"[1]<br>• Weld-free | A<br>A<br>A | on request<br>on request<br>on request | 250<br>125<br>63 | 250<br>160<br>100 |
| **Control circuit** | | | | | |
| **Coil operating range** (AC/DC) | | | 0.8 ... 1.1 x $U_s$ | | |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | | |
| • AC operation, 50 Hz | - Closing<br>- P.f.<br>- Closed<br>- P.f. | VA<br>VA<br>VA<br>VA | 190<br>0.72<br>16<br>0.37 | 270<br>0.68<br>22<br>0.27 | |
| • AC operation, 50/60 Hz | - Closing<br>- P.f.<br>- Closed<br>- P.f. | VA<br><br>VA<br> | 210/188<br>0.69/0.65<br>17.2/16.5<br>0.36/0.3 | 298/274<br>0.72/0.62<br>27/20<br>0.29/0.31 | |
| • DC operation | - Closing = Closed | W | | 15 | |
| **Operating times for 0.8 ... 1.1 x $U_s$**[2]<br>Total break time = Opening delay + Arcing time | | | | | |
| • DC operation | - Closing delay<br>- Opening delay | ms<br>ms | | 110 ... 200<br>14 ... 20 | |
| • AC operation | - Closing delay<br>- Opening delay | ms<br>ms | 10 ... 80<br>10 ... 18 | 20 ... 50<br>10 ... 25 | |
| • Arcing time | | ms | 10 ... 20 | 10 ... 15 | |
| **Main circuit** | | | | | |
| ***AC capacity*** | | | | | |
| **Utilization category AC-1, switching resistive loads** | | | | | |
| • Rated operational currents $I_e$ | At 40 °C, up to 690 V<br>At 60 °C, up to 690 V | A<br>A | 60<br>55 | 110<br>100 | 140<br>120 |
| • Rated power for AC loads<br>P.f. = 0.95 (at 40 °C) | At 230 V<br>400 V | kW<br>kW | 21<br>36 | 42<br>72 | 53<br>92 |
| • Minimum conductor cross-section for loads with $I_e$ | At 40 °C<br>At 60 °C | mm²<br>mm² | 16<br>25 | 50<br>50 | 50<br>50 |
| **Utilization categories AC-2 and AC-3** | | | | | |
| • Rated operational currents $I_e$ | At 60 °C, up to 400 V | A | | -- | -- |
| • Rated power for slipring or squirrel-cage motors at 50 and 60 Hz | At 230 V<br>400 V | kW<br>kW | | --<br>-- | --<br>-- |

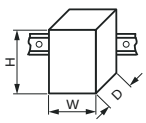
[1] In accordance with the corresponding 3-pole 3RT1 contactors.
[2] With size S00, DC operation: Operating times for 0.85 ... 1.1 x $U_s$

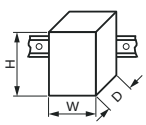
## Technical specifications

| Type | | 3RT2516 | 3RT2517 | 3RT2518 | 3RT2526 | 3RT2535 | 3RT2536 |
|---|---|---|---|---|---|---|---|
| Size | | S00 | | | S0 | S2 | |
| **General technical specifications** | | | | | | | |
| **Permissible mounting position** | | | | | | | |
| The contactors are designed for operation on a vertical mounting surface. | |   | | | | | |
| Upright mounting position | | Special version required | | | | | |
| Mechanical endurance | Operating cycles | 30 million | | | 10 million | | |
| **Electrical endurance at $I_e$/AC-1** | Operating cycles | Approx. 0.5 million | | | | | |
| **Rated insulation voltage $U_i$** (Pollution degree 3) | V | 690 | | | | | |
| **Permissible ambient temperature** | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | -25 ... +60 | |
| • During storage | °C | -55 ... +80 | | | | -55 ... +80 | |
| **Protection class IP on the front** acc. to IEC 60529 | | IP20 | | | | | |
| **Touch protection on the front** acc. to IEC 60529 | | Finger-safe, for vertical contact from the front (screw and spring-type terminal) | | | | | |
| **Short-circuit protection** | | | | | | | |
| **Main circuit** | | | | | | | |
| Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1 | | | | | | | |
| • Type of coordination "1" | A | 35 | | | 63 | 125 | 160 |
| • Type of coordination "2" | A | 20 | | | 35 | 63 | 80 |
| • Weld-free | A | 10 | | | 16 | -- | -- |

| Type | | 3RT2516 | 3RT2517 | 3RT2518 | 3RT2536 | 3RT2537 |
|---|---|---|---|---|---|---|
| Size | | S00 | | | S2 | |
| Dimensions (W x H x D)[1] | | 45 x 57.5 x 73 / 45 x 70 x 73 | | | 74.5 x 113.5 x 130 / 74.5 x 113.5 x 130 | |
| • with mounted auxiliary switch block | | 45 x 57.5 x 116 / 45 x 70 x 121 | | | 74.5 x 113.5 x 173.5 / 74.5 x 113.5 x 177.5 | |

| Type | | 3RT2526 |
|---|---|---|
| Size | | S0 |
| Dimensions (W x H x D) for AC operation[1)2)] | mm | 60 x 85 x 97 / 60 x 101.5 x 97 |
| • with mounted auxiliary switch block | mm | 60 x 85 x 141 / 60 x 101.5 x 144 |
| Dimensions (W x H x D) for DC operation[1)2)] | mm | 60 x 85 x 107 / 60 x 101.5 x 107 |
| • with mounted auxiliary switch block | mm | 60 x 85 x 151 / 60 x 101.5 x 154 |




1) Dimensions for devices with screw terminals/spring-type terminals.
2) For size S0, devices for AC and DC operation differ in depth. The following applies: Depth (DC) = Depth (AC) + 10 mm.

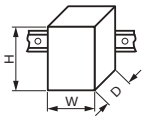
| Type | | | 3RT2516 | 3RT2517 | 3RT2518 | 3RT2526 | | 3RT2535 | 3RT2536 |
|---|---|---|---|---|---|---|---|---|---|
| Size | | | S00 | | | S0 | | S2 | |
| **Control circuit** | | | | | | | | | |
| **Solenoid coil operating range** | | | | | | | | | |
| • AC operation | at 50 Hz | | 0.8 ... 1.1 x $U_s$ | | | 0.8 ... 1.1 x $U_s$ | | | |
| | at 60 Hz | | 0.85 ... 1.1 x $U_s$ | | | 0.8 ... 1.1 x $U_s$ | | | |
| • DC operation | up to 50 °C | | 0.8 ... 1.1 x $U_s$ | | | | | -- | |
| | up to 60 °C | | 0.85 ... 1.1 x $U_s$ | | | | | -- | |
| • AC/DC operation | | | -- | | | | | 0.8 x $U_{smin}$... 1.1 x $U_{smax}$ | |
| **Power consumption of the solenoid coils** (for cold coil and 1.0 x $U_s$) | | | see 3RT2316 | see 3RT2317 | | see 3RT2326 | | see 3RT233 | |
| **Operating times for 0.8 to 1.1 x $U_s$** (Total break time = Opening delay + Arcing time) | | | see 3RT2316 | see 3RT2317 | | see 3RT2326 | | see 3RT233 | |
| **Main circuit** | | | | | | | | | |
| ***Load rating with AC*** | | | | | | | | | |
| **Utilization category AC-1 Switching resistive loads** | | | | | | | | | |
| • Rated operational currents $I_e$ | at 40 °C up to 690 V | A | 18 | 22 | | 40 | | 60 | 70 |
| | at 60 °C up to 690 V | A | 16 | 20 | | 35 | | 55 | 60 |
| • Rated power for AC loads p.f. = 0.95 (at 60 °C) | at 230 V | kW | 6 | 7.5 | | 13.3 | | 21 | 23 |
| | 400 V | kW | 10.5 | 13 | | 23 | | 36 | 39 |
| • Minimum conductor cross-section for loads with $I_e$ | at 40 °C | $mm^2$ | 2.5 | 2.5 | | 10 | | 16 | 25 |
| **Utilization categories AC-2 and AC-3** | | | | | | AC[1] | DC[1] | | |
| • Rated operational currents $I_e$ (at 60 °C) | NO up to 400 V | A | 9 | 12 | 16 | 25 | 25 | 35 | 41 |
| | NC up to 400 V | A | 9 | 9 | 9 | 25 | 20 | 35 | 41 |
| • Rated power for slipring or squirrel-cage motors at 50 and 60 Hz | NO at 230 V | kW | 2.2 | 3 | 4 | 5.5 | 5.5 | 11 | |
| | NC at 230 V | kW | 2.2 | 2.2 | 2.2 | 5.5 | 5.5 | 11 | |
| | NO at 400 V | kW | 4 | 5.5 | 7.5 | 11 | 11 | 18.5 | 22 |
| | NC at 400 V | kW | 4 | 4 | 4 | 11 | 7.5 | 18.5 | 22 |
| ***Load rating with DC*** | | | | | | | | | |
| **Utilization category DC-1 Switching resistive loads ($L/R \leq 1$ ms)** | | | | | | | | | |
| • Rated operational currents $I_e$ (at 60 °C) | | | | | | | | | |
| - 1 conducting path | up to 24 V | A | 16 | 20 | | 35 | | 55 | 60 |
| | 60 V | A | 16 | 20 | | 20 | | 23 | |
| | 110 V | A | 2.1 | 2.1 | | 4.5 | | 4.5 | |
| | 220 V | A | 0.8 | 0.8 | | 1 | | 1 | |
| | 440 V | A | 0.6 | 0.6 | | 0.4 | | 0.4 | |
| - 2 conducting paths in series | up to 24 V | A | 16 | 20 | | 35 | | 55 | |
| | 60 V | A | 16 | 20 | | 35 | | 45 | |
| | 110 V | A | 12 | 12 | | 35 | | 45 | |
| | 220 V | A | 1.6 | 1.6 | | 5 | | 5 | |
| | 440 V | A | 0.8 | 0.8 | | 1 | | 1 | |
| **Utilization category DC-3/DC-5[2] Shunt-wound and series-wound motors ($L/R \leq 15$ ms)** | | | | | | | | | |
| • Rated operational currents $I_e$ (at 60 °C) | | | | | | | | | |
| - 1 conducting path | up to 24 V | A | 16 | 20 | | 20 | | 35 | |
| | 60 V | A | 0.5 | 0.5 | | 5 | | 6 | |
| | 110 V | A | 0.15 | 0.15 | | 2.5 | | 2.5 | |
| | 220 V | A | 0.75 | 0.75 | | 1 | | 1 | |
| | 440 V | A | -- | -- | | 0.09 | | 0.1 | |
| - 2 conducting paths in series | up to 24 V | A | 16 | 20 | | 35 | | 55 | |
| | 60 V | A | 5 | 5 | | 35 | | 45 | |
| | 110 V | A | 0.35 | 0.35 | | 15 | | 25 | |
| | 220 V | A | -- | -- | | 3 | | 5 | |
| | 440 V | A | -- | -- | | 0.27 | | 0.27 | |

1) Values for devices with AC and DC operation: for 3RT25 26 with DC operation, different values apply to AC-2 and AC-3 for the NC.

2) For $U_s$ >24 V, the rated operational currents $I_e$ for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.

## Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT10 17 contactors for size S00, to those of the 3RT10 26 contactors for size S0 and to those of the 3RT10 45 contactors for size S3.

| | | | 3RT16 17-.A..3 | 3RT16 27-.A..1 | 3RT16 47-.A..1 |
|---|---|---|---|---|---|
| Type | | | **3RT16 17-.A..3** | **3RT16 27-.A..1** | **3RT16 47-.A..1** |
| Size | | | **S00** | **S0** | **S3** |
| Dimensions (W x H x D) including auxiliary switches and connecting cables |   | mm | 45 x 101 x 105 | 45 x 100 x 130 | 70 x 167 x 183 |
| **General technical specifications** | | | | | |
| **Capacitor rating at rated power** (utilization category AC-6b) | 230 V, 50/60 Hz | kvar | 3 … 7.5 | 3.5 … 15 | 3.5 … 30 |
| | **400 V, 50/60 Hz** | **kvar** | **5 … 12.5** | **6 … 25** | **5 … 50** |
| | 525 V, 50/60 Hz | kvar | 7.5 … 15 | 7.8 … 30 | 7.5 … 60 |
| | 690 V, 50/60 Hz | kvar | 10 … 21 | 10 … 42 | 10 … 84 |
| **Auxiliary contacts mounted** (unassigned) | | | 1 NO + 1 NC | 1 NO | |
| **Auxiliary contacts mountable** (lateral), not for sizes S00 and S0 | | | -- | | 2 NC + 2 NO or 1 NO + 1 NC |
| **Max. switching frequency** | | $h^{-1}$ | 180 | 100 | |
| **Electrical endurance** | | Operating cycles | > 250000 | > 150000 | > 100000 |
| **Ambient temperature** | | °C | 60 | | |
| **Short-circuit protection** | | | 1.6 ... 2.2 x $I_e$ | | |
| **Coil operating range** | | | 0.8 … 1.1 x $U_s$ | | |
| **Conductor cross-sections (1 or 2 conductors connectable)** | | | | | |
| **Main conductors** | | | **Screw terminals** | | |
| • Solid | | mm² | 2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2] according to IEC 60947; max. 2 x (1 ... 4)[2] | 2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2] according to IEC 60947; max. 1 x 10 [1)2)] | -- |
| • Finely stranded with end sleeve | | mm² | 2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2] | 2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6) [1)2)] | -- |
| • AWG cables | | | | | |
| - Solid | | AWG | 2 x (20 ... 16) | 2 x (16 ... 12) | -- |
| - Solid or stranded | | AWG | 2 x (18 ... 14) | 2 x (14 ... 10) | -- |
| - Stranded | | AWG | 1 x 12 | 1 x 8 | -- |
| • Terminal screws | | | M3 | M4 (Pozidriv size 2) | -- |
| - Tightening torque | | Nm | 0.8 ... 1.2 | 2 ... 2.5 | -- |
| | | lb.in | 7 ... 10.3 | 18 ... 22 | -- |

1) 3RV19 25-5AB feeder terminal for 16 mm².

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

## More information

All technical specifications not mentioned in the table below are identical to those of the 3RT20 contactors for switching motors (see 2/135-2/137)

| Contactors | Type | | 3RT20 1.-.HB4. | 3RT20 1.-.JB4. | 3RT20 1.-.KB4. | 3RT20 2.-.KB4. |
|---|---|---|---|---|---|---|
| | Size | | S00 | S00 | S00 | S0 |
| | Width | mm | 45 | 45 | 45 | 45 |
| **General data** | | | | | | |
| **Mechanical endurance** | | Operating cycles | 30 million | | | 10 million |
| **Protective separation** between the coil and the main contacts acc. to EN 60947-1, Appendix N | | V | 400 | | | |
| **Control** | | | | | | |
| **Solenoid coil operating range** | | | 0.7 ... 1.25 x $U_s$ | | | |
| **Power consumption of the solenoid coil** (for cold coil) Closing = Closed | At $U_s$ 17 V | W | 1.6 | | | 2.3 |
| | 24 V | W | 2.8 | | | 4.5 |
| | 30 V | W | 4.4 | | | 7 |
| **Permissible residual current** of the electronics (for 0 signal) | | | < 10 mA x (24 V/$U_s$) | | | < 6 mA x (24 V/$U_s$) |
| **Overvoltage configuration of the solenoid coil** | | | Without overvoltage damping | With diode | With suppressor diode | With varistor |
| **Operating times of the coupling contactors** | | | | | | |
| • Closing | | | | | | |
| - At 17 V | ON-delay NO | ms | 40 ... 130 | | | 70 ... 270 |
| | OFF-delay NC | ms | 30 ... 80 | | | 60 ... 250 |
| - At 24 V | ON-delay NO | ms | 35 ... 60 | | | 65 ... 90 |
| | OFF-delay NC | ms | 25 ... 40 | | | 55 ... 80 |
| - At 30 V | ON-delay NO | ms | 25 ... 50 | | | 52 ... 65 |
| | OFF-delay NC | ms | 15 ... 30 | | | 43 ... 57 |
| • Closing at 17 ... 30 V | OFF-delay NO | ms | 7 ... 20 | 38 ... 65 | 7 ... 20 | 19 ... 21 |
| | ON-delay NC | ms | 20 ... 30 | 55 ... 75 | 20 ... 30 | 25 ... 31 |

| Contactors | Type | | 3RT20 1.-1MB4.-0KT0 | 3RT20 1.-1VB4. | 3RT20 1.-1WB4. |
|---|---|---|---|---|---|
| | Size | | S00 | S00 | S00 |
| | Width | mm | 45 | 45 | 45 |
| **General data** | | | | | |
| **Mechanical endurance** | | Operating cycles | 30 million | | |
| **Protective separation** between the coil and the main contacts acc. to EN 60947-1, Appendix N | | V | 400 | | |
| **Control** | | | | | |
| **Solenoid coil operating range** | | | 0.85 ... 1.85 x $U_s$ | | |
| **Power consumption of the solenoid coil** (for cold coil) Closing = Closed | At $U_s$ 24 V | W | 1.6 | | |
| **Permissible residual current, upright mounting position** | | | On request | | |
| **Overvoltage configuration of the solenoid coil** | | | Without overvoltage damping | With diode | With suppressor diode |
| **Operating times of the coupling contactors** | | | | | |
| • Closing | | | | | |
| - At 20.5 V | ON-delay NO | ms | 30 ... 120 | | |
| | OFF-delay NC | ms | 20 ... 110 | | |
| - At 24 V | ON-delay NO | ms | 25 ... 90 | | |
| | OFF-delay NC | ms | 15 ... 80 | | |
| - At 44 V | ON-delay NO | ms | 15 ... 60 | | |
| | OFF-delay NC | ms | 10 ... 50 | | |
| • Opening | OFF-delay NO | ms | 5 ... 20 | 20 ... 80 | 5 ... 20 |
| | ON-delay NC | ms | 10 ... 30 | 30 ... 90 | 10 ... 30 |

## Overview

### Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3TF68/69 contactors are climate-proof.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see Accessories and Spare Parts on page 2/60).

### Main contacts

Contact erosion indication with 3TF68/69 vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base. If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, then the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters simultaneously.

### Auxiliary contacts

Contact reliability

These auxiliary contacts are particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

### Electromagnetic compatibility

The 3TF68/69..-.**C** contactors for AC operation are fitted with an electronically controlled solenoid operating mechanism with a high interference immunity (for EMC values see page 3/115). The solenoid coil is connected to varistors for protection against overvoltages.

The 3TF68/69..-.**Q**.. contactors for AC operation are designed for operation in systems with AC control supply voltage which is subject to strong interference. The solenoid systems of these contactors are configured in the DC economy circuit with rectification. The rectifier bridge is connected to varistors for protection against overvoltages.

### Protection of the main current paths

An integrated RC varistor connection for the main current paths dampens the switching overvoltage rises to safe values. This prevents multiple restricting. It can therefore be assumed that the motor winding cannot be damaged by switching overvoltages with steep voltage rises.

Note:

During operation in installations in which the emitted interference limits cannot be observed, e.g. when used for output contactors in converters, 3TF68/69..-.**Q** contactors without a main current path circuit are recommended.

## Technical specifications

| Contactor | Type | 3TF68 and 3TF69 | | |
|---|---|---|---|---|
| **Rated data of the auxiliary contacts** | | Acc. to IEC 60947-5-1 | | |
| **Rated insulation voltage** $U_i$ (pollution degree 3) | V | 690 | | |
| **Conventional thermal current $I_{th}$ = Rated operational current $I_e$/AC-12** | A | 10 | | |
| **AC load**<br>**Rated operational current $I_e$/AC-15/AC-14**<br>• For rated operational voltage $U_e$ | | | | |
| - At 24 V | A | 10 | | |
| - At 110 V | A | 10 | | |
| - At 125 V | A | 10 | | |
| - At 220 V | A | 6 | | |
| - At 230 V | A | 5.6 | | |
| - At 380 V | A | 4 | | |
| - At 400 V | A | 3.6 | | |
| - At 500 V | A | 2.5 | | |
| - At 660 V | A | 2.5 | | |
| - At 690 V | A | 2.3 | | |
| **DC load**<br>**Rated operational current $I_e$/DC-12**<br>• For rated operational voltage $U_e$ | | | | |
| - At 24 V | A | 10 | | |
| - At 60 V | A | 10 | | |
| - At 110 V | A | 3.2 | | |
| - At 125 V | A | 2.5 | | |
| - At 220 V | A | 0.9 | | |
| - At 440 V | A | 0.33 | | |
| - At 600 V | A | 0.22 | | |
| **Rated operational current $I_e$/DC-13**<br>• For rated operational voltage $U_e$ | | | Auxiliary contacts with delayed NC contact: | NS = No specification |
| - At 24 V | A | 10 | 6 | |
| - At 60 V | A | 5 | NS | |
| - At 110 V | A | 1.14 | 0.98 | |
| - At 125 V | A | 0.98 | NS | |
| - At 220 V | A | 0.48 | NS | |
| - At 440 V | A | 0.13 | NS | |
| - At 600 V | A | 0.07 | 0.07 | |
| **CSA and UL rated data of the auxiliary contacts** | | | | |
| Rated voltage, max. | V AC | 600 | | |
| Switching capacity | | A 600, P 600 | | |

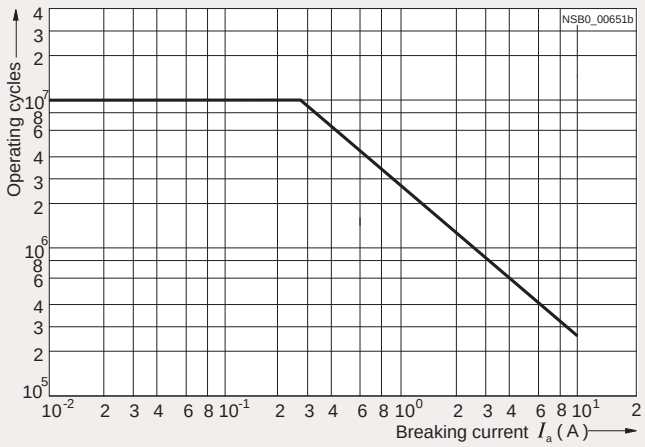
Contactor

## Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The characteristic curves apply to 230 V AC.

**3TF68 and 3TF69**




## Contact erosion indication with vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base.

If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters.

**3TF68 and 3TF69**

## Contact endurance of the main contacts

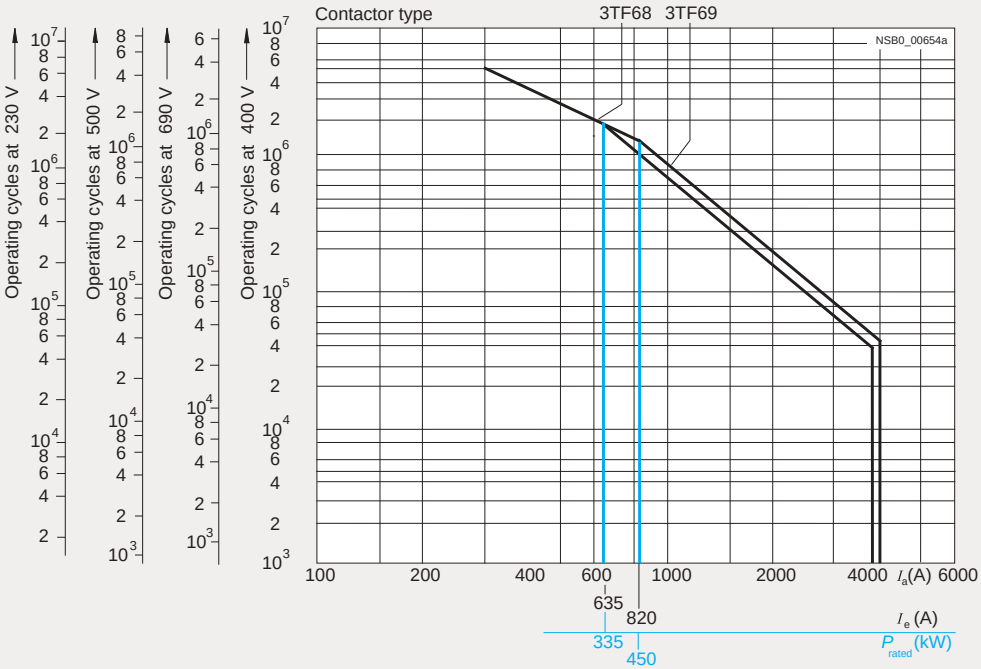
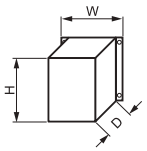
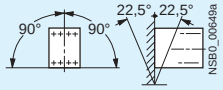



Diagram legend:
$P_{rated}$ = Rated power for squirrel-cage motors at 400 V
$I_a$ = Breaking current
$I_e$ = Rated operational current

| | | | | |
|---|---|---|---|---|
| Type | | | **3TF68** | **3TF69** |
| Size | | | **14** | **14** |
| Dimensions (W x H x D) |   | mm | 230 x 276 x 237 | 230 x 295 x 237 |
| **General data** | | | | |
| **Permissible mounting position, installation instructions** [1) 2)]<br>The contactors are designed for operation on a vertical mounting surface. | | |   | |
| **Mechanical endurance** | | Operating cycles | 5 million | |
| **Electrical endurance** | | Operating cycles | [3)] | |
| **Rated insulation voltage $U_i$**<br>(pollution degree 3) | | kV | 1 | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 8 | |
| **Protective separation** between the coil and the main contacts acc. to IEC 60947-1, Appendix N | | kV | 1 | |
| **Mirror contacts**<br>A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.<br>One NC contact each must be connected in series for the right and left auxiliary switch block respectively. | | | Yes, acc. to IEC 60947-4-1, Appendix F | |
| **Permissible ambient temperature** | | | | |
| • During operation [5)] | | °C | -25 ... +55 | |
| • During storage | | °C | -55 ... +80 | |
| **Degree of protection** acc. to IEC 60947-1, Appendix C | | | IP00/open (where applicable, use additional terminal covers) | |
| **Touch protection** acc. to EN 50274 | | | Finger-safe with cover | |
| **Shock resistance** | | | | |
| • Rectangular pulse | | | | |
| - AC operation | | *g*/ms | 8.1/5 and 4.7/10 | 9.5/5 and 5.7/10 |
| - DC operation | | *g*/ms | 9/5 and 5.7/10 | 8.6/5 and 5.1/10 |
| • Sine pulse | | | | |
| - AC operation | | *g*/ms | 12.8/5 and 7.4/10 | 13.5/5 and 7.8/10 |
| - DC operation | | *g*/ms | 14.4/5 and 9.1/10 | 13.5/5 and 7.8/10 |
| **Conductor cross-sections** | | | See page 2/184. | |
| **Electromagnetic compatibility (EMC)** | | | See page 2/113. | |
| **Short-circuit protection** | | | | |
| **Main circuit**<br>Fuse links, gG operational class:<br>LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE<br>according to IEC 60947-4-1/EN 60947-4-1 | | | | |
| • Type of coordination "1" | | A | 1000 | 1250 |
| • Type of coordination "2" | | A | 500 | 630 |
| • Weld-free [4)] | | A | 400 | 500 |
| **Auxiliary circuit** | | | | |
| • Short-circuit test with fuse links of gG operational class:<br>LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE<br>with $I_k$ = 1 kA acc. to IEC 60947-5-1 | | A | 10 | |
| • Test with miniature circuit breaker up to 230 V with C characteristic:<br>Short-circuit current $I_k$ = 400 A acc. to IEC 60947-5-1 | | A | 10 | |

1) To easily replace the laterally mounted auxiliary switches it is recommended to maintain a minimum distance of 30 mm between the contactors.

2) If mounted at a 90° angle (conducting paths are horizontally above each other), the switching frequency is reduced by 80% compared with the normal values.

3) See "Endurance of the auxillary contacts", page 2/180.

4) Test conditions according to IEC 60947-4-1.

5) For ambient temperatures > 55°C, only 3TF6.33-.Q..-Z A02 contactors (= without connection of the main current path circuits) can be used. Then derating is also possible with these contactors:
- AC-1: $I_e$ = 782 A, 644 operating cycles/h;
- AC-3: operating range 0.85-1.05 x Us, 460 operating cycles/hour, mechanical endurance 5 million operating cycles, lateral clearance 10 mm

| Contactor | | Type | 3TF68 | 3TF69 |
|---|---|---|---|---|
| | | Size | 14 | 14 |
| **Control** | | | | |
| **Coil operating range** | | | 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$ | |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | |
| • AC operation, $U_{s\ max}$ | - Closing | VA/p.f. | 1850/1 | 950/0.98 |
| | - Closed | VA/p.f. | 49/0.15 | 30.6/0.31 |
| • AC operation, $U_{s\ min}$ | - Closing | VA/p.f. | 1200/1 | 600/0.98 |
| | - Closed | VA/p.f. | 13.5/0.47 | 12.9/0.43 |
| • DC economy circuit[1] | - Closing at 24 V | W | 1010 | 960 |
| | - Closed | W | 28 | 20.6 |
| For contactors of type 3TF68/69..-.**Q**: | | | | |
| • AC operation, $U_{s\ min}$[2] | - Closing | VA/p.f. | 1000/0.99 | 1150/0.99 |
| | - Closed | VA/p.f. | 11/1 | 11/1 |
| **Operating times for 0.8 ... 1.1 x $U_s$** (Total break time = Opening delay + Arcing time) | | | (Values apply to cold and warm coil) | |
| • AC operation | - Closing delay | ms | 70 ... 120 (22 ... 65)[3] | 80 ... 120 |
| | - Opening delay | ms | 70 ... 100 | 70 ... 80 |
| • DC economy circuit | - Closing delay | ms | 76 ... 110 | 86 ... 280 |
| | - Opening delay | ms | 50 | 19 ... 25 |
| • Arcing time | | ms | 10 ... 15 | 10 |
| For contactors of type 3TF68/69..-.**Q**: | | | | |
| • AC operation | - Closing delay | ms | 35 ... 90 | 45 ... 160 |
| | - Opening delay | ms | 65 ... 90 | 30 ... 80 |
| **Operating times for 1.0 x $U_s$** (Total break time = Opening delay + Arcing time) | | | | |
| • AC operation | - Closing delay | ms | 80 ... 100 (30 ... 45)[3] | 85 ... 100 |
| | - Opening delay | ms | 70 ... 100 | 70 |
| • DC economy circuit | - Closing delay | ms | 80 ... 90 | 90 ... 125 |
| | - Opening delay | ms | 50 | 19 ... 25 |
| **Minimum command duration** for closing | Standard | ms | 120 | 120 |
| | Reduced make-time | ms | 90 | -- |
| **Minimum interval time** between two ON commands | | ms | 100 | 300 |

1) At 24 V DC; for further voltages, deviations of up to ±10 % are possible.
2) Including reversing contactor.
3) Values in brackets apply to contactors with reduced operating times.

| Contactor | Type | 3TF6. 44-.CF7 | 3TF6. 44-.CM7 | 3TF6. 44-.CP7 | 3TF6. 44-.CQ7 | 3TF6. 44-.CS7 |
|---|---|---|---|---|---|---|
| **Electromagnetic compatibility** | | | | | | |
| **Rated control supply voltage $U_s$** | V AC | 110 ... 132 | 200 ... 240 | 230 ... 277 | 380 ... 460 | 500 ... 600 |
| **Overvoltage type** acc. to IEC 60801 | | Burst/Surge | | | | |
| **Degree of severity** acc. to IEC 60801 | | | | | | |
| • Burst | | 3 | 4 | 4 | 4 | 4 |
| • Surge | | 4 | 4 | 4 | 4 | 4 |
| **Overvoltage resistance** | | | | | | |
| • Burst | kV | 2 | 4 | 4 | 4 | 4 |
| • Surge | kV | 6 | 5 | 5 | 6 | 6 |

| Contactor | Type | | 3TF68 | 3TF69 |
|---|---|---|---|---|
| | Size | | 14 | 14 |
| **Main circuit** | | | | |
| ***AC capacity*** | | | | |
| **Utilization category AC-1 Switching resistive loads** | | | | |
| • Rated operational currents $I_e$ | At 40 °C up to 690 V | A | 700 | 910 |
| | At 55 °C up to 690 V | A | 630 | 850 |
| | At 55 °C up to 1000 V | A | 450 | 800 |
| • Rated power for AC loads with p.f. = 0.95 at 55°C | 230 V | kW | 240 | 323 |
| | 400 V | kW | 415 | 558 |
| | 500 V | kW | 545 | 735 |
| | 690 V | kW | 720 | 970 |
| | 1000 V | kW | 780 | 1385 |
| • Minimum conductor cross-sections for loads with $I_e$ | At 40°C | $mm^2$ | 2 x 240 | $I_e \geq 800$ A: 2 x 60 x 5 (copper busbars) |
| | At 55°C | $mm^2$ | 2 x 185 | $I_e < 800$ A: 2 x 240 |
| **Utilization categories AC-2 and AC-3** | | | | |
| • Rated operational currents $I_e$ | Up to 690 V | A | 630 | 820 |
| | 1000 V | A | 435 | 580 |
| • Rated power for slipring or squirrel-cage motors at 50 Hz and 60 Hz | At 230 V | kW | 200 | 260 |
| | 400 V | kW | 347 | 450 |
| | 500 V | kW | 434 | 600 |
| | 690 V | kW | 600 | 800 |
| | 1000 V | kW | 600 | 800 |
| **Thermal load capacity** | 10 s current | A | 5 040 | 7 000 |
| **Power loss per conducting path** | At $I_e$/AC-3 | W | 45 | 70 |
| **Utilization category AC-4** (for $I_a = 6 \times I_e$) | | | | |
| • Rated operational current $I_e$ | Up to 690 V | A | 610 | 690 |
| • Rated power for squirrel-cage motors with 50 Hz and 60 Hz | At 400 V | kW | 355 | 400 |
| The following applies to a contact endurance of about 200000 operating cycles: | | | | |
| • Rated operational currents $I_e$ | Up to 690 V | A | 300 | 360 |
| | 1000 V | A | 210 | 250 |
| • Rated power for squirrel-cage motors with 50 Hz and 60 Hz | At 230 V | kW | 97 | 110 |
| | 400 V | kW | 168 | 191 |
| | 500 V[1)] | kW | 210 | 250 |
| | 690 V[1)] | kW | 278 | 335 |
| | 1000 V[1)] | A | 290 | 350 |
| ***Switching frequency*** | | | | |
| **Switching frequency z** in operating cycles/hour | | | | |
| • Contactors without overload relays | No-load switching frequency AC | 1/h | 2000 | 1000 |
| | No-load switching frequency DC | 1/h | 1000 | 1000 |
| | AC-1 | 1/h | 700 | 700 |
| | AC-2 | 1/h | 200 | 200 |
| | AC-3 | 1/h | 500 | 500 |
| | AC-4 | 1/h | 150 | 150 |
| • Contactors with overload relays (mean value) | | 1/h | 15 | 15 |

[1)] Max. permissible rated operational current $I_e$/AC-4 = $I_e$/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency.

| Contactor | Type | 3TF68 | 3TF69 |
|---|---|---|---|
| | Size | 14 | 14 |
| **Conductor cross-sections** | | | |
| **Main conductors:** | | Screw terminals | |
| • Busbar connections | | | |
| - Finely stranded with cable lug | $mm^2$ | 50 ... 240 | 50 ... 240 |
| - Stranded with cable lug | $mm^2$ | 70 ... 240 | 50 ... 240 |
| - Solid or stranded | AWG | 2/0 ... 500 MCM | 2/0 ... 500 MCM |
| - Connecting bar (max. width) | mm | 50 | 60 ($U_e \leq 690$ V)<br>50 ($U_e > 690$ V) |
| • Terminal screw | | M10 x 30 | M12 x 40 |
| - Tightening torque | Nm | 14 ... 24 (124 ... 210 lb.in) | 20 ... 35 (177 ... 310 lb.in) |
| • With box terminal[1] | | | |
| - Connectable copper bars | | | |
| - Width | mm | 15 ... 25 | 15 ... 38 |
| - Max. thickness | mm | 1 x 26 or 2 x 11 | 1 x 46 or 2 x 18 |
| - Terminal screw | | A/F 6 (hexagon socket) | A/F 8 (hexagon socket) |
| - Tightening torque | Nm<br>lb.in | 25 ... 40<br>221 ... 354 | 35 ... 50<br>266 ... 443 |
| **Auxiliary conductors:** | | | |
| • Solid | $mm^2$ | 2 x (0.5 ... 1)[2]/2 x (1 ... 2.5)[2] | |
| • Finely stranded with end sleeve | $mm^2$ | 2 x (0.5 ... 1)[2]/2 x (0.75 ... 2.5)[2] | |
| • Pin-end connector acc. to DIN 46231 | $mm^2$ | 2 x (1 ... 1.5) | |
| • Solid or stranded | AWG | 2 x (18 ... 12) | |
| • Tightening torque | Nm<br>lb.in | 0.8 ... 1.4<br>7 ... 12 | |

1) See "Accessories and Spare Parts", page 2/60.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

| Contactor | Type | 3TF68 | 3TF69 |
|---|---|---|---|
| | Size | 14 | 14 |
| **CSA and UL rated data** | | | |
| **Rated insulation voltage** | V AC | 600 | 600 |
| **Uninterrupted current** | | | |
| • Open and enclosed | A | 630 | 820 |
| **Maximum horsepower ratings** (CSA and UL approved values) | | | |
| • Rated power for induction motors at 60 Hz | | | |
| - At 200 V | hp | 231 | 290 |
| - At 230 V | hp | 266 | 350 |
| - At 460 V | hp | 530 | 700 |
| - At 575 V | hp | 664 | 860 |
| **NEMA/EEMAC ratings** | | | |
| SIZE | hp | 6 | 7 |
| • Uninterrupted current | | | |
| - Open | A | 600 | 820 |
| - Enclosed | A | 540 | 810 |
| • Rated power for induction motors at 60 Hz | | | |
| - At 200 V | hp | 150 | -- |
| - At 230 V | hp | 200 | 300 |
| - At 460 V | hp | 400 | 600 |
| - At 575 V | hp | 400 | 600 |
| **Overload relays** | Type | 3RB12 . | |
| • Setting range | A | 200 ... 820 | |

## Overview

### *3TC4 and 3TC5*

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The DC motor ratings given in the tables are applicable to the DC-3 and DC-5 utilization categories with two-pole switching of the load or with the two conducting paths of the contactor connected in series.

One contactor conducting path can switch full power up to 220 V. The ratings for higher voltages are available on request.

### *3TC7*

IEC 60947-4-1, EN 60947-4-1.

The contactors are suitable for use in any climate. They are suitable for switching and controlling DC motors as well as all other DC circuits.

The solenoid excitation is configured for a particularly large operating range. It is between 0.7 or 0.8 to 1.2 x $U_s$.

3TC74 contactors can be used at up to 750 V/400 A and 50 Hz in AC-1 operation.

## Application

The contactors are suitable for switching and controlling DC motors as well as all other DC circuits.

A version with an especially large coil operating range is available for operation in electrically driven vehicles and in switchgears with significant fluctuations in the actuating voltage

.

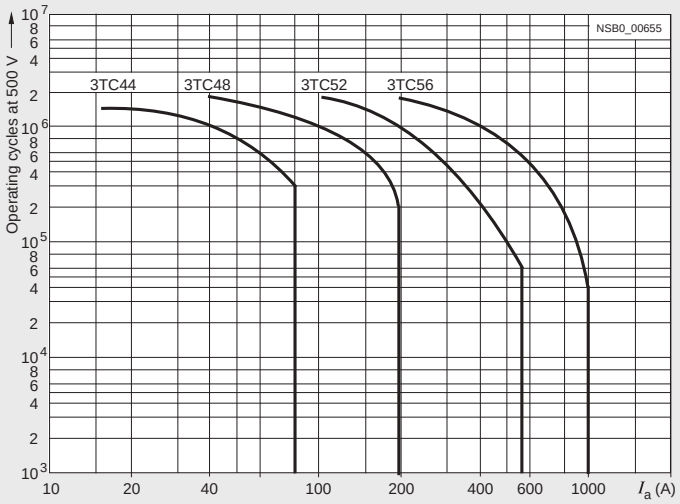


## Technical specifications

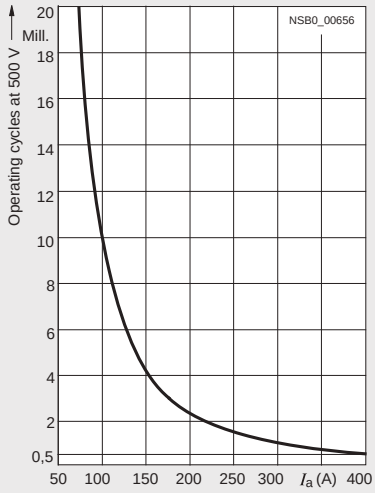
| Contactors | Type | | 3TC4 and 3TC7 | 3TC5 |
|---|---|---|---|---|
| **Rated data of the auxiliary contacts** | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | |
| **Conventional thermal current $I_{th}$ = Rated operational current $I_e$/AC-12** | | A | 10 | 10 |
| **AC load** **Rated operational current $I_e$/AC-15/AC-14** • For rated operational voltage $U_e$ | | | | |
| | 24 V | A | 10 | 10 |
| | 110 V | A | 10 | 10 |
| | 125 V | A | 10 | 10 |
| | 220 V | A | 6 | 6 |
| | 230 V | A | 5.6 | 5.6 |
| | 380 V | A | 4 | 4 |
| | 400 V | A | 3.6 | 3.6 |
| | 500 V | A | 2.5 | 2.5 |
| | 660 V | A | 2.5 | 2.5 |
| | 690 V | A | -- | -- |
| **DC load** **Rated operational current $I_e$/DC-12** • For rated operational voltage $U_e$ | | | | |
| | 24 V | A | 10 | 10 |
| | 60 V | A | 10 | 10 |
| | 110 V | A | 3.2 | 8 |
| | 125 V | A | 2.5 | 6 |
| | 220 V | A | 0.9 | 2 |
| | 440 V | A | 0.33 | 0.6 |
| | 600 V | A | 0.22 | 0.4 |
| **Rated operational current $I_e$/DC-13** • For rated operational voltage $U_e$ | | | | |
| | 24 V | A | 10 | 10 |
| | 60 V | A | 5 | 5 |
| | 110 V | A | 1.14 | 2.4 |
| | 125 V | A | 0.98 | 2.1 |
| | 220 V | A | 0.48 | 1.1 |
| | 440 V | A | 0.13 | 0.32 |
| | 600 V | A | 0.07 | 0.21 |

| Contactors | Type | 3TC44 ... 3TC56 |
|---|---|---|
| **cULus rated data of the auxiliary contacts** | | |
| Rated voltage, max. | V AC | 600 |
| Switching capacity | | A 600, P 600 |

| Contactors | Type | 3TC44 ... 3TC78 |
|---|---|---|
| **Contact endurance of the main contacts** | | |

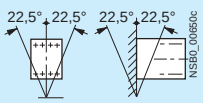



3TC44 to 3TC56 contactors




3TC74 and 3TC78 contactors

Legend for the diagrams:
$I_a$ = Breaking current

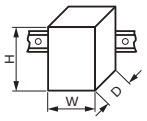
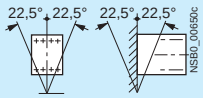
| Contactors | Type<br>Size | 3TC44<br>2 | 3TC48<br>4 | 3TC52<br>8 | 3TC56<br>12 |
|---|---|---|---|---|---|
| **General technical specifications** | | | | | |
| **Permissible mounting positions**<br>The contactors are designed for operation on a vertical mounting surface. | |  | | | |
| **Mechanical endurance** | Operating cycles | 10 million | | | |
| **Electrical endurance** | Operating cycles | [1] | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 800 | | 1000 | |
| **Protective separation** between the coil and the main contacts acc. to IEC 60947-1, Appendix N | V | Up to 300 | | Up to 660 | |
| **Mirror contacts**[2]<br>A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact. | | Yes, acc. to IEC 60947-4-1, Appendix F | | | |
| **Permissible ambient temperature** | | | | | |
| • During operation | °C | -25 ... +55 | | | |
| • During storage | °C | -50 ... +80 | | | |
| **Degree of protection** acc. to IEC 60947-1, Appendix C | | IP00/open, for AC operation, coil assembly IP40 | | | |
| **Shock resistance** | Rectangular pulse *g*/ms | 7.5/5 and 3.4/10 | 10/5 and 5/10 | 12/5 and 5.5/10 | 12/5 and 5.6/10 |
| **Short-circuit protection** | | | | | |
| **Main circuit**<br>Fuse links, operational class gG:<br>LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE | | | | | |
| • Type of coordination "1" | A | 50 | 160 | 250 | 400 |
| • Type of coordination "2" | A | 35 | 63 | 80 | 250 |
| **Auxiliary circuit** | | | | | |
| • Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k$ = 1 kA acc. to IEC 60947-5-1 | A | 16 | | | |
| • Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k$ = 400 A acc. to IEC 60947-5-1 | A | 10 | | | |

1) See the endurance diagram above.

2) For 3TC44, one NC contact each must be connected in series for the right and left auxiliary switch block respectively.

| Type | | | 3TC44 | 3TC48 | 3TC52 | 3TC56 |
|---|---|---|---|---|---|---|
| Size | | | 2 | 4 | 8 | 12 |
| Dimensions (W x H x D) | | | | | | |
| • DC operation | | mm | 70 x 85 x 141 | 100 x 183 x 180 | 135 x 238 x 232 | 160 x 279 x 310 |
| • AC operation | | mm | 70 x 85 x 100 | 100 x 183 x 154 | 135 x 238 x 200 | 160 x 279 x 251 |
| **Control circuits** | | | | | | |
| **Coil operating range** | | | 0.8 ... 1.1 x $U_s$ | | | |
| **Power consumption of the solenoid coils** (for cold coil and 1.0 x $U_s$) | | | | | | |
| • DC operation | - Closing = Closed | W | 10 | 19 | 30 | 86 |
| • AC operation, 50 Hz coil | - Closing | VA/p.f. | 68/0.86 | 300/0.5 | 640/0.48 | 1780/0.3 |
| | - Closed | VA/p.f. | 10/0.29 | 26/0.24 | 46/0.23 | 121/0.22 |
| • AC operation, 60 Hz coil | - Closing | VA/p.f. | 95/0.79 | 365/0.45 | 730/0.38 | 2140/0.3 |
| | - Closed | VA/p.f. | 12/0.3 | 35/0.26 | 56/0.24 | 140/0.29 |
| • AC operation, 50/60 Hz coil | - Closing at 50 Hz/60 Hz | VA/p.f. | 79/73/0.83/0.78 | -- | -- | -- |
| | - Closed at 50 Hz/60 Hz | VA/p.f. | 11/9/0.28/0.27 | -- | -- | -- |
| **Operating times** (for 0.8 ... 1.1 x $U_s$) Total break time = Opening delay + Arcing time | | | (The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm) | | | |
| • DC operation | - Closing delay | ms | 35 ... 190 | 90 ... 380 | 120 ... 400 | 110 ... 400 |
| | - Opening delay[1] | ms | 10 ... 25 | 17 ... 28 | 22 ... 35 | 40 ... 110 |
| • AC operation | - Closing delay | ms | 10 ... 40 | 20 ... 50 | 20 ... 50 | 20 ... 50 |
| | - Opening delay[1] | ms | 5 ... 25 | 5 ... 30 | 10 ... 30 | 10 ... 30 |
| • Arcing time | - DC-1 | ms | 20 | | | |
| | - DC-3/DC-5 | ms | 30 | | | |
| **Main circuit** | | | | | | |
| ***Load rating with DC*** | | | | | | |
| **Utilization category DC-1, switching resistive loads (L/R ≤ 1 ms)** | | | | | | |
| • Rated operational currents $I_e$ (at 55 °C) | Up to $U_e$ 750 V | A | 32 | 75 | 220 | 400 |
| • Minimum conductor cross-section | | $mm^2$ | 6 | 25 | 95 | 240 |
| • Rated power at $U_e$ | At 220 V | kW | 7 | 16.5 | 48 | 88 |
| | 440 V | kW | 14 | 33 | 97 | 176 |
| | 600 V | kW | 19.2 | 45 | 132 | 240 |
| | 750 V | kW | 24 | 56 | 165 | 300 |
| **Utilization category DC-3 and DC-5 Shunt-wound and series-wound motors (L/R ≤ 15 ms)** | | | | | | |
| • Rated operational currents $I_e$ (at 55 °C) | Up to 220 V | A | 32 | 75 | 220 | 400 |
| | 440 V | A | 29 | 75 | 220 | 400 |
| | 600 V | A | 21 | 75 | 220 | 400 |
| | 750 V | A | 7.5 | 75 | 170 | 400 |
| • Rated power at $U_e$ | At 110 V | kW | 2.5 | 6.5 | 20 | 35 |
| | 220 V | kW | 5 | 13 | 41 | 70 |
| | 440 V | kW | 9 | 27 | 82 | 140 |
| | 600 V | kW | 9 | 38 | 110 | 200 |
| | 750 V | kW | 4 | 45 | 110 | 250 |
| ***Switching frequency*** | | | | | | |
| **Switching frequency *z*** in operating cycles/hour | | | | | | |
| AC/DC operation | | | | | | |
| • With resistive load DC-1 | | $h^{-1}$ | 1500 | 1000 | | |
| • For inductive load DC-3/DC-5 | | $h^{-1}$ | 750 | 600 | | |
| **Conductor cross-sections (1 or 2 conductors connectable)** | | | | | | |
| **Main conductors:** | | | Screw terminals | | | |
| • Solid | | $mm^2$ | 2 x (2.5 ... 10) | 2 x (6 ... 16) | -- | -- |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (1.5 ... 4) | -- | -- | -- |
| • Stranded with cable lug | | $mm^2$ | 2 x 16 | 2 x 35 | 2 x 120 | 2 x 150 |
| • Pin-end connector acc. to DIN 46231 | | $mm^2$ | 2 x (1 ... 6) | -- | -- | -- |
| • Busbars | | mm | -- | 15 x 2.5 | 25 x 4 | 2 x (25 x 3) |
| • Terminal screw | | | M5 | M6 | M10 | M10 |
| **Auxiliary conductors:** | | | | | | |
| • Solid | | $mm^2$ | 2 x (1 ... 2.5) | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.75 ... 1.5) | | | |

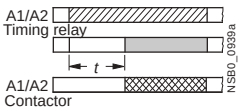
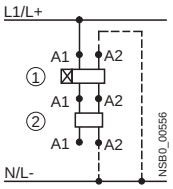
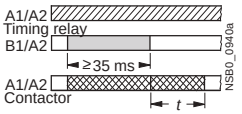
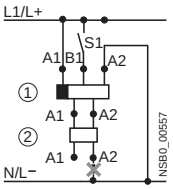
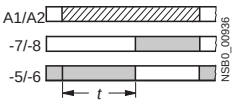
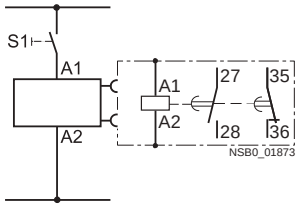
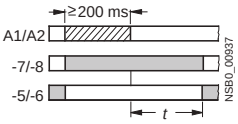
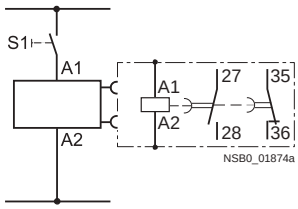
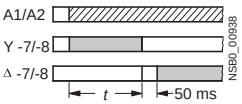
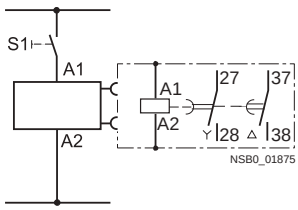
[1] The opening delay times can increase if the contactor coils are damped against voltage peaks. Only 3TC44 contactors are allowed to be fitted with diodes.

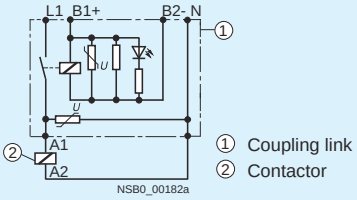
| | | | | | |
|---|---|---|---|---|---|
| Type | | | | **3TC74** | **3TC78** |
| Design | | | | **1-pole contactors** | **2-pole contactors** |
| Dimensions |  | | mm | 78 x 352 x 276 | 160 x 366 x 290 |
| **General technical specifications** | | | | | |
| **Permissible mounting positions**<br>The contactors are designed for operation on a vertical mounting surface. |  | | | | |
| **Mechanical endurance** | Operating cycles | | | 30 million | |
| **Electrical endurance** | Operating cycles | | | 1) | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 1500 | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 8 | |
| **Protective separation** between the coil and the main contacts acc. to IEC 60947-1, Appendix N | | | V | 630 | |
| **Permissible ambient temperature** | | | °C | -25 ... +55 | |
| **Degree of protection** acc. to IEC 60947-1, Appendix C | | | | IP00/open | |
| **Short-circuit protection** | | | | | |
| **Main circuit**<br>Fuse links, operational class gG:<br>LV HRC, type 3NA | | | | | |
| • Type of coordination "1" | | | A | 630 | |
| • Type of coordination "2" | | | A | 500 | |
| **Auxiliary circuits** | | | | | |
| • Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k$ = 1 kA acc. to IEC 60947-5-1 | | | A | 16 | |
| • Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k$ = 400 A acc. to IEC 60947-5-1 | | | A | 10 | |
| **Control circuits** | | | | | |
| **Coil operating range** | | | | | |
| • DC operation | At $U_c$ = 24 V | | | 0.8 ... 1.2 x $U_s$ | |
| | At $U_c$ > 24 V | | | 0.7 ... 1.2 x $U_s$ | |
| • AC operation | At $U_c$ = 24 V | | | 0.7 ... 1.15 x $U_s$ | |
| | At $U_c$ > 24 V | | | 0.7 ... 1.14 x $U_s$ | |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | | |
| • DC operation | Closing = Closed | | W | 46 | 92 |
| • AC operation, 50 Hz | Closing, | | VA | 80 | 160 |
| | Closed | | | 0.95 | 0.95 |
| **Operating times**<br>(Total break time = Opening delay + Arcing time) | | | | (The values apply up to and including 15 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm) | |
| • AC and DC operation | - Closing delay | | ms | 60 ... 100 | |
| | - Opening delay | | ms | 20 ... 35 | |
| • Arcing time at 0.06 ... 4 x $I_e$ | | | ms | 40 ... 70 | |
| **Main circuit** | | | | | |
| ***Load rating with DC*** | | | | | |
| **Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)** | | | | | |
| • Rated operational current $I_e$/DC-1 (at 55 °C) | | | A | 500 | 500 |
| • Minimum conductor cross-section | | | $mm^2$ | 2 x 150 | 2 x 150 |
| • Rated power | At 220 V | | kW | 110 | 110 |
| | 440 V | | kW | 220 | 220 |
| | 600 V | | kW | 300 | 300 |
| | 750 V | | kW | 375 | 375 |
| | 1200 V | | kW | — | 600 |
| | 1500 V | | kW | — | 750 |
| • Critical currents, without arc extinction | At 440 V | | A | ≤ 7 | — |
| | 600 V | | A | ≤ 13 | — |
| | 750 V | | A | ≤ 15 | — |
| | ≤ 800 V | | A | — | ≤ 7 |
| | 1200 V | | A | — | ≤ 13 |
| | 1500 V | | A | — | ≤ 15 |
| **Utilization categories DC-3 and DC-5, switching DC motors** | | | | 2) | |
| **Permissible rated current for regenerative braking** | At 110 ... 600 V | | A | 400 | |
| ***Switching frequency*** | | | | | |
| **Switching frequency *z*** in operating cycles/hour | | | | | |
| AC/DC operation | | | | | |
| • With resistive load DC-1 | | | $h^{-1}$ | 750 | 1000 |
| • For inductive load DC-3/DC-5 | | | $h^{-1}$ | 500 | 500 |

1) Endurance see page 2/186..
2) See Selection and ordering data.

## Technical specifications

| Contactor | Type | | 3RT19 26-2C | 3RT19 26-2D | 3RT19 26-2E | 3RT19 26-2F | 3RT19 26-2G |
|---|---|---|---|---|---|---|---|
| | | | Solid-state timing relay blocks with semiconductor output | | Solid-state time-delay auxiliary switch blocks | | |
| **General data** | | | | | | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to EN 60664-1 | | V AC | 250 | | | | |
| **Permissible ambient temperature** | | | | | | | |
| • During operation | | °C | -25 ... +60 | | | | |
| • During storage | | °C | -40 ... +80 | | | | |
| **Degree of protection** acc. to EN 60947-1, Appendix C<br>• Cover<br>• Terminals | | | <br>IP40<br>IP20 | | | | |
| **Shock resistance**<br>Half-sine acc. to IEC 60068-2-27 | | g/ms | 15/11 | | | | |
| **Vibration resistance**<br>according to IEC 60068-2-6 | | Hz/mm | 10 ... 55/0.35 | | | | |
| **EMC tests** | Basic specification | | IEC 61000-6-4 | | | | |
| **Conductor connections** | | | | | | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 1.5), 2 x (0.75 ... 4) | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 2.5) | | | | |
| • AWG cables, solid or stranded | | AWG | 2 x (18 ... 14) | | | | |
| • Terminal screws | | | M3 | | | | |
| • Tightening torque | | Nm<br>lb.in | 0.8 ... 1.2<br>7 ... 10.3 | | | | |
| **Permissible mounting positions** | | | Any | | | | |
| **Control** | | | | | | | |
| **Operating range of excitation** | | | 0.8 ... 1.1 x $U_s$,<br>0.95 ... 1.05 times the rated frequency | | 0.85 ... 1.1 x $U_s$,<br>0.95 ... 1.05 times the rated frequency | | |
| **Rated power** | | W | 1 | | 2 | | |
| • Power consumption at 230 V AC, 50 Hz | | VA | 1 | | 4 | | |
| **Overvoltage protection** | | | Varistor integrated in timing relay | | -- | | |
| **Recovery time** | | ms | 50 | | 150 | | |
| **Minimum ON period** | | ms | 35 | | 200 (with OFF-delay) | | |
| **Setting accuracy**<br>With reference to upper limit of scale | Typ. | % | ±15 | | | | |
| **Repeat accuracy** | Max. | % | ±1 | | | | |
| **Load side** | | | | | | | |
| **Rated operational currents $I_e$** | | | | | | | |
| • Load current | | A | 0.3 | | -- | | |
| • AC-15, 230 V, 50 Hz | | A | -- | | 3 | | |
| • DC-13, 24 V | | A | -- | | 1 | | |
| • DC-13, 110 V | | A | -- | | 0.2 | | |
| • DC-13, 230 V | | A | -- | | 0.1 | | |
| **Short-time loading capacity** | Up to 10 ms | A | 10 | | -- | | |
| **DIAZED protection** gG operational class | | A | -- | | 4 | | |
| **Residual current** | Max. | mA | 5 | | -- | | |
| **Voltage drop**<br>With conducting output | Max. | VA | 3.5 | | -- | | |
| **Mechanical endurance** | | Operating cycles | $100 \times 10^6$ | | $10 \times 10^6$ | | |
| **Switching frequency** for load | | | | | | | |
| • With $I_e$ at 230 V AC | | $h^{-1}$ | 200 | | 2500 | | |
| • With 3RT20 16 contactor at 230 V AC | | $h^{-1}$ | 2500 | | 5000 | | |

| Function | Function chart |
|---|---|
| | Timing relay energized<br>Contact closed<br>Contact open |
| **Solid-state timing relay blocks** | **1 NO contact (semiconductor output)** |
| ON-delay,<br>two-wire design<br>(varistor integrated) | 3RT19 26-2C<br>  <br>  <br>A2 can be connected to N(L-) using either the contactor or the timing relay.<br>– – – – To be connected optionally<br>① Timing relay block<br>② Contactor |
| OFF-delay<br>with auxiliary voltage<br>(varistor integrated) | 3RT19 26-2D<br>  <br>  <br>A2 must only be connected to N(L--) from the timing relay.<br>✕ Do not connect<br>① Timing relay block<br>② Contactor |
| **Solid-state time-delay auxiliary switch blocks** | **1 NO + 1 NC** |
| ON-delay | 3RT19 26-2E<br>  <br>  |
| OFF-delay<br>without auxiliary voltage | 3RT19 26-2F<br>  <br>  |
| **Solid-state time-delay auxiliary switch blocks** | **2 NO** |
| Wye-delta function:<br>1 NO delayed,<br>1 NO instantaneous,<br>dead time 50 ms<br>(varistor integrated) | 3RT19 26-2G<br>  <br>  |

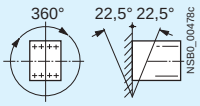
| Contactor | Type | | 3RH19 24, 3TX7 090<br>Coupling links for mounting on contactors acc. to IEC 60947/EN 60947 |
|---|---|---|---|
| **General data** | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 300 |
| **Protective separation** between coil and contacts acc. to IEC 60947-1, Appendix N | | V AC | Up to 300 |
| **Permissible ambient temperature** | | | |
| • During operation | | °C | -25 ... +60 |
| • During storage | | °C | -40 ... +80 |
| **Degree of protection acc. to IEC 60947-1, Appendix C** | | | |
| • Connections | | | IP20 |
| • Enclosure | | | IP40 |
| **Circuit diagram** | | |  |
| **Conductor cross-sections** | | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 2.5) |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5) |
| Terminal screws | | | M3 |
| **Control side** | | | |
| **Rated control supply voltage $U_s$** | | V DC | 24 |
| **Operating range** | | V DC | 17 ... 30 |
| **Power consumption at $U_s$** | | W | 0.5 |
| **Nominal current input** | | mA | 20 |
| **Release voltage** | | V | ≥ 4 |
| **Function display** | | | Yellow LED |
| **Protection circuit** | | | Varistor |
| **Load side** | | | |
| **Mechanical endurance** | Operating cycles | | 20 x $10^6$ |
| **Electrical endurance at $I_e$** | Operating cycles | | 1 x $10^5$ |
| **Switching frequency** | Operating cycles | $h^{-1}$ | 5000 |
| **Make-time** | | ms | Approx. 7 |
| **Break-time** | | ms | Approx. 4 |
| **Bounce time** | | ms | Approx. 2 |
| **Contact material** | | | AgSnO |
| **Switching voltage** | AC/DC | V | 24 ... 250 |
| **Permissible residual current** of the electronics (with 0 signal) | | mA | 2.5 |

## Technical specifications

| | | |
|---|---|---|
| Contactor relays | Type | **3RH2** |
| | Size | **S00** |

### Permissible mounting positions

The contactor relays are designed for operation on a vertical mounting surface.




Upright mounting position

Special version required

(3RH21 22-2K.40 coupling relays and contactor relays with extended operating range on request)

### Positively-driven operation of contacts in contactor relays

**3RH2:**
**Yes,** in the basic unit and the auxiliary switch block as well as between the basic unit and the front-mounted auxiliary switch block (removable) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

**3RH22:**
**Yes,** in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

Note:

3RH29 11-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts.

Explanations:
There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

**ZH1/457**
Safety Rules for Controls on Power-Operated Metalworking Presses.

**IEC 60947-5-1, Appendix L**
Low-Voltage Controlgear, Controls and Contact Blocks. Special requirements for positively-driven contacts

### Contact reliability

Contact reliability at 17 V, 1 mA acc. to IEC 60947-5-4

Frequency of contact faults $<10^{-8}$ i.e. < 1 fault per 100 million operating cycles

### Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary, e.g. in the form of RC elements and freewheel diodes.

The characteristic curves apply to:

- 3RH21/3RH22 contactor relays
- 3RH24 latched contactor relays
- 3RH29 11 auxiliary switch blocks[1)]
- Auxiliary switch blocks for snapping onto the front, max. 4-pole and for mounting onto the side in size S00

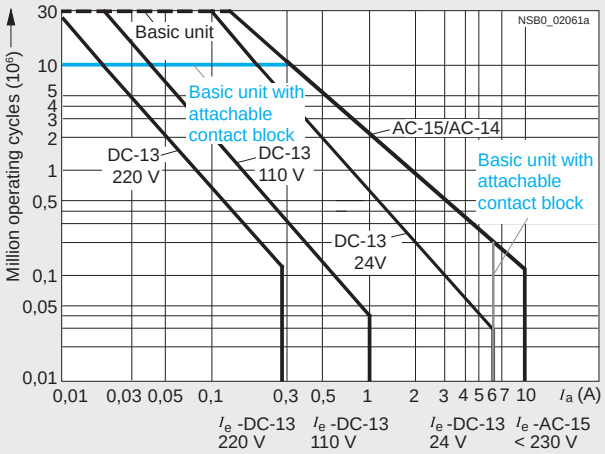
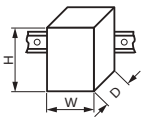
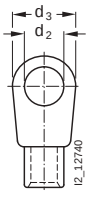



Diagram legend:
$I_a$ = Breaking current
$I_e$ = Rated operational current

1) $I_e$ = 6 A for AC-15/AC-14.

| | | | | | |
|---|---|---|---|---|---|
| Type |  | | **3RH21** | **3RH22** | **3RH24** |
| Size | | | **S00** | **S00** | **S00** |
| Dimensions (W x H x D) with screw terminals | | mm | 45 x 57.5 x 73 | -- | 90 x 57.5 x 73 |
| • With mounted auxiliary switch block | | mm | 45 x 57.5 x 116 | 45 x 57.5 x 116 | -- |
| **General technical specifications** | | | | | |
| **Mechanical endurance** | | | | | |
| • Basic units | | Operating cycles | 30 million | | 5 million |
| • Basic unit with snap-on auxiliary switch block | | Operating cycles | 10 million | | |
| • Solid-state compatible auxiliary switch block | | Operating cycles | 5 million | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 690 | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | |
| **Protective separation** between the coil and the contacts in the basic unit acc. to IEC 60947-1, Appendix N | | V | 400 | | |
| **Permissible ambient temperature** | | | | | |
| • During operation | | °C | -25 ... +60 | | |
| • During storage | | °C | -55 ... +80 | | |
| **Protection class IP on the front** acc. to IEC 60529 | | | IP20, coil assembly IP40 | | |
| **Touch protection on the front** acc. to IEC 60529 | | | Finger-safe, for vertical contact from the front (screw and spring-type terminal) | | |
| **Shock resistance** | • Rectangular pulse - AC operation | g/ms | 7.3/5 and 4.7/10 | | |
| | • Rectangular pulse - DC operation | g/ms | >10/5 and >5/10 | | |
| | • Sine pulse - AC operation | g/ms | 11.4/5 and 7.3/10 | | |
| | • Sine pulse - DC operation | g/ms | >15/5 and >8/10 | | |
| **Short-circuit protection** | | | | | |
| • Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k$ = 1 kA acc. to IEC 60947-5-1 | | A | 10 | | |
| • Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k$ = 400 A acc. to IEC 60947-5-1 | | A | 6 | | |
| **Conductor cross-sections** | | | | | |
| **Auxiliary conductors and coil terminals** (1 or 2 conductors can be connected) | | | **Screw terminals** | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (0.5 ... 4) | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] | | |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 16)[1]; 2 x (18 ... 14)[1] | | |
| • Terminal screw - Tightening torque | | Nm | M3 (for standard screwdriver size 2 or Pozidriv 2) 0.8 ... 1.2 (7 ... 10.3 lb.in) | | |
| **Auxiliary conductors and coil terminals** (1 or 2 conductors can be connected) | | | **Spring-type terminals** | | |
| • Operating devices | | mm | 3.0 x 0.5; 3.5 x 0.5 | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 4) | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 2.5) | | |
| • Finely stranded without end sleeve | | $mm^2$ | 2 x (0.5 ... 2.5) | | |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 12) | | |
| **Auxiliary conductors for front and laterally mounted auxiliary switches** | | | | | |
| • Operating devices | | mm | 3.0 x 0.5; 3.5 x 0.5 | | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 2.5) | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5) | | |
| • Finely stranded without end sleeve | | $mm^2$ | 2 x (0.5 ... 2.5) | | |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) | | |
| **Auxiliary conductor and coil terminals** | | | **Ring terminal lug connection** | | |
| • Terminal screw |  | mm | M3, Pozidriv size 2 | | |
| • Operating devices | | Nm | Ø 5 ... 6 | | |
| • Tightening torque | | mm | 0.8 ... 1.2 | | |
| • Usable ring terminal lugs | | mm | $d_2$ = min. 3.2 | | |
| - DIN 46234 without insulation sleeve<br>- DIN 46225 without insulation sleeve<br>- DIN 46237 with insulation sleeve<br>- JIS C2805 Type R without insulation sleeve<br>- JIS C2805 Type RAV with insulation sleeve<br>- JIS C2805 Type RAP with insulation sleeve | | mm | $d_3$ = max. 7.5 | | |

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Note:

Max. external diameter of the cable insulation: 3.6 mm.

Tool for opening the spring-type terminals see Accessories, page 2/85.

An insulation stop must be used for conductor cross-sections ≤1 $mm^2$, see Accessories, page 2/85.

| Contactor relays | | Type | | 3RH2. |
|---|---|---|---|---|
| | | Size | | S00 |
| **Control circuits** | | | | |
| **Coil operating range** | | | | |
| • AC operation | | At 50 Hz | | 0.8 ... 1.1 x $U_s$ |
| | | At 60 Hz | | 0.85 ... 1.1 x $U_s$ |
| • DC operation | | At +50 °C | | 0.8 ... 1.1 x $U_s$ |
| | | At +60 °C | | 0.85 ... 1.1 x $U_s$ |
| **Power consumption of the solenoid coils** (when coil is cold and 1.0 x $U_s$) | | | | |
| • AC operation, 50 Hz | | | | |
| - Closing | | | VA/p.f. | 37/0.8 |
| - Closed | | | VA/p.f. | 5.7/0.25 |
| • AC operation, 60 Hz | | | | |
| - Closing | | | VA/p.f. | 33/0.75 |
| - Closed | | | VA/p.f. | 4.4/0.25 |
| • DC operation (closing = closed) | | | W | 4.0 |
| **Permissible residual current of the electronics** (with 0 signal) | | | | |
| • For AC operation[1] | | | | < 4 mA x (230 V/$U_s$) |
| • For DC operation | | | | < 10 mA x (24 V/$U_s$) |
| **Operating times**[2] | | | | |
| Total break time = OFF-delay + Arcing time | | | | |
| Values apply with coil in cold state and at operating temperature for operating range | | | | |
| AC operation | | | | |
| • Closing | | | | |
| - ON-delay of NO contact | With 0.8 ... 1.1 x $U_s$ | | ms | 8 ... 33 |
| | With 1.0 x $U_s$ | | ms | 9 ... 22 |
| | 3RH24 minimum operating time | | ms | ≥35 |
| - OFF-delay of NC contact | With 0.8 ... 1.1 x $U_s$ | | ms | 6 ... 25 |
| | With 1.0 x $U_s$ | | ms | 6.5 ... 19 |
| • Opening | | | | |
| - OFF-delay of NO contact | With 0.8 ... 1.1 x $U_s$ | | ms | 4 ... 15 |
| | With 1.0 x $U_s$ | | ms | 4.5 ... 15 |
| | 3RH24 minimum operating time | | ms | ≥30 |
| - ON-delay of NC contact | With 0.8 ... 1.1 x $U_s$ | | ms | 5 ... 15 |
| | With 1.0 x $U_s$ | | ms | 5 ... 15 |
| DC operation | | | | |
| • Closing | | | | |
| - ON-delay of NO contact | With 0.8 ... 1.1 x $U_s$ | | ms | 30 ... 100 |
| | With 1.0 x $U_s$ | | ms | 35 ... 50 |
| | 3RH24 minimum operating time | | ms | ≥100 |
| - OFF-delay of NC contact | With 0.8 ... 1.1 x $U_s$ | | ms | 25 ... 90 |
| | With 1.0 x $U_s$ | | ms | 30 ... 45 |
| • Opening | | | | |
| - OFF-delay of NO contact | With 0.8 ... 1.1 x $U_s$ | | ms | 7 ... 13 |
| | With 1.0 x $U_s$ | | ms | 7 ... 12 |
| | 3RH24 minimum operating time | | ms | ≥30 |
| - ON-delay of NC contact | With 0.8 ... 1.1 x $U_s$ | | ms | 13 ... 19 |
| | With 1.0 x $U_s$ | | ms | 13 ... 18 |
| • Arcing time | | | ms | 10 ... 15 |
| Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$: | | | | |
| $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$ | | | | |

1) The 3RT29 16-1GA00 additional load module is recommended for higher residual currents (see page 2/80).

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

| Contactor relays | Type | | 3RH2. |
|---|---|---|---|
| | Size | | S00 |
| **Load side** | | | |
| ***AC capacity*** | | | |
| **Rated operational currents $I_e$** | | | |
| AC-12 | | A | 10 |
| AC-15/AC-14 for rated operational voltage $U_s$ | | | |
| | Up to 230 V | A | 6 |
| | 400 V | A | 3 |
| | 500 V | A | 2 |
| | 690 V | A | 1 |
| ***Load rating with DC*** | | | |
| **Rated operational currents $I_e$** | | | |
| DC-12 for rated operational voltage $U_s$ | | | |
| • 1 conducting path | 24 V | A | 6 |
| | 60 V | A | 6 |
| | 110 V | A | 3 |
| | 220 V | A | 1 |
| | 440 V | A | 0.3 |
| | 600 V | A | 0.15 |
| • 2 conducting paths in series | 24 V | A | 10 |
| | 60 V | A | 10 |
| | 110 V | A | 4 |
| | 220 V | A | 2 |
| | 440 V | A | 1.3 |
| | 600 V | A | 0.65 |
| • 3 conducting paths in series | 24 V | A | 10 |
| | 60 V | A | 10 |
| | 110 V | A | 10 |
| | 220 V | A | 3.6 |
| | 440 V | A | 2.5 |
| | 600 V | A | 1.8 |
| DC-13 for rated operational voltage $U_s$ | | | |
| • 1 conducting path | 24 V | A | 6 |
| | 60 V | A | 2 |
| | 110 V | A | 1 |
| | 220 V | A | 0.3 |
| | 440 V | A | 0.14 |
| | 600 V | A | 0.1 |
| • 2 conducting paths in series | 24 V | A | 10 |
| | 60 V | A | 3.5 |
| | 110 V | A | 1.3 |
| | 220 V | A | 0.9 |
| | 440 V | A | 0.2 |
| | 600 V | A | 0.1 |
| • 3 conducting paths in series | 24 V | A | 10 |
| | 60 V | A | 4.7 |
| | 110 V | A | 3 |
| | 220 V | A | 1.2 |
| | 440 V | A | 0.5 |
| | 600 V | A | 0.26 |
| ***Switching frequency*** | | | |
| **Switching frequency *z*** in operating cycles/hour | | | |
| • For rated operation<br>For utilization category | AC-12/DC-12<br>AC-15/AC-14<br>DC-13 | $h^{-1}$<br>$h^{-1}$<br>$h^{-1}$ | 1000<br>1000<br>1000 |
| • No-load switching frequency | | $h^{-1}$ | 10000 |
| Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$: $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$ | | | |
| **cULus and cULus rated data** | | | |
| **Basic units and auxiliary switch blocks** | | | |
| • Rated control supply voltage | | V AC | max. 600 |
| • Rated voltage | | V AC | 600 |
| • Switching capacity | | | A 600, Q 600 |
| • Uninterrupted current at 240 V AC | | A | 10 |

## Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RH21 contactor relays (see page 5/6).

| | | | | |
|---|---|---|---|---|
| **Contactor type** | | **3RH21 ..-.HB40** | **3RH21 ..-.JB40** | **3RH21 ..-.KB40** |
| Size | | **S00** | **S00** | **S00** |
| **Control circuits** | | | | |
| **Coil operating range** | | 0.7 ... 1.85 x $U_s$ | | |
| **Power consumption of the solenoid coil** (for cold coil) Closing = Closed | | | | |
| • At $U_s$ = 17 V | W | 1.4 | | |
| • At $U_s$ = 24 V | W | 2.8 | | |
| • At $U_s$ = 30 V | W | 4.4 | | |
| **Permissible residual current** of the electronics for 0 signal | | < 10 mA x (24 V/$U_s$) | | |
| **Overvoltage configuration of the solenoid coil** | | No overvoltage damping | With diode | With suppressor diode |
| **Operating times** | | | | |
| • **Closing** at 17 V | | | | |
| - ON-delay NO | ms | 40 ... 130 | | |
| - OFF-delay NC | ms | 30 ... 80 | | |
| • At 24 V | | | | |
| - ON-delay NO | ms | 35 ... 60 | | |
| - OFF-delay NC | ms | 25 ... 40 | | |
| • At 30 V | | | | |
| - ON-delay NO | ms | 25 ... 50 | | |
| - OFF-delay NC | ms | 15 ... 30 | | |
| • **Opening** at 17 ... 30 V | | | | |
| - OFF-delay NO | ms | 7 ... 20 | 38 ... 65 | 7 ... 20 |
| - ON-delay NC | ms | 20 ... 30 | 55 ... 75 | 20 ... 30 |
| **Upright mounting position** | | Request required | | |

| | | | | |
|---|---|---|---|---|
| **Contactor type** | | **3RH21 ..-.MB40-0KT0** | **3RH21 ..-.VB40** | **3RH21 ..-.WB40** |
| Size | | **S00** | **S00** | **S00** |
| **Control circuits** | | | | |
| **Coil operating range** | | 0.85 ... 1.85 x $U_s$ | | |
| **Power consumption of the solenoid coil** (for cold coil) Closing = Closed at $U_s$ = 24 V | W | 1.6 | | |
| **Permissible residual current** of the electronics for 0 signal | | < 8 mA x (24 V/$U_s$) | | |
| **Overvoltage configuration of the solenoid coil** | | Diode, varistor or RC element, attachable | Built-in diode | Built-in suppressor diode |
| **Control circuits** | | | | |
| **Operating times** | | | | |
| • Closing at 20.5 V | | | | |
| - ON-delay NO | ms | 30 ... 120 | | |
| - OFF-delay NC | ms | 20 ... 110 | | |
| • At 24 V | | | | |
| - ON-delay NO | ms | 25 ... 90 | | |
| - OFF-delay NC | ms | 15 ... 80 | | |
| • At 44 V | | | | |
| - ON-delay NO | ms | 15 ... 60 | | |
| - OFF-delay NC | ms | 10 ... 50 | | |
| • Closing at 17 ... 30 V | | | | |
| - OFF-delay NO | ms | 5 ... 20 | 20 ... 80 | 5 ... 20 |
| - ON-delay NC | ms | 10 ... 30 | 30 ... 90 | 10 ... 30 |
| **Upright mounting position** | | Request required | | |

## Terminal designations and identification numbers for auxiliary contacts

### *Terminal designations*

The terminal designations are 2-digit, e.g. 13, 14, 21, 22:

- Tens digit: Sequence digit
  - Related terminals have the same sequence digit
- Units digit: Function digit
  - 1-2 for normally closed contacts (NC)
  - 3-4 for normally open contacts (NO)

### *Identification numbers*

The identification number indicates the number and type of the auxiliary contacts, e.g. 40, 31, 22, 13:

- 1st digit: number of normally open contacts (NO)
- 2nd digit: number of normally closed contacts (NC)

Examples:

- 31 = 3 NO + 1 NC
- 40 = 4 NO

## Selection guide for mountable auxiliary switch blocks for power contacts and contactor relays

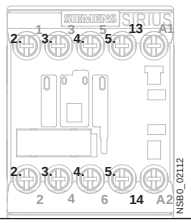
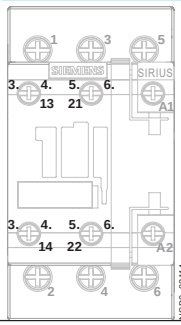
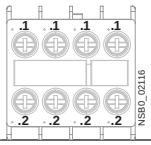
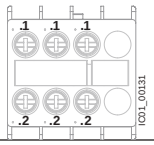
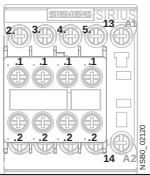
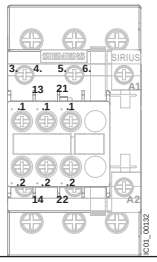
The auxiliary switch blocks of the 3RH29 series for mounting on the front and side can be used for power contactors as well as for contactor relays.

The possible combinations of basic unit and mounted auxiliary switch block can be found in the tables below.

Where the columns and lines intersect (blue and green in the example) you will find the identification number for the combination of basic unit (column) and auxiliary switch block (line).

| Auxiliary contacts | | Version | 3-pole contactors 3RT20 1 S00 | 3RT20 1 S00 | 3RT20 2 S0 | |
|---|---|---|---|---|---|---|
| NO | NC | | 10 | 01 | 11 | |
| | | | 2. 3. 4. 5. | 5. 6. 7. 8. | 3. 4. 5. 6. | |
| | | | According to EN 50012[1] | | | Order No. |
| **Auxiliary switches without NO contact** | | | | | | |
| -- | 1 | | 11 | 02 | 12 | **3RH29 11-.HA01** |
| -- | 2 | | 12 | 03 | 13 | **3RH29 11-.HA02** |
| -- | 3 | | 13 | 04 | 14 | **3RH29 11-.HA03** |
| -- | 4 | | 14 | -- | | **3RH29 11-.FA04** |
| **Auxiliary switch with 1 NO contact** | | | | | | |
| 1 | -- | | 20 | 11 | 21 | **3RH29 11-.HA10** |
| 1 | 1 | | 21 | 12 | 22 | **3RH29 11-.HA11** |

1) Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

| | Example 1 | Example 2 |
|---|---|---|
| Type | **3RT20 motor contactor, S00 with 1 NO** | **3RT20 motor contactor, S0 with 1 NO + 1 NC** |
| |  |  |
| Sequence digit | 2. 3. 4. 5. | 3. 4. 5. 6. |
| Type | **Auxiliary switch with 4 NC, 3RH29 11-.FA04** | **Auxiliary switch with 3 NC, 3RH29 11-.HA03** |
| |  |  |
| Function digit | .1 .1 .1 .1<br>.2 .2 .2 .2 | .1 .1 .1<br>.2 .2 .2 |
| Type | **3RT20 motor contactor, S00 with auxiliary switch block** | **3RT20 motor contactor, S0 with auxiliary switch block** |
| |  |  |
| Terminal design. | 13 21 31 41 51<br>14 22 32 42 52 | 13 21 31 41 51<br>14 22 32 42 52 |
| Type | **Ident. No. 14** | **Ident. No. 14** |

## Additional auxiliary switch blocks

| | | | 3-pole contactors | | | 4-pole contactors | | | | Contactor relays | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auxiliary contacts | | | S00 | | S0 | S00 | | S0/S2 | | S00 | | | |
| Version | | | 3RT20 1 | 3RT20 1 | 3RT20 2 | 3RT23 1 | 3RT25 1 | 3RT23 | 3RT25 | 3RH21, 3RH24 | 3RH21, 3RH24 | 3RH21, 3RH24 | |
| NO | NC | | 10 | 01 | 11 | -- | -- | 11 | 11 | 40E | 31E | 22E | |
| | | | 13 14 | 21 22 | 13 21 14 22 | | | 13 21 14 22 | 13 21 14 22 | 13 23 33 43 14 24 34 44 | 13 21 33 43 14 22 34 44 | 13 21 31 43 14 22 32 44 | |
| | | | 2. 3. 4. 5. | 5. 6. 7. 8. | 3. 4. 5. 6. | 1. 2. 3. 4. | 1. 2. 3. 4. | 3. 4. 5. 6. | 3. 4. 5. 6. | 5. 6. 7. 8 | 5. 6. 7. 8 | 5. 6. 7. 8 | |
| Front auxiliary switches | | | According to EN 50012[1] | | | According to EN 50012[1] | | | | According to EN 50011[1] | | | Order No. |
| **Without NO contact** | | | | | | | | | | | | | |
| -- | 1 | .1 .2 | 11 | 02 | 12 | 01 | 01 | 12 | 12 | 41X | 32X | 23X | **3RH29 11-.HA01** |
| -- | 2 | .1 .1 .2 .2 | 12 | 03 | 13 | 02 | 02 | 13 | -- | 42E | 33X | 24 | **3RH29 11-.HA02** |
| -- | 3 | .1 .1 .1 .2 .2 .2 | 13 | 04 | 14 | 03 | -- | -- | -- | 43 | 34 | -- | **3RH29 11-.HA03** |
| -- | 4 | .1 .1 .1 .1 .2 .2 .2 .2 | 14 | -- | -- | -- | -- | -- | -- | 44E | -- | -- | **3RH29 11-.FA04** |
| **With 1 NO contact** | | | | | | | | | | | | | |
| 1 | -- | .3 .4 | 20 | 11 | 21 | 10 | 10 | 21 | 21 | 50E | 41E | 32E | **3RH29 11-.HA10** |
| 1 | 1 | .1 .3 .2 .4 | 21 | 12 | 22 | 11 | 11 | 22 | 22 | 51X | 42X | 33X | **3RH29 11-.HA11** |
| 1 | 2 | .1 .1 .3 .2 .2 .4 | 22 | 13 | 23 | 12 | 12 | 23 | -- | 52 | 43 | 34 | **3RH29 11-.HA12** |
| 1 | 3 | .1 .1 .1 .3 .2 .2 .2 .4 | 23 | 14 | 24 | 13 | -- | -- | -- | 53X | 44X | -- | **3RH29 11-.HA13** |
| **With 2 NO contacts** | | | | | | | | | | | | | |
| 2 | -- | .3 .3 .4 .4 | 30 | 21 | 31 | 20 | 20 | 31 | 31 | 60E | 51X | 42X | **3RH29 11-.HA20** |
| 2 | 1 | .1 .3 .3 .2 .4 .4 | 31 | 22 | 32 | 21 | 21 | 32 | 32 | 61 | 52 | 43 | **3RH29 11-.HA21** |
| 2 | 2 | .1 .1 .3 .3 .2 .2 .4 .4 | 32 | 23 | 33 | 22 | 22 | 33 | -- | 62X | 53 | 44X | **3RH29 11-.HA22** |
| 2 | 2 | .3 .1 .1 .3 .4 .2 .2 .4 | 32 | 23 | 33 | 22 | 22 | 33 | -- | 62X | 53 | 44X | **3RH29 11-.FA22** |

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

## Additional auxillary switch blocks

| Auxiliary contacts Version NO | NC | 3-pole contactors S00 3RT20 1 10 | S00 3RT20 1 01 | S0 3RT20 2 11 | 4-pole contactors S00 3RT23 1 -- | S00 3RT25 1 -- | S0/S2 3RT23 11 | S0/S2 3RT25 11 | Contactor relays S00 3RH21, 3RH24 40E | 31E | 22E | Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2. 3. 4. 5. | 5. 6. 7. 8. | 3. 4. 5. 6. | 1. 2. 3. 4. | 1. 2. 3. 4. | 3. 4. 5. 6. | 3. 4. 5. 6. | 5. 6. 7. 8 | 5. 6. 7. 8 | 5. 6. 7. 8 | |
| | | According to EN 50012[1] | | | According to EN 50012[1] | | | | According to EN 50011[1] | | | |
| **Front auxiliary switches with 3 NO contacts** | | | | | | | | | | | | |
| 3 | -- | 40 | 31 | 41 | 30 | 30 | 41 | 41 | 70 | 61 | 52 | **3RH29 11-.HA30** |
| 3 | 1 | 41 | 32 | 42 | 31 | 31 | 42 | 42 | 71X | 62X | 53X | **3RH29 11-.HA31** |
| **Front auxiliary switches with 4 NO contacts** | | | | | | | | | | | | |
| 4 | -- | 50 | 41 | 51 | 40 | 40 | 51 | 51 | 80E | 71X | 62X | **3RH29 11-.FA40** |
| | | Acc. to EN 50005 | | | Acc. to EN 50005 | | | | Acc. to EN 50005 | | | |
| **Front auxiliary switches with make-before-break** | | | | | | | | | | | | |
| -- | 1 | 21 | 12 | 22 | 11 | 11 | 22 | 22 | 51 | 42 | 33 | **3RH29 11-.FB11** |
| -- | 2 | 32 | 23 | 33 | 22 | 22 | 33 | -- | 62 | 53 | 44 | **3RH29 11-.FB22** |
| -- | 3 | 32 | 23 | 33 | 22 | 22 | 33 | -- | 62 | 53 | 44 | **3RH29 11-.FC22** |
| **Front auxiliary switches with complete inscription[2]** | | | | | | | | | | | | |
| 1 | -- | 20 | 11 | 21 | 10 | 10 | 21 | 21 | 50 | 41 | 32 | **3RH29 11-1AA10** |
| 1 | -- | 20 | 11 | 21 | 10 | 10 | 21 | 21 | 50 | 41 | 32 | **3RH29 11-1BA10** |
| -- | 1 | 11 | 02 | 12 | 01 | 01 | 12 | 12 | 41 | 32 | 23 | **3RH29 11-1AA01** |
| -- | 1 | 11 | 02 | 12 | 01 | 01 | 12 | 12 | 41 | 32 | 23 | **3RH29 11-1BA01** |
| 1 | 1 | 21 | 12 | 22 | 11 | 11 | 22 | 22 | 51 | 42 | 33 | **3RH29 11-1LA11** |
| 1 | 1 | 21 | 12 | 22 | 11 | 11 | 22 | 22 | 51 | 42 | 33 | **3RH29 11-1MA11** |
| 2 | -- | 30 | 21 | 31 | 20 | 20 | 31 | 31 | 60 | 51 | 42 | **3RH29 11-1LA20** |
| 2 | -- | 30 | 21 | 31 | 20 | 20 | 31 | 31 | 60 | 51 | 42 | **3RH29 11-1MA20** |

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

[2] Terminals from the top or bottom.

## Additional auxillary switch blocks

| Auxiliary contacts Version NO | NC | | 3-pole contactors S00 3RT20 1 10 | 3-pole contactors 3RT20 1 01 | 3-pole contactors S0 3RT20 2 11 | 4-pole contactors S00 3RT23 1 -- | 4-pole contactors 3RT25 1 -- | 4-pole contactors S0/S2 3RT23 11 | 4-pole contactors 3RT25 11 | Contactor relays S00 3RH21, 3RH24 40E | Contactor relays 31E | Contactor relays 22E | Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2. 3. 4. 5. Acc. to EN 50005 | 5. 6. 7. 8. Acc. to EN 50005 | 3. 4. 5. 6. Acc. to EN 50005 | 1. 2. 3. 4. Acc. to EN 50005 | 1. 2. 3. 4. Acc. to EN 50005 | 3. 4. 5. 6. Acc. to EN 50005 | 3. 4. 5. 6. Acc. to EN 50005 | 5. 6. 7. 8. According to EN 50011[1] | 5. 6. 7. 8. According to EN 50011[1] | 5. 6. 7. 8. According to EN 50011[1] | |
| **Front auxiliary switches with complete inscription (for contactor relays)** | | | | | | | | | | | | | |
| 4 | -- | 53 63 73 83 / 54 64 74 84 | -- | -- | -- | -- | -- | -- | -- | 80E | -- | -- | **3RH29 11-.GA40** |
| 3 | 1 | 53 61 73 83 / 54 62 74 84 | -- | -- | -- | -- | -- | -- | -- | 71E | -- | -- | **3RH29 11-.GA31** |
| 2 | 2 | 53 61 71 83 / 54 62 72 84 | -- | -- | -- | -- | -- | -- | -- | 62E | -- | -- | **3RH29 11-.GA22** |
| 1 | 3 | 53 61 71 81 / 54 62 72 82 | -- | -- | -- | -- | -- | -- | -- | 53E | -- | -- | **3RH29 11-.GA13** |
| -- | 4 | 51 61 71 81 / 52 62 72 82 | -- | -- | -- | -- | -- | -- | -- | 44E | -- | -- | **3RH29 11-.GA04** |
| **Front auxiliary switches with complete inscription, special version** | | | | | | | | | | | | | |
| 4 | -- | 53 63 73 83 / 54 64 74 84 | 50 | 41 | 51 | 40 | 40 | 51 | 51 | 80E | 71X | 62X | **3RH29 11-.XA40 -0MA0** |
| 3 | 1 | 53 61 73 83 / 54 62 74 84 | 41 | 32 | 42 | 31 | 31 | 42 | 42 | 71E | 62X | 53 | **3RH29 11-.XA31 -0MA0** |
| 2 | 2 | 53 61 71 83 / 54 62 72 84 | 32 | 23 | 33 | 22 | 22 | 33 | -- | 62E | 53 | 44X | **3RH29 11-.XA22 -0MA0** |
| -- | 4 | 51 61 71 81 / 52 62 72 82 | 14 | -- | -- | -- | -- | -- | -- | 44E | -- | -- | **3RH29 11-.XA04 -0MA0** |
| **Front auxiliary switches, Solid-state compatible** | | | | | | | | | | | | | |
| -- | 2 | .1 .1 / .2 .2 | 12 | 03 | 13 | 02 | 02 | 13 | -- | 42 | 33 | 24 | **3RH29 11-.NF02** |
| 1 | 1 | .3 .1 / .4 .2 | 21 | 12 | 22 | 11 | 11 | 22 | 22 | 51 | 42 | 33 | **3RH29 11-.NF11** |
| 2 | -- | .3 .3 / .4 .4 | 30 | 21 | 31 | 20 | 20 | 31 | 31 | 60 | 51 | 42 | **3RH29 11-.NF20** |

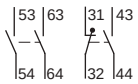
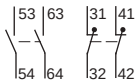
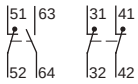
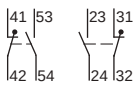
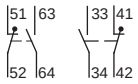
[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

## Additional auxillary switch blocks

| Auxiliary contacts | | | | 3-pole contactors | | | 4-pole contactors | | | | Contactor relays | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Version | | | | S00 | | S0 | S00 | | S0/S2 | | S00 | | | |
| | | | | 3RT20 1 | 3RT20 1 | 3RT20 2 | 3RT23 1 | 3RT25 1 | 3RT23 | 3RT25 | 3RH21, 3RH24 | | | |
| NO | NC | | | 10 | 01 | 11 | -- | -- | 11 | 11 | 40E | 31E | 22E | |
| | | | | 2. 3. 4. 5. | 5. 6. 7. 8. | 3. 4. 5. 6. | 1. 2. 3. 4. | 1. 2. 3. 4. | 3. 4. 5. 6. | 3. 4. 5. 6. | 5. 6. 7. 8 | 5. 6. 7. 8 | 5. 6. 7. 8 | |
| | | Left | Right | According to EN 50012[1] | | | According to EN 50012[1] | | | | According to EN 50011[1] | | | Order No. |
| **Lateral auxiliary switches for size S00** | | | | | | | | | | | | | | |
| -- | 2 | | 21 31 / 22 32 | 12 | -- | -- | 02 | 02 | -- | -- | -- | -- | -- | **3RH29 11-.DA02** |
| -- | 2 | 41 51 / 42 52 | 21 31 / 22 32 | 14 | -- | -- | -- | -- | -- | -- | -- | -- | -- | **3RH29 11-.DA02** |
| 1 | 1 | | 21 33 / 22 34 | 21 | -- | -- | 11 | 11 | -- | -- | -- | -- | -- | **3RH29 11-.DA11** |
| 1 | 1 | 41 53 / 42 54 | 21 33 / 22 34 | 32 | -- | -- | 22 | 22 | -- | -- | -- | -- | -- | **3RH29 11-.DA11** |
| 2 | -- | | 23 33 / 24 34 | 30 | -- | -- | 20 | 20 | -- | -- | -- | -- | -- | **3RH29 11-.DA20** |
| 2 | -- | 43 53 / 44 54 | 23 33 / 24 34 | 50 | -- | -- | 40 | 40 | -- | -- | -- | -- | -- | **3RH29 11-.DA20** |
| 2<br>1 | --<br>1 | 43 53 / 44 54 | 21 33 / 22 34 | 41 | -- | -- | 31 | 31 | -- | -- | -- | -- | -- | **3RH29 11-.DA20 + 3RH29 11-.DA11** |
| 2<br>-- | --<br>2 | 43 53 / 44 54 | 21 31 / 22 32 | 32 | -- | -- | 22 | 22 | -- | -- | -- | -- | -- | **3RH29 11-.DA20 + 3RH29 11-.DA02** |
| 1<br>-- | 1<br>2 | 41 53 / 42 54 | 21 31 / 22 32 | 23 | -- | -- | 13 | -- | -- | -- | -- | -- | -- | **3RH29 11-.DA11 + 3RH29 11-.DA02** |
| **Lateral auxiliary switches for size S0** | | | | | | | | | | | | | | |
| -- | 2 | | 31 41 / 32 42 | 12 | 03 | 13 | 02 | 02 | 13 | -- | -- | -- | -- | **3RH29 21-.DA02** |
| -- | 2 | 51 61 / 52 62 | 31 41 / 32 42 | 14 | -- | -- | -- | -- | -- | -- | -- | -- | -- | **3RH29 21-.DA02** |
| 1 | 1 | | 31 43 / 32 44 | 21 | 12 | 22 | 11 | 11 | 22 | 22 | -- | -- | -- | **3RH29 21-.DA11** |
| 1 | 1 | 51 63 / 52 64 | 31 43 / 32 44 | 32 | 23 | 33 | 22 | 22 | 33 | -- | -- | -- | -- | **3RH29 21-.DA11** |
| 2 | -- | | 33 43 / 34 44 | 30 | 21 | 31 | 20 | 20 | 31 | 31 | -- | -- | -- | **3RH29 21-.DA20** |
| 2 | -- | 53 63 / 54 64 | 33 43 / 34 44 | 50 | 41 | 51 | 40 | 40 | 51 | 51 | -- | -- | -- | **3RH29 21-.DA20** |

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

## Additional auxillary switch blocks

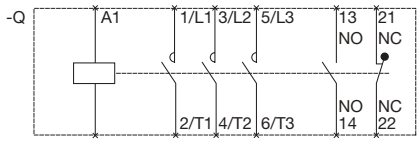
| Auxiliary contacts Version NO | NC | Left | Right | 3-pole contactors S00 3RT20 1 10 | 3-pole contactors S00 3RT20 1 01 | 3-pole contactors S0 3RT20 2 11 | 4-pole contactors S00 3RT23 1 -- | 4-pole contactors 3RT25 1 -- | 4-pole contactors S0/S2 3RT23 11 | 4-pole contactors 3RT25 11 | Contactor relays S00 3RH21, 3RH24 40E | Contactor relays 31E | Contactor relays 22E | Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | 2. 3. 4. 5. | 5. 6. 7. 8. | 3. 4. 5. 6. | 1. 2. 3. 4. | 1. 2. 3. 4. | 3. 4. 5. 6. | 3. 4. 5. 6. | 5. 6. 7. 8 | 5. 6. 7. 8 | 5. 6. 7. 8 | |
| | | | | According to EN 50012[1] | | | According to EN 50012[1] | | | | According to EN 50011[1] | | | |
| **Lateral auxiliary switches for size S0, S00** | | | | | | | | | | | | | | |
| 2 | -- |  | | 41 | 32 | 42 | 31 | 31 | 42 | 42 | -- | -- | -- | **3RH29 21-.DA20 + 3RH29 21-.DA11** |
| 1 | 1 | | | | | | | | | | | | | |
| 2 | -- |  | | 32 | 23 | 33 | 22 | 22 | 33 | -- | -- | -- | -- | **3RH29 21-.DA20 + 3RH29 21-.DA02** |
| -- | 2 | | | | | | | | | | | | | |
| 1 | 1 |  | | 23 | 14 | 24 | 13 | -- | -- | -- | -- | -- | -- | **3RH29 21-.DA11 + 3RH29 21-.DA02** |
| -- | 2 | | | | | | | | | | | | | |
| **Lateral auxiliary switches for contactor relays** | | | | | | | | | | | | | | |
| -- | 2 | | | -- | -- | -- | -- | -- | -- | -- | 42Z | 33X | 24 | **3RH29 21-.DA02** |
| 1 | 1 | | | -- | -- | -- | -- | -- | -- | -- | 51X | 42X | 33X | **3RH29 21-.DA11** |
| 2 | -- | | | -- | -- | -- | -- | -- | -- | -- | 60Z | 51X | 42X | **3RH29 21-.DA20** |
| **Lateral auxiliary switches, Solid-state compatible for size S00** | | | | | | | | | | | | | | |
| 1 | 1 | | | 21 | -- | -- | 11 | 11 | -- | -- | -- | -- | -- | **3RH29 11-2DE11** |
| 1 | 1 |  | | 32 | -- | -- | 22 | 22 | -- | -- | -- | -- | -- | **3RH29 11-2DE11** |
| **Lateral auxiliary switches, Solid-state compatible for size S0, S00** | | | | | | | | | | | | | | |
| 1 | 1 | | | 21 | 12 | 22 | 11 | 11 | 22 | 22 | -- | -- | -- | **3RH29 21-2DE11** |
| 1 | 1 |  | | 32 | 23 | 33 | 22 | 22 | 33 | -- | -- | -- | -- | **3RH29 21-2DE11** |
| **Lateral auxiliary switches, Solid-state compatible for contactor relays** | | | | | | | | | | | | | | |
| 1 | 1 | | | -- | -- | -- | -- | -- | -- | -- | 51X | 42X | 33X | **3RH29 21-.DE11** |

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

## Internal circuit diagrams (applicable to screw, spring and ring lug connection)

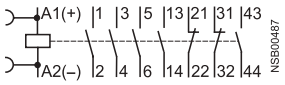
### *Sizes S3 to S12*
### *Terminal designations according to EN 50 012*

**3RT10 4 to 3RT10 7, 3RT12, 3RT14 contactors**



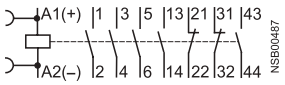

**3RT10 4 to 3RT10 7, 3RT14 contactors**
With 3RH19 21-. HA22 4-pole auxiliary contact block, mountable on the front

**2 NO + 2 NC**
Ident. no. 22E



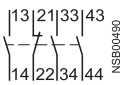

**3RT1. 5, 3RT1. 6, 3RT1. 7 contactors** (sizes S6, S10, S12)
With 3RH19 21-1DA11 2-pole auxiliary switch blocks, laterally mountable

**2 NO + 2 NC**

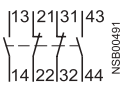



**3RH19 21-. HA../-.XA..4-pole auxiliary switch blocks, for snapping onto the front** [2]

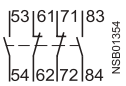
**3 NO + 1 NC**
Ident. no. 31



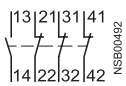

**2 NO + 2 NC**
22




**2 NO + 2 NC**
22




**1 NO + 3 NC**
13




**3RH19 21-. DA11, 3RH19 21-2DE11 first laterally mountable auxiliary switch block (solid-state compatible)**

**1 NO + 1 NC**
left

**1 NO + 1 NC**
right

**3RH19 21-. JA11, 3RH19 21-2JE11 second laterally mountable auxiliary switch block (solid-state compatible)**
(only for sizes S3 to S12)

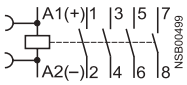
**1 NO + 1 NC**
left

**1 NO + 1 NC**
right

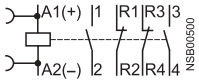
### *Contactors with 4 main contacts, sizes S3*
### *Terminal designations acc. to EN 50 005*

**3RT13/23 and 3RT15/25 contactors**

**4 NO**



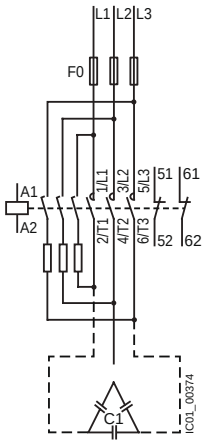

**2 NO + 2 NC**



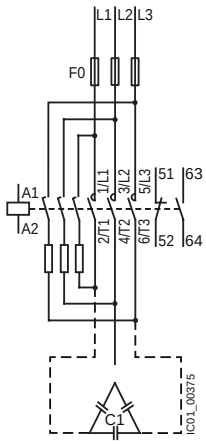

(3RH19 21 auxiliary switch blocks acc. to EN 50 005 can be snapped on)

### *3RT26 capacitor contactors*

Size S00




Sizes S0 and S2




**Surge suppressor** (plug-in direction coded; exception: marked +/– for 3RT19 16-1T... diode assembly) **for sizes S2 to S3**

Diode

Diode assembly

Varistor

RC element

Diode with LED

Varistor with LED

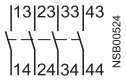
1) 3RH29 auxiliaries are intended to be used only with 3RT2 or 3RH2 base devices.
3RH19 auxiliaries are intended to be used only with 3RT1 or 3RH1 base devices.
2) Not for 3RT12. vacuum contactors

## Internal circuit diagrams (applicable to screw connection and Spring-type terminal connection)

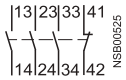
### *Accessories for size S6[1] to S12 contactors*
### *Terminal designations acc. to EN 50 005*

**3RH19 21-.F..., 4-pole,**
for snapping onto the front [1])

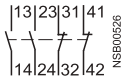
**4 NO**
Ident. no. 40



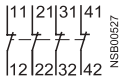

**3 NO + 1 NC**
31



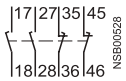

**2 NO + 2 NC**
22




**4 NC**
04




**2 NO + 2 NC**
22 U




make-before-break

**3RH19 21-.CA.. auxiliary switch blocks, single-pole,**
for snapping onto the front [2])

**1 NO**

**1 NC**

(terminal designations according to EN 50 005 or EN 50 012)

**3RH19 21-1CD.. auxiliary switch blocks, single-pole,**
with make-before-break contacts, for snapping onto the front [1])

**1 NO**

**1 NC**

### *Accessories for size S0 to S12 contactors*
### *Terminal designations acc. to EN 50 005*

**3RH19 21-1LA.. and 3RH19 21-1MA.. auxiliary switch block, 2-pole,**
for snapping onto the front [1])
cable entry from above or below

**2 NO**

**1 NO + 1 NC**

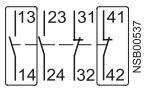
**2 NC**

**Internal wiring**

Example: 1 NO + 1 NC,
cable entry from below

**3RH19 21-.FE22 solid-state compatible auxiliary switch block, 4-pole,**
for snapping onto the front [1])

**2 NO + 2 NC**
Ident. no. 22




**3RH19 21-.EA.. first laterally mountable auxiliary switch blocks (left)**

**2 NO**

**1 NO + 1 NC**

**2 NC**

**3RH19 21-.EA.. first laterally mountable auxiliary switch blocks (right)**

**2 NO**

**1 NO + 1 NC**

**2 NC**

**3RH19 21-.KA.. second laterally mountable auxiliary switch blocks (left)**
(only for sizes S3 to S12)

**2 NO**

**1 NO + 1 NC**

**2 NC**

**3RH19 21-.KA.. second laterally mountable auxiliary switch blocks (right)**
(only for sizes S3 to S12)

**2 NO**

**1 NO + 1 NC**

**2 NC**

1) RH29 auxiliaries are intended to be used only with 3RT2 or 3RH2 base devices.
3RH19 auxiliaries are intended to be used only with 3RT1 or 3RH1 base devices.

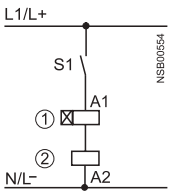
2) Not for 3RT12. vacuum contactors

## Circuit diagrams

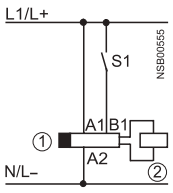
### *Accessories for size S3 contactors and control relays*

**Solid-state time-delay blocks**
(see configuring aid on page 2/38)

**3RT19 16-2C...**
ON-delay
Size S00

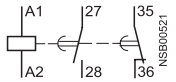



**3RT19 16-2D...**
OFF-delay (with auxiliary voltage)
Size S00

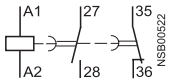



**Sizes S2 to S12**
**3RT19 16-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks**

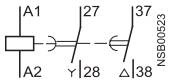
**1 NO + 1 NC**
ON-delay




**1 NO + 1 NC**
OFF-delay

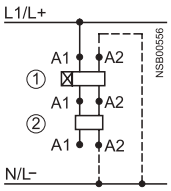



**2 NO**
WYE-delta function



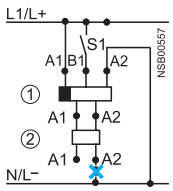

(Integrated varistors not shown)

**3RT19 26-2C...**
ON-delay
Sizes S0 to S3



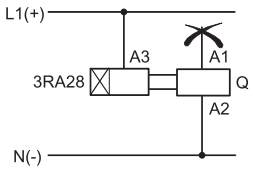
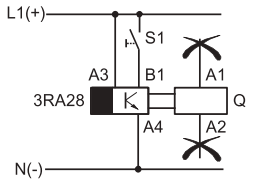
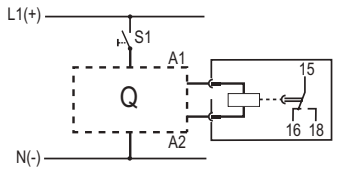
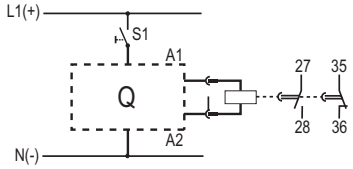

A2 can be connected to N(L–) via either the contactor or the time-delay relay.
- - - optional connection

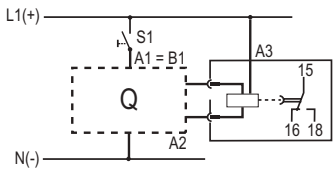
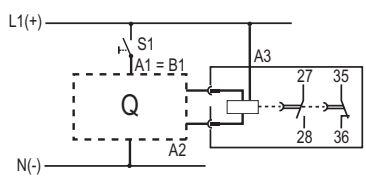
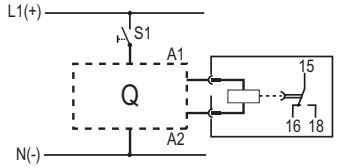
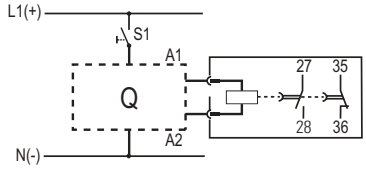
**3RT19 26-2D...**
OFF-delay (with auxiliary voltage)
Sizes S0 to S3




A2 can only be connected to N(L–) via the time-delay relay.
x don't connect

① Time-delay block
② Contactor

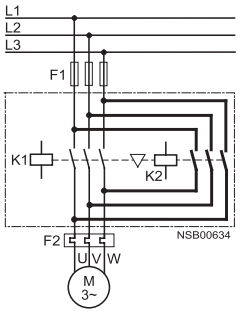
| Designation | Circuit diagram |
|---|---|
| 3RA2811-.CW10<br>ON-delay |  |
| 3RA2812-.DW10<br>OFF-delay with auxillary voltage |  |
| 3RA2813-.AW10<br>ON-delay,<br>1 CO contact |  |
| 3RA2813-.FW10<br>ON-delay,<br>1 NC contact/<br>1 NO contact |  |

| Designation | Circuit diagram |
|---|---|
| 3RA2814-.AW10<br>OFF-delay,<br>1 CO contact |  |
| 3RA2814-.FW10<br>OFF-delay with auxillary voltage,<br>1 NC contact/<br>1 CO contact |  |
| 3RA2815-.AW10<br>OFF-delay without auxillary voltage,<br>1 CO contact |  |
| 3RA2815-.FW10<br>OFF-delay without auxillary voltage,<br>1 NC contact/<br>1 NO contact |  |

3RT29 accessories are intended to be used only with 3RT2 or 3RH2 base devices.
3RT19 auxiliaries are intended to be used only with 3RT1 or 3RH1 base devices.

## Circuit diagrams

### *Size S00 to S0*
### *Main circuit*

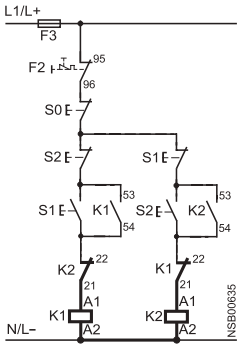



The 3RA2913-2AA. (S00) and 3RA2913-2AA (S0) installation kit contains wiring connectors for connecting the main conducting paths, the mechanical interlock and two connecting clips for the contactors.

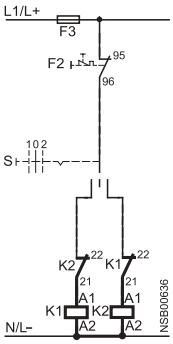
### *Control circuit (sizes S00 and S0)*

(terminal designations of contactors according to EN 50 012)

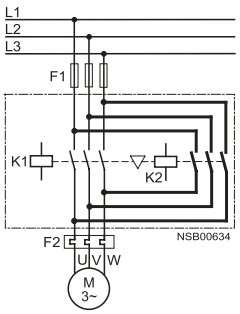
**for momentary-contact operation**




**for maintained-contact operation**




### *Sizes S2 to S3*
### *Main circuit*

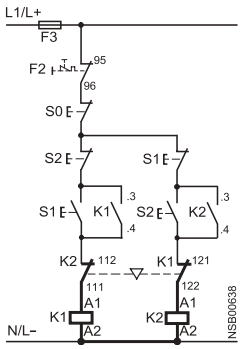



The 3RA19 .3-2A installation kits contain, among other things, the wiring connectors on the top and bottom for connecting the main conducting paths.

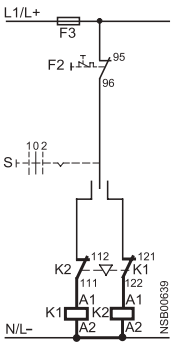
### *Control circuit*

(terminal designations of contactors according to EN 50 005)

**for momentary-contact operation**




**for maintained-contact operation**



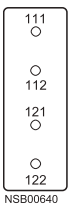

The 3RA19 24-2B mechanical interlock contains one NC contact for the NC contact interlock for each contactor

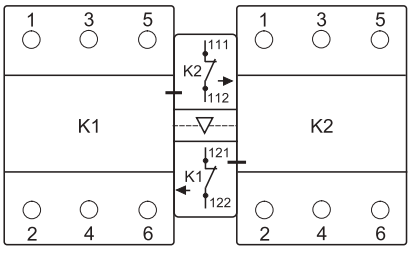
## Position of terminals

### *Sizes S2 to S3*
### *Terminal designations according to EN 50 005*

**3RA19 24-2B mechanical interlock (laterally mountable), integrated in reversing contactor assemblies (reversing starters),** contains one NC contact for the electrical interlock for each contactor

**2 NC**



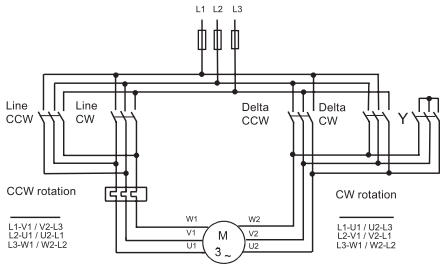

S0 "OFF" button
S1 "Clockwise ON" button
S2 "Counterclockwise ON" button
S "CW-OFF-CCW" button

K1 Clockwise contactor
K2 Counterclockwise contactor

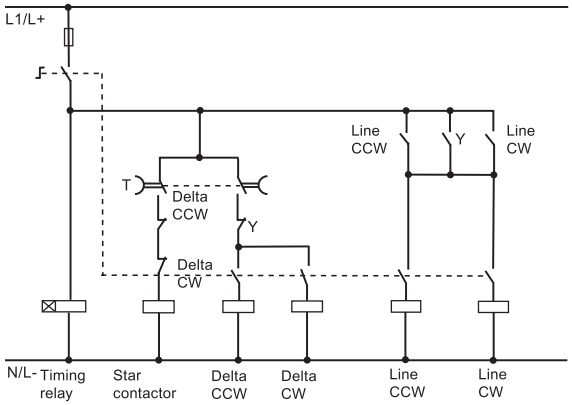
F1 Fuses for main circuit
F3 Fuses for control circuit
F2 Overload relay

## Circuit diagrams

### *Size S00 / S0*
### *Main circuit*

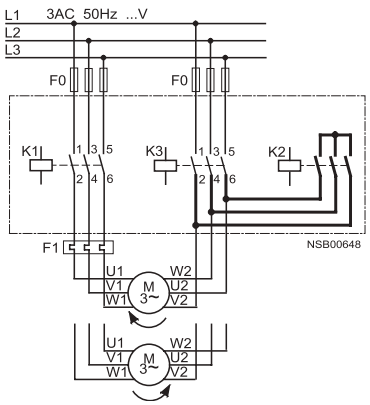



### *Control circuits*
### *with 3RA2816-0EW20 function module (set of three)*
snapped onto the front




### *Sizes S2 to S3*
### *Main circuit*

**Sizes S2 and S3**

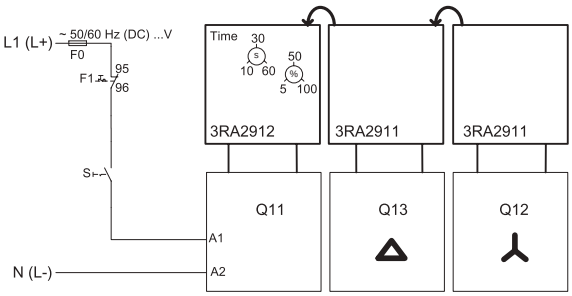



S0 "OFF" button
S1 "ON" button
S Maintained-contact switch

K1 Line contactor
K2 Star contactor
K3 Delta contactor
K4 Solid-state, time-delay auxiliary switch block or time-delay relay

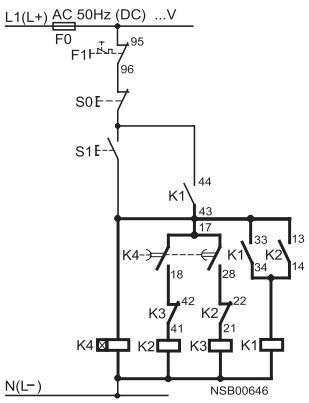
F0 Fuses
F1 Overload relay

### *3RA2816-0EW20*

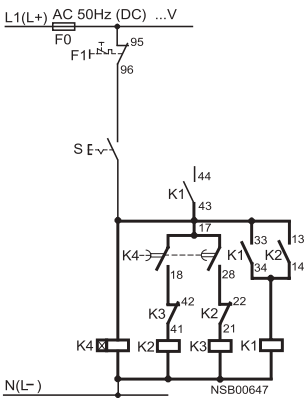



### *Control circuits*
### *with 3RP15 7. time-delay relay,*
laterally mounted (typical circuits)

**for momentary-contact operation**




**for maintained-contact operation**

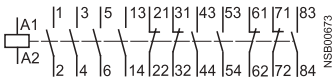



Contact element 17/18 is only closed on the star step; the contact element is open on the delta step and when de-energized.

## Internal circuit diagrams

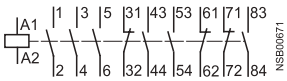
**3TF68 44 and 3TF69 44 contactors**

**4 NO + 4 NC**
AC operation
max. complement of auxiliary switches




**3TF68 33 and 3TF69 33 contactors**

**3 NO + 3 NC**
DC operation
max. complement of auxiliary switches




**Auxiliary switch blocks 3TY7 681-1G**
for coil reconnection, 3TF68 and 3TF69, DC economy circuit

**Auxiliary switch blocks 3TY7 561-1AA00**
first auxiliary switch block left or right

mounted on left

mounted on right

**Auxiliary switch blocks 3TY7 561-1KA00**
second auxiliary switch block left or right

mounted on left

mounted on right

**Auxiliary switch blocks 3TY7 561-1EA00**
with make-before-break contacts

mounted on left

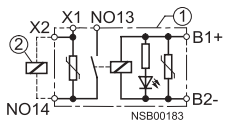
mounted on right

**Auxiliary switch blocks 3TY7 561-1.**
solid-state compatible aux. switch block

mounted on left

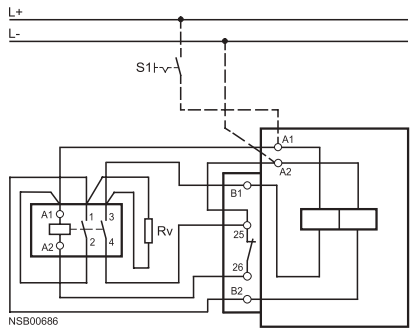
mounted on right

**Interface for control by PLC 3TX7 090-0D**
with surge suppression




## Circuit diagrams for DC economy circuit · maintained-contact operation

**3TF68 33 and 3TF69 33 contactors**




Terminal designations according to EN 50 012.

## Terminal diagrams

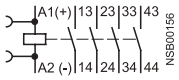
### DC operation

L+ is to be connected to coil terminal A1.

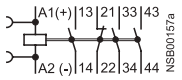
***3RH21 coupling relays for auxiliary circuits, size S00***
***Terminal designations according to EN 50 011***
(it is not possible to snap on an auxiliary switch block)

**Surge suppressor can be mounted**

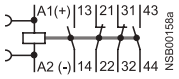
**4 NO**
Ident no.: 40E




**3 NO + 1 NC**
31E

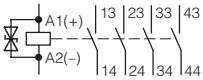



**2 NO + 2 NC**
22E

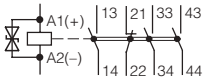



**Suppressor Diode integrate**

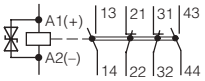
**4 NO**
Ident no.:40E




**3 NO + 1 NC**
31E

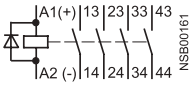



**2 NO + 2 NC**
22E

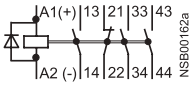



**Diode integrated**

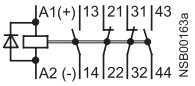
**4 NO**
Ident no.:40E




**3 NO + 1 NC**
31E




**2 NO + 2 NC**
22E

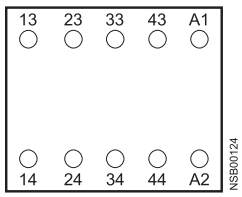



## Position of terminals

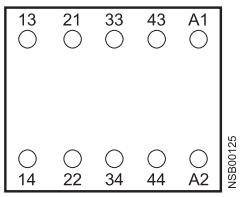
### Size S00

**3RH21 coupling relays**

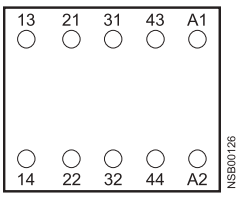
**4 NO**
Ident no.: 40E




**3 NO + 1 NC**
31E

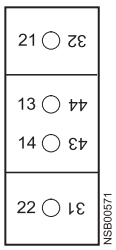



**2 NO + 2 NC**
22E

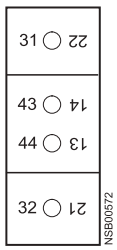



**3RH19 21-. DA11 first laterally mountable auxiliary switch block** [1]
mountable on left or right

**1 NO + 1 NC**
left

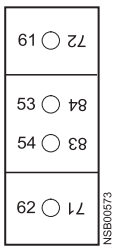



right

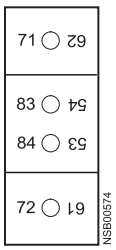



**3RH19 21-. JA11 second laterally mountable auxiliary switch block** [1]
mountable on left or right
(only for sizes S3 to S12)

**1 NO + 1 NC**
left




right

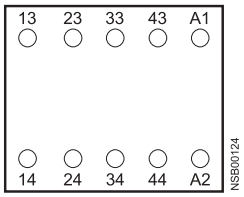



1) Note the location digit.
Can only be used if no 4-pole auxiliary switch block is snapped onto the front.

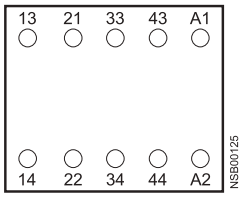
## *Terminal designations according to EN 50 011*

### 3RH21 control relays

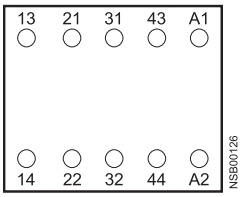
**4 NO**
Ident no.:40E




**3 NO + 1 NC**
31E



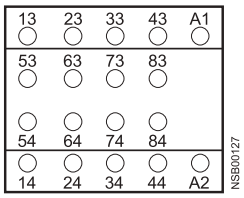

**2 NO + 2 NC**
22E



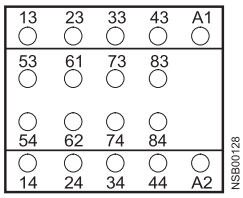

### 3RH21 40 control relays

with 3RH19 11-1GA.. auxiliary switch blocks snapped onto the front

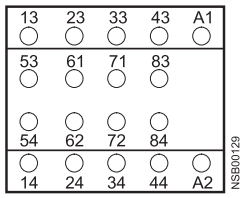
**8 NO**
Ident no.:80E



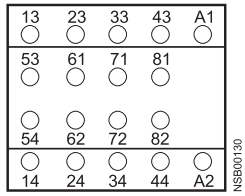

**7 NO + 1 NC**
71E



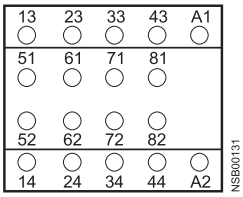

**6 NO + 2 NC**
62E




**5 NO + 3 NC**
53E

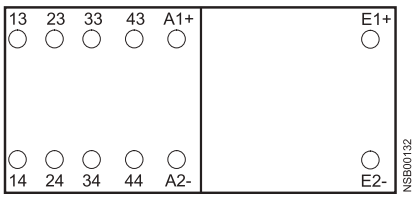



**4 NO + 4 NC**
Ident no.:44E

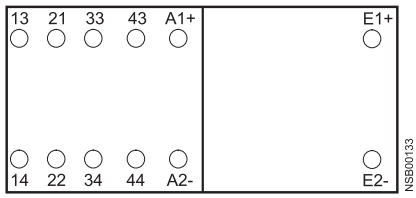



### 3RH24 latched control relays

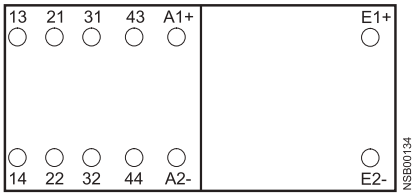
**4 NO**
Ident no.: 40E




**3 NO + 1 NC**
31E




**2 NO + 2 NC**
Ident no.: 22E

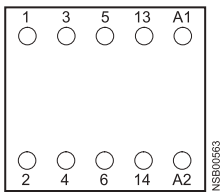


## Position of terminals (applicable to screw connection and Cage Clamp connection)

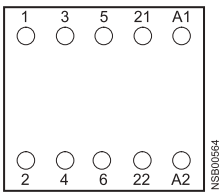
### Size S00
### Terminal designations according to EN 50 012

**3RT20 1 contactors, 3RT20 1 coupling relays,**

**1 NO**
Ident. no. 10E

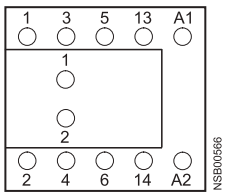



**1 NC**
01

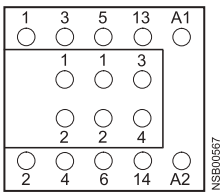



**3RT20 1 contactors (with 1 NO)**
with auxiliary switch blocks snapped onto the front
3RH19 11-. H . . .

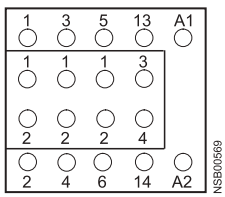
**1 NO + 1 NC**
Ident. no.: 11



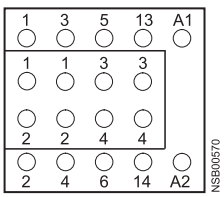

**2 NO + 2 NC**
22




**2 NO + 3 NC**
Ident. no.: 23

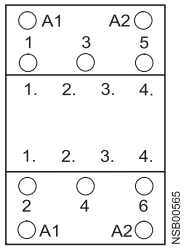



**3 NO + 2 NC**
32



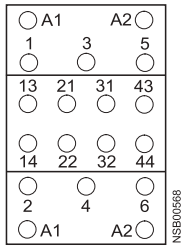

### Sizes S3 to S12
### Terminal designations according to EN 50 012

**3RT 20 3,**
**3RT20 4, 3RT124 46 contactors,**



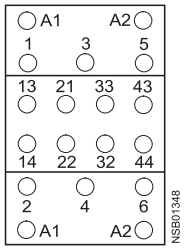

**3RT 20 3, 3RT 20 4 contactors**
3RH19 21-. HA22
4-pole auxiliary switch block
snapped onto the front

**2 NO + 2 NC**
Ident. no. 22 E



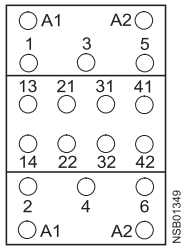

**3RT20 3, 3RT20 4 contactors**
with 4-pole auxiliary switch block
for snapping onto the front
3RH19 21-. HA31

**3 NO + 1 NC**
Ident. no. 31 E



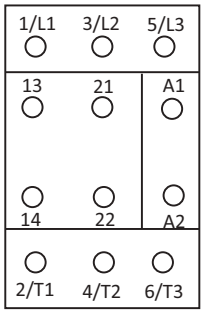

**3RT20 3, 3RT20 4 contactors**
with 4-pole auxiliary switch block
for snapping onto the front
3RH19 21-. HA13

**1 NO + 3 NC**
13 E

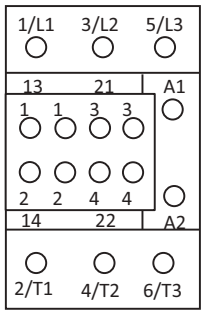



### Size S0
### Terminal designations according to EN 50 012

**3RT20 2 Contactors with 1NO + 1NC**
**3RT20 2 Coupling Relays**

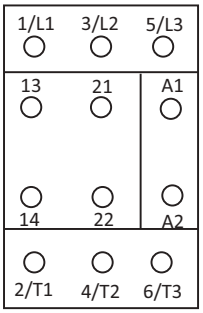



**3RT20 2 Contactors with 3NO + 3NC**

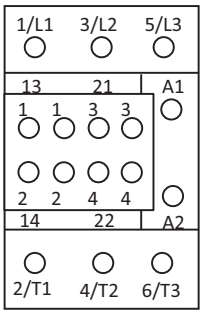



### Size S2
### Terminal designations according to EN 50 012

**3RT20 3 Contactors with 1NO + 1NC**
**3RT20 3 Coupling Relays**




**3RT20 3 Contactors with 3NO + 3NC**

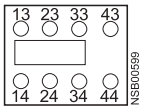


## Position of terminals (applicable to screw connection and Spring-type connection)

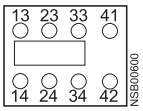
### *Accessories for size S3 to S12 contactors*
### *Terminal designations acc. to EN 50 005*

**3RH19 21-. F... auxiliary switch blocks, 4-pole,**
for snapping onto the front

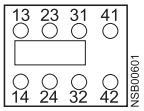
**4 NO**
Ident. no. 40



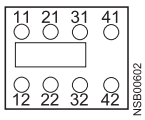

**3 NO + 1 NC**
31



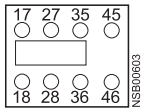

**2 NO + 2 NC**
22




**4 NC**
04



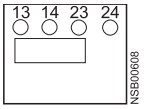

**2 NO + 2 NC**
22 U



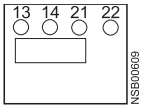

make-before-break

**3RH19 21-1LA.. auxiliary switch blocks, 2-pole,**
for snapping onto the front, cable entry from above

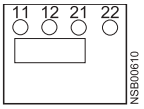
**2 NO**




**1 NO + 1 NC**

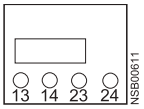



**2 NC**

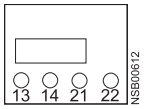



**3RH19 21-1MA.. auxiliary switch blocks, 2-pole,**
for snapping onto the front, cable entry from below

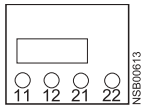
**2 NO**




**1 NO + 1 NC**

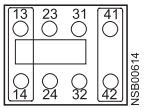



**2 NC**




**3RH19 21-. FE22 solid-state compatible auxiliary switch block, 4-pole,**
for snapping onto the front

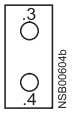
**2 NO + 2 NC**
Ident. no. 22



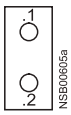

### *Terminal designations according to EN 50 005 or EN 50 012*

**3RH19 21-. CA.. auxiliary switch blocks, single-pole,**
for snapping onto the front

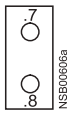
**1 NO**




**1 NC**

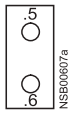



**1 NO**




with extended
contact-making

**1 NC**



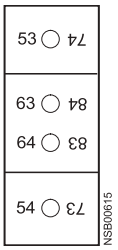

with extended
contact-making

## Position of terminals

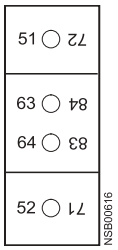
### *Accessories for size S2 to S12 contactors*
### *Terminal designations acc. to EN 50 005*

**3RH19 21-.EA.. first laterally mountable auxiliary switch blocks (left)**

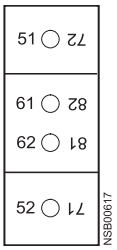
**2 NO**




**1 NO + 1 NC**

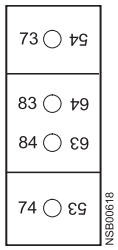



**2 NC**

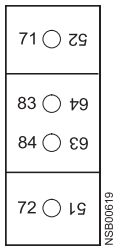



**3RH19 21-.EA.. first laterally mountable auxiliary switch blocks (right)**

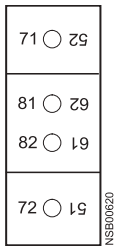
**2 NO**




**1 NO + 1 NC**

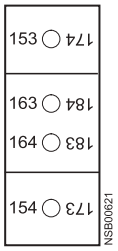



**2 NC**

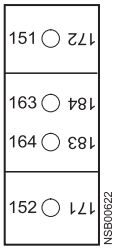



**3RH19 21-.KA.. second laterally mountable auxiliary switch blocks (left)**
(only for sizes S3 to S12; can only be used if no auxiliary switches are snapped onto the front)

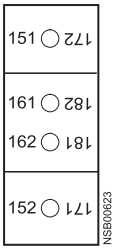
**2 NO**




**1 NO + 1 NC**

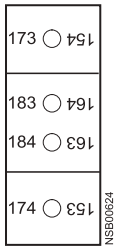



**2 NC**

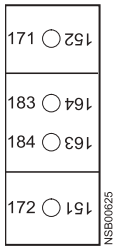



**3RH19 21-.KA.. second laterally mountable auxiliary switch blocks (right)**
(only for sizes S3 to S12; can only be used if no auxiliary switches are snapped onto the front)

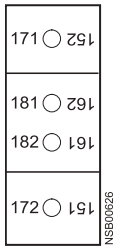
**2 NO**




**1 NO + 1 NC**



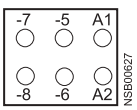

**2 NC**



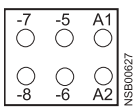

### *Accessories for size S3 to S12 contactors*
### *Terminal designations acc. to DIN 46 199 Part 5*

**3RT19 26-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks**

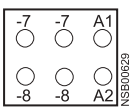
**1 NO + 1 NC**
ON-delay




**1 NO + 1 NC**
OFF-delay

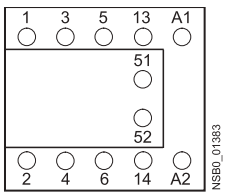



**2 NO**
Star-delta function



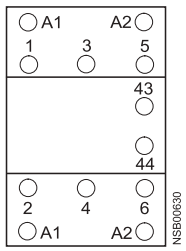

### *3RT26 capacitor contactors*

**Size S00**
**with 4-pole auxiliary switch block mounted on the front**




The auxiliary switch block comprises 3 leading contacts (not shown) and one unassigned NO contact.

**Sizes S2 and S3**
**with 4-pole auxiliary switch block mounted on the front**




The auxiliary switch block comprises 3 leading contacts (not shown) and one unassigned NO contact.

## Position of terminals (applicable to screw connection and Spring-type terminal connection)

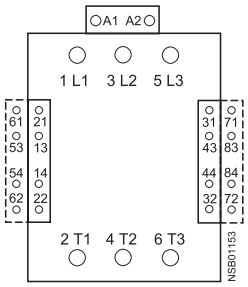
### *Sizes S6 to S12*

**3RT1.5, 3RT1.6, 3RT1.7 contactors**

- with conventional op. mechanism (3RT1. ..-.**A**...)

with laterally mountable auxiliary switch blocks 3RH19 21-1DA11 (for 2 NO + 2 NC, incl. in contactor) 3RH19 21-1JA11 (expandable to 4 NO + 4 NC)

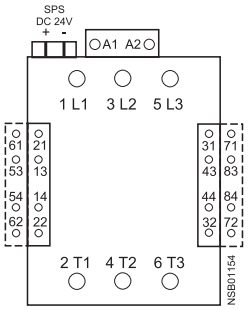
**2 NO + 2 NC or 4 NO + 4 NC**




- with solid-state op. mechanism (3RT1. ..-.**N**...)

with laterally mountable auxiliary switch blocks 3RH19 21-1DA11 (for 2 NO + 2 NC, incl. in contactor) 3RH19 21-1JA11 (expandable to 4 NO + 4 NC)

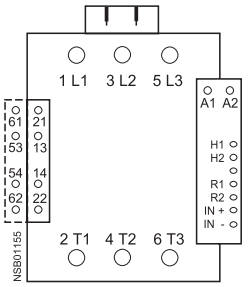
**2 NO + 2 NC or 4 NO + 4 NC**




- with solid-state op. mechanism (3RT1. ..-.**P**...)

with laterally mountable auxiliary switch blocks 3RH19 21-1DA11 (for 1 NO + 1 NC, incl. in contactor) 3RH19 21-1JA11 (expandable to 2 NO + 2 NC)

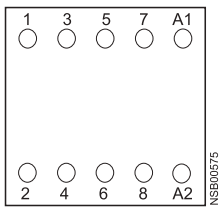
**1 NO + 1 NC or 2 NO + 2 NC**



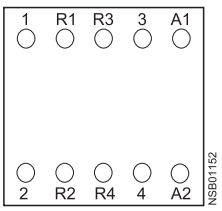

### *Contactors with 4 main contacts, size S00*
### *Terminal designations acc. to EN 50 005*

**3RT23 and 3RT25 contactor s**

**4 NO**



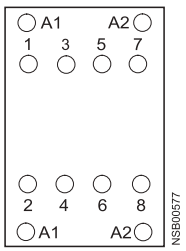

**2 NO + 2 NC**




### *Contactors with 4 main contacts, sizes S2 to S3*
### *Terminal designations acc. to EN 50 005*

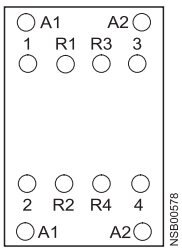
**3RT13 and 3RT15 contactors**

**4 NO**




Size S0 with integrated 1NO + 1NC aux (13/14 + 21/22) and only one set of A1+A2 on front

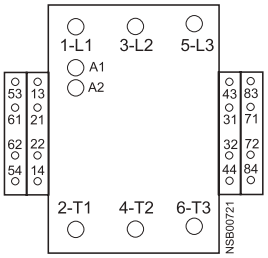
**2 NO + 2 NC**



## Position of terminals

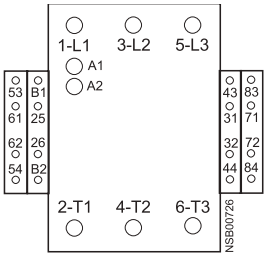
### *AC operation*

**3TF68 and 3TF69 contactors**
4 NO + 4 NC




### *DC operation*

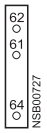
**3TF68 and 3TF69 contactors**
3 NO + 3 NC
max. complement of auxiliary switches




**Solid-state compatible auxiliary switch blocks**
3TY7 561-1. for lateral mounting onto size 6 to 14 contactors

mounted on left

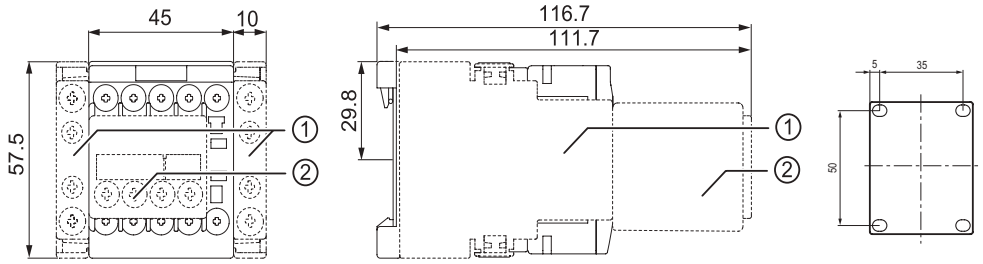
mounted on right



## Dimension drawings

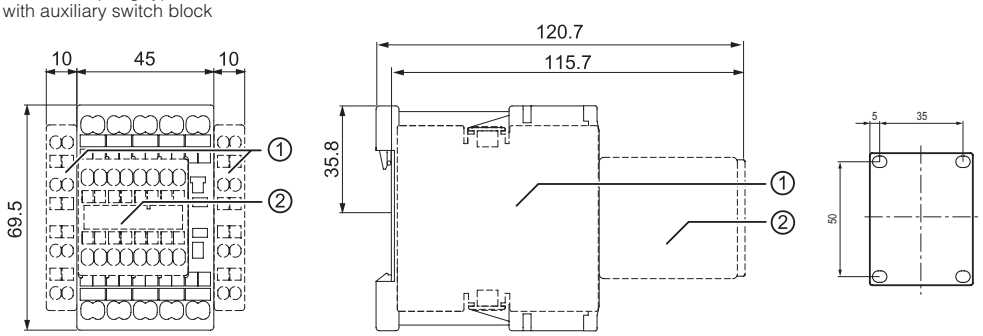
**3RT2.1.-1 contactor and 3RH21..-1 contactor relays**
**Size S00 and NEMA Size 0,** screw connection
with surge suppressor and auxiliary switch block

**Lateral clearance from earthed parts = 6 mm**



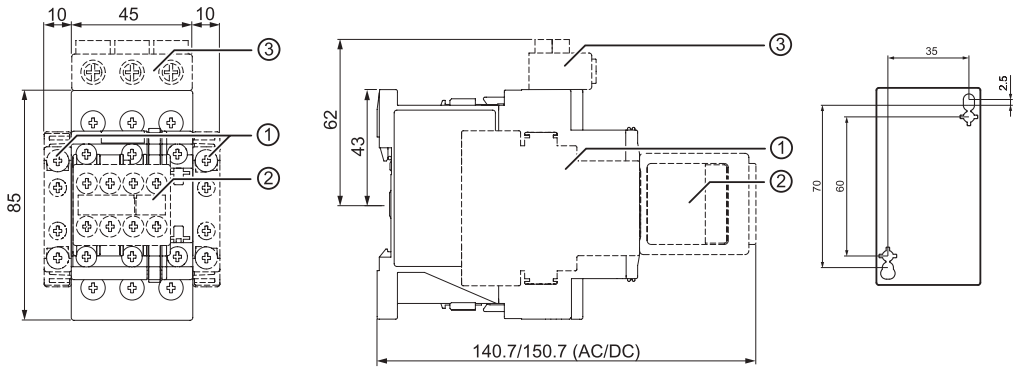

1) Laterally mountable auxiliary switch block 3RH2911-1DA.. / -1DE.. / -1EE..
2) Auxiliary switch block for mounting on the front 3RH2911-1FA.. / -1GA.. / -1HA.. / -1NF..

**3RT2.1.-2 contactor and 3RH21..-2 contactor relay**
**Size S00,** Spring-type terminal connection
with auxiliary switch block




1) Laterally mountable auxiliary switch block 3RH2911-2DA.. / -2DE.. / -2EE..
2) Auxiliary switch block for mounting on the front 3RH2911-2FA.. / -2GA.. / -2HA.. / -2NF..

**3RT2.2.-1 contactors Size S0 and NEMA Size 1,**
(screw-type connection system) with auxiliary switch blocks
mounted and other accessories

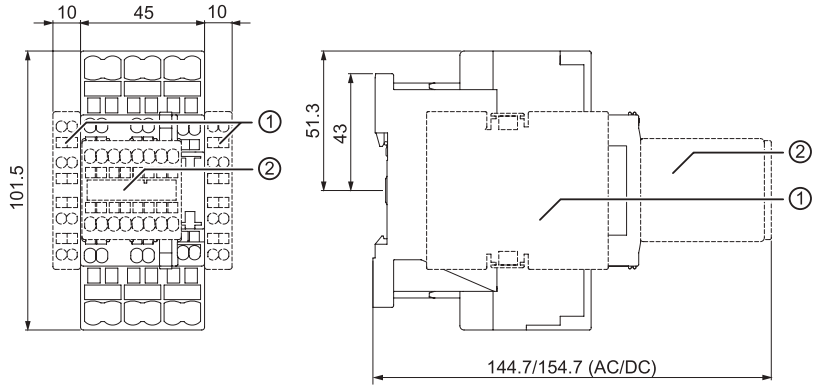



1) Laterally mountable auxiliary switch block 3RH2921-1DA.. / -1DE..
2) Auxiliary switch block for mounting on the front 3RH2911-1FA.. / -1GA.. / -1HA.. / -1NF..
3) 3-phase infeed terminal 3RV2925-5AB

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

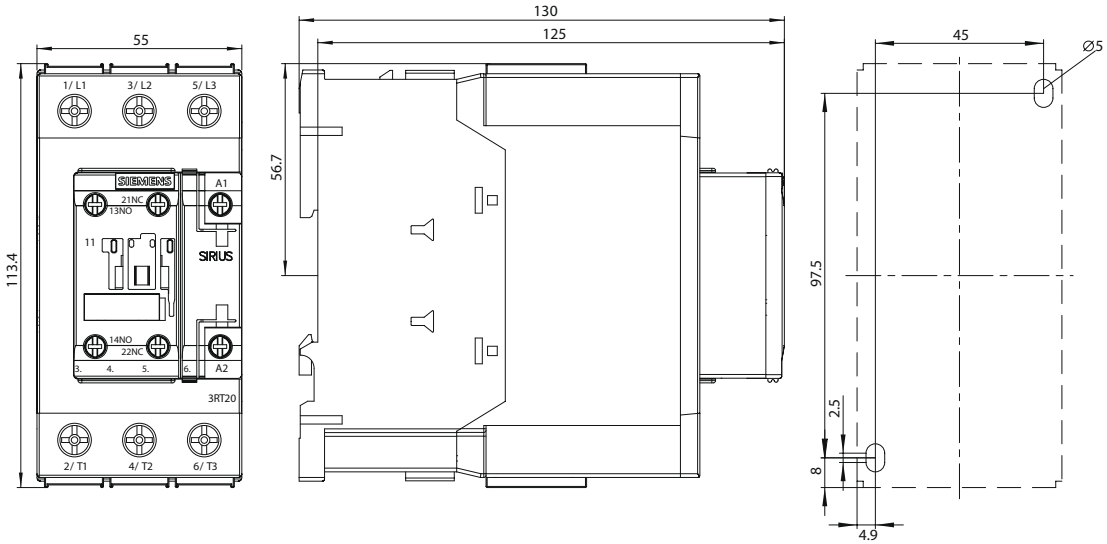
## Dimension drawings

**3RT2.2.-2 and 3RT202.-.....-0LA2 contactors**
**Size S0** (spring-loaded connection) with auxiliary switch blocks mounted




**For size S0:**
1) Laterally mountable auxiliary switch block 3RH2921-2DA.. / -2DE..
2) Auxiliary switch block for mounting on the front 3RH2911-2FA.. / -2GA.. / -2HA.. / -2NF..

**3RT20 3 contactors**
**Size S2 and NEMA Size 2,** screw connection
with surge suppressor, auxiliary switch blocks and mounted overload relay



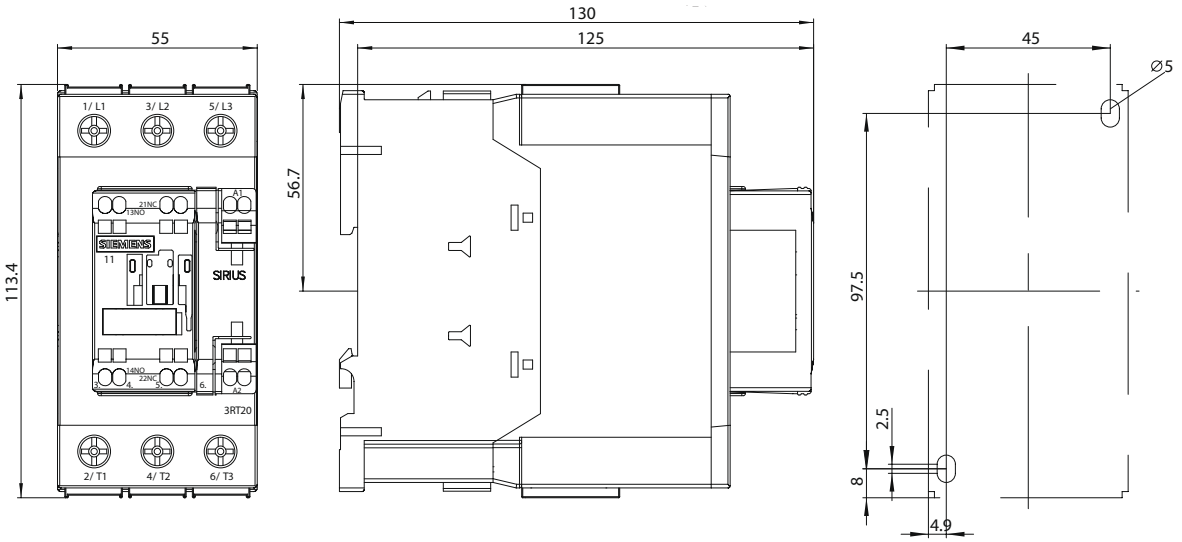

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

**For size S2:**
a = 0 mm with varistor < 240 V, diode assembly
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element
b = DC 15 mm deeper than AC

1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole)
3) Surge suppressor
4) Drilling pattern

## Dimension drawings

**3RT20 3 contactors**
**Size S2**, Spring-type terminal connection
with surge suppressor, auxiliary switch blocks and mounted overload relay




For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

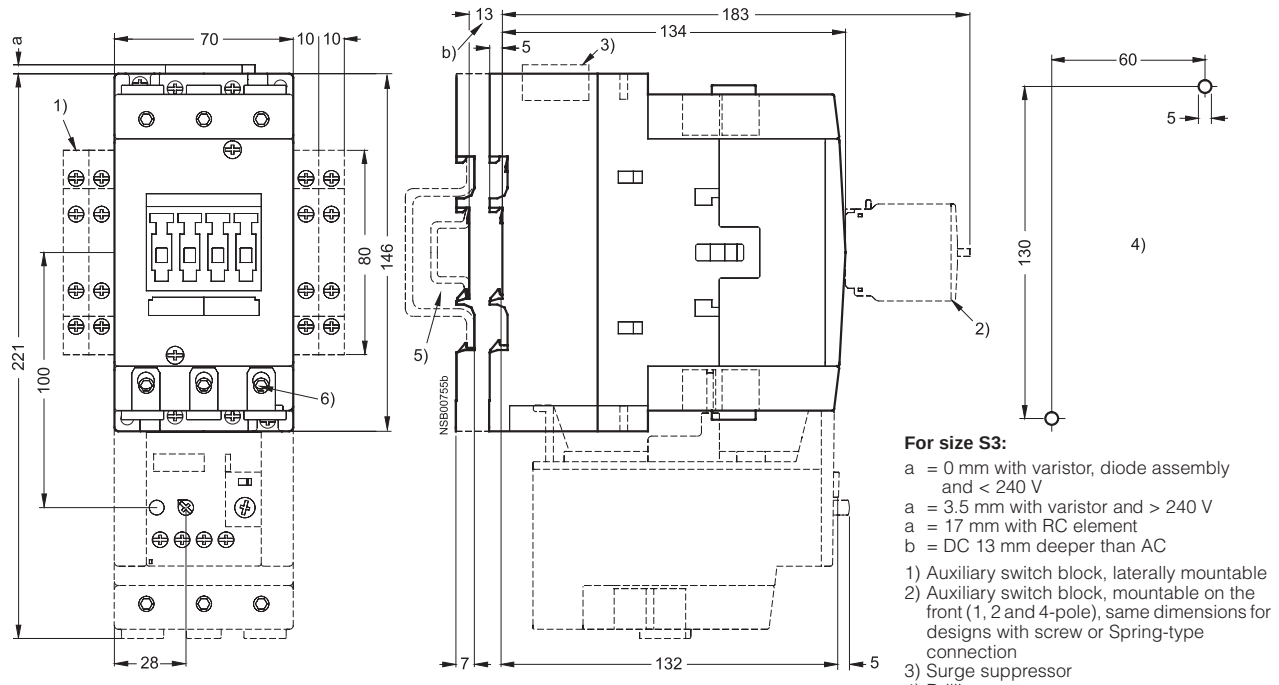
**For size S2:**

a = 0 mm with varistor < 240 V, diode assembly
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element
b = DC 15 mm deeper than AC

1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole)
3) Surge suppressor
4) Drilling pattern

**3RT20 4, 3RT24 46 contactors**
**Size S3 and NEMA Size 3,** screw connection
with surge suppressor, auxiliary switch blocks and mounted overload relay

**Lateral clearance from earthed parts = 6 mm**




**For size S3:**

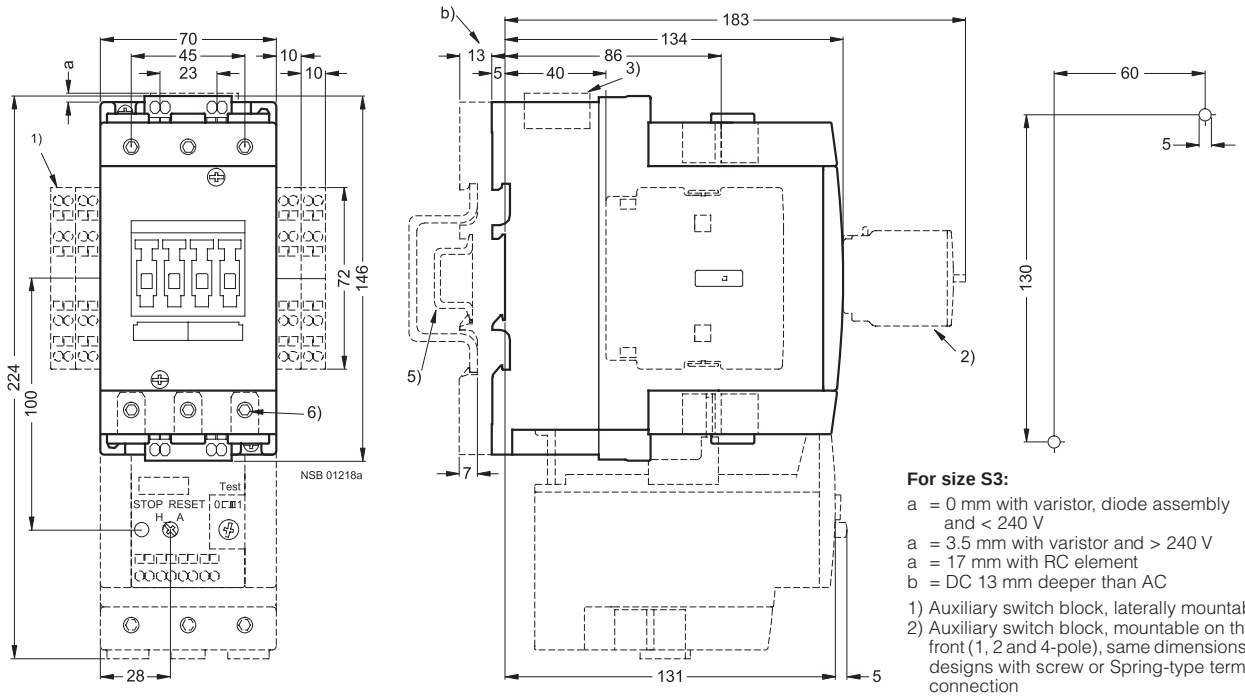
a = 0 mm with varistor, diode assembly and < 240 V
a = 3.5 mm with varistor and > 240 V
a = 17 mm with RC element
b = DC 13 mm deeper than AC

1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole), same dimensions for designs with screw or Spring-type connection
3) Surge suppressor
4) Drilling pattern
5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to EN 50 023
6) Hexagon socket screw 4 mm

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

**3RT20 4 contactors,**
**Size S3,** Spring-type terminal connection with surge suppressor, auxiliary switch blocks and mounted overload relay




**For size S3:**

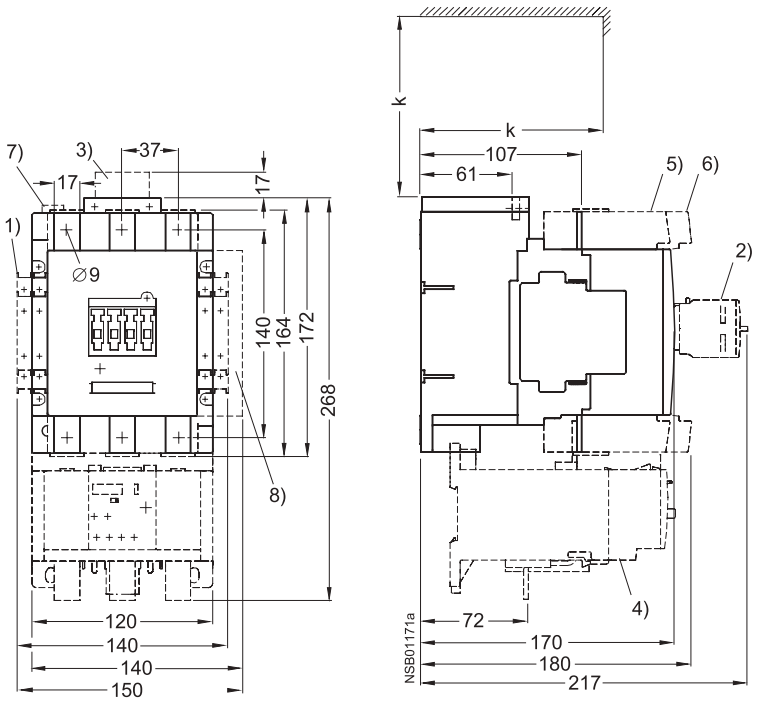
a = 0 mm with varistor, diode assembly and < 240 V
a = 3.5 mm with varistor and > 240 V
a = 17 mm with RC element
b = DC 13 mm deeper than AC

1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole), same dimensions for designs with screw or Spring-type terminal connection
3) Surge suppressor
4) Drilling pattern
5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to EN 50 023
6) Hexagon socket screw 4 mm

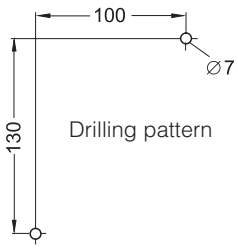
For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

**3RT10 5, 3RT14 5 contactors**
**Size S6 and NEMA Size 4**
with auxiliary switch block, laterally mountable and mountable on the front,
mounted overload relay and box terminals,
laterally mounted electronics module with remaining lifetime indication




Clearance from earthed parts with
directly mounted overload relay:
lateral: 10 mm
front: 20 mm




**For size S6:**

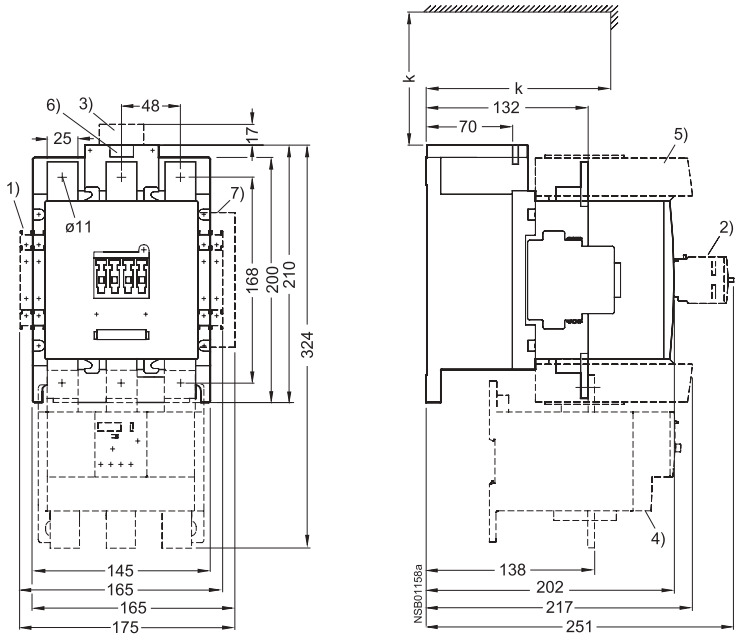
k = 120 mm (minimum clearance for removing the withdrawable coil)

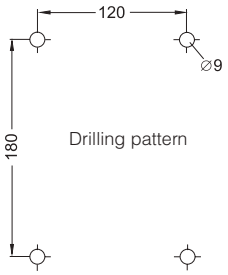
1) Second auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front
3) RC element
4) 3RB10 overload relay, mounted
5) 3RT19 55-4G box terminal block (hexagon socket 4 mm)
6) 3RT19 56-4G box terminal block (hexagon socket 4 mm)
7) PLC connection DC 24 V and changeover switch (with 3RT1…-.N)
8) Electronics module with remaining lifetime indication (auxiliary switch block not mountable on right-hand side)

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

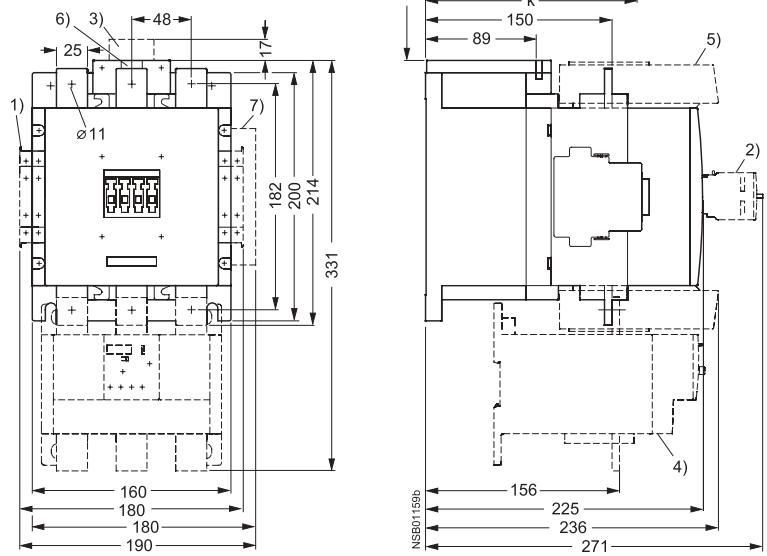
## Dimension drawings

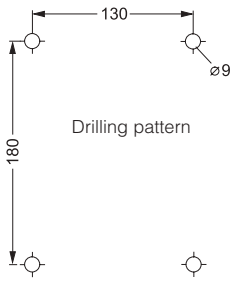
**3RT10 6, 3RT14 6 contactors**
**Size S10**
with auxiliary switch block, laterally mountable and mountable on the front,
mounted overload relay and box terminals,
laterally mounted electronics module with remaining lifetime indication




**3RT10 7, 3RT14 7 contactors**
**Size S12**
with auxiliary switch block, laterally mountable and mountable on the front,
mounted overload relay and box terminals,
laterally mounted electronics module with remaining lifetime indication




**For sizes S10 and S12:**
Clearance from earthed parts with directly mounted overload relay:
lateral: 10 mm
front: 20 mm

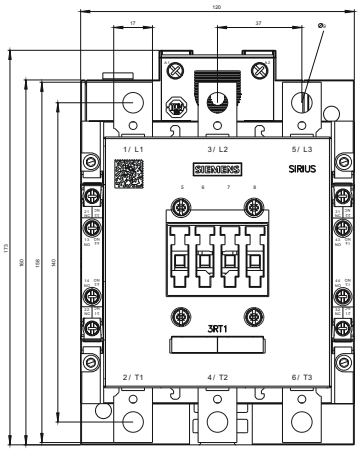
**For sizes S10 and S12:**
k = 150 mm (minimum clearance for removing the withdrawable coil)

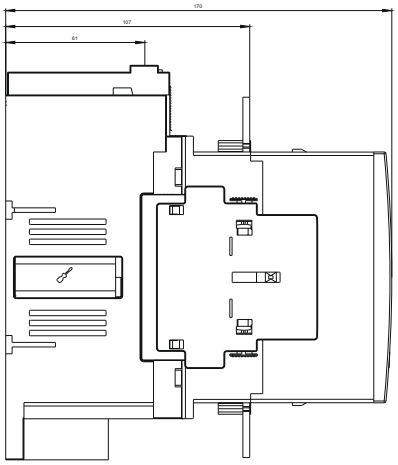
1) Second auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front
3) RC element
4) 3RB10 overload relay, mounted
5) Box terminal block (hexagon socket 6 mm)
6) PLC connection DC 24 V and changeover switch (with 3RT1…-.N)
7) Electronics module with remaining lifetime indication (auxiliary switch block not mountable on right-hand side)

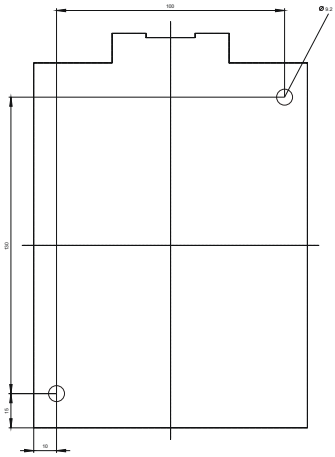
For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

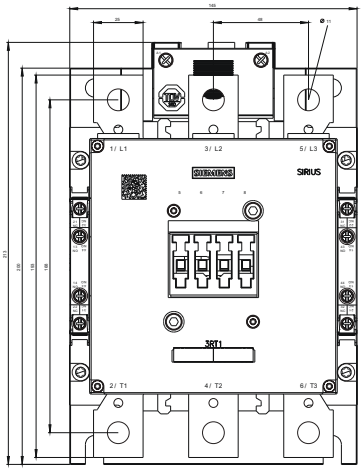
**3RT10 contactors with integrated safety**
**Size S6**

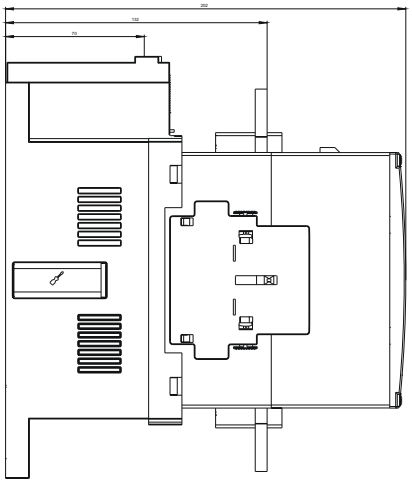


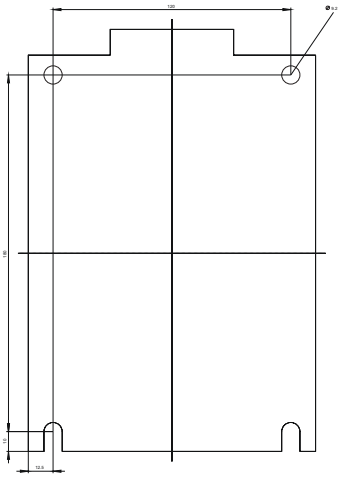





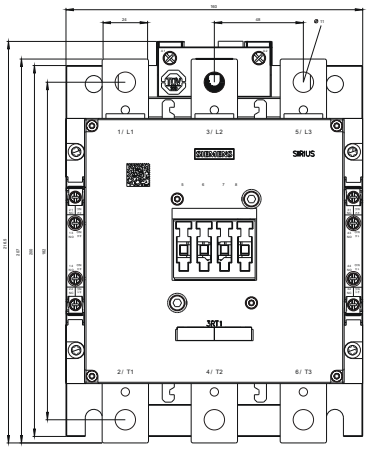
**Size S10**

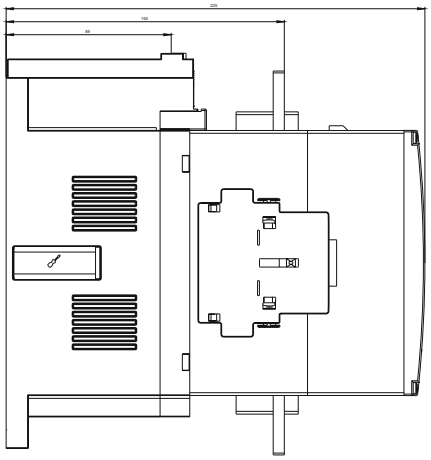


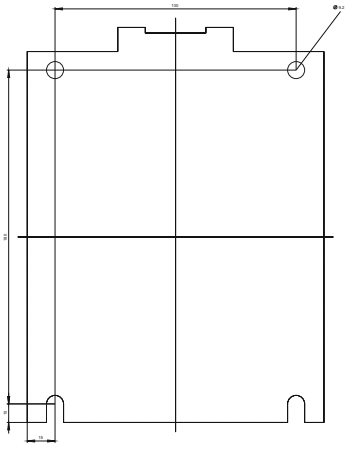





**Size S12**

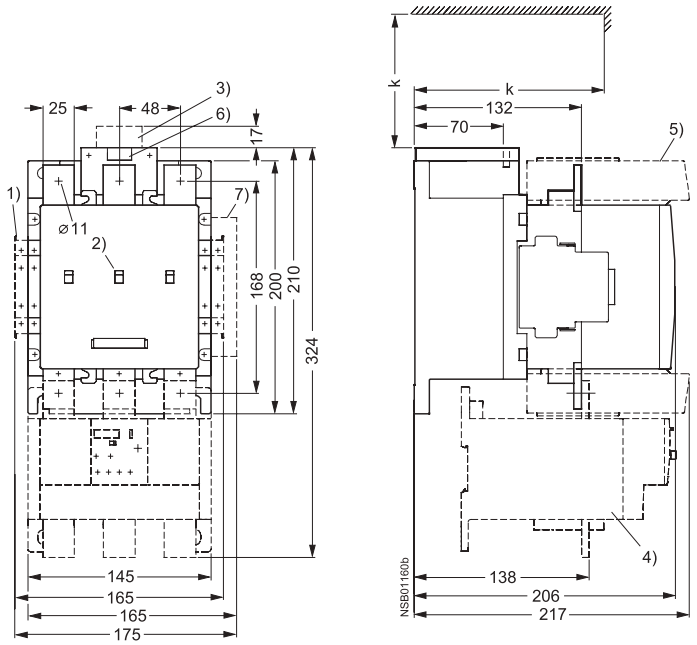


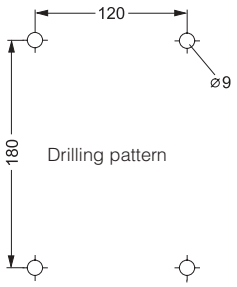





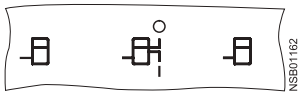
## Dimension drawings

**3RT12 6 vacuum contactors**
**Size S10**
with auxiliary switch block, laterally mountable,
mounted overload relay and box terminals,
laterally mounted electronics module with remaining lifetime indication

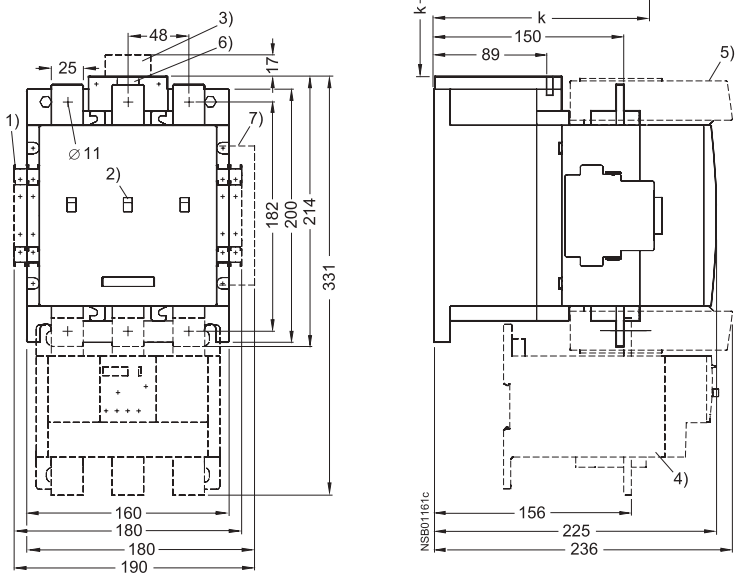


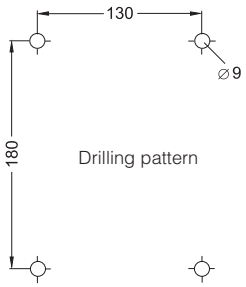




**Detail**
Contact erosion indicator for vacuum interrupters




**3RT12 7 vacuum contactors**
**Size S12**
with auxiliary switch block, laterally mountable,
mounted overload relay and box terminals,
laterally mounted electronics module with remaining lifetime indication



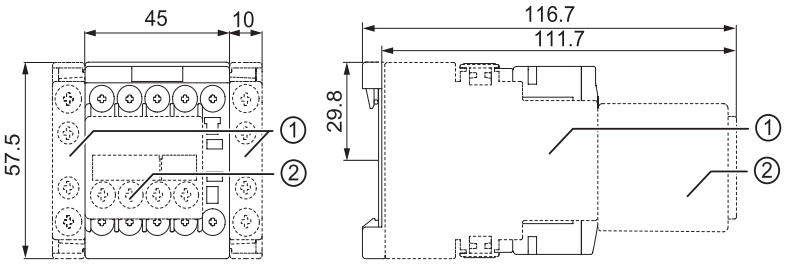

**For sizes S10 and S12:**
k = 150 mm (minimum clearance for removing the withdrawable coil)

1) Second auxiliary switch block, laterally mountable
2) Position and contact erosion indicator
3) RC element
4) 3RB10 overload relay, mounted
5) Box terminal block (hexagon socket 6 mm)
6) PLC connection DC 24 V and changeover switch (with 3RT1…-.N)
7) Electronics module with remaining lifetime indication (auxiliary switch block not mountable on right-hand side)

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

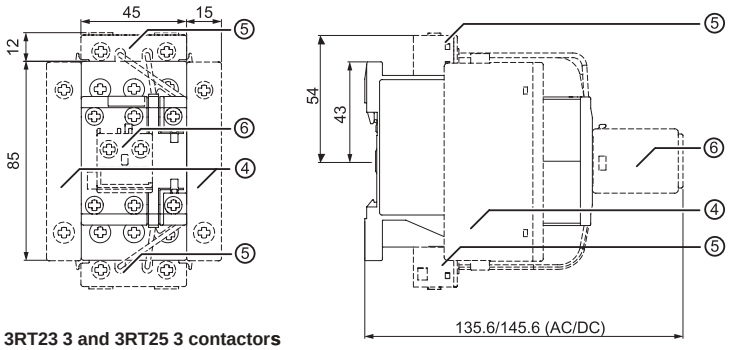
**3RT23 1 and 3RT25 1 contactors**
**Size S00**, screw connection
with surge suppressor and auxiliary switch block




**Lateral clearance from earthed parts = 6 mm**

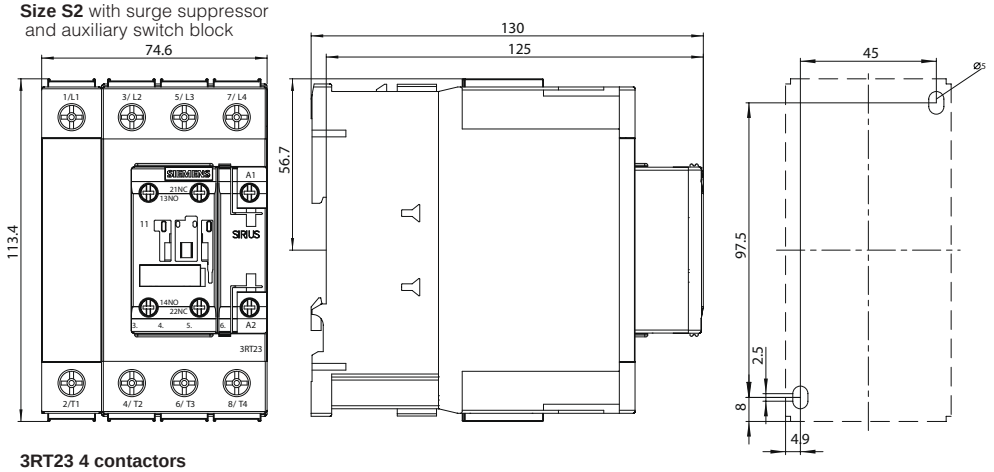
**For size S00:**
1) Laterally mountable auxiliary switch block 3RH2911-1DA.. / -1DE.. / -1EE..
2) Auxiliary switch block for mounting on the front 3RH2911-1FA.. / -1GA.. / -1HA.. / -1NF..

**3RT23 2 and 3RT25 2 contactors**
**Size S0** with coil terminal module
and auxiliary switch block



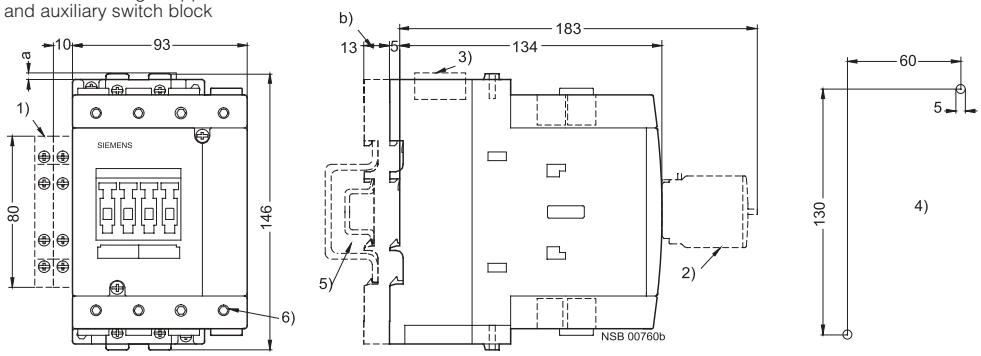

**For size S0:**
4) 4-pole contactor for switching 4 resistive loads 3RT232. 4-pole pole-changing contactor for changing the polarity of hoisting gear motors (2 NO contacts and 2 NC contacts) 3RT252.
5) Coil terminal module 3RT2926-4RA11/-4RB11
6) Auxiliary switch block for mounting on the front 3RH2911-1AA.. / -1BA

**3RT23 3 and 3RT25 3 contactors**
**Size S2** with surge suppressor
and auxiliary switch block




**For sizes S2 and S3:**
a = 0 mm with varistor < 240 V
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element and diode assembly
b = S2: DC 15 mm deeper than AC
S3: DC 13 mm deeper than AC
1) Auxiliary switch block, laterally mountable (right or left)
2) Auxiliary switch block, mountable on the front, (1, 2 and 4-pole, also 3RH19 21-1FE22 solid-state compatible design)
3) Surge suppressor
4) Drilling pattern
5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or, in the case of size S3, 75mm standard mounting rail acc. to EN 50 023
6) Hexagon socket screw 4 mm

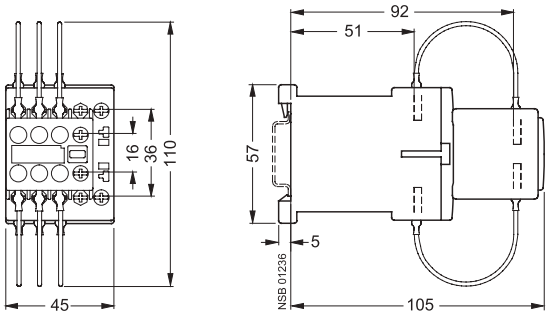
**3RT23 4 contactors**
**Size S3** with surge suppressor
and auxiliary switch block



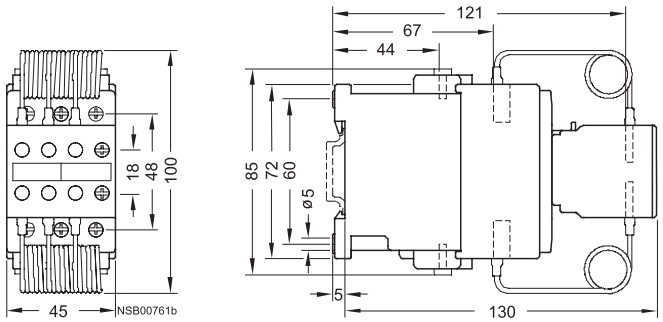

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

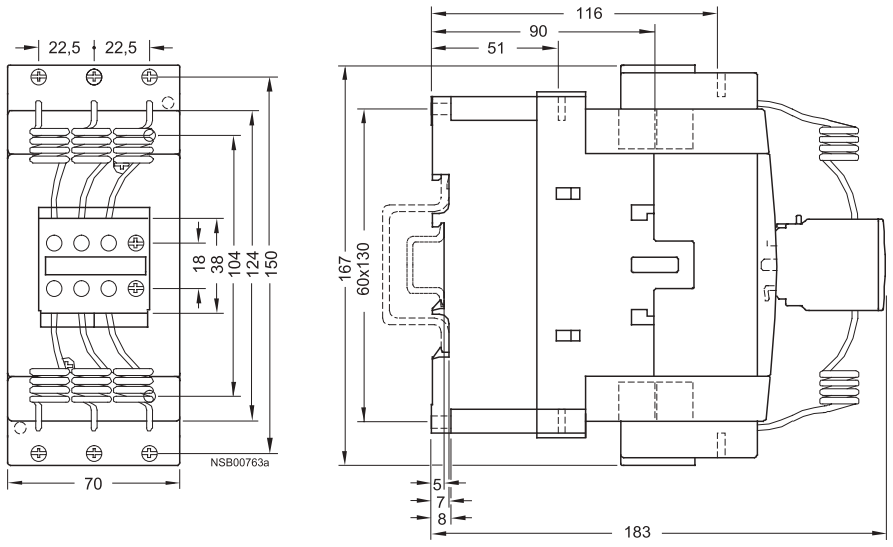
**3RT16 17 capacitor contactors**
**Size S00**




**3RT16 27 capacitor contactors**
**Size S0**



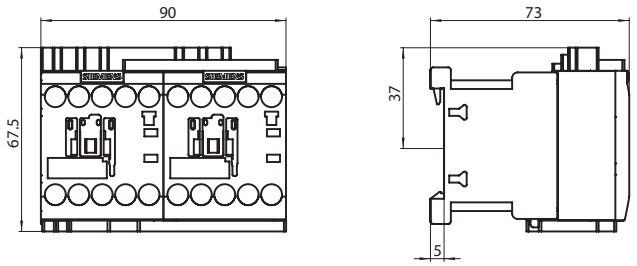

**3RT16 47 capacitor contactors**
**Size S3**



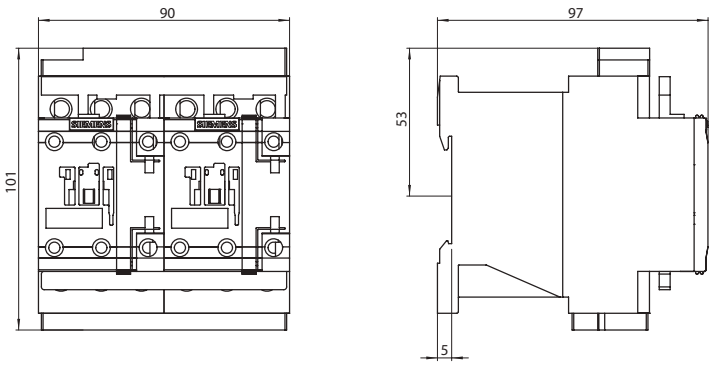

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

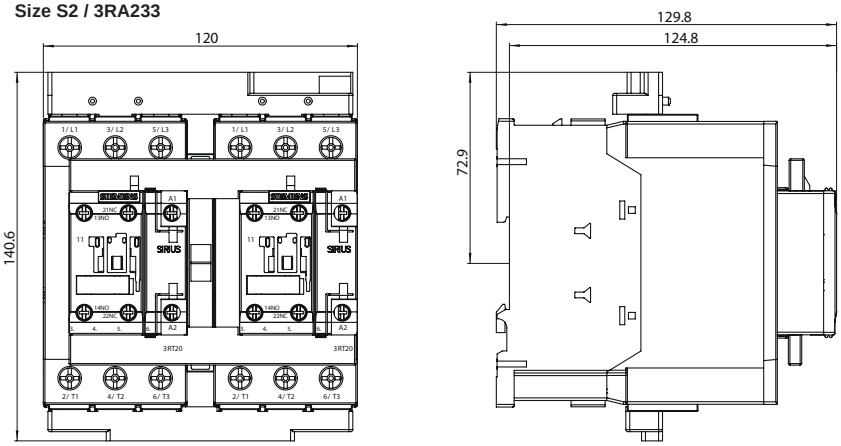
### Size S00 / 3RA231



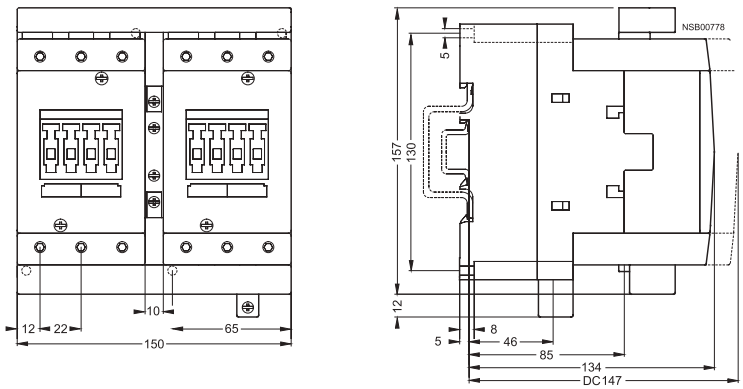

### Size S0 / 3RA232




### Size S2 / 3RA233



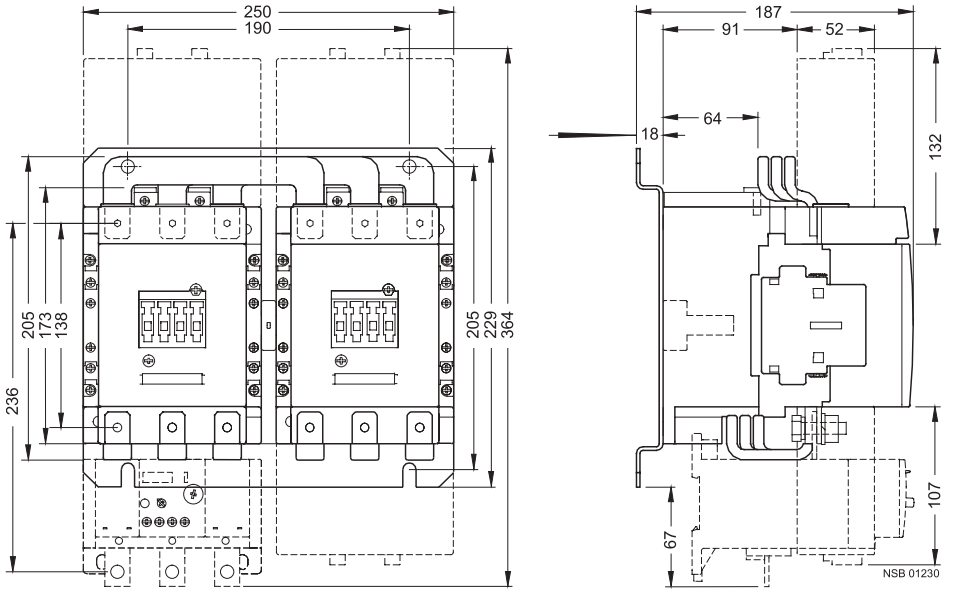

### Size S3 / 3RA234



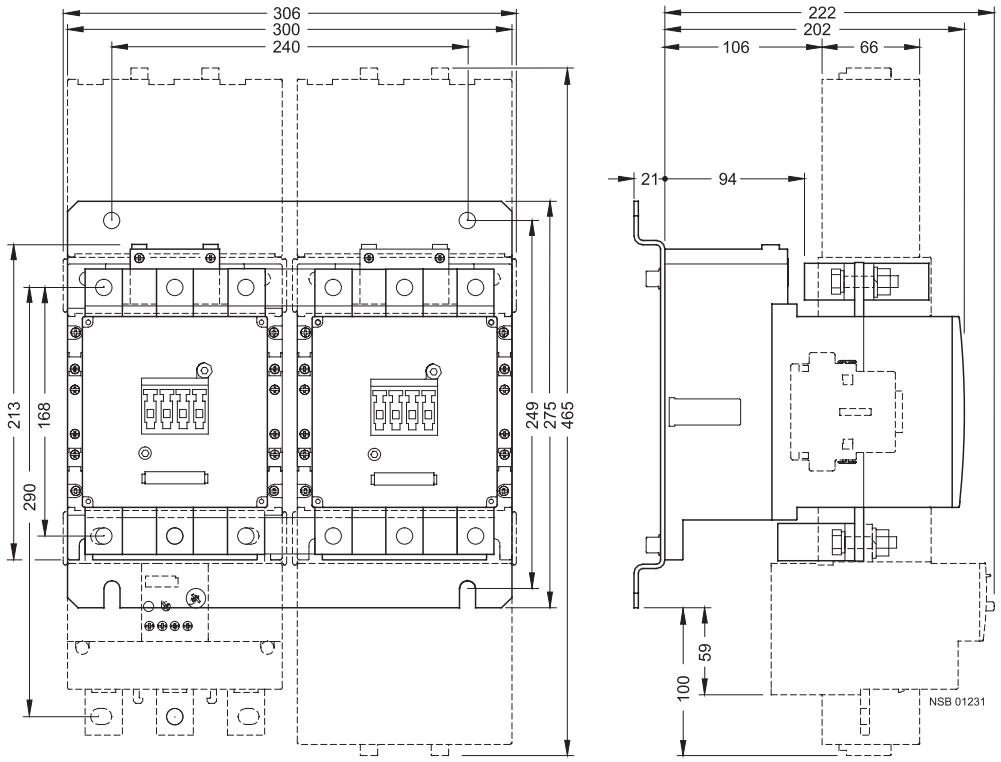

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## Dimension drawings

### Size S6



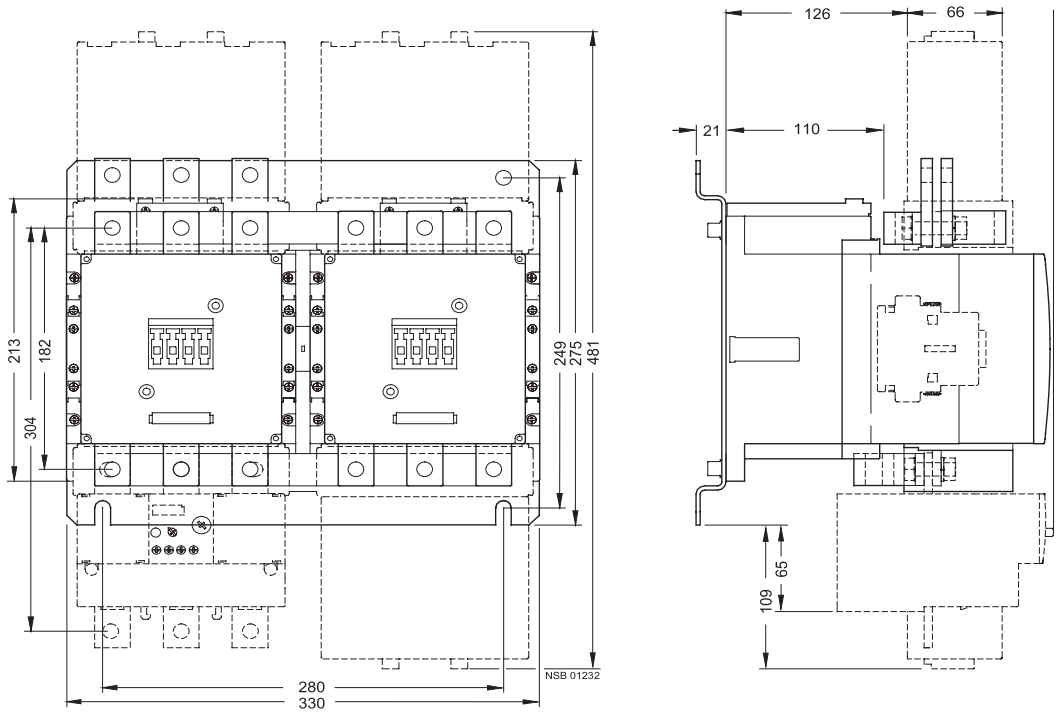

### Size S10

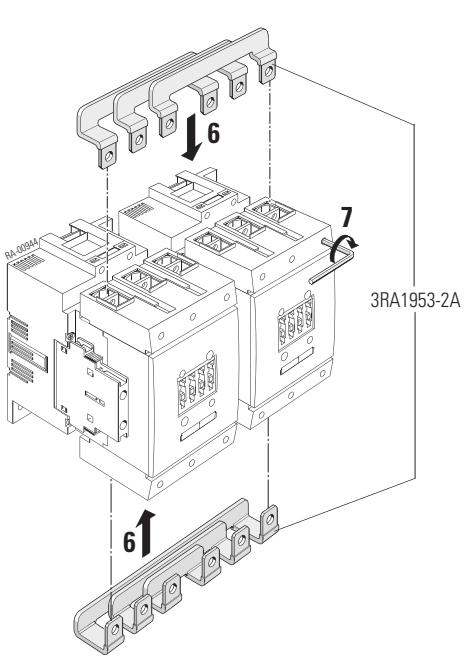


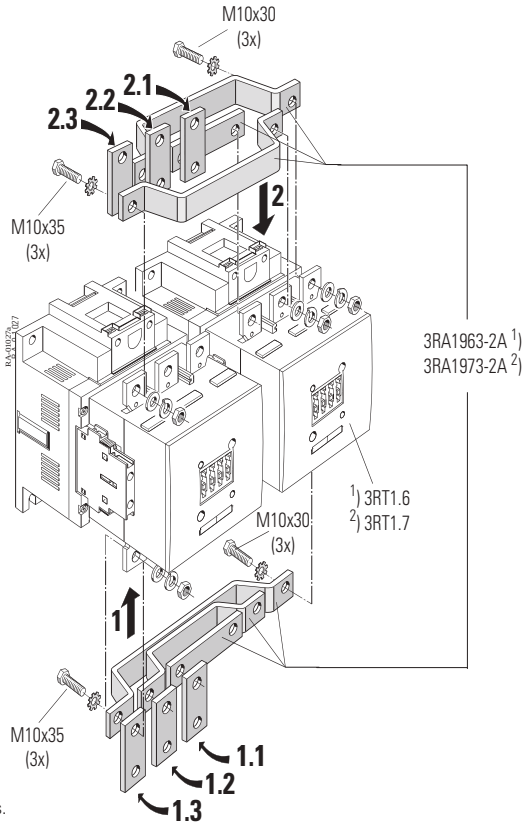

The assemblies shown on this page are for customer assembly with individual components.

## Dimension drawings

**Size S12**



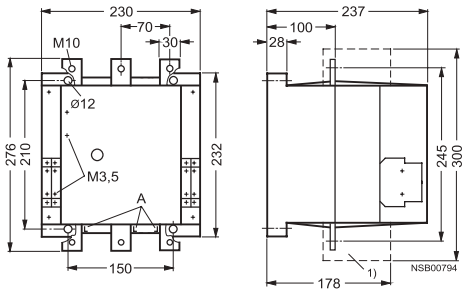



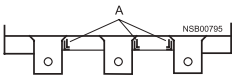

The assemblies shown on this page are for customer assembly with individual components.

## Dimension drawings

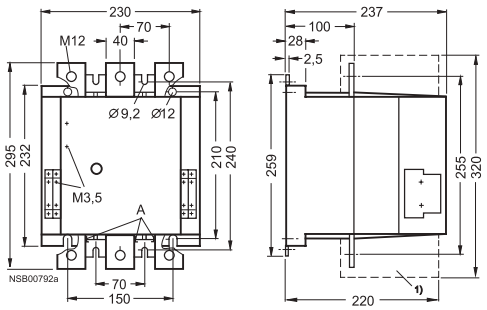
### 3TF68 vacuum contactors



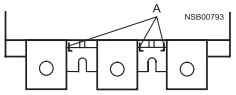

Detail
A = Contact erosion indicator for vacuum interrupter contacts




### 3TF69 vacuum contactors

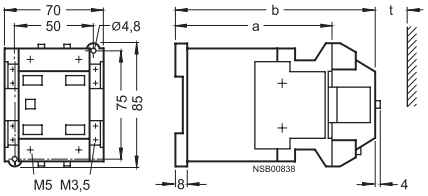



Detail
A = Contact erosion indicator for vacuum interrupter contacts




## *3TC4 and 3TC5 contactors*

### 3TC44 contactors
### Size 2, AC and DC operation

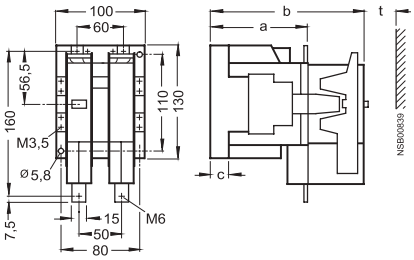



t = minimum clearance from insulated components: 15 mm (600 V and 750 V)

from grounded components: 30 mm (600 V and 750 V)

| | a | b |
|---|---|---|
| DC operation | 109 | 141 |
| AC operation | 68 | 100 |

### 3TC48 contactors
### Size 4, AC and DC operation

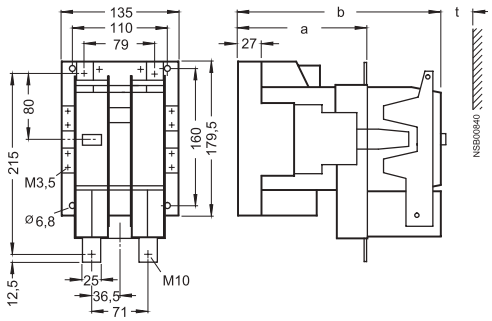



t = minimum clearance from insulated components: 15 mm (600 V), 20 mm (750 V)

from grounded components: 35 mm (600 V), 55 mm (750 V)

| | a | b | c |
|---|---|---|---|
| DC operation | 112 | 180 | 21.5 |
| AC operation | 86 | 154 | 23.5 |

### 3TC52 contactors
### Size 8, AC and DC operation

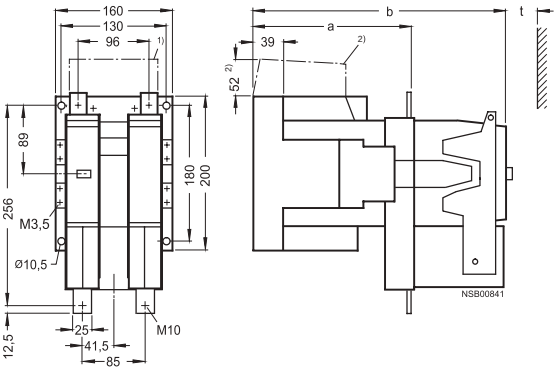



t = minimum clearance from insulated components: 20 mm (600 V and 750 V)

from grounded components: 70 mm (600 V and 750 V)

| | a | b |
|---|---|---|
| DC operation | 147 | 232 |
| AC operation | 115 | 200 |

### 3TC56 contactors
### Size 12, AC and DC operation




t = minimum clearance from insulated components: 25 mm (600 V and 750 V)

from grounded components: 80 mm (600 V), 100 mm (750 V)

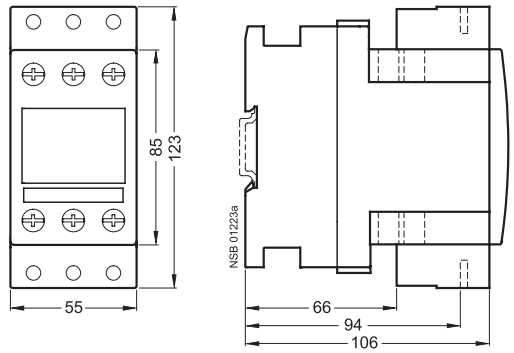
| | a | b |
|---|---|---|
| DC operation | 200 | 310 |
| AC operation | 141 | 251 |

1) With box terminals for laminated copper bars (accessories).

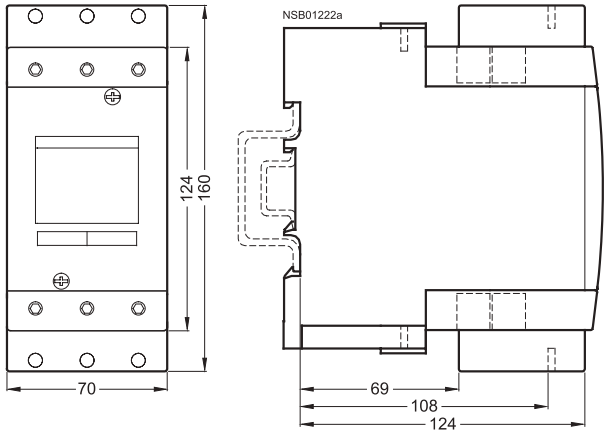
2) DC operation only

## Dimension drawings

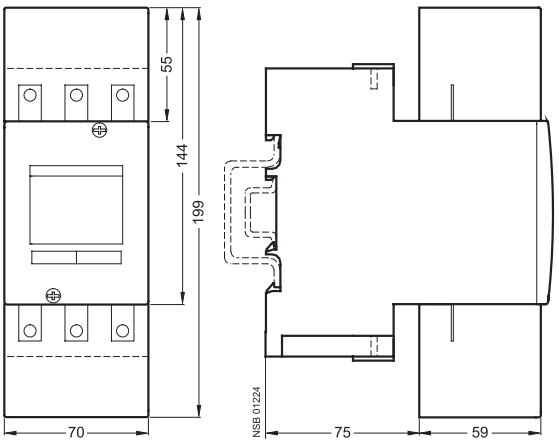
**Terminal cover for box terminals for size S2, 3RT29 36-4EA2**



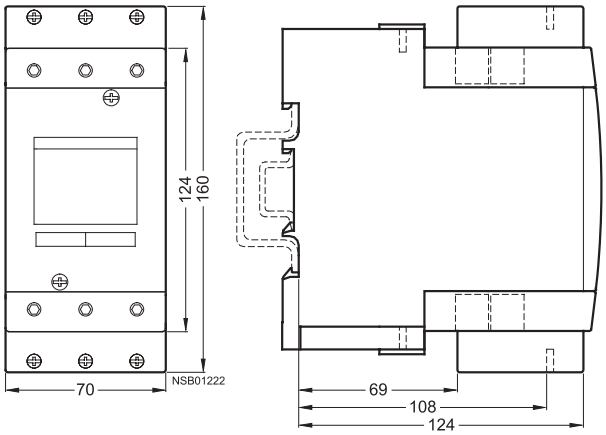

**Terminal cover for box terminals for size S3, 3RT19 46-4EA2**




**Terminal cover for cable lug and bar connection for size S3, 3RT19 46-4EA1**



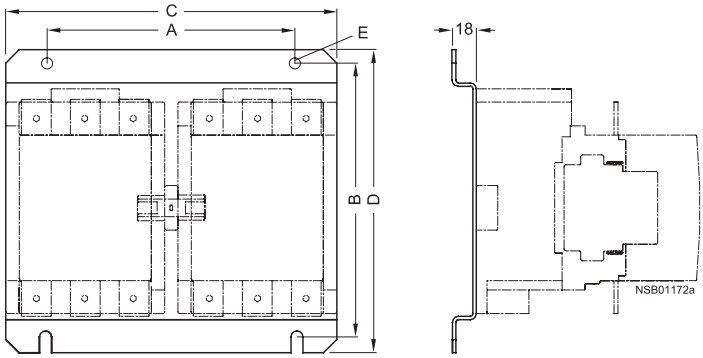

**Auxiliary conductor terminal, 3-pole 3RT19 46-4F Size S3**
mounted on contactor




For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

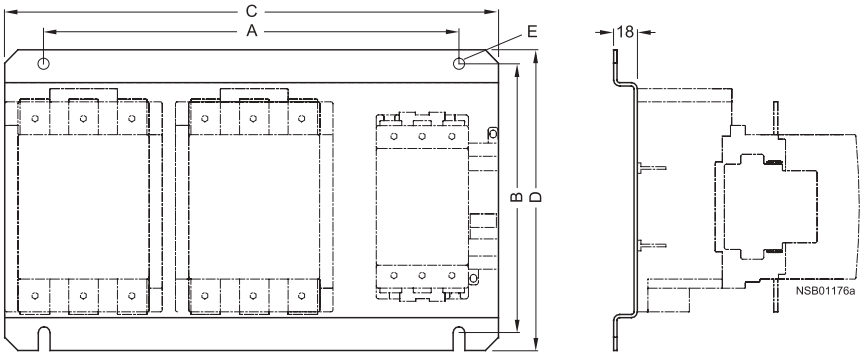
## Dimension drawings

**3RA19.2-2A baseplates for reversing contactor assemblies**




| | A | B | C | D | E |
|---|---|---|---|---|---|
| S6 | 190 | 205 | 250 | 229 | 9 |
| S10 | 240 | 249 | 300 | 275 | 11 |
| S12 | 280 | 249 | 330 | 275 | 11 |

**3RA19.2-2E, 3RA19.2-2F**
**baseplates for star-delta assemblies**

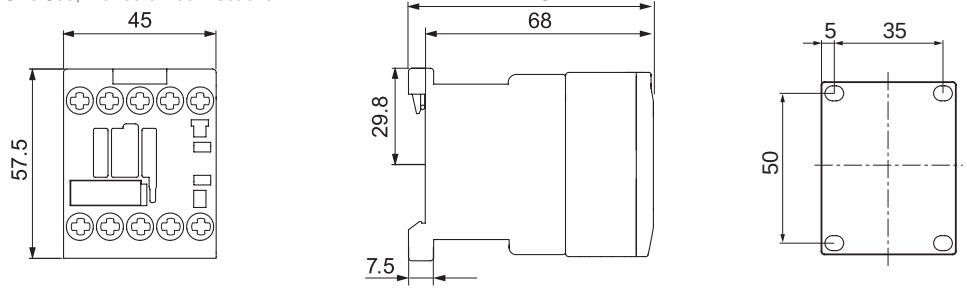



| | A | B | C | D | E |
|---|---|---|---|---|---|
| S6-S6-S3 | 316 | 205 | 376 | 229 | 9 |
| S6-S6-S6 | 343 | 205 | 403 | 229 | 9 |
| S10-S10-S6 | 393 | 250 | 453 | 275 | 11 |
| S10-S10-S10 | 423 | 250 | 483 | 275 | 11 |
| S12-S12-S10 | 450 | 250 | 510 | 275 | 11 |
| S12-S12-S12 | 465 | 250 | 525 | 275 | 11 |

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

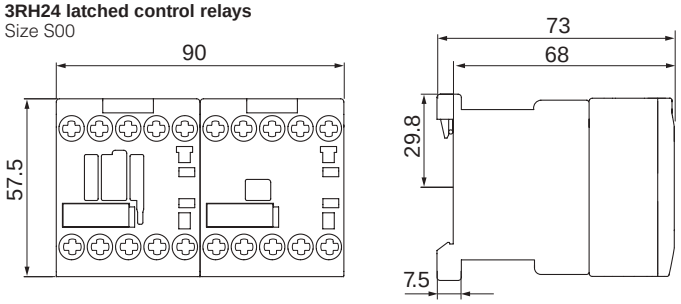
## Dimension drawings

**3RH21 control relays**
Size S00, with screw connections




**Lateral clearance from earthed parts = 6 mm**

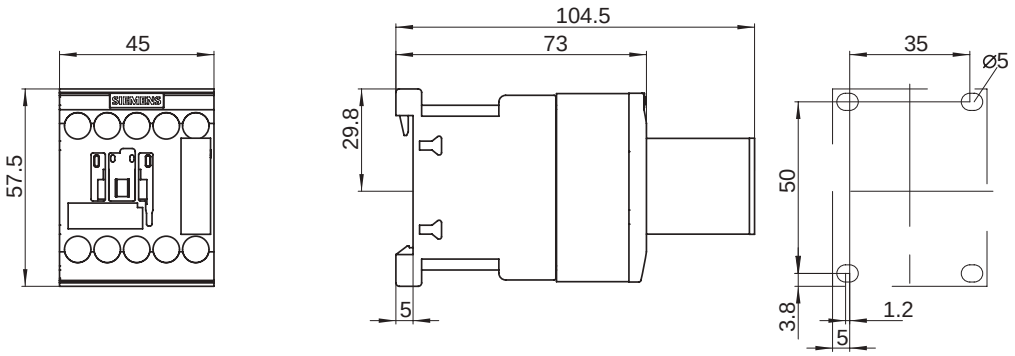
**3RH24 latched control relays**
Size S00




# 3RH21 coupling relay

## Dimension drawings

Size S00, with screw connections,
with surge suppressor




1) Surge suppressor
2) Drilling pattern

Deviating dimensions for coupling relays with Spring-type terminal connections

Height: 69.5 mm

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

## contents

### Thermal overload relays

**3RU21 overload relays up to 100 A with screw connection, CLASS 10**

Page

**Selection and ordering data**

- Basic Unit 3/10
- Accessories 3/11

Description 3/8 - 3/9
Technical data 3/12 - 3/14
Circuit diagrams 3/15
Dimension drawings 3/16 - 3/17

### Solid state overload relays

**3RB24 overload relays up to 630A with IO-Link current monitoring**

Page

**Selection and ordering data**

- Basic Unit 3/51
- Accessories 3/55

Description 3/52 - 3/53
Technical data 3/58 - 3/62

### SIRIUS 3RV motor starter protectors up to 100 A

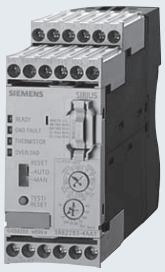
**3RB20/21, 3RB30/31 overload relays up to 630 A, 3RB20/30 CLASS 10 or 20 3RB21/31 CLASS 5, 10, 20, 30**

Page

**Selection and ordering data**

- Basic Unit 3/22 - 3/23
- Accessories 3/49 - 3/50

Description 3/18 - 3/19
Cross Reference Aid 3/21
Technical data 3/24 - 3/28
Dimension drawings 3/30
Circuit diagrams 3/31



**3RB22/23 overload relays up to 820 A for full motor protection, CLASS 5 to CLASS 30 adjustable**

Page

**Selection and ordering data**

- Basic Unit 3/34 - 3/35
- Accessories 3/49 - 3/50

Description 3/47
Technical data 3/40 - 3/43
Dimension drawings 3/45 - 3/46
Circuit diagrams 3/47

**3UF7 SIMOCODE Pro Motor management and control devices**

Page

**Selection and ordering data**

- Basic Unit 3/74 - 3/76
- Expansion modules 3/77 - 3/79
- Accessories 3/80 - 3/82

Description 3/63 - 3/68
Technical data 3/69 - 3/73
Software and licenses 3/83 - 3/86

## General data

### Overview

| Features | 3RU21 | 3RB30/3RB31 | 3RB20/3RB21 | 3RB22/3RB23 | 3RB24 | Benefits |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Sizes** | S00 ... S3 | S00 ... S3 | S6 ... S12 | S00 ... S12 | S00 ... S12 | • Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, etc., ...)<br>• Permit the mounting of slim and compact load feeders in widths of 45 mm (S00), 45 mm (S0), 55 mm (S2), 70 mm (S3), 120 mm (S6) and 145 mm (S10/S12); this does not include the current measuring modules for the 3RB22 to 3RB24 evaluation modules sizes S00 to S3<br>• Simplify configuration |
| **Seamless current range** | 0.11 ... 100 A | 0.1 ... 100 A | 50 ... 630 A | 0.3 ... 630 A (up to 820 A)[1] | 0.3 ... 630 A (up to 820 A)[1] | • Allows easy and consistent configuration with one series of overload relays (for small to large loads) |
| **Protection functions** | | | | | | |
| **Tripping due to overload** | ✓ | ✓ | ✓ | ✓ | ✓ | • Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload |
| **Tripping due to phase unbalance** | ✓ | ✓ | ✓ | ✓ | ✓ | • Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to phase unbalance |
| **Tripping due to phase failure** | ✓ | ✓ | ✓ | ✓ | ✓ | • Minimizes heating of induction motors during phase failure |
| **Protection of single-phase loads** | ✓ | — | — | ✓ | ✓ | • Enables the protection of single-phase loads |
| **Tripping in the event of overheating**<br>by<br>**integrated thermistor motor protection function** | —[2] | —[2] | —[2] | ✓ | ✓ | • Provides optimum temperature-dependent protection of loads against excessive temperature rises e.g. for stator-critical motors or in the event of insufficient coolant flow, contamination of the motor surface or for long starting or braking operations<br>• Eliminates the need for additional special equipment<br>• Saves space in the control cabinet<br>• Reduces wiring outlay and costs |
| **Tripping in the event of a ground fault**<br>by<br>**internal ground-fault detection (activatable)** | — | ✓ (only 3RB31) | ✓ (only 3RB21) | ✓ | ✓ | • Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc.<br>• Eliminates the need for additional special equipment<br>• Saves space in the control cabinet<br>• Reduces wiring outlay and costs |

✓ Available
— Not available

[1] Motor currents up to 820 A can be recorded and evaluated by a current measuring module, e.g. 3RB29 06-2BG1 (0.3 to 3 A), in combination with a 3UF18 68-3GA00 (820 A/1 A) series transformer.

[2] The SIRIUS 3RN thermistor motor protection devices can be used to provide additional temperature-dependent protection.

## General data

| Features | 3RU21 | 3RB30/3RB31 | 3RB20/3RB21 | 3RB22/3RB23 | 3RB24 | Benefits |
|---|---|---|---|---|---|---|
| **Features** | | | | | | |
| **RESET function** | ✓ | ✓ | ✓ | ✓ | ✓ | • Allows manual or automatic resetting of the device |
| **Remote RESET function** | ✓ (by means of separate module) | ✓ (only with 3RB31 and external auxiliary voltage 24 V DC) | ✓ (only with 3RB21 and external auxiliary voltage 24 V DC) | ✓ (electrically via external button) | ✓ (electrically with button or via IO-Link) | • Allows the remote resetting of the device |
| **TEST function for auxiliary contacts** | ✓ | ✓ | ✓ | ✓ | ✓ | • Allows easy checking of the function and wiring |
| **TEST function for electronics** | — | ✓ | ✓ | ✓ | ✓ | • Allows checking of the electronics |
| **Status display** | ✓ | ✓ | ✓ | ✓ | ✓ | • Displays the current operating state |
| **Large current adjustment button** | ✓ | ✓ | ✓ | ✓ | ✓ | • Makes it easier to set the relay exactly to the correct current value |
| **Integrated auxiliary contacts (1 NO + 1 NC)** | ✓ | ✓ | ✓ | ✓ (2 ×) | -- | • Allows the load to be switched off if necessary<br>• Can be used to output signals |
| **Integrated auxiliary contacts (1 CO and 1 NO in series)** | — | — | — | — | ✓ | • Enables the controlling of contactors directly from the higher-level control system through IO-Link |
| **IO-Link connection** | — | — | — | — | ✓ | • Reduction of wiring in the control cabinet<br>• Enables communication |
| **Connection of optional hand-held device** | — | — | — | — | ✓ | • Enables local operation |
| **Communication capability through IO-Link** | | | | | | |
| **Full starter functionality through IO-Link** | — | — | — | — | ✓ | • Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting) |
| **Reading out of diagnostics functions** | — | — | — | — | ✓ | • Enables the reading out of diagnostics information such as overload, open circuit, ground fault, etc. |
| **Reading out of current values** | — | — | — | — | ✓ | • Enables the reading out of current values and their direct processing in the higher-level control system |
| **Reading out all set parameters** | — | — | — | — | ✓ | • Enables the reading out of all set parameters, e.g. for plant documentation |

✓ Available

— Not available

| Features | 3RU21 | 3RB30/3RB31 | 3RB20/3RB21 | 3RB22/3RB23 | 3RB24 | Benefits |
|---|---|---|---|---|---|---|
| **Design of load feeders** | | | | | | |
| **Short-circuit strength up to 100 kA at 690 V** (in conjunction with the corresponding fuses or the corresponding motor starter protector) | ✓ | ✓ | ✓ | ✓ | ✓ | • Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations |
| **Electrical and mechanical matching to 3RT contactors** | ✓ | ✓ | ✓ | ✓[1] | ✓[1] | • Simplifies configuration<br>• Reduces wiring outlay and costs<br>• Enables stand-alone installation as well as space-saving direct mounting |
| **Straight-through transformers for main circuit**[2] (in this case the cables are routed through the feed-through openings of the overload relay and connected directly to the box terminals of the contactor) | — | ✓ (S2, S3) | ✓ (S3 to S6) | ✓ (S00 ... S6) | ✓ (S00 ... S6) | • Reduces the contact resistance (only one point of contact)<br>• Saves wiring costs (easy, no need for tools, and fast)<br>• Saves material costs<br>• Reduces installation costs |
| **Spring-type connection system for main circuit**[2] | ✓ (S00, S0) | ✓ (S00, S0) | — | — | — | • Enables fast connections<br>• Permits vibration-resistant connections<br>• Enables maintenance-free connections |
| **Spring-type connection system for auxiliary circuits**[2] | ✓ | ✓ | ✓ | ✓ | ✓ | • Enables fast connections<br>• Permits vibration-resistant connections<br>• Enables maintenance-free connections |
| **Ring terminal lug connection method for main and auxiliary circuits**[2] | ✓ (S00, S0) | — | — | — | — | • Enables fast connections<br>• Permits vibration-resistant connections<br>• Enables maintenance-free connections |
| **Full starter functionality through IO-Link** | — | — | — | — | ✓ | • Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting) |
| **Starter function** | — | — | — | — | ✓ | • Integration of feeders via IO-Link in the control system up to 630 A or 820 A |

✓ Available
— Not available

[1] Exception: up to size S3, only stand-alone installation is possible.
[2] Alternatively available for screw terminals.

| Features | 3RU21 | 3RB30/3RB31 | 3RB20/3RB21 | 3RB22/3RB23 | 3RB24 | Benefits |
|---|---|---|---|---|---|---|
| **Other features** | | | | | | |
| **Temperature compensation** | ✓ | ✓ | ✓ | ✓ | ✓ | • Allows the use of the relays at high temperatures without derating<br>• Prevents premature tripping<br>• Allows compact installation of the control cabinet without distance between the devices/load feeders |
| **Very high long-term stability** | ✓ | ✓ | ✓ | ✓ | ✓ | • Provides safe protection for the loads even after years of use in severe operating conditions |
| **Wide setting ranges** | — | ✓ (1:4) | ✓ (1:4) | ✓ (1:10) | ✓ (1:10) | • Minimize the configuration outlay and costs<br>• Minimize storage overheads, storage costs, tied-up capital |
| **Fixed trip class** | CLASS 10 CLASS 10A | 3RB30: CLASS 10E or CLASS 20E | 3RB20: CLASS 10 or CLASS 20 | | | • Optimum motor protection for standard starts |
| **Trip classes adjustable on the device CLASS 5, 10, 20, 30** | — | 3RB31: ✓ | 3RB21: ✓ | ✓ | ✓ | • Enables solutions for very fast starting motors requiring special protection (e.g. Ex motors)<br>• Enables heavy starting solutions<br>• Reduces the number of versions |
| **Low power loss** | — | ✓ | ✓ | ✓ | ✓ | • Reduces energy consumption and energy costs (up 98 % less energy is used than for thermal overload relays).<br>• Minimizes temperature rises of the contactor and control cabinet – in some cases this may eliminate the need for control-gear cabinet cooling.<br>• Direct mounting to contactor saves space, even for high motor currents (i.e. no heat decoupling is required). |
| **Internal power supply** | —[1)] | ✓ | ✓ | — | — | • Eliminates the need for configuration and connecting an additional control circuit |
| **Supplied from an external voltage through IO-Link** | — | — | — | | ✓ | • Eliminates the need for configuration and connecting an additional control circuit |
| **Overload warning** | — | — | — | ✓ | ✓ | • Indicates imminent tripping of the relay directly on the device due to overload, phase unbalance or phase failure through flickering of the LEDs or in the case of the 3RB24 as a signal through IO-Link<br>• Allows the imminent tripping of the relay to be signaled<br>• Allows measures to be taken in time in the event of inverse-time delayed overloading of the load for an extended period over the current limit |
| **Analog output** | — | — | — | ✓ | ✓ | • Allows the output of an analog output signal for actuating moving-coil instruments, feeding programmable logic controllers or transfer to bus systems<br>• Eliminates the need for an additional measuring transducer and signal converter |

✓ Available
— Not available

[1)] SIRIUS 3RU21 thermal overload relays use a bimetal contactor and therefore do not require a control supply voltage.

## *Overview of overload relays – matching contactors*

| Overload relays | Current measure-ment | Current range | **Contactors** (type, size, rating in HP) **3RT20 1.** | **3RT20 2.** | **3RT20 3.** | **3RT20 4.** | **3RT20 5.** | **3RT20 6.** | **3RT20 7** | **3TF68/ 3TF69** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | S00 | S0 | S2 | S3 | S6 | S10 | S12 | Size 14 |
| Type | Type | A | 3/5/7.5/10 | 5/7.5/10/15/20/25 | 30/40/50 | 50/60/70 | 100/125/150 | 150/200/250 | 300/400 | 500/700 |
| **SIRIUS 3RU21 thermal overload relays** | | | | | | | | | | |
| 3RU21 1 | Integrated | 0.11 … 16 | ✓ | — | — | — | — | — | — | — |
| 3RU21 2 | Integrated | 1.8 … 40 | — | ✓ | — | — | — | — | — | — |
| 3RU21 3 | Integrated | 22 … 80 | — | — | ✓ | — | — | — | — | — |
| 3RU21 4 | Integrated | 28 … 100 | — | — | — | ✓ | — | — | — | — |
| **SIRIUS 3RB30 solid-state overload relays**[1] | | | | | | | | | | |
| 3RB30 1 | Integrated | 0.1 … 16 | ✓ | — | — | — | — | — | — | — |
| 3RB30 2 | Integrated | 0.1 … 40 | — | ✓ | — | — | — | — | — | — |
| 3RB30 3 | Integrated | 12 … 80 | — | — | ✓ | — | — | — | — | — |
| 3RB30 4 | Integrated | 32 … 115 | — | — | — | ✓ | — | — | — | — |
| **SIRIUS 3RB31 solid-state overload relays**[1] | | | | | | | | | | |
| 3RB31 1 | Integrated | 0.1 … 16 | ✓ | — | — | — | — | — | — | — |
| 3RB31 2 | Integrated | 0.1 … 40 | — | ✓ | — | — | — | — | — | — |
| 3RB31 3 | Integrated | 12 … 80 | — | — | ✓ | — | — | — | — | — |
| 3RB31 4 | Integrated | 32 … 115 | — | — | — | ✓ | — | — | — | — |
| **SIRIUS 3RB20 solid-state overload relays**[1] | | | | | | | | | | |
| 3RB20 5 | Integrated | 50 … 200 | — | — | — | — | ✓ | — | — | — |
| 3RB20 6 | Integrated | 55 … 630 | | | | | | ✓ | ✓ | ✓ |
| 3RB20 1 + 3UF18 | Integrated | 630 … 820 | — | — | — | — | — | — | — | ✓ |
| **SIRIUS 3RB21 solid-state overload relays**[1] | | | | | | | | | | |
| 3RB21 5 | Integrated | 50 … 200 | — | — | — | — | ✓ | — | — | — |
| 3RB21 6 | Integrated | 55 … 630 | | | | | | ✓ | ✓ | ✓ |
| 3RB21 1 + 3UF18 | Integrated | 630 … 820 | — | — | — | — | — | — | — | ✓ |

3RU21

3RB30

3RB31

3RB20

3RB21

✓ Can be used

— Cannot be used

[1] "Technical Specifications" for use of the overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders",

### *Overview of overload relays – matching contactors (continued)*

| Overload relays | Current measure-ment | Current range | **Contactors** (type, size, rating in HP) **3RT20 1** | **3RT20 2** | **3RT20 3** | **3RT20 4** | **3RT20 5** | **3RT20 6** | **3RT20 7** | **3TF68/ 3TF69** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | S00 | S0 | S2 | S3 | S6 | S10 | S12 | Size 14 |
| Type | Type | A | 3/5/7.5/1. | 5/7.5/10/15/ 20/25 | 30/40/50 | 50/60/75 | 100/125/150 | 150/200/250 | 300/400 | 500/700 |
| **SIRIUS 3RB22 to 3RB24 solid-state overload relays**[1] | | | | | | | | | | |
| 3RB22 83/ 3RB23 83/ 3RB24 83+ | 3RB29 0 | 0.3 … 25 | ✓ | ✓ | — | — | — | — | — | — |
| | 3RB29 0 | 10 … 100 | ✓ | ✓ | ✓ | ✓ | — | — | — | — |
| | 3RB29 5 | 20 … 200 | — | ✓ | ✓ | ✓ | ✓ | — | — | — |
| | 3RB29 6 | 63 … 630 | — | — | — | — | — | ✓ | ✓ | ✓ |
| | 3RB29 0 + 3UF18 | 630 … 820 | — | — | — | — | — | — | — | ✓ |

3RB22, 3RB23

3RB24

✓ Can be used

— Cannot be used

[1] "Technical Specifications" for use of the overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders",

### *Connection methods*

Depending on the device version of the 3RU2 and 3RB3 overload relays, the terminals for screw terminals, spring-type terminals or ring terminal lug connection are configured for both the main and auxiliary circuit in frame sizes S00 and S0.

The 3RU21 thermal overload relays come with screw terminals.

The electronic overload relays 3RB20 and 3RB21 are available with screw terminals (box terminals) or spring-type terminals on the auxiliary current side; the same applies for the evaluation modules of the 3RB22 to 3RB24 electronic overload relays for High-Feature applications.

## Description

The 3RU thermal overload relays up to 100 A are designed for current-dependent protection of applications with normal start-up conditions (see "Trip classes") against impermissibly high rises in temperature as a result of overload or phase failure (see "Phase failure protection"). An overload or phase failure causes the motor current to rise above the set rated motor current (see "Setting"). This current rise heats up the bimetal strips within the relay via heating elements which, in turn, operate the auxiliary contacts via a tripping mechanism due to their deflection (see "Auxiliary contacts"). These switch the load off via a contactor. The switch-off time is dependent on the ratio of tripping current to operational current $I_e$ and is stored in the form of a tripping characteristic with long-term stability (see "Tripping characteristics"). The "Tripped" state is signalled by means of a switching position indicator (see "Indication of status").

Resetting takes place manually or automatically (see "Manual and automatic resetting") after a recovery time has elapsed (see "Recovery time").

The 3RU thermal overload relays are electrically and mechanically optimised to the 3RT contactors such that, in addition to individual mounting, they can also be directly mounted onto the contactors to save space (see "Design and mounting"). The main and auxiliary circuits can be connected in various ways (see "Connection"), including the use of Cage Clamp terminals. When the overload relay has been connected, it can be tested for correct functioning using a TEST slide (see "TEST function"). In addition to the TEST function, the 3RU thermal overload relay is equipped with a STOP function (see "STOP function").

For a wide variety of application possibilities for the 3RU thermal overload relay, please refer to the sections "Application", "Ambient conditions", "Overload relays in WYE-delta combinations" and "Operation with frequency converters".

The 3RU thermal overload relays can protect your loads from overload and phase failure. You must implement short-circuit protection (see "Short-circuit protection") by means of a fuse or circuit-breaker.

The 3RU thermal overload relays are environmentally friendly (see "Environmental considerations") and comply with all the main international standards and approvals (see "Specifications" and "Increased safety type of protection EEx").

The accessories for the 3RU thermal overload relays have been designed on the principle that all requirements are covered by a small number of variants.

### *Application*

The 3RU thermal overload relays are designed for the protection of three-phase and single-phase AC and DC motors.

If single-phase AC or DC loads are to be protected using 3RU thermal overload relays, all three bimetal strips should be heated. Therefore all main circuits of the relay must be connected in series.

### *Overload relays in WYE-delta combinations*

When overload relays are used in WYE-delta combinations, it is important to note that only $1/\sqrt{3}$ of the motor current flows through the mains contactor. An overload relay mounted on the main contactor must be set to 0.58 times the motor current.

A second overload relay must be mounted on the star contactor if your load is also to be optimally protected in WYE operation. The WYE current is 1/3 of the rated motor current. The relevant relay must be set to this current.

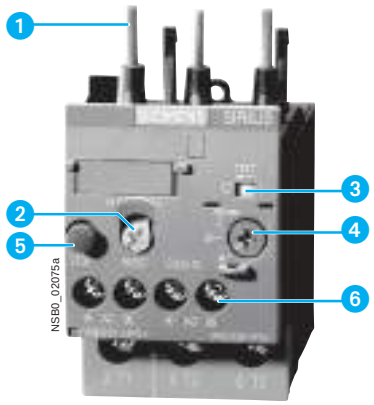
### *Control circuit*

An additional power supply is not required for operation of the 3RU thermal overload relays.

### *Ambient conditions*

The 3RU thermal overload relays are temperature compensating according to IEC 60 947-4-1/DIN VDE 0660 Part 102 in the temperature range –20 °C to +60 °C. For temperatures from +60 °C to +80 °C, the upper setting value of the setting range must be reduced by a specific factor as given in the table below.

| Ambient temperature in °C | Reduction factor for the upper setting value |
|---|---|
| +60 | 1.0 |
| +65 | 0.94 |
| +70 | 0.87 |
| +75 | 0.81 |
| +80 | 0.73 |




1 **Connection for mounting onto contactors:**
Optimally adapted in electrical, mechanical and design terms to the contactors. The overload relay can be connected directly to these contactor using these pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal bracket for stand-alone installation).

2 **Selector switch for manual/automatic RESET and RESET button:**
With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. A remote RESET is possible using the RESET modules (accessories), which are independent of size.

3 **Switch position indicator and TEST function of the wiring:**
Indicates a trip and enables the wiring test.

4 **Motor current setting:**
Setting the device to the rated motor current is easy with the large rotary knob.

5 **STOP button:**
If the STOP button is pressed, the NC contact is opened. This switches off the contactor downstream. The NC contact is closed again when the button is released.

6 **Supply terminals:**
Depending on the device version, the terminals for screw, spring-type or ring lug terminal connection are configured for the main and auxiliary circuit.

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

3RU21 26-4FB00 thermal overload relays

### *Trip classes*

The 3RU thermal overload relay is available for normal start-up conditions in CLASS 10. For further details about trip classes, see "Tripping characteristics".

### *Tripping characteristics*

The tripping characteristics show the relationship between the tripping time and the tripping current as a multiple of the operational current $I_e$ and are specified for symmetrical three-pole and two-pole loading from cold.

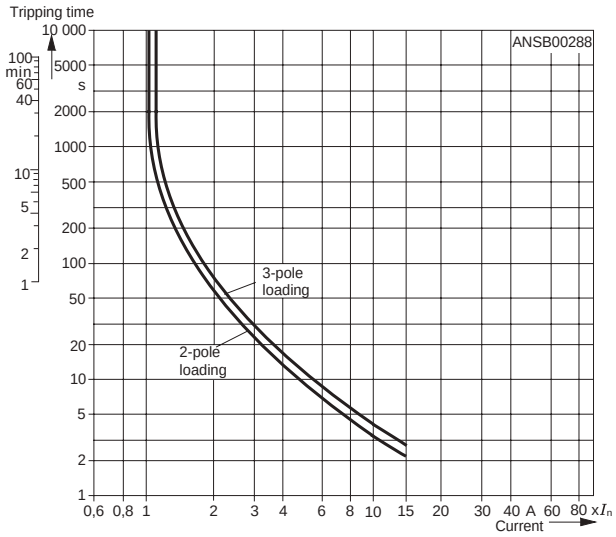
The smallest current at which tripping occurs is called the limiting tripping current. In accordance with IEC 60 947-4-1/DIN VDE 0660 Part 102, this must lie within certain specified limits. The limits of the limiting tripping current lie, in the case of the 3RU11 thermal overload relay for symmetrical three-pole loading between 105 % and 120 % of the operational current. Starting from the limiting tripping current, the tripping characteristic moves on to larger tripping currents based on the characteristics of the so-called trip classes (CLASS 10, CLASS 20 etc.). The trip classes describe time-intervals within which the overload relay must trip with 7.2 times the operational current $I_e$ for symmetrical three-pole loading from cold.

The tripping times are:

| CLASS | Tripping times |
|---|---|
| 10A | 2 s to 10 s |
| 10 | 4 s to 10 s |
| 20 | 6 s to 20 s |
| 30 | 9 s to 30 s |

## Description

This is the schematic representation of a characteristic. The characteristics of the individual 3RU thermal overload relays can be requested from Technical Assistance at the e-mail address: nst.technical-assistance@siemens.de




The tripping characteristic of a three-pole 3RU thermal overload relay (see characteristic for symmetrical three-pole loading from cold) is valid when all three bimetal strips are loaded with the same current simultaneously. If, however, only two bimetal strips are heated as a result of phase failure, these two strips would have to provide the force necessary for operating the release mechanism and, if no additional measures were implemented, they would require a longer tripping time or a higher current. These increased current levels over long periods usually result in damage to the consumer. To prevent damage, the 3RU thermal overload relay features phase failure sensitivity which, thanks to an appropriate mechanical mechanism, results in accelerated tripping according to the characteristic for two-pole loading from cold.

In contrast to a load in the cold state, a load at operating temperature has a lower heat reserve. This fact affects the 3RU thermal overload relay in that following an extended period of loading at operational current $I_e$, the tripping time reduces by about a quarter.

### Phase failure protection

The 3RU thermal overload relays feature phase failure protection (see "Tripping characteristics") for the purpose of minimizing the heating of the load during single-phase operation as a result of phase failure.

### Setting

The 3RU thermal overload relay is adjusted to the rated motor current using a rotary knob. The scale of the rotary knob is calibrated in Amperes.

### Manual and automatic resetting

It is possible to switch between manual resetting and automatic resetting by depressing and rotating the blue button (RESET button). When manual resetting is selected, a reset can be performed directly on the device by pressing the RESET button. Remote resetting can be implemented by using the mechanical and electrical RESET modules from the range of accessories (see "Accessories"). When the blue button is set to Automatic RESET, the relay will be reset automatically.

A reset is not possible until the recovery time has elapsed (see "Recovery time").

### Recovery time

After tripping due to an overload, it takes a certain length of time for the bimetal strips of the 3RU thermal overload relays to cool down. The relay can only be reset once it has cooled down. This time (recovery time) is dependent on the tripping characteristic and the level of the tripping current.

After tripping due to overload, the recovery time allows the load to cool down.

### TEST function

Correct functioning of the ready 3RU thermal overload relay can be tested with the TEST slide. The slide is operated to simulate tripping of the relay. During this simulation, the NC contact (95-96) is opened and the NO contact (97-98) is closed whereby the overload relay checks that the auxiliary circuit is wired correctly. When the 3RU thermal overload relay is set to Automatic RESET, an automatic reset takes place when the TEST slide is released. The relay must be reset using the RESET button when it is set to Manual RESET.

### STOP function

When the STOP button is pressed, the NC contact is opened and the series-connected contactor and therefore the load is switched Off. The load is reconnected via the contactor when the STOP button is released.

### Status indication

The current status of the 3RU thermal overload relay is indicated by the position of the marking on the "TEST function/switching position indicator" slide. The marking on the slide is on the left at the "O" mark following a trip due to overload or phase failure and at the "I" mark otherwise.

### Auxiliary contacts

The 3RU thermal overload relay is equipped with an NO contact for the tripped signal and an NC contact for switching off the contactor.

### Connection

All the 3RU thermal overload relays have screw terminals for the main and auxiliary circuits. Once the box terminals have been removed from the main conductor connections of the overload relays of size S3, it is possible to connect busbars.

Alternatively the devices are available with either spring loaded or with ring lug terminals on both the control and the main terminals. For details of various connection possibilities, see the "Technical data" and "Selection and ordering data".

### Design and mounting

The 3RU thermal overload relays are suitable for direct mounting on the 3RT contactors. They can also be mounted as single units if the appropriate adapters are used. For details of the mounting possibilities, see the "Selection and ordering data" and the "Technical data".

### Operation with frequency converters

The 3RU thermal overload relays are suitable for operation with frequency converters. Depending on the frequency of the converter, a current higher than the motor current may have to be set due to the occurrence of eddy currents and skin effects.

### Environmental considerations

The devices are manufactured taking environmental considerations into account and comprise environmentally-friendly and recyclable materials.

### Specifications

The 3RU thermal overload relays comply with the requirements of:

- IEC 60 947-1/ DIN VDE 0660 Part 100
- IEC 60 947-4-1/ DIN VDE 0660 Part 102
- IEC 60 947-5-1/ DIN VDE 0660 Part 200
- IEC 60801-2, -3, -4, -5 and
- UL 508/CSA C 22.2.

The 3RU11 thermal overload relays are also safe from touch according to DIN VDE 0106 Part 100 and climate-proof to IEC 721.

### Degree of protection "Increased safety" EEx

The 3RU thermal overload relay meets the requirements for overload protection of motors of the "Increased safety" type of protection EEx e IEC 50 019/ DIN VDE 0165, DIN VDE 0170, DIN VDE 171.
KEMA test certificate number Ex-97.Y.3235,
DMT 98 ATEX G001,
EN 50 019: 1977 + A1 ... A5,
Increased Safety "e": Appendix A, Guideline for temperature monitoring of squirrel cage motors during operation.

### Accessories

For the 3RU thermal overload relay, there are:

- one adapter for each of the four overload relay sizes S00 to S3 for individual mounting
- one electrical remote RESET module for all sizes in three different voltage variants
- one mechanical remote RESET module for all sizes
- one cable release for all sizes for resetting inaccessible devices
- terminal covers

The accessories can also be used for the 3RB solid state overload relay.

## Selection and ordering data

Features and technical characteristics
- Auxiliary contacts: 1 NO + 1 NC
- Manual/automatic RESET
- Switching position indication
- CLASS 10
- TEST function
- STOP button
- Phase failure sensitivity
- Sealable cover: optional in S00, S0 & S2. Integrated in S3

### Ordering information

- Replace the (••) with the letter Number combination from the Terminal types I table
- Replace the ( ††) with the letter Number combination from the Terminal types II table
- For description, see page 3/8
- For technical data, see pages 3/12-3/15
- For circuit diagrams, see page 3/15
- For dimension drawings, see page 3/16-3/17.

**•• Terminal Types I**

| Type | Mounting Type | Ltr |
|---|---|---|
| Screw | Direct to Contactor | B0 |
| Screw[1] | Stand Alone | B1 |
| Spring[2] | Direct to Contactor | C0 |
| Spring[1] [2] | Stand Alone | C1 |
| Ring Lug | Direct to Contactor | J0 |

**†† Terminal Types II**

| Type | Mounting Type | Ltr |
|---|---|---|
| Screw | Direct to Contactor | B0 |
| Screw [4] | Stand Alone | B1 |
| Spring [3] | Direct to Contactor | D0 |
| Spring [3] [4] | Stand Alone | D1 |

3RU2116-1GB0

3RU2116-1GC0

3RU2126-4NB0

3RU2136-4RB1

3RU2146-4JB0

### *Thermal Overload Relays up to 40A Frame Size S00 and S0* ••

| Setting Range A | Order No. | Setting Range A | Order No. | Weight approx. (screw/ spring) kg |
|---|---|---|---|---|
| **Frame Size S00: For mounting directly to 3RT201 contactors or for stand-alone installation** | | | | |
| 0.11 - 0.16 | **3RU2116-0A••** | 1.4 - 2 | **3RU2116-1B••** | 0.13/0.15 |
| 0.14 - 0.2 | **3RU2116-0B••** | 1.8 - 2.5 | **3RU2116-1C••** | |
| 0.18 - 0.25 | **3RU2116-0C••** | 2.2 - 3.2 | **3RU2116-1D••** | |
| 0.22 - 0.32 | **3RU2116-0D••** | 2.8 - 4 | **3RU2116-1E••** | |
| 0.28 - 0.4 | **3RU2116-0E••** | 3.5 - 5 | **3RU2116-1F••** | 0.13/0.15 |
| 0.35 - 0.5 | **3RU2116-0F••** | 4.5 - 6.3 | **3RU2116-1G••** | |
| 0.45 - 0.63 | **3RU2116-0G••** | 5.5 - 8 | **3RU2116-1H••** | |
| 0.55 - 0.8 | **3RU2116-0H••** | 7 - 10 | **3RU2116-1J••** | |
| 0.7 - 1 | **3RU2116-0J••** | 9 - 12.5 | **3RU2116-1K••** | 0.13/0.15 |
| 0.9 - 1.25 | **3RU2116-0K••** | 11 - 16 | **3RU2116-4A••** | |
| 1.1 - 1.6 | **3RU2116-1A••** | | | |
| **Frame Size S0: For mounting directly to 3RT202 contactors or for stand-alone installation** | | | | |
| 1.8 - 2.5 | **3RU2126-1C••** | 11 - 16 | **3RU2126-4A••** | 0.16/0.22 |
| 2.2 - 3.2 | **3RU2126-1D••** | 14 - 20 | **3RU2126-4B••** | |
| 2.8 - 4 | **3RU2126-1E••** | 17 - 22 | **3RU2126-4C••** | |
| 3.5 - 5 | **3RU2126-1F••** | 20 - 25 | **3RU2126-4D••** | |
| 4.5 - 6.3 | **3RU2126-1G••** | 23 - 28 | **3RU2126-4N••** | 0.16/0.22 |
| 5.5 - 8 | **3RU2126-1H••** | 27 - 32 | **3RU2126-4E••** | |
| 7 - 10 | **3RU2126-1J••** | 30 - 36 | **3RU2126-4P••** | |
| 9 - 12.5 | **3RU2126-1K••** | 34 - 40 | **3RU2126-4F••** | |

### *Thermal Overload Relays up to 100A Frame Size S2 and S3* ††

| Setting Range A | Order No. | Setting Range A | Order No. | Weight approx. (screw/ spring) kg |
|---|---|---|---|---|
| **Frame Size S2: For mounting directly to 3RT203 contactors [4]** | | | | |
| 22 - 32 | **3RU2136-4E††** | 47 - 57 | **3RU2136-4Q††** | 0.34 |
| 28 - 40 | **3RU2136-4F††** | 54 - 65 | **3RU2136-4J††** | |
| 36 - 45 | **3RU2136-4G††** | 62 - 73 | **3RU2136-4K††** | |
| 40 - 50 | **3RU2136-4H††** | 70 - 80 | **3RU2136-4R††** | |
| **Frame Size S3: For mounting directly to 3RT204 contactors [4]** | | | | |
| 28 - 40 | **3RU2146-4F††** | 57 - 75 | **3RU2146-4K††** | |
| 36 - 50 | **3RU2146-4H††** | 70 - 90 | **3RU2146-4L††** | |
| 45 - 63 | **3RU2146-4J††** | 80 - 100[5] | **3RU2146-4M††** | |

[1] Not available for size S0 3RU212 with current setting range below 14 A.

[2] Size S00 and S0: main and auxiliary conductor terminals are spring-type.

[3] Size S2 and S3 auxiliary terminals are spring-type only. Main conductor terminals are screw.

[4] 3RU Overloads in S2 and S3 frame are available preassembled with a terminal bracket for standalone mounting. S2 and S3 overloads can also be customer assembled to the terminal bracket (see Accessories).

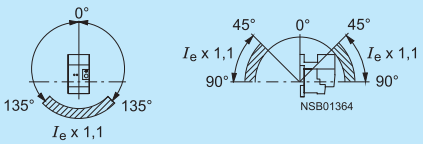
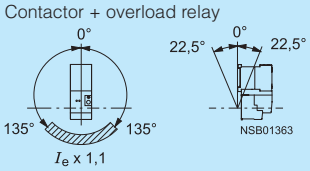
[5] For overload relays > 100A, see electronic overload relays.

## Accessories

| | Design | | for type Size | Order No. | Weight approx kg |
|---|---|---|---|---|---|
| **Terminal brackets for stand-alone installation** [1] | | | | | |
| 3RU29 36-3AA01 | For separate mounting of the overload relay; panel mount or snapped onto 35 mm standard mounting rail, size S3 also for 75 mm standard mounting rail | *Screw terminals* | S00<br>S0<br>S2<br>S3 | **3RU29 16-3AA01**<br>**3RU29 26-3AA01**<br>**3RU29 36-3AA01**<br>**3RU29 46-3AA01** | 0.04<br>0.05<br>0.18<br>0.28 |
| | | *Spring Loaded terminals* | S00<br>S0 | **3RU29 16-3AC01**<br>**3RU29 26-3AC01** | 0.04<br>0.06 |
| **Mechanical RESET** | | | | | |
| 3RU29 00-1A with pushbutton, and reset extension | **Resetting plunger, holder, and former overload reset adapter** | | S00 to S3 | **3RU29 00-1A** | 0.038 |
| | **Pushbuttons with extended stroke**<br>IP 65 Ø 22 mm, 12 mm hub | | S00 to S3 | **3SU1200-0FB10-0AA0** | 0.020 |
| | **Extension plungers**<br>For compensation of the distance bewteen the pushbutton and the unlatching button of the relay | | S00 to S3 | **3SU1900-0KG10-0AA0** | 0.004 |
| | **Complete mechanical reset assembly** | | S00 to S3 | **3SU1200-0KB10-0AA0 + 3RU1900-1A** | |
| **Cable release with holder for RESET** | | | | | |
| 3RU29 00-1 | For drilled hole Ø 6.5 mm in the control panel max. control panel thickness 8 mm | Length 400 mm<br>Length 600 mm | S00 to S3<br>S00 to S3 | **3RU29 00-1B**<br>**3RU29 00-1C** | 0.063<br>0.073 |
| **Module for remote RESET, electrical** | | | | | |
| 3RU19 00-2A.71 | Operating range 0.85 to 1.1 × $U_s$<br>Power consumption AC 80 VA, DC 70 W<br>ON period 0.2 s to 4 s<br>AC/DC 24 V to 30 V<br>AC/DC 110 V to 127 V<br>AC/DC 220 V to 250 V | | S00 to S3 | **3RU19 00-2AB71**<br>**3RU19 00-2AF71**<br>**3RU19 00-2AM71** | 0.066<br>0.066<br>0.066 |
| **Terminal cover** | | | | | |
| 3RT1946-4EA1 | Cover for cable lug and bar connection | | S3 | **3RT19 46-4EA1** | 0.040 |
| | Cover for box terminals | | S2<br>S3 | **3RT29 36-4EA2**<br>**3RT29 46-4EA2** | 0.020<br>0.025 |
| **Sealable covers** | | | | | |
|  3RV29 08-0P | For covering the rotary setting dials. Order in multiples of 10. | | S00 to S2 | **3RV29 08-0P** | 0.100 |
| **Tool for opening Spring Loaded terminal connections** | | | | | |
| 3RA2908-1A | Suitable up to a<br>For all SIRIUS devices with spring-type terminals<br>• Length: approx. 200 mm; 3.0 × 0.5 mm (green) | | | **3RA2908-1A** | 0.045 |

[1] The accessories are identical to those of the 3RB30/3RB31 solid-state overload relays.

## Technical data

| | | | 3RU21 16 | 3RU21 26 | 3RU21 36 | 3RU21 46 |
|---|---|---|---|---|---|---|
| **Type** | | | | | | |
| **Size** | | | S00 | S0 | S2 | S3 |
| **Width** | | | 45 mm | 45 mm | 55 mm | 70 mm |
| **General data** | | | | | | |
| **Release on** | | | overload or phase failure | | | |
| **Trip class** | acc. to IEC 60947-4-1 | CLASS | 10 | | 10, 10A | 10 |
| **Phase failure sensitivity** | | | Yes | | | |
| **Overload warning** | | | No | | | |
| **Resetting and recovery** | | | | | | |
| Reset possibilities after tripping | | | Manual, remote and automatic RESET [1] | | | |
| Recovery time | on automatic RESET | min | depending on the level of tripping current and the tripping characteristic | | | |
| | on manual RESET | min | depending on the level of tripping current and the tripping characteristic | | | |
| | on remote RESET | min | depending on the level of tripping current and the tripping characteristic | | | |
| **Features** | | | | | | |
| Indication of status on the device | | | Yes, using the slide "TEST function/ON-OFF indicator" | | | |
| TEST function | | | Yes | | | |
| RESET button | | | Yes | | | |
| STOP button | | | Yes | | | |
| **Safe operation of motors with "increased safety" type of protection** | | | | | | |
| EC type test certificate number according to directive 94/9/EC (ATEX) | | | DMT 98 ATEX G 001 Ⓔx II (2) GD | | On request | |
| **Ambient temperatures** | | | | | | |
| Storage/transport | | °C | –55 to +80 | | | –55 to +80 |
| Operation | | °C | –40 to +70 | | | –40 to +70 |
| Temperature compensation | | °C | up to +60 | | | up to +60 |
| Permissible rated current at | Internal cabinet temperature of 60 °C | % | 100 (over +60°C, the current must be reduced) | | | 100 (over +60°C, current reduction is not required) |
| | Internal cabinet temperature of 70 °C | % | 87 | | | 87 |
| **Repeat terminals** | | | | | | |
| Repeat coil terminal | | | Yes | Not required | | |
| Auxiliary switch repeat terminal | | | Yes | Not required | | |
| **Degree of protection** | acc. to IEC 60529 | | IP 20 | | | IP 20 [2] |
| **Touch protection** | acc. to IEC 61140 | | Finger-safe for vertical contact from the front<br>Finger-safe only with optional terminal covers | | | |
| **Shock resistance (sine)** | acc. to IEC 60068-2-27 | g/ms | 15/11 (auxiliary contacts 95/96 and 97/98: 8g/11ms) | | | 8/10 |
| **EMC** | | | | | | |
| • Interference immunity | | | Not relevant | | | |
| • Emitted interference | | | Not relevant | | | |
| **Resistance to extreme climates (humidity)** | | % | 90 | | | 100 |
| **Dimensions** | | | see dimensional drawings | | | |
| **Site altitude** | | m | Up to 2000; above this on request | | | |
| **Installation angle** | | | The permissible installation angles for mounting onto contactors and individual mounting are shown in the diagrams. For mounting in the shaded area, adjustment compensation of 10 % is necessary.<br>Individual mounting<br>  <br><br>Contactor + overload relay<br>  <br> | | | |
| **Type of installation/mounting** | | | Mounting onto contactor/stand-alone installation with terminal support (For screw and snap-on mounting onto TH 35 standard mounting rail) | | | Direct mounting/ stand-alone installation with terminal support (For screw and snap-on mounting onto TH34 standard mounting rail size; size S3 also for TH 75 standard mounting rail." |

1) Remote RESET in combination with the appropriate accessories.
2) Terminal compartment: IP 00 degree of protection.

## Technical data

| | | | | | | |
|---|---|---|---|---|---|---|
| **Type** | | | **3RU21 16** | **3RU21 26** | **3RU21 36** | **3RU21 46** |
| **Size** | | | **S00** | **S0** | **S2** | **S3** |
| **Width** | | | **45 mm** | **45 mm** | **55 mm** | **70 mm** |
| **Main circuit** | | | | | | |
| **Rated insulation voltage $U_i$ (pollution degree 3)** | | V | 690 | | | 1000 |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | | 8 |
| **Rated operational voltage $U_e$** | | V | 690 | | | 1000 |
| **Type of current** | DC | | Yes | | | |
| | AC | | Yes, frequency range up to 400 Hz | | | |
| **Current setting** | | A | 0.11– 0.16 to 11 – 16 | 1.8 – 2.5 to 34 – 40 | 11-16 up to 70-80 | 18 – 25 to 80 – 100 |
| **Power loss per device (max.)** | | W | 4.1...6.3 | 6.2...7.5 | 8...14 | 10 to 16.5 |
| **Short-circuit protection** | With fuse without contactor | | See selection and ordering data | | | |
| | With fuse and contactor | | See technical data (short-circuit protection with fuses / circuit-breaker for motor feeders) | | | |
| **Protective separation between main and auxiliary current paths** Acc. to IEC 60947-1, | | V | | | | |
| • Screw terminals or ring terminal lug connections | | | 440 | 690: Setting ranges ≤ 25 A<br>440: Setting ranges > 25 A | 690 | 690 |
| • Spring - type terminals | | | 440 | | 690 | |
| **Connection of the main circuit** | | | | | | |
| **Type of connection** | | | Screw terminals | | | Screw connection with box terminal [2]/ bar connection |
| **Screw terminals** | | | | | | |
| • Terminal screw | | | M3, Pozidriv size 2 | M4, Pozidriv size 2 | M6, Pozidriv size 2 | Hexagon socket screw 4 mm |
| • Operating devices | | mm | Ø5 ... 6 | Ø5 ... 6 | Ø5 ... 6 | Ø5 ... 6 |
| • Tightening torque | | Nm | 0.8 to 1.2 | 2 to 2.5 | 3 to 4.5 | 4 to 6 |
| • Conductor cross-section (min./max.), 1 or 2 wires | Solid or stranded | $mm^2$ | 2 × (0.5 to 1.5), 2 × (0.75 to 2.5), max. 2 x 4 | 2 × (1 to 2.5), 2 × (2.5 to 6), max. 2 × (2.5 to 10) | 2x(2.5 to 35) 1x(2.5 to 50) | 2 × (2.5 to 16) |
| | Finely stranded with end sleeve | $mm^2$ | 2 × (0.5 to 1.5), 2 × (0.75 to 2.5) | 2 × (1 to 2.5), 2 × (2.5 to 6) max. 1 x 10 | 2 x (1 to 25) 1 × (1 to 35) | 2 × (2.5 to 35), 1 × (2.5 to 50) |
| | AWG conductor con., solid or stranded | AWG | 2 x (20 ... 16) 2 x (18 ... 14) 2 x 12 | 2 x (16 ... 12) 2 x (14 ... 8) | 2 x (18 to 2) 1 × (18 to 1) | 2 × (10 to 1/0), 1 × (10 to 2/0) |
| | Ribbon cable (No. × width × thickness) | mm | – | – | – | 2 × (6 × 9 × 0.8) |
| **Bar connection** | | | | | | |
| • Terminal screw | | | – | | | M 6 × 20 |
| • Tightening torque | | Nm | – | | | 4 to 6 |
| • Conductor cross-section (min./max.) | Finely stranded with cable lug | $mm^2$ | – | | | 2 × 70 |
| | Stranded with cable lug | $mm^2$ | – | | | 2 × 70 |
| | AWG conductor connections, solid or stranded with cable lug | AWG | – | | | 2/0 |
| | With connecting bars (max. width) | mm | – | | | 12 |
| **Auxiliary circuit** | | | | | | |
| **Main contacts:** Number of NO contacts | | | 1 | | | |
| Number of NC contacts | | | 1 | | | |
| **Assignment of auxiliary contacts** | | | 1 NO for the signal "tripped"; 1 NC for disconnecting the contactor | | | |
| **Rated insulation voltage $U_i$ (pollution degree 3)** | | V | 690 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | | |
| **Switching capacity of auxiliary contacts** | | | | | | |
| NC for AC AC-14/AC-15 | Rated operational current $I_e$ at $U_e$: | | | | | |
| | • 24 V | A | 4 | | | |
| | • 120 V | A | 4 | | | |
| | • 125 V | A | 4 | | | |
| | • 230 V | A | 3 | | | |
| | • 400 V | A | 2 | | | |
| | • 600 V | A | 0.75 | | | |
| | • 690 V | A | 0.75 | | | |

1) For conductor cross-sections for Cage Clamp terminals, see "Connection of the auxiliary circuit."

2) The box terminal can be removed. After the box terminal has been removed, bar connection and lug connection is possible.

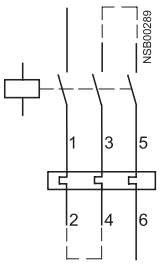
## Technical data

| | | | | | | |
|---|---|---|---|---|---|---|
| **Type** | | | **3RU21 16** | **3RU21 26** | **3RU21 36** | **3RU11 46** |
| **Size** | | | **S00** | **S0** | **S2** | **S3** |
| **Width** | | | **45 mm** | **45 mm** | **55 mm** | **70 mm** |
| NO for AC | Rated operational current $I_e$ at $U_e$: | | | | | |
| AC-14/AC-15 | • 24 V | A | 3 | | | 3 |
| | • 120 V | A | 3 | | | 3 |
| | • 125 V | A | 3 | | | 3 |
| | • 230 V | A | 2 | | | 2 |
| | • 400 V | A | 1 | | | 1 |
| | • 600 V | A | 0.75 | | | 0.6 |
| | • 690 V | A | 0.75 | | | 0.5 |
| NC, NO for DC | Rated operational current $I_e$ at $U_e$: | | | | | |
| DC-13 | • 24 V | A | 1 | | | 1 |
| | • 60 V | A | On request | | | On request |
| | • 110 V | A | 0.22 | | | 0.22 |
| | • 125 V | A | 0.22 | | | 0.22 |
| | • 220 V | A | 0.11 | | | 0.11 |
| Conventional thermal current $I_{th}$ | | A | 6 | | | 6 |
| Contact reliability | (suitable for PLC; 17 V, 5 mA) | | Yes | | | Yes |
| **Short-circuit protection** | | | | | | |
| With fuse | Utilization cat. gL/gG | A | 6 | | | |
| | fast | A | 10 | | | |
| **With miniature circuit-breaker (C characteristic)** | | A | 6[1]) | | | |
| **Reliable operational voltage for protective separation between auxiliary current paths** | acc. to IEC 60947-1 | V | 440 | | | |
| **Connection of the auxiliary circuit** | | | | | | |
| **Type of connection** | | | Screw terminal or Cage Clamp terminal | | | |
| **Connection characteristics** | | | Screw terminals | | | Cage Clamp terminals |
| • Terminal screw | | | Pozidrive Size 2 | | | – |
| • Tightening torque | | Nm | 0.8 to 1.2 | | | 2 × (0.25 to 2.5) |
| • Conductor cross-sections (min./max.), 1 or 2 wires | Solid or stranded | $mm^2$ | 2 × (0.5 to 1.5), 2 × (0.75 to 2.5) | | | |
| | Finely stranded without end sleeve | $mm^2$ | – | | | 2 × (0.25 to 2.5) |
| | Finely stranded with end sleeve | $mm^2$ | 2 × (0.5 to 1.5), 2 × (0.75 to 2.5) | | | 2 × (0.25 to 1.5) |
| | AWG conductor connections, solid or stranded | AWG | 2 x (20 to 16) 2 x (18 to 14) | | | 2 × (20 to 14) |

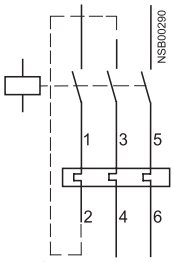
1) Up to $I_k \leq 0.5$ kA; ≤ 260 V.

## Circuit diagrams

### Protection of DC motors

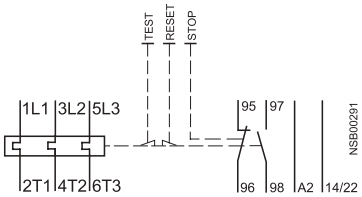


1-pole

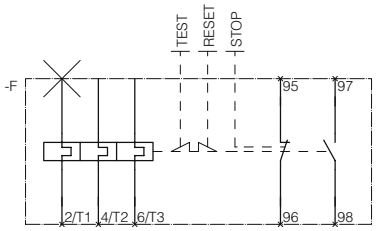


2-pole

### 3RU21 16 overload relay




### 3RU21 26 to 3RU21 46 overload relays

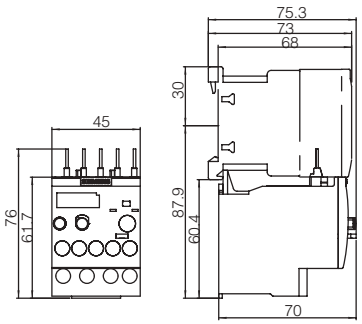


## Dimension drawings

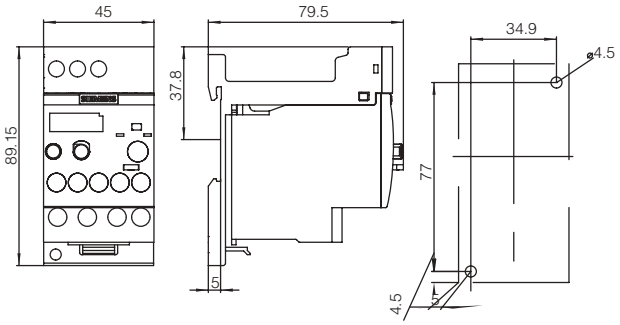
***Screw connection***

Lateral clearance to grounded components: at least 6 mm.

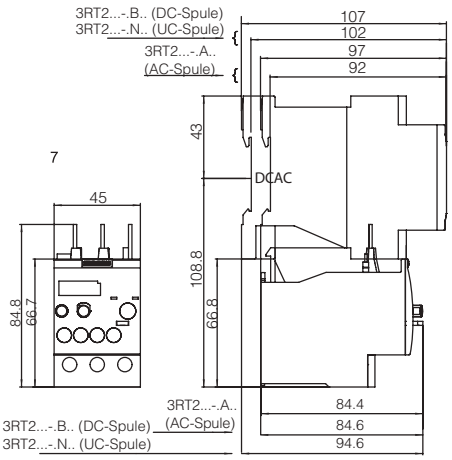
**3RU21 16-..B0**
Size S00



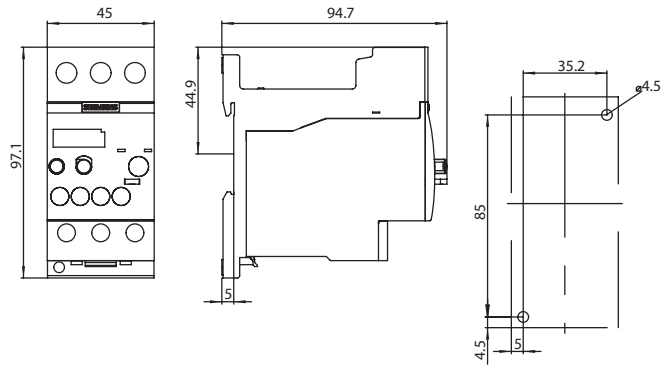

**3RU21 16-..B1**
Size S00
with adapter for installation as a single unit with accessories



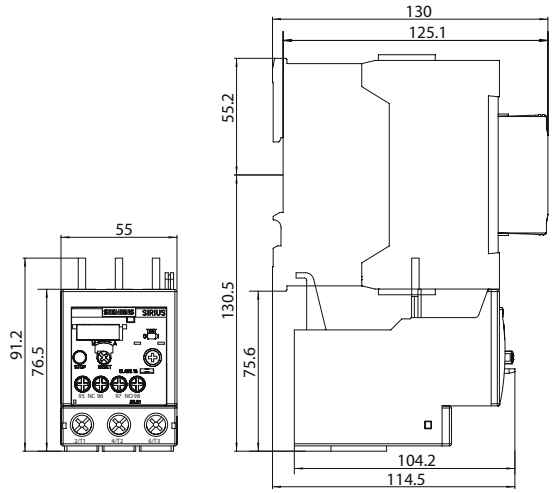

**3RU21 26-..B.**
Size S0



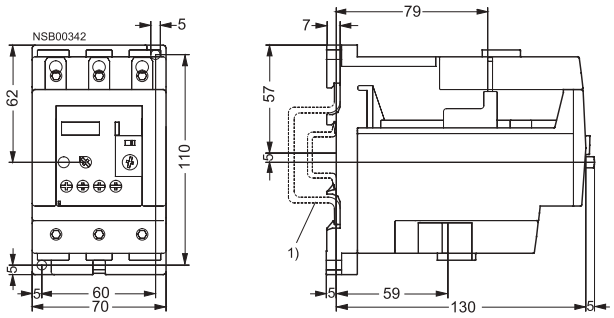

**3RU21 26-..B1**
Size S0
with adapter for installation as a single unit




**3RU21 36-..B.**
Size S2
with adapter for installation as a single unit




**3RU21 46-..B.**
Size S3
with adapter for installation as a single unit



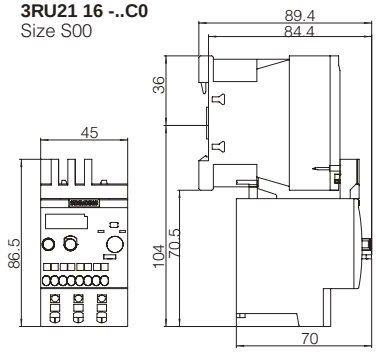

1) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to EN 50023

*Dimension drawings "Contactor with built-on overload relay" see contactors and contactor combinations.*

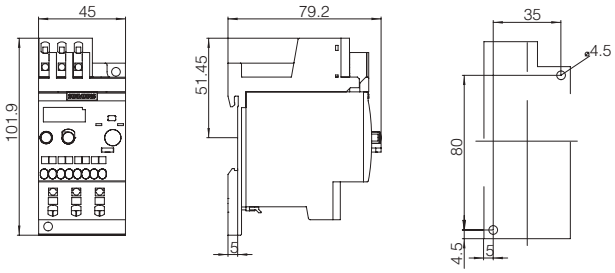
## Dimension drawings

***Spring Loaded terminals***
Lateral clearance to grounded components: at least 6 mm.

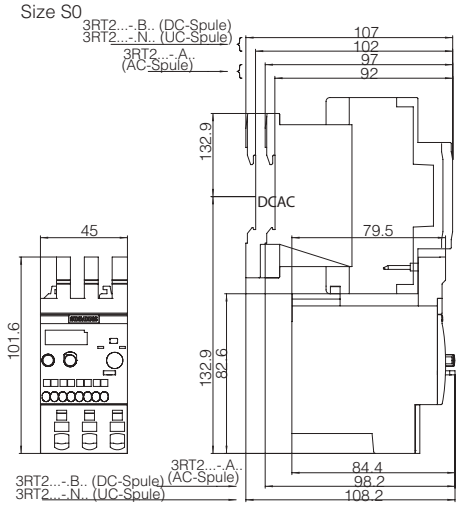
**3RU21 16 -..C0**
Size S00



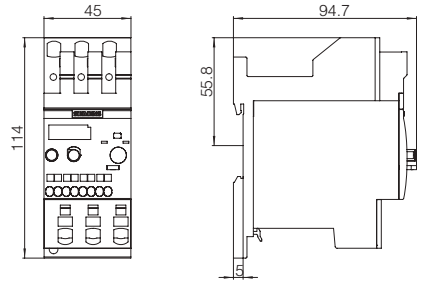

**3RU21 16 -..C1**
Size S00 with with adapter for installation as a single unit



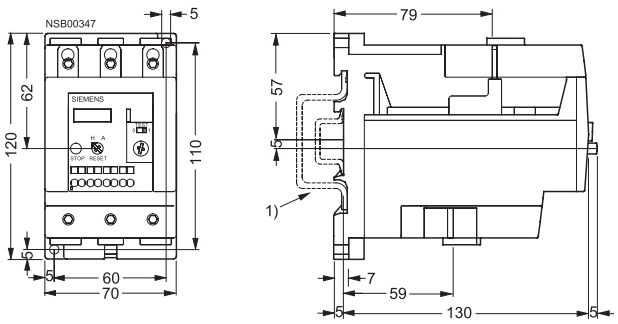

**3RU21 26-..C0**
Size S0



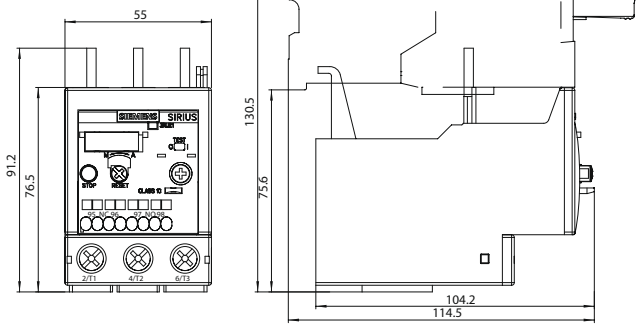

**3RU21 26-..C1**
Size S0 with adapter for installation as a single unit




**3RU11 46-..D.**
Size S3



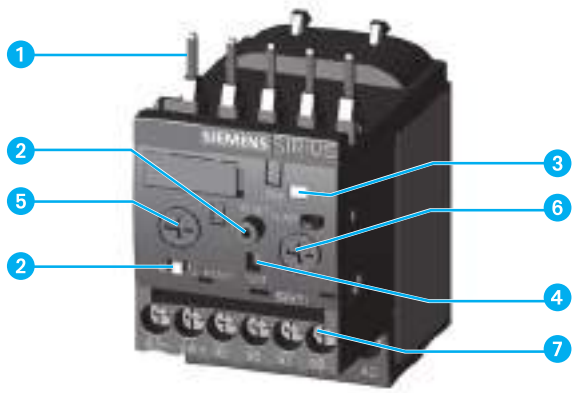

**3RU2136-..D.**
Size S2




1) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to EN 50 023

*Dimension drawings "Contactor with built-on overload relay" see contactors and contactor combinations.*

## Overview




1 **Connection for mounting onto contactors:**
Optimally adapted in electrical, mechanical and design terms to the contactors. The overload relay can be connected directly to these contactor using these pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal bracket for stand-alone installation).

2 **Selector switch for manual/automatic RESET and RESET button:**
With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. On the 3RB21 a solid-state remote is integrated into the unit.

3 **Switch position indicator and TEST function of the wiring:**
Indicates a trip and enables the wiring test.

4 **Solid state test:**
Enables a test of all important device components and functions.

5 **Motor current setting:**
Setting the device to the rated motor current is easy with the large rotary knob.

6 **Trip class setting/internal ground-fault detection (3RB21 only):**
Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the starting conditions.

7 **Connecting terminals** (removable terminal block for auxiliary circuits):
The generously sized terminals permit connection of two conductors auxiliary circuit can be connected with screw-type terminals or with spring-loaded terminals.

The 3RB and 3RB solid-state overload relays up to 630 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting (see Function) against excessive temperature rise due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set motor rated current. This current rise is detected by the current transformers integrated into the devices and evaluated by corresponding solid-state circuits which then output a pulse to the auxiliary contacts. The auxiliary contacts then switch off the load by means of the contactors control circuit. The break time depends on the ratio between the tripping current and set current $I_e$ and is stored in the form of a long-term stable tripping characteristic (see Characteristic Curves).

In addition to inverse-time delayed protection of loads against excessive temperature rise due to overload, phase unbalance and phase failure, the 3RB21/31 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with wye-delta assemblies). This provides protection of loads against high-resistance short-circuits due to damage to the insulation material, moisture, condensed water etc.

The "tripped" status is signaled by means of a switch position indicator (see Function). Resetting takes place either manually or automatically after the recovery time has elapsed (see Function).

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with important worldwide standards and approvals.

## Application

### *Industries*

The 3RB2 / 3RB3 solid-state overload relays are suitable for customers from all industries who want to provide optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to CLASS 30), minimize project completion times, inventories and power consumption, and optimize plant availability and maintenance management.

### *Application*

The 3RB2 / 3RB3 solid-state overload relays have been designed for the protection of three-phase motors in sinusoidal 50/60 Hz voltage networks. The relays are not suitable for the protection of single-phase AC or DC loads.

The 3RU thermal overload relay or the 3RB22/3RB23 solid-state overload relay can be used for single-phase AC loads. For DC loads the 3RU thermal overload relays are available.

### *Ambient conditions*

The devices are insensitive to external influences such as shocks, corrosive environments, ageing and temperature changes.

For the temperature range from –25 C to +60 °C, the 3RB2 / 3RB3 solid-state overload relays compensate the temperature according to IEC 60947-4-1.

The 3RB2 / 3RB3 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e according to ATEX guideline 94/9/EC. The relays meet the requirements of EN 60079-7 (Electrical apparatus for potentially explosive atmospheres – Increased safety "e").

The basic safety and health requirements of ATEX guideline 94/9/EG are fulfilled by compliance with

- EN 60947-1
- EN 60947-4-1
- EN 60947-5-1
- EN 60079-14

EU type test certificate for Group II, Category (2) G/D under application. It has the number PTB 09 ATEX 3001.

## Accessories

The following accessories are available for the 3RB2/3RB3 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as single units without a terminal bracket)
- One mechanical remote RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Box terminals for sizes S6 and S10/S12
- Terminal covers for sizes S2 to S10/S12

## Design

### Device concept

The 3RB2 / 3RB3 solid-state overload relays are compact devices, i.e. current measurement (transformer) and the evaluation unit are integrated in a single enclosure.

### Mounting options

The 3RB2 / 3RB3 solid-state overload relays are suitable for direct and space-saving mounting onto 3RT1 / 3RT2 contactors and 3RW30/3RW31 soft starters as well as for stand-alone installation. For more information on the mounting options, please see Technical Specifications and Selection and Ordering Data .

### Connection technique

Main circuit

All sizes of the 3RB2 / 3RB3 solid-state overload relays can be connected with screw-type terminals. As an alternative for sizes S3 to S10/S12, the main circuits can be connected via the Busbar. Sizes S2 to S6 of the 3RB20/3RB21 relays are also available with a straight-through transformer. In this case, the cables of the main circuit are routed directly through the feed-through openings of the relay to the contactor terminals.

Auxiliary circuit

Connection of the auxiliary circuit (removable terminal block) is possible with either screw terminals or spring-loaded terminals.

For more information on the connection options, see Technical Specifications and Selection and Ordering Data.

### Overload relays in contactor assemblies for Wye-Delta starting

When overload relays are used in combination with contactor assemblies for Wye-Delta starting it must be noted that only 0.58 times the motor current flows through the line contactor. An overload relay mounted onto the line contactor must be set to 0.58 times the motor current.

When 3RB21 / 31 solid-state overload relays are used in combination with contactor assemblies for Wye-Delta starting, the internal ground-fault detection must not be activated.

### Operation with frequency converter

The 3RB2 / 3RB3 solid-state overload relays are suitable for frequencies of 50/60 Hz and the associated harmonics. This permits the 3RB2 / 3RB3 overload relays to be used on the incoming side of the frequency converter.

If motor protection is required on the outgoing side of the frequency converter, the 3RN thermistor motor protection devices or the 3RU thermal overload relays are available for this purpose.

## Function

### Basic functions

The 3RB2 / 3RB3 solid-state overload relays are designed for:

- Inverse-time delayed protection of loads from overloading
- Inverse-time delayed protection of loads from phase unbalance
- Inverse-time delayed protection of loads from phase failure
- Protection of loads from high-resistance short-circuits (internal ground-fault detection only with 3RB21 / 31).

### Control circuit

The 3RB2 / 3RB3 solid-state overload relays have an internal power supply, i.e. no additional supply voltage is required.

### Short-circuit protection

Fuses or motor starter protectors must be used for short-circuit protection. For assignments of the corresponding short-circuit protection devices to the 3RB2 / 3RB3 solid-state overload relays with/without contactor see Technical Specifications and Selection and Ordering Data.

### Trip classes

The 3RB20 / 30 solid-state overload relays are available for normal starting conditions with trip CLASS 10 or for heavy starting conditions with trip CLASS 20 (fixed setting in each case).

The 3RB21 / 31 solid-state overload relays are suitable for normal and heavy starting. The required trip class (CLASS 5, 10, 20 or 30) can be adjusted by means of a rotary knob depending on the current starting condition.

For details of the trip classes see Characteristic Curves.

### Phase failure protection

The 3RB2 / 3RB3 solid-state overload relays are fitted with phase failure protection (see Characteristic Curves) in order to minimize temperature rise of the load during single-phase operation.

Phase failure protection is not effective for loads with star-connection and a grounded neutral point or a neutral point which is connected to a neutral conductor.

### Setting

The 3RB2 / 3RB3 solid-state overload relays are set to the motor rated current by means of a rotary knob. The scale of the rotary knob is shown in amps.

With the 3RB21 / 31 solid-state overload relay it is also possible to select the trip class (CLASS 5, 10, 20 or 30) using a second rotary knob and to switch the internal ground-fault detection on and off.

### Manual and automatic reset

In the case of the 3RB2 / 3RB3 solid-state overload relays, a slide switch can be used to choose between automatic and manual resetting.

If manual reset is set, a reset can be carried out directly on the device after a trip by pressing the blue RESET button. Resetting is possible in combination with the mechanical reset options from the accessories range (see Accessories). As an alternative to the mechanical RESET options, the 3RB21 / 31 solid-state overload relays are equipped with an electrical remote RESET which may be utilized by applying a voltage of 24 V DC to the terminals A3 and A4.

If the slide switch is set to automatic RESET, the relay is reset automatically.

The time between tripping and resetting is determined by the recovery time.

### Recovery time

With the 3RB2 / 3RB3 solid-state overload relays the recovery time after inverse-time delayed tripping is between 0.5 and 3 minutes depending on the preloading when automatic RESET is set. These recovery times allow the load (e.g. motor) to cool down.

If the button is set to manual RESET, the 3RB2 / 3RB3 devices can be reset immediately after inverse-time delayed tripping.

After a ground fault trip the 3RB21 / 31 solid-state overload relays (with ground-fault detection activated) can be reset immediately without a recovery time regardless of the reset mode set.

### TEST function

With motor current flowing, the TEST button can be used to check whether the relay is working correctly (device/solid-state TEST). Current measurement, motor model and trip unit are tested. If these components are OK, the device is tripped in accordance with the table below. If there is an error, no tripping takes place.

| Trip class | Required loading with the rated current prior to pressing the test button | Tripping within |
|---|---|---|
| CLASS 5 | 2 min | 8 s |
| CLASS 10 | 4 min | 15 s |
| CLASS 20 | 8 min | 30 s |
| CLASS 30 | 12 min | 45 s |

Note: The test button must be kept pressed throughout the test.

Testing of the auxiliary contacts and the control current wiring is possible with the switch position indicator slide. Actuating the slide simulates tripping of the relay. During this simulation the NC contact (95-96) is opened and the NO contact (97-98) is closed. This tests whether the auxiliary circuit has been correctly wired.

After a test trip the relay is reset by pressing the RESET button.

### Self-monitoring

The 3RB2 / 3RB3 solid-state overload relays have a self-monitoring feature, i.e. the devices constantly monitor their own basic functions and trip if an internal fault is detected.

### Display of operating status

The respective operating status of the 3RB2 / 3RB3 solid-state overload relays is displayed by means of the position of the marking on the switch position indicator slide. After tripping due to overload, phase failure, phase unbalance or ground fault (ground fault detection possible only with 3RB21 / 31) the marking on the slide is to the left on the "O" mark, otherwise it is on the "I" mark.

### Auxiliary contacts

The 3RB2 / 3RB3 solid-state overload relays are fitted with an NO contact for the "tripped" signal, and an NC contact for switching off the contactor.

## Selection and ordering data

| Size | Order No. | Setting range A |
|---|---|---|
| S00 | **3RB30 16-□RB0** | 0.1 ... 0.4 |
| | **3RB30 16-□NB0** | 0.32 ... 1.25 |
| | **3RB30 16-□PB0** | 1 ... 4 |
| | **3RB30 16-□SB0** | 3 ... 12 |
| S0 | **3RB30 26-□RB0** | 0.1 ... 0.4 |
| | **3RB30 26-□NB0** | 0.32 ... 1.25 |
| | **3RB30 26-□PB0** | 1 ... 4 |
| | **3RB30 26-□SB0** | 3 ... 12 |
| | **3RB30 26-□QB0** | 6 ... 25 |
| S2 | **3RB30 36-□UB0** | 12.5 ... 50 |
| | **3RB30 36-□WB0** | 20 ... 80 |
| S3 | **3RB30 46-□UB0** | 12.5 ... 50 |
| | **3RB30 46-□XB0** | 32 ... 115 |
| S6 | **3RB20 56-□FW2** | 50 ... 200 |
| | **3RB20 56-□FC2** | |
| S10/S12 | **3RB20 66-□GC2** | 55 ... 250 |
| | **3RB20 66-□MC2** | 160 ... 630 |

| | |
|---|---|
| CLASS 10 | **1** |
| CLASS 20 | **2** |

| Size | New Order No. | Setting range A |
|---|---|---|
| S00 | **3RB31 13-4RB0** | 0.1 ... 0.4 |
| | **3RB31 13-4NB0** | 0.32 ... 1.25 |
| | **3RB31 13-4PB0** | 1 ... 4 |
| | **3RB31 13-4SB0** | 3 ... 12 |
| S0 | **3RB31 23-4RB0** | 0.1 ... 0.4 |
| | **3RB31 23-4NB0** | 0.32 ... 1.25 |
| | **3RB31 23-4PB0** | 1 ... 4 |
| | **3RB31 23-4SB0** | 3 ... 12 |
| | **3RB31 23-4QB0** | 6 ... 25 |
| S2 | **3RB31 33-4UB0** | 12.5 ... 50 |
| | **3RB31 33-4WB0** | 20 ... 80 |
| S3 | **3RB31 43-4UB0** | 12.5 ... 50 |
| | **3RB31 43-4XB0** | 32 ... 115 |
| S6 | **3RB21 53-4FW2** | 50 ... 200 |
| | **3RB21 53-4FC2** | |
| S10/S12 | **3RB21 63-4GC2** | 55 ... 250 |
| | **3RB21 63-4MC2** | 160 ... 630 |

Note:

CLASS 5, 10, 20 and 30 can be set on the unit

## *3RB20 solid-state overload relays and stand-alone installation[2)3)], CLASS 10 or CLASS 20 for direct mounting[1)2)]*

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring

| | Size Contactor[4)] | Set current value of the inverse-time delayed overload trip A | | Screw Terminal Order Number | Spring Loaded Terminal Order Number | Weight per PU approx. kg |
|---|---|---|---|---|---|---|
| **Size S00[1)]** | | | | | | |
| 3RB30 16-1RB0 | S00 | 0.1 … 0.4 | | **3RB30 16-☐RB0** | **3RB30 16-☐RE0** | 0.172 |
| | | 0.32 … 1.25 | | **3RB30 16-☐NB0** | **3RB30 16-☐NE0** | 0.172 |
| | | 1 … 4 | | **3RB30 16-☐PB0** | **3RB30 16-☐PE0** | 0.172 |
| | | 3 … 12 | | **3RB30 16-☐SB0** | **3RB30 16-☐SE0** | 0.172 |
| | | 4 … 16 | | **3RB30 16-☐TB0** | **3RB30 16-☐TE0** | 0.172 |
| **Size S0[1)]** | | | | | | |
| 3RB30 26-1QB0 | S0 | 0.1 … 0.4 | | **3RB30 26-☐RB0** | **3RB30 26-☐RE0** | 0.250 |
| | | 0.32 … 1.25 | | **3RB30 26-☐NB0** | **3RB30 26-☐NE0** | 0.250 |
| | | 1 … 4 | | **3RB30 26-☐PB0** | **3RB30 26-☐PE0** | 0.250 |
| | | 3 … 12 | | **3RB30 26-☐SB0** | **3RB30 26-☐SE0** | 0.250 |
| | | 6 … 25 | | **3RB30 26-☐QB0** | **3RB30 26-☐QE0** | 0.250 |
| | | 10 … 40 | | **3RB30 26-☐VB0** | **3RB30 26-☐VE0** | 0.250 |
| **Size S2 [1)3)5)]** | | | | | | |
| 3RB30 36-1UB0 | S2 | 12 … 50 | with busbar | **3RB30 36-☐UB0** | **3RB30 36-☐UD0** | 0.360 |
| | | | with pass through CT's | **3RB30 36-☐UW1** | **3RB30 36-☐UX1** | 0.230 |
| | | 20 … 80 | with busbar | **3RB30 36-☐WB0** | **3RB30 36-☐WD0** | 0.360 |
| | | | with pass through CT's | **3RB30 36-☐WW1** | **3RB30 36-☐WX1** | 0.230 |
| **Size S3 [1)3)5)]** | | | | | | |
| 3RB30 46-1XB0 | S3 | 12.5 … 50 | with busbar | **3RB30 46-☐UB0** | **3RB30 46-☐UD0** | 0.560 |
| | | | with pass through CT's | **3RB30 46-☐UW1** | **3RB30 46-☐UX1** | 0.450 |
| | | 32 … 115 | with busbar | **3RB30 46-☐XB0** | **3RB30 46-☐XD0** | 0.560 |
| | | | with pass through CT's | **3RB30 46-☐XW1** | **3RB30 46-☐XX1** | 0.450 |
| **Size S6 [2)5)]** | | | | | | |
| 3RB20 56-1FW2 | S6 | 50 … 200 | with busbar | **3RB20 56-☐FC2** | **3RB20 56-☐FF2** | 1.030 |
| | | | with pass through CT's | **3RB20 56-☐FW2** | **3RB20 56-☐FX2** | 0.690 |
| **Size S10/S12[2)]** | | | | | | |
| 3RB20 66-1MC2 | S10/S12 and size 14 (3TF68/ 3TF69) | 55 … 250 | with busbar | **3RB20 66-☐GC2** | **3RB20 66-☐GF2** | 1.820 |
| | | 160 … 630 | with busbar | **3RB20 66-☐MC2** | **3RB20 66-☐MF2** | 1.820 |

**2** Class 20 **2** Class 20

**1** Class 10 **1** Class 10

1) The relays with an Order No. ending with **"0"** are designed for direct mounting to the contactor. With the matching terminal brackets (see Accessories) the sizes S00 to S3 can also be installed as stand-alone units.

2) The relays with an Order No. ending with **"2"** are designed for direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) The relays with an Order No. with **"X"** in 10th position are equipped with a straight-through transformer.

For accessories, see pages 3/49-3/50.
For description, see pages 3/18-3/20.
For technical data, see pages 3/24-3/29.
For dimension drawings, see page 3/30.
For schematic diagrams, see page 3/31.

## *3RB21 / 3RB31 solid-state overload relays for direct mounting[1)2)] and stand-alone installation[2)3)], CLASS 5, 10, 20 and 30 adjustable*

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal ground fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring

| | Size Contactor[4)] | Set current value of the inverse-time delayed overload trip | | Screw Terminal Order Number | Spring Loaded Terminal Order Number | Weight per PU approx. |
|---|---|---|---|---|---|---|
| | | A | | | | kg |
| **Size S00[1)]** | | | | | | |
| 3RB31 13-4RB0 | S00 | 0.1 … 0.4 | | **3RB31 13-4RB0** | **3RB31 13-4RE0** | 0.175 |
| | | 0.32 … 1.25 | | **3RB31 13-4NB0** | **3RB31 13-4NE0** | 0.175 |
| | | 1 … 4 | | **3RB31 13-4PB0** | **3RB31 13-4PE0** | 0.175 |
| | | 3 … 12 | | **3RB31 13-4SB0** | **3RB31 13-4SE0** | 0.175 |
| | | 4 … 16 | | **3RB31 13-4TB0** | **3RB31 13-4TE0** | 0.175 |
| **Size S0[1)]** | | | | | | |
| 3RB31 23-4QB0 | S0 | 0.1 … 0.4 | | **3RB31 23-4RB0** | **3RB31 23-4RE0** | 0.215 |
| | | 0.32 … 1.25 | | **3RB31 23-4NB0** | **3RB31 23-4NE0** | 0.215 |
| | | 1 … 4 | | **3RB31 23-4PB0** | **3RB31 23-4PE0** | 0.215 |
| | | 3 … 12 | | **3RB31 23-4SB0** | **3RB31 23-4SE0** | 0.215 |
| | | 6 … 25 | | **3RB31 23-4QB0** | **3RB31 23-4QE0** | 0.215 |
| | | 10 … 40 | | **3RB31 23-4VB0** | **3RB31 23-4VE0** | 0.215 |
| **Size S2[1)3)5)]** | | | | | | |
| 3RB31 33-4WB0 | S2 | 12 … 50 | with busbar | **3RB31 33-4UB0** | **3RB31 33-4UD0** | 0.360 |
| | | | with pass through CT's | **3RB31 33-4UW1** | **3RB31 33-4UX1** | 0.230 |
| | | 20 … 80 | with busbar | **3RB31 33-4WB0** | **3RB31 33-4WD0** | 0.360 |
| | | | with pass through CT's | **3RB31 33-4WW1** | **3RB31 33-4WX1** | 0.230 |
| **Size S3[1)3)5)]** | | | | | | |
| 3RB31 43-4XB0 | S3 | 12.5 … 50 | with busbar | **3RB31 43-4UB0** | **3RB31 43-4UD0** | 0.560 |
| | | | with pass through CT's | **3RB31 43-4UW1** | **3RB31 43-4UX1** | 0.450 |
| | | 32 … 115 | with busbar | **3RB31 43-4XB0** | **3RB31 43-4XD0** | 0.560 |
| | | | with pass through CT's | **3RB31 43-4XW1** | **3RB31 43-4XX1** | 0.450 |
| **Size S6[2)5)]** | | | | | | |
| 3RB21 53-4FC2 | S6 | 50 … 200 | with busbar | **3RB21 53-4FC2** | **3RB21 53-4FF2** | 1.030 |
| | | | with pass through CT's | **3RB21 53-4FW2** | **3RB21 53-4FX2** | 0.690 |
| **Size S10/S12[2)]** | | | | | | |
| 3RB21 63-4MC2 | S10/S12 and size 14 (3TF68/ 3TF69) | 55 … 250 | | **3RB21 63-4GC2** | **3RB21 63-4GF2** | 1.820 |
| | | 160 … 630 | | **3RB21 63-4MC2** | **3RB21 63-4MF2** | 1.820 |

1) The relays with an Order No. ending with **"0"** are designed for direct mounting to the contactor. With the matching terminal brackets (see Accessories) the sizes S00 to S3 can also be installed as stand-alone units.

2) The relays with an Order No. ending with **"2"** are designed for direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) The relays with an Order No. with **"X"** in 10th position are equipped with a straight-through transformer.

For accessories, see pages 3/49-3/50.
For description, see pages 3/18-3/21.
For technical data, see pages 3/24-3/29.
For dimension drawings, see page 3/30.
For schematic diagrams, see page 3/31.

## Technical specifications

| Type | | 3RB30 16, 3RB31 13 | 3RB30 26, 3RB31 23 | 3RB30 36 3RB31 33 | 3RB30 46, 3RB31 43 | 3RB30 56, 3RB31 53 | 3RB30 66, 3RB31 63 |
|---|---|---|---|---|---|---|---|
| **Size** | | S00 | S0 | S2 | S3 | S6 | S10/S12 |
| **Width** | | 45 mm | 45 mm | 55 mm | 70 mm | 120 mm | 145 mm |
| **General data** | | | | | | | |
| **Trips in the event of** | | Overload, phase failure, and phase unbalance + ground fault (for 3RB31 only) | | | | | |
| **Trip class** according to IEC 60947-4-1 | CLASS | 3RB30: 10E, 20E; 3RB31: 5E, 10E, 20E or 30E adjustable | | | | | |
| **Phase failure sensitivity** | | Yes | | | | | |
| **Overload warning** | | | | | No | | |
| **Reset and recovery** | | | | | | | |
| • Reset options after tripping | | Manual and automatic RESET, 3RB31 has an integrated connection for electrical remote RESET (24 V DC) | | | 3RB20: Manual and automatic RESET; 3RB21: Manual, automatic and remote RESET | | |
| • Recovery time | | | | | | | |
| - For automatic RESET | min. | Appox. 3 min | | | Appox. 3 min | | |
| - For manual RESET | min. | Immediately | | | Immediately | | |
| - For remote RESET | min. | Immediately | | | Immediately | | |
| **Features** | | | | | | | |
| • Display of operating status on device | | Yes, by means of switch position indicator slide | | | | | |
| • TEST function | | Yes, test of electronics by pressing the button Test<br>Test of auxiliary contacts and wiring of control current circuit by actuating the switch position indicator slide/self-monitoring | | | | | |
| • RESET button | | Yes | | | | | |
| • STOP button | | No | | | | | |
| **Explosion protection – Safe operation of motors with"Increased safety" type of protection**<br>EC type test certificate number according to directive 94/9/EC (ATEX) | | PTB 09 ATEX 3001<br>Ⓔx II (2) G [Ex e] [Ex d] [Ex px]<br>Ⓔx II (2) G [Ex t] [Ex p] | | On request | PTB 09 ATEX 3001<br>Ⓔx II (2) G [Ex e] [Ex d] [Ex px]<br>Ⓔx II (2) G [Ex t] [Ex p] | | |
| **Ambient temperatures** | | | | | | | |
| • Storage/transport | °C | -40 ... +80 | | | | | |
| • Operation | °C | -25 ... +60 | | | | | |
| • Temperature compensation | °C | +60 | | | | | |
| • Permissible rated current at | | | | | | | |
| - Temperature inside control cabinet 60 °C, stand-alone installation | % | — | | | 100 | 100 | 100 or 90[2] |
| - Temperature inside control cabinet 60 °C, mounted on contactor | % | 100 | | | 100 | 70 | 70 |
| - Temperature inside control cabinet 70 °C | % | On request | | | On request | | |
| **Repeat terminals** | | | | | | | |
| • Coil repeat terminal | | Yes | Not required | | | | |
| • Auxiliary contact repeat terminal | | Yes | Not required | | | | |
| **Degree of protection** according to IEC 60529 | | IP20[3] | | | | IP20[3] | |
| **Touch protection** according to IEC 61140 | | Finger-safe for vertical contact from the front | | | | Finger-safe, for busbar connection with cover | Finger-safe with cover |
| **Shock resistance with sine** according to IEC 60068-2-27 | g/ms | 15/11 (signaling contact 97/98 in position "tripped": 9g/ms) | | 15/11 (signaling contact 97/98 in "Tripped" position: 8 g/11ms) | 15/11 (signaling contact 97/98 in position "tripped": 4 g/11ms) | | |
| **Electromagnetic compatibility (EMC) – Interference immunity** | | | | | | | |
| • Conductor-related interference | | | | | | | |
| - Burst according to IEC 61000-4-4 (corresponds to degree of severity 3) | kV | 2 (power ports), 1 (signal ports) | | | | | |
| - Surge according to IEC 61000-4-5 (corresponds to degree of severity 3) | kV | 2 (line to earth), 1 (line to line) | | | | | |
| • Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | 8 (air discharge), 6 (contact discharge) | | | | | |
| • Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3) | V/m | 10 | | | | | |
| **Electromagnetic compatibility (EMC) – Emitted interference** | | Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22) | | | | | |
| **Resistance to extreme climates – air humidity** | % | 95 | | | 100 | | |
| **Dimensions** | | See dimensional drawings | | | | | |
| **Installation altitude above sea level** | m | Up to 2000 | | | | | |
| **Mounting position** | | Any | | | | | |
| **Type of mounting** | | Direct mounting/stand-alone installation with terminal support | | | | Direct mounting / Stand-alone installation | |

1) Permissible rated current in case of heavy starting
Size S0 at 10 A up to 40 A
- CLASS 20, Ie max = 32 A
- CLASS 30, Ie max = 25 A

2) 90 % for relay with current setting range 160A to 630A

3) Terminal compartment: degree of protection IP00.

| | | | | | |
|---|---|---|---|---|---|
| **Type** | | **3RB30 16, 3RB31 13** | **3RB30 26, 3RB31 23** | **3RB30 36, 3RB31 33** | **3RB30 46, 3RB31 43** |
| **Size** | | **S00** | **S0** | **S2** | **S3** |
| **Width** | | **45 mm** | **45 mm** | **55 mm** | **70 mm** |
| **Main circuit** | | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 690 | 690 | 690 | 1000 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | 6 | 6/8 | 8 |
| **Rated operational voltage $U_e$** | V | 690 | 690 | 690 | 1000 |
| **Type of current** | | | | | |
| • Direct current | | No | | | |
| • Alternating current | | Yes, 50/60 Hz ± 5% | | | |
| **Set current** | A | 0.1 ... 0.4 to 4 ... 16 | 0.1 ... 0.4 to 10... 40 | 12.5 ... 50 and 20 to 80 | 12.5 ... 50 to 25 ... 100 |
| **Power loss per unit (max.)** | W | 0.05 ... 0.2 | | | 0.05 |
| **Short-circuit protection** | | | | | |
| - With fuse without contactor | | See Selection and Ordering Data | | | |
| - With fuse and contactor | | See Technical Specifications (short-circuit protection with fuses for motor feeders) | | | |
| **Protective separation between main and auxiliary conducting path** according to IEC 60947-1 (pollution degree 2) | V | 690 for grounded networks, otherwise 600 V | | | |
| **Connection for main circuit** | | | | | |
| **Electrical connection version** | | Screw terminal | Screw terminal | Screw terminal | Screw terminal with box terminal / |
| **Screw terminal** | | | | | |
| • Terminal screw | | M3, Pozidriv size 2 | M3, Pozidriv size 2 | M4, Pozidriv size 2 | M8, 4 mm Allen screw |
| • Tightening torque | Nm | 0.8 ... 1.2 | 2 ... 2.5 | 2 ... 2.5 | 4 ... 6 |
| • Conductor cross-sections (min./max.) | | | | | |
| - Solid or stranded | $mm^2$ | 2 × (0.5 ... 1.5)[3]<br>2 × (0.75 ... 2.5)[3]<br>2 × (0.05 ... 4)[3] | 2 × (1 ... 2.5)[3]<br>2 × (2.5 ... 10) | 1 × (1 ... 50)<br>2 × (1 ... 35)<br>(Solid or Stranded) | 2 × (2.5 ... 16) |
| - Finely stranded with end sleeve (DIN 46228 T1) | $mm^2$ | 2 × (0.5 ... 1.5)[3]<br>2 × (0.75 ... 2.5)[3] | 2 × (1 ... 2.5)[3]<br>2 × (2.5 ... 6)[3]<br>max. 1 x 10 | 2 × (1 ... 25),<br>1 × (1 ... 35) | 2 × (2.5 ... 35),<br>1 × (2.5 ... 50) |
| - Stranded | $mm^2$ | -- | | | 2 × (10 ... 50),<br>1 × (10 ... 70) |
| - AWG cables, solid or stranded | AWG | 2 × (20 ... 16)[3]<br>2 × (18 ... 14)[3]<br>2 × 12 | 2 × (16 ... 12)[3]<br>2 × (14 ... 8)[3] | 2 × (18 ... 2)<br>1 × (18 ... 1) | 2 × (10 ... 1/0),<br>2 × (10 ... 2/0) |
| - Ribbon cable conductors (number x width x circumference) | mm | -- | | | 2 × (6 × 9 × 0.8) |
| **Busbar connections** | | | | | |
| • Terminal screw | | -- | | | M 6 × 20 |
| • Tightening torque | Nm | -- | | | 4 ... 6 |
| • Conductor cross-section (min./max.) | | | | | |
| - Finely stranded with cable lug | $mm^2$ | -- | | | 2 × 70 |
| - Stranded with cable lug | $mm^2$ | -- | | | 3 × 70 |
| - AWG connections, solid or stranded, with cable lug | AWG | -- | | | 2/0 |
| - With connecting bar (max. width) | mm | -- | | | 12 |
| **Straight-through transformers** | | | | | |
| • Diameter of opening | mm | – | | 15 | 18 |

1) For version with straight-through transformer up to 1000 VAC.
2) For version with straight-through transformer up to 8 kV.
3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

| Type | | 3RB20 56, 3RB21 53 | 3RB20 66, 3RB21 63 |
|---|---|---|---|
| Size | | S6 | S10/S12 |
| Width | | 120 mm | 145 mm |
| **Main circuit** | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 1000 | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 8 | |
| **Rated operational voltage $U_e$** | V | 1000 | |
| **Type of current** | | | |
| • Direct current | | No | |
| • Alternating current | | Yes, 50/60 Hz ± 5 (other frequencies on request) | |
| **Set current** | A | 50 ... 200 | 55 ... 250 to 160 ... 630 |
| **Power loss per unit (max.)** | W | 0.05 | |
| **Short-circuit protection** | | | |
| - With fuse without contactor | | See Selection and Ordering Data | |
| - With fuse and contactor | | See Technical Specifications (short-circuit protection with fuses for motor feeders) | |
| **Safe isolation between main and auxiliary conducting path** according to IEC 60947-1 | V | 690[1] | |
| **Connection for main circuit** | | | |
| **Electrical connection version** | | Screw terminal with box terminal/ Bus connection / Straight-through transformer | Screw terminal with box terminal/ Bus connection |
| **Screw terminal** | | | |
| • Terminal screw | | 4 mm Allen screw | 5 mm Allen screw |
| • Tightening torque | Nm | 10 ... 12 | 20 ... 22 |
| • Conductor cross-sections (min./max.), 1 or 2 conductors | | | |
| - Solid | $mm^2$ | -- | |
| - Finely stranded without end sleeve | $mm^2$ | With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70) With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120) | 2 × (50 ... 185), front clamping point only: 1 × (70 ... 240) rear clamping point only: 1 × (120 ... 185) |
| - Finely stranded with end sleeve | $mm^2$ | With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70) With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120) | 2 × (50 ... 185), front clamping point only: 1 × (70 ... 240) rear clamping point only: 1 × (120 ... 185) |
| - Stranded | $mm^2$ | With 3RT19 55-4G box terminal: 2 × (max. 70), 1 × (16 ... 70) With 3RT19 56-4G box terminal: 2 × (max. 120), 1 × (16 ... 120) | 2 × (70 ... 240), front clamping point only: 1 × (95 ... 300) rear clamping point only: 1 × (120 ... 240) |
| - AWG conductors, solid or stranded | AWG | With 3RT19 55-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0) With 3RT19 56-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil) | 2 × (2/0 ... 500 kcmil), front clamping point only: 1 × (3/0 ... 600 kcmil) rear clamping point only: 1 × (250 kcmil ... 500 kcmil) |
| - Ribbon cable conductors (number x width x circumference) | mm | With 3RT19 55-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8) With 3RT19 56-4G box terminal: 2 × (10 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 10 × 15.5 × 0.8) | 2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5) |
| **Busbar connections** | | | |
| • Terminal screw | | M 8 × 25 | M 10 × 30 |
| • Tightening torque | Nm | 10 ... 14 | 14 ... 24 |
| • Conductor cross-section (min./max.) | | | |
| - Finely stranded with cable lug | $mm^2$ | 16 ... 95[2] | 50 ... 240[3] |
| - Stranded with cable lug | $mm^2$ | 25 ... 120[2] | 70 ... 240[3] |
| - AWG connections, solid or stranded, with cable lug | AWG | 4 ... 250 kcmil | 2/0 ... 500 kcmil |
| - With connecting bar (max. width) | mm | 15 | 25 |
| **Straight-through transformers** | | | |
| • Diameter of opening | mm | 24.5 | -- |
| • Conductor cross-section (max.) | | | |
| - NYY | $mm^2$ | 120 | -- |
| - H07RN-F | $mm^2$ | 70 | -- |

1) For grounded networks, otherwise 600 V.

2) When connecting cable lugs according to DIN 46235, use the 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 $mm^2$ to ensure phase spacing.

3) When connecting cable lugs according to DIN 46234 for conductor cross-sections from 240 $mm^2$ as well as DIN 46235 for conductor cross-sections from 185 $mm^2$, use the 3RT19 56-4EA1 terminal cover to ensure phase spacing.

| Type | | 3RB30 16, 3RB31 13 | 3RB30 26, 3RB31 23 | 3RB30 36, 3RB31 33 | 3RB30 46, 3RB31 43 | 3RB30 56, 3RB31 53 | 3RB30 66, 3RB31 63 |
|---|---|---|---|---|---|---|---|
| **Size** | | S00 | S0 | S2 | S3 | S6 | S10/S12 |
| **Width** | | 45 mm | 45 mm | 55 mm | 70 mm | 120 mm | 145 mm |
| **Auxiliary circuit** | | | | | | | |
| **Number of NO contacts** | | 1 | | | | | |
| **Number of NC contacts** | | 1 | | | | | |
| **Auxiliary contacts – assignment** | | 1 NO for the signal "tripped",<br>1 NC for switching off the contactor | | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 300 | | | | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 | | | | | |
| **Auxiliary contacts – Contact rating** | | | | | | | |
| • NC contact with alternating current AC-14/AC-15<br>Rated operational current $I_e$ at $U_e$: | | | | | | | |
| - 24 V | A | 4 | | | | | |
| - 120 V | A | 4 | | | | | |
| - 125 V | A | 4 | | | | | |
| - 250 V | A | 3 | | | | | |
| • NO contact with alternating current AC-14/AC-15:<br>Rated operational current $I_e$ at $U_e$: | | | | | | | |
| - 24 V | A | 4 | | | | | |
| - 120 V | A | 4 | | | | | |
| - 125 V | A | 4 | | | | | |
| - 250 V | A | 3 | | | | | |
| • NC, NO contact with direct current DC-13:<br>Rated operational current $I_e$ at $U_e$: | | [1] | | | | | |
| - 24 V | A | 2 | | | | | |
| - 60 V | A | 0.55 | | | | | |
| - 110 V | A | 0.3 | | | | | |
| - 125 V | A | 0.3 | | | | | |
| - 250 V | A | 0.11 | | | | | |
| • Continuous thermal current $I_{th}$ | A | 5 | | | | | |
| • Contact reliability<br>(suitability for PLC control; 17 V, 5 mA) | | Yes | | | | | |
| **Short-circuit protection** | | | | | | | |
| • With fuse | | | | | | | |
| - gL/gG operational class | A | 6 | | | | | |
| **Ground-fault protection (only 3RB31)** | | The information refers to sinusoidal residual currents at 50/60 Hz. | | | | | |
| • Tripping value $I_\Delta$ | | > 0.75 × $I_{motor}$ | | | | | |
| • Operating range $I$ | | Lower current setting value < $I_{motor}$ < 3.5 × upper current setting value | | | | | |
| • Response time $t_{trip}$ (in steady-state condition) | s | < 1 | | | | | |
| **Integrated electrical remote RESET (only 3RB31)** | | | | | | | |
| Connecting terminals A3, A4 | | 24 V DC, max. 200 mA for approx. 20 ms, then < 10 mA | | | | | |
| **Protective separation between main and auxiliary conducting path** according to IEC 60947-1 | V | 300 | | | | | |
| **CSA, UL, and UR rated data** | | | | | | | |
| **Auxiliary circuit – switching capacity** | | 3RB30: B600, R300<br>3RB31: B300, R300 | | | B300, R300 | | |
| **Connection of the auxiliary circuit** | | | | | | | |
| **Connection type** | | Screw terminal or spring-loaded terminals | | | | | |
| **Screw terminal** | | | | | | | |
| • Terminal screw | | Pozidriv size 2 | | | | | |
| • Tightening torque | Nm | 0.8 ... 1.2 | | | | | |
| • Conductor cross-sections (min./max.), 1 or 2 conductors | | | | | | | |
| - Solid or stranded | $mm^2$ | 1 × (0.5 ... 4), 2 × (0.5 ... 2.5) | | | | | |
| - Finely stranded with end sleeve | $mm^2$ | 1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5) | | | | | |
| - AWG conductors, solid or stranded | AWG | 2 × (20 ... 14) | | | | | |
| **Spring-loaded terminals** | | | | | | | |
| • Conductor cross-sections (min./max.), 1 or 2 conductors | | | | | | | |
| - Solid | $mm^2$ | 2 × (0.25 ... 1.5) | | | | | |
| - Finely stranded without end sleeve | $mm^2$ | -- | | | | | |
| - Finely stranded with end sleeve | $mm^2$ | 2 × (0.25 ... 1.5) | | | | | |
| - Stranded | $mm^2$ | 2 × (0.25 ... 1.5) | | | | | |
| - AWG conductors, solid or stranded | AWG | 2 × (24 ... 16) | | | | | |

### *Short-circuit protection with fuses for motor starters*

For short-circuit currents up to 50 kA at 400 to 690 V

| Overload relays | Contactor | CLASS | | | | | | | | | 690 V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5 and 10 | | | 20 | | | 30 | | | Fuse links[1] | |
| | | | | | | | | | | | LV HRC | Type 3NA |
| | | | | | | | | | | | DIAZED | Type 5SB |
| | | | | | | | | | | | NEOZED | Type 5SE |
| | | | | | | | | | | | gL/gG operational class | |
| | | Rated operational current $I_e$ AC-3 in A at | | | | | | | | | Type of coordination[2] | |
| Setting range | Type | 400 V | 500 V | 690 V | 400 V | 500 V | 690 V | 400 V | 500 V | 690 V | 1 | 2 |
| **Size S00** | | | | | | | | | | | | |
| 0.1 ... 0.4 A | 3RT20 15 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 35 | 4 |
| 0.32 ... 1.25 A | 3RT20 15 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 35 | 6 |
| 1 ... 4 A | 3RT20 15 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 35 | 20 |
| | 3RT20 16 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 35 | 20 |
| | 3RT20 17 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 35 | 20 |
| 4 ... 16 A | 3RT20 16 | 9 | 6.5 | 5.2 | 9 | 6.5 | 5.2 | 9 | 6.5 | 5.2 | 35 | 20 |
| | 3RT20 17 | 12 | 9 | 6.3 | 10 | 9 | 6.3 | 9 | 9 | 6.3 | 35 | 20 |
| | 3RT20 18 | 16 | 12.4 | 8.9 | 12.9 | 11.6 | 8.1 | 11.6 | 11.6 | 8.1 | 50 | 25 |
| **Size S0** | | | | | | | | | | | | |
| 3 ... 12 A | 3RT20 23 | 9 | 6.5 | 5.2 | 9 | 6.5 | 5.2 | -- | -- | -- | 63 | 25 |
| | 3RT20 24 | 12 | 12 | 9 | 12 | 12 | 9 | 12 | 12 | 9 | 63 | 25 |
| | 3RT20 25 | 12 | 12 | | 12 | 12 | 12 | 12 | 12 | 12 | 63 | 25 |
| 10 ... 40 | 3RT20 24 | 12 | 12 | 9 | 12 | 12 | 9 | 12 | 12 | 9 | 63 | 25 |
| | 3RT20 25 | 17 | 17 | 13 | 16 | 16 | 13 | 14 | 14 | 13 | 63 | 25 |
| | 3RT20 26 | 25 | 18 | 13 | 16 | 16 | 13 | 14 | 14 | 13 | 100 | 35 |
| | 3RT20 27 | 32 | 32 | 21 | 18.6 | 18.6 | 15.1 | 16.2 | 16.2 | 15.1 | 125 | 50 |
| | 3RT20 28 | 38 | 32 | 21 | 22.4 | 22.4 | 18.2 | 19.6 | 19.6 | 18.2 | 125 | 50 |
| **Size S2** | | | | | | | | | | | | |
| 12.5 ... 50 A | 3RT20 35 | 40 | 40 | 24 | 40 | 40 | 24 | 36 | 36 | 36 | 160 | 80 |
| | 3RT20 36 | 50 | 50 | 24 | 45 | 45 | 24 | 38 | 38 | 24 | 160 | 80 |
| | 3RT20 37 | 50 | 50 | 47 | 48 | 48 | 47 | 42 | 42 | 42 | 250 | 125 |
| | 3RT20 38 | 50 | 50 | 50 | 49 | 49 | 49 | 43 | 43 | 43 | 250 | 160 |
| 20 ... 80 A | 3RT20 35 | 40 | 40 | 24 | 40 | 40 | 24 | 36 | 36 | 36 | 160 | 80 |
| | 3RT20 36 | 50 | 50 | 24 | 45 | 45 | 24 | 38 | 38 | 24 | 160 | 80 |
| | 3RT20 37 | 65 | 65 | 47 | 48 | 48 | 47 | 42 | 42 | 42 | 250 | 125 |
| | 3RT20 38 | 80 | 80 | 58 | 49 | 49 | 49 | 43 | 43 | 43 | 250 | 160 |
| **Size S3** | | | | | | | | | | | | |
| 12.5 ... 50 A | 3RT20 45 | 50 | 50 | 47 | 49 | 49 | 47 | 41.7 | 41.7 | 41.7 | 200 | 125 |
| | 3RT20 46 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 45 | 45 | 200 | 160 |
| 32 ... 115 A | 3RT20 45 | 65 | 65 | 47 | 49 | 49 | 47 | 41.7 | 41.7 | 41.7 | 200 | 125 |
| | 3RT20 46 | 80 | 80 | 58 | 53 | 53 | 53 | 45 | 45 | 45 | 200 | 160 |
| | 3RT20 47 | 95 | 95 | 58 | 59 | 59 | 58 | 50 | 50 | 50 | 200 | 160 |
| | 3RT10 54 | 100 | 100 | 100 | 81.7 | 81.7 | 81.7 | 69 | 69 | 69 | 355 | 315 |
| | 3RT10 55 | -- | -- | -- | 100 | 100 | 100 | 90 | 90 | 90 | 355 | 315 |
| **Size S6** | | | | | | | | | | | | |
| 50 ... 200 A | 3RT10 54 | 115 | 115 | 115 | 81.7 | 81.7 | 81.7 | 69 | 69 | 69 | 355 | 315 |
| | 3RT10 55 | 150 | 150 | 150 | 107 | 107 | 107 | 90 | 90 | 90 | 355 | 315 |
| | 3RT10 56 | 185 | 185 | 170 | 131 | 131 | 131 | 111 | 111 | 111 | 355 | 315 |
| **Size S10/S12** | | | | | | | | | | | | |
| 55 ... 250 A | 3RT10 64 | 225 | 225 | 225 | 160 | 160 | 160 | 135 | 135 | 135 | 500 | 400 |
| | 3RT10 65 | 250 | 250 | 250 | 188 | 188 | 188 | 159 | 159 | 159 | 500 | 400 |
| | 3RT10 66 | 250 | 250 | 250 | 213 | 213 | 213 | 180 | 180 | 180 | 500 | 400 |
| 160 ... 630 A | 3RT10 64 | 225 | 225 | 225 | 160 | 160 | 160 | -- | -- | -- | 500 | 400 |
| | 3RT10 65 | 265 | 265 | 265 | 188 | 188 | 188 | -- | -- | -- | 500 | 400 |
| | 3RT10 66 | 300 | 300 | 280 | 213 | 213 | 213 | 180 | 180 | 180 | 500 | 400 |
| | 3RT10 75 | 400 | 400 | 400 | 284 | 284 | 284 | 240 | 240 | 240 | 630 | 400 |
| | 3RT10 76 | 500 | 500 | 450 | 355 | 355 | 355 | 300 | 300 | 300 | 630 | 500 |
| | 3RT12 64 | 225 | 225 | 225 | 225 | 225 | 225 | 173 | 173 | 173 | 500 | 500 |
| | 3RT12 65 | 265 | 265 | 265 | 265 | 265 | 265 | 204 | 204 | 204 | 500 | 500 |
| | 3RT12 66 | 300 | 300 | 300 | 300 | 300 | 300 | 231 | 231 | 231 | 500 | 500 |
| | 3RT12 75 | 400 | 400 | 400 | 400 | 400 | 400 | 316 | 316 | 316 | 800 | 800 |
| | 3RT12 76 | 500 | 500 | 500 | 500 | 500 | 500 | 385 | 385 | 385 | 800 | 800 |
| | 3TF68[3] | 630 | 630 | 630 | 440 | 440 | 440 | 376 | 376 | 376 | 800 | 500[4] |
| | 3TF69[3] | 630 | 630 | 630 | 572 | 572 | 572 | 500 | 500 | 500 | 800 | 630[4] |

1) Please observe operational voltage.

2) Coordination and short-circuit equipment according to EN 60947-4-1:
**Type of coordination 1:** the contactor or starter must not endanger persons or the installation in the event of a short-circuit.
They do not need to be suitable for further operation without repair and the renewal of parts.
**Type of coordination 2:** the contactor or starter must not endanger persons or the installation in the event of a short-circuit.
They must be suitable for further operation. There is a risk of contact welding.

3) Contactor cannot be mounted.

4) Please ensure that the maximum AC-3 operational current has sufficient safety clearance from the rated current of the fuses.

## Characteristic curves

The tripping characteristics show the relationship between the tripping time and tripping current as multiples of the set current $I_e$ and are given for symmetrical three-pole and two-pole loads from the cold state.

The smallest current used for tripping is called the minimum tripping current. According to IEC 60947-4-1, this current must be within specified limits. The limits of the total tripping current for the 3RB20/3RB21 solid-state overload relays for symmetrical three-pole loads are between 105 % and 120 % of the set current.

The tripping characteristic starts with the minimum tripping current and continues with higher tripping currents based on the characteristics of the so-called trip classes (CLASS 10, CLASS 20 etc.). The trip classes describe time intervals within which the overload relays have to trip with 7.2 times the set current $I_e$ from the cold state for symmetrical three-pole loads.

The tripping times according to IEC 60947-4-1, tolerance band E, are as follows for:

| Trip class | Tripping time |
|---|---|
| CLASS 5 | 3 … 5 s |
| CLASS 10 | 5 … 10 s |
| CLASS 20 | 10 … 20 s |
| CLASS 30 | 20 … 30 s |

The tripping characteristic for a three-pole overload relay from the cold state (see illustration 1) only apply if all three phases are simultaneously loaded with the same current. In the event of a phase failure the 3RB20/3RB21 solid-state overload relays switch off the contactor more quickly in order to minimize heating of the load in accordance with the tripping characteristic for two-pole loads from the cold state (see illustration 2). With phase unbalance the devices switch off depending on the reason for the unbalance between the two characteristic curves.

Compared with a cold load, a load at operating temperature obviously has a lower temperature reserve. The tripping time of the 3RB2/3RB3 solid-state overload relays is reduced therefore to about 30 % when loaded with the set current $I_e$ for an extended period.

Tripping characteristics for 3-pole loads

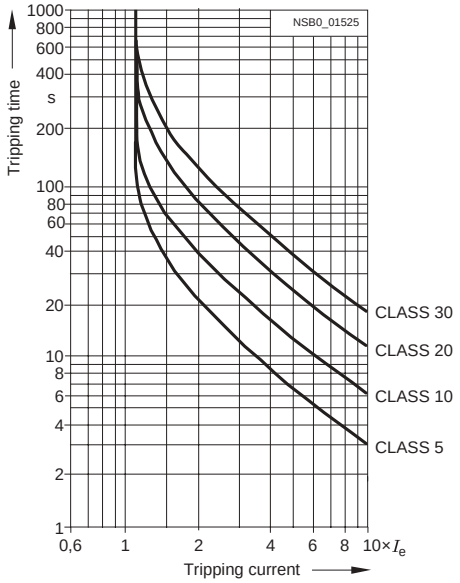



Illustration 1

Tripping characteristics for 2-pole loads

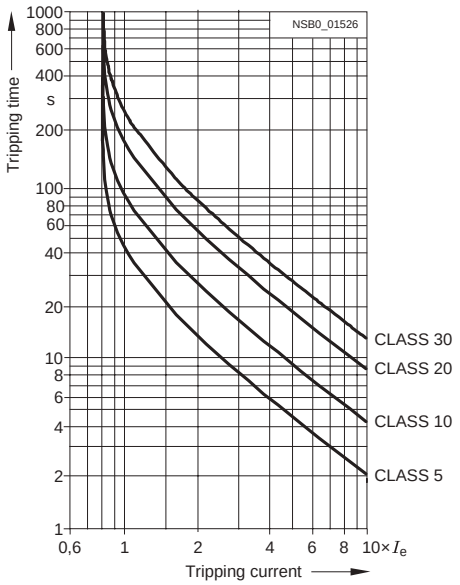
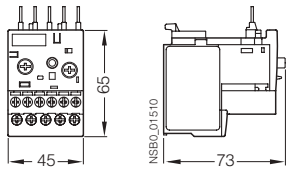


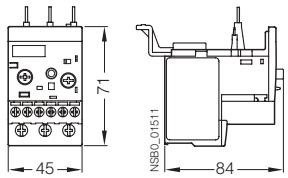

Illustration 2

The above illustrations are schematic representations of characteristic curves.

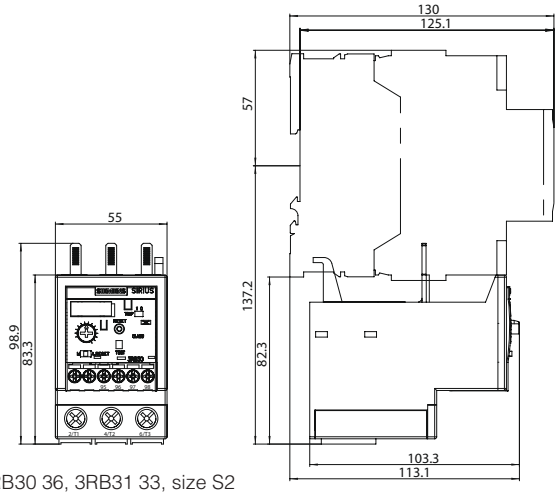
## Dimensional drawings



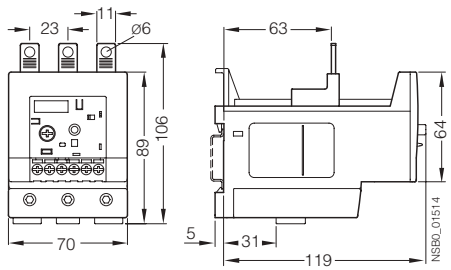

3RB30 16, 3RB31 13, size S00



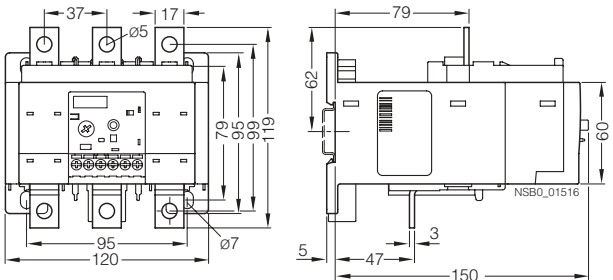

3RB30 26, 3RB31 23, size S0



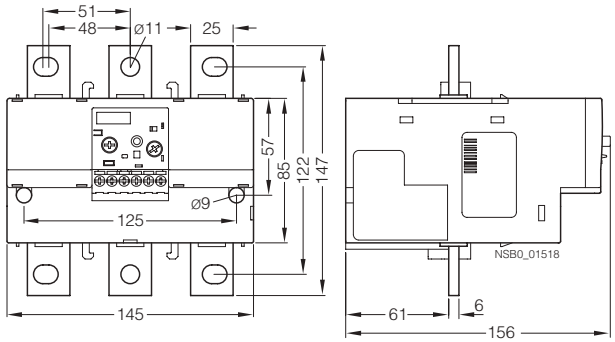

3RB30 36, 3RB31 33, size S2



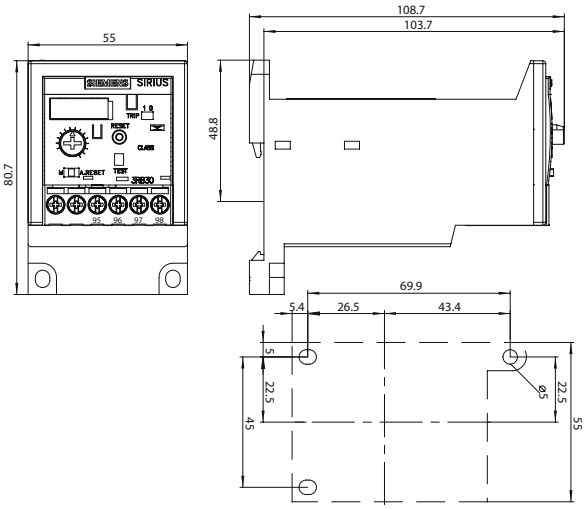

3RB30 46, 3RB31 43, size S3



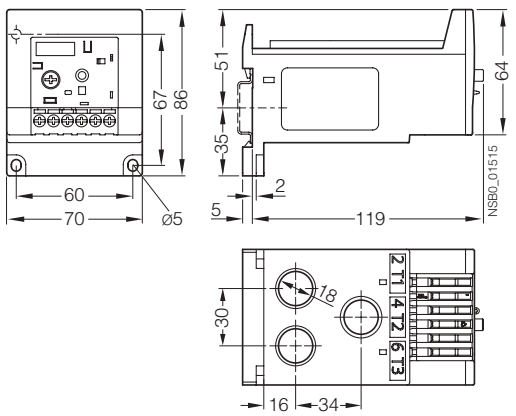

3RB20 56, 3RB21 53, size S6



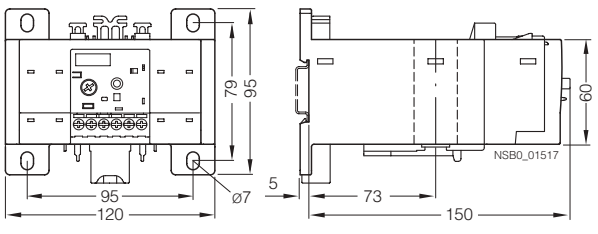

3RB20 66, 3RB21 63, size S10/S12




3RB30 36, 3RB31 33, size S2 with straight-through transformer

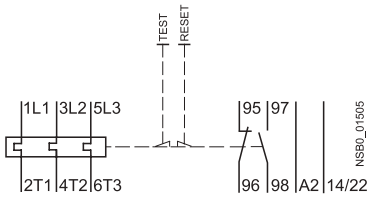



3RB30 46, 3RB31 43, size S3 with straight-through transformer

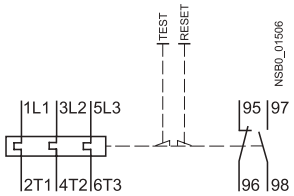



3RB20 56, 3RB21 53, size S6 with straight-through transformer

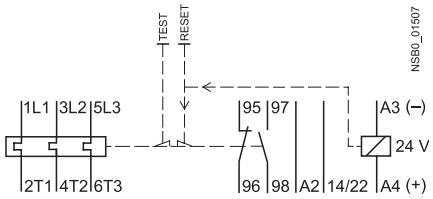
## Schematics



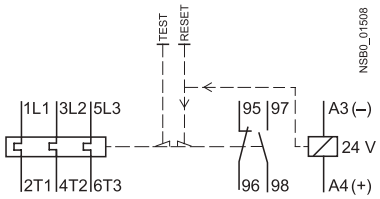

3RB30 16 overload relays




3RB30 26 to 3RB20 66 overload relays

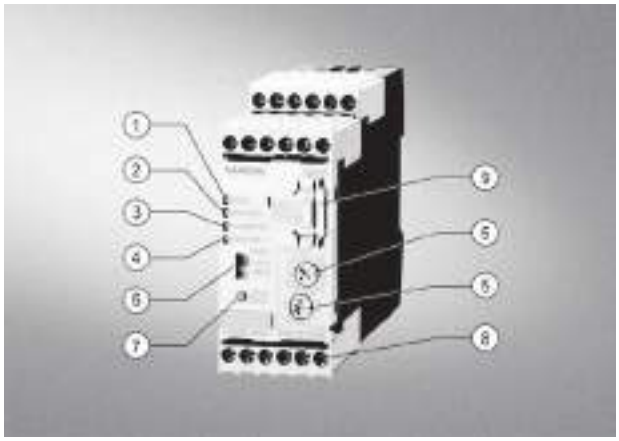



3RB31 13 overload relays




3RB31 23 to 3RB21 63 overload relays

## Overview



3RB22/3RB23 evaluation module

(1) Green "Ready" LED:
A continuous green light signals that the device is working correctly.

(2) Red "Ground Fault" LED:
A continuous red light signals a ground fault.

(3) Red "Thermistor" LED:
A continuous red light signals an active thermistor trip.

(4) Red "Overload" LED:
A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).

(5) Motor current and trip class adjustment:
Setting the device to the motor current and to the required trip class dependent on the starting conditions is easy with the two rotary knobs.

(6) Selector switch for manual/automatic RESET:
With this switch you can choose between manual and automatic RESET.

(7) Test/RESET button:
Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.

(8) Connecting terminals (removable terminal block):
The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw-type terminals and alternatively with spring-loaded terminals.

(9) 3RB29 85 function expansion module:
Enables more functions to be added, e.g. internal ground fault detection and/or an analog output with corresponding signals.

3RB29 06 current measuring module

The modular, solid-state overload relays with external power supply type 3RB22 (with monostable auxiliary contacts) and type 3RB23 (with bistable auxiliary contacts) up to 630 A (up to 820 A possible with a series transformer) have been designed for inverse-time delayed protection of loads with normal and heavy starting (see Function) against excessive temperature rises due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set motor rated current. This current rise is detected by means of a current measuring module and electronically evaluated by a special evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of the contactors control circuit. The break time depends on the ratio between the tripping current and set current $I_e$ and is stored in the form of a long-term stable tripping characteristic (see Characteristic Curves). The "tripped" status is signaled by means of a continuous red "Overload" LED.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. This warning can also be used as a signal through auxiliary contacts.

In addition to the described inverse-time delayed protection of loads against excessive temperature rise, the 3RB22/3RB23 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by failsafe connection of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices signal the contactor to switch off, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuous red "Thermistor" LED.

To also protect the loads against high-resistance short-circuits due to damage to the insulation, humidity, condensed water, etc., the 3RB22/3RB23 solid-state overload relays offer the possibility of internal ground fault monitoring in conjunction with a function expansion module; not possible in conjunction with a contactor assembly for Wye-Delta starting). In the event of a ground fault the 3RB22/3RB23 relays trip instantaneously. The "tripped" status is signaled by means of a red "Ground Fault" LED. Signaling through auxiliary contacts is also possible.

After tripping due to overload, phase unbalance, phase failure, thermistor tripping or ground fault, the relay may be reset manually or automatically after the recovery time has elapsed (see Function).

In conjunction with a function expansion module the motor current measured by the microprocessor can be output in the form of an analog signal 4 ... 20 mA DC for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers. With an additional AS-Interface analog module the current values can also be transferred over the AS-i bus system.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with important worldwide standards and approvals.

## Benefits

The most important features and benefits of the 3RB22/3RB23 solid-state overload relays are listed in the overview table (see Overload Relays, General Data).

## Application

### *Industries*

The 3RB22/3RB23 solid-state overload relays are suitable for customers from all industries who want to provide optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to CLASS 30), minimize project completion times, inventories and power consumption, and optimize plant availability and maintenance management.

### *Application*

The 3RB22/3RB23 solid-state overload relays have been designed for the protection of three-phase asynchronous and single-phase AC motors.

If single-phase AC motors are to be protected by the 3RB22/3RB23 solid-state overload relays, the main circuits of the current measuring modules must be series-connected.

### *Ambient conditions*

The devices are insensitive to external influences such as shocks, corrosive environments, ageing and temperature changes.

For the temperature range from –25 C to +60 °C, the 3RB22/3RB23 solid-state overload relays compensate the temperature according to IEC 60947-4-1.

Configuration notes for use of the devices below –25 °C or above +60 °C on request.

### *"Increased safety" type of protection EEx e according to ATEX guideline 94/9/EC*

The 3RB22/3RB23 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e. The relays meet the requirements of EN 60079-7 (Electrical apparatus for potentially explosive atmospheres – Increased safety "e").

When using 3RB23 solid-state overload relays for the protection of EEx e motors, separate monitoring of the control supply voltage is recommended.

The basic safety and health requirements of ATEX guideline 94/9/EG are fulfilled by compliance with

- EN 60947-1
- EN 60947-4-1
- EN 60947-5-1
- EN 60079-14

EU type test certificate for Group II, Category (2) G/D under application. Number on request.

## Accessories

The following accessories are available for the 3RB22/3RB23 solid-state overload relays:

- A sealable cover for the evaluation module
- Box terminal blocks for the current measuring modules size S6 and S10/S12
- Terminal covers for the current measuring modules size S6 and S10/S12
- Push-in lugs for screw (panel) mounting the size S00 to S3 current measuring modules

## *3RB22/3RB23 solid-state overload relays for full motor protection with screw connection or spring-loaded terminals for stand-alone installation, CLASS 5, 10, 20 and 30 adjustable*

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- External power supply 24 ... 240 V AC/DC
- Auxiliary contacts 2 NO +2 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- 4 LEDs for operating and status displays
- TEST function and self-monitoring
- Internal ground fault detection with function expansion module
- Screw connection or spring-loaded terminals for auxiliary, control and sensor circuits
- Input for PTC sensor circuit
- Analog output with function expansion module

| | Size Contactor | Version | Connection type | Order No. | Weight per PU approx. kg |
|---|---|---|---|---|---|
| **Evaluation modules** | | | | | |
| 3RB2. 83-4AA1 | S00 ... S12 | Monostable | Screw connection | **3RB22 83-4AA1** | 0.300 |
| | | | Spring-loaded terminals | **3RB22 83-4AC1** | 0.300 |
| | | Bistable | Screw connection | **3RB23 83-4AA1** | 0.300 |
| | | | Spring-loaded terminals | **3RB23 83-4AC1** | 0.300 |
| 3RB2. 83-4AC1 | | | | | |
| **Function expansion modules** | | | | | |
| | – | **Analog Basic 1 module**[1] Analog output DC 4 ... 20 mA, with overload warning | | **3RB29 85-2AA0** | 0.030 |
| | | **Analog Basic 1 GF module**[1)2)] Analog output DC 4 ... 20 mA, with internal ground fault detection and overload warning | | **3RB29 85-2AA1** | 0.030 |
| | | **Analog Basic 2 GF module**[1)2)] Analog output DC 4 ... 20 mA, with internal ground fault detection and ground fault signaling | | **3RB29 85-2AB1** | 0.030 |
| | | **Basic 1 GF module**[2)] with internal ground fault detection and overload warning | | **3RB29 85-2CA1** | 0.030 |
| | | **Basic 2 GF module**[2)] with internal ground fault detection and ground fault signaling | | **3RB29 85-2CB1** | 0.030 |

1) The analog signal 4 ... 20 mA DC can be used for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

2) The following information on ground fault protection refers to sinusoidal residual currents at 50/60 Hz:
   - With a motor current of between 0.3 and 2 times the set current $I_e$ the unit will trip at a ground fault current equal to 30% of the set current.
   - With a motor current of between 2 and 8 times the set current $I_e$ the unit will trip at a ground fault current equal to 15% of the set current.
   - The trip delay amounts to between 0.5 and 1 second.

*Note: Analog input modules, e. g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22/ 3RB23 relay.*

For accessories, see page 3/35
For description, see pages 3/32-3/33
For technical data, see pages 3/39-3/44.
For dimension drawings, see pages 3/45-3/46.
For schematic diagrams, see page 3/47.

### *Current measuring modules for direct mounting[1] and stand-alone installation[1)2)]*

| | Size Con-tactor[3] | Set current value of the inverse-time delayed overload trip A | | Order No. | Weight per PU approx. kg |
|---|---|---|---|---|---|
| **Size S00/S0[2)4)]** | | | | | |
| 3RB29 06-2.G1 | S00/S0 | 0.3 … 3 | | **3RB29 06-2BG1** | 0.100 |
| | | 2.4 … 25 | | **3RB29 06-2DG1** | 0.150 |
| **Size S2/S3[2)4)]** | | | | | |
| 3RB29 06-2JG1 | S2/S3 | 10 … 100 | | **3RB29 06-2JG1** | 0.350 |
| **Size S6[1)4)]** | | | | | |
| 3RB29 56-2TG2 | S6 | 20 … 200 | with pass through CT's | **3RB29 56-2TG2** | 0.600 |
| | | | with busbar | **3RB29 56-2TH2** | 1.000 |
| **Size S10/S12[1)]** | | | | | |
| 3RB29 66-2WH2 | S10/S12 and size 14 (3TF68/ 3TF69) | 63 … 630 | | **3RB29 66-2WH2** | 1.750 |

1) The current measuring modules with an Order No. ending with **"2"** are designed for direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

2) The current measuring modules with an Order No. ending with **"1"** are designed for stand-alone installation.

3) Observe maximum rated operational current of the devices.

4) The modules with an Order No. with **"G"** in 11th position are equipped with a straight-through transformer.

| | Size Contactor | Version | Order No. | Weight per PU approx. kg |
|---|---|---|---|---|
| **Connecting cables (essential accessory)** | | | | |
| 3RB29 87-2. | S00 ... S12 | For connection between evaluation module and current measuring module | | |
| | | • Length 0.1 m | **3RB29 87-2B** | 0.010 |
| | | • Length 0.5 m | **3RB29 87-2D** | 0.020 |

For description, see pages 3/36-3/37.
For technical data, see pages 3/39-3/44.
For dimension drawings, see pages 3/45-3/46.
For schematic diagrams, see page 3/47.

## Design

### Device concept

The 3RB22/3RB23 solid-state overload relays are based on a modular device concept. Each device always comprises an evaluation module, which is independent of the motor current, and a current measuring module, which is dependent on the motor current. The two modules are electrically interconnected by a connection cable through the system interface.

The basic functionality of the evaluation module can be optionally expanded with corresponding function expansion modules. The function expansion modules are integrated in the evaluation module for this purpose through a simple plug connection.

### Mounting options

Current measuring modules

The current measuring modules size S00/S0 and S2/S3 are designed for stand-alone installation. By contrast, the current measuring modules size S6 and S10/S12 are suitable for stand-alone installation or direct mounting.

Evaluation modules

The evaluation modules can be mounted either on the current measuring module (only sizes S00/S0 and S2/S3) or separately.

### Connection technique

Main circuit (current measuring module)

For sizes S00/S0, S2/S3 and S6, the main circuit can also be connected by the straight-through transformer method. In this case, the cables of the main circuit are routed directly through the feed-through openings of the relay to the contactor terminals.

For sizes S6 and S10/S12, the main circuit can be connected with the help of the Busbar. In conjunction with the corresponding box terminals, screw terminals are also available.

Auxiliary circuit (evaluation module)

Connection of the auxiliary circuit (removable terminal block) is possible with either screw terminals or spring-loaded terminals.

### Overload relays in contactor assemblies for Wye-Delta starting

When overload relays are used in combination with contactor assemblies for Wye-Delta starting it must be noted that only 0.58 times the motor current flows through the line contactor. An overload relay mounted onto the line contactor must be set to 0.58 times the motor current.

When 3RB22/3RB23 solid-state overload relays are used in combination with contactor assemblies for Wye-Delta starting, the function expansion modules for internal ground-fault detection must not be used.

### Operation with frequency converter

The 3RB22/3RB23 solid-state overload relays are suitable for frequencies of 50/60 Hz and the associated harmonics. This permits the 3RB22/3RB23 overload relays to be used on the incoming side of the frequency converter.

If motor protection is required on the outgoing side of the frequency converter, the 3RN thermistor motor protection devices or the 3RU11 thermal overload relays are available for this purpose.

## Function

### Basic functions

The 3RB22/3RB23 solid-state overload relays are designed for:

- Inverse-time delayed protection of loads from overloading
- Inverse-time delayed protection of loads from phase unbalance
- Inverse-time delayed protection of loads from phase failure
- Temperature-dependent protection of loads by connecting a PTC sensor circuit
- Protection of loads from high-resistance short-circuits (internal ground-fault detection; detection of fault currents > 30 % of the set current $I_e$)
- Output of an overload warning
- Output of an analog signal 4 to 20 mA DC as image of the flowing motor current

The basic functions of the evaluation modules in conjunction with function expansion modules are listed in the following table:

| Evaluation module | Function expansion module | Basic functions |
|---|---|---|
| 3RB22 83-4AA1<br>3RB22 83-4AC1<br>3RB23 83-4AA1<br>3RB23 83-4AC1 | None | Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning |
| | 3RB29 85-2CA1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning |
| | 3RB29 85-2CB1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground fault signal |
| | 3RB29 85-2AA0 | Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning, analog output |
| | 3RB29 85-2AA1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning, analog output |
| | 3RB29 85-2AB1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground fault signal, analog output |

### Control circuit

The 3RB22/3RB23 solid-state overload relays require an external power supply (24–240 V AC/DC), i.e. an additional supply voltage is necessary.

### Short-circuit protection

Fuses or motor starter protectors must be used for short-circuit protection. For assignments of the corresponding short-circuit protection devices to the 3RB22/3RB23 solid-state overload relays with/without contactor see Technical Specifications and Selection and Ordering Data.

### Trip classes

The 3RB22/3RB23 solid-state overload relays are suitable for normal and heavy starting. The required trip class (CLASS 5, 10, 20 or 30) can be adjusted by means of a rotary knob depending on the current starting condition.

For details of the trip classes see Characteristic Curves.

### Phase failure protection

The 3RB22/3RB23 solid-state overload relays are fitted with phase failure protection (see Characteristic Curves) in order to minimize temperature rises of the load during single-phase operation.

### Setting

The 3RB22/3RB23 solid-state overload relays are set to the motor rated current by means of two rotary knobs.

- The upper rotary knob (CLASS/$I_{emax}$) is divided into 4 ranges: 1 A, 10 A, 100 A and 1000 A. The zone must be selected which corresponds to the rated motor current and the current measuring module to be used with it. With the range selected the required trip class (CLASS 5, 10, 20 or 30) can be determined.
- The lower rotary knob with percent scale (10 % ... 100 %) is then used to set the rated motor current in percent of the range selected with the upper rotary button.

Example

- Rating of induction motor = 45 kW (50 Hz, 400 V AC)
- Rated motor current = 80 A
- Required trip class = CLASS 20
- Selected transformer: 10 to 100 A

Solution

- Step 1: Use the upper rotary knob (CLASS) to select the 100 A range
- Step 2: Within the 100 A range set the trip class CLASS 20
- Step 3: Set the lower rotary knob to 80 % (= 0.8) of 100 A × 0.8 = 80 A.

If the current which is set on the evaluation module does not correspond to the current range of the connected current transformer, an error will result.

### Manual and automatic reset

In the case of the 3RB22/3RB23 solid-state overload relays, a slide switch can be used to choose between automatic and manual resetting.

If manual reset is set, a reset can be carried out directly on the device after a trip by pressing the blue TEST/RESET button. A remote RESET can be carried out electrically by jumpering the terminals Y1 and Y2.

If the slide switch is set to automatic RESET, the relay is reset automatically.

The time between tripping and resetting is determined by the recovery time.

### Recovery time

With the 3RB22/3RB23 solid-state overload relays the recovery time after inverse-time delayed tripping is approx. 3 minutes regardless of the selected reset mode. The recovery time allows the load to cool down.

However, in the event of temperature-dependent tripping by means of a connected PTC thermistor sensor circuit, the device can only be manually or automatically reset once the winding temperature at the installation location of the PTC thermistor has fallen 5 Kelvin below its response temperature.

After a ground fault trip the 3RB22/3RB23 solid-state overload relay trips can be reset immediately without a recovery time.

### TEST function

The combined TEST/RESET button can be used to check whether the relay is working correctly. The test can be aborted at any time by letting go of the TEST/RESET button.

LEDs, the device configuration (this depends on which expansion module is plugged in) and the device hardware are tested while the button is kept pressed for 6 seconds. Simultaneously and for another 18 seconds a direct current proportional in size to the maximum phase of the main current is fed in at the terminals I(+) and I(-). By comparing the analog signal, which is to be measured, with the main current, the accuracy of the current measurement can be determined. In this case 4 mA corresponds to 0 % and 20 mA to 125 % of the set current. After 24 seconds the auxiliary contacts are switched and the feeder switch off as the result, bringing the test to an end.

After a test trip a faultless relay is reset by pressing the TEST/RESET button. If a hardware fault is detected, the device trips and cannot be reset.

### Self-monitoring

The 3RB22/3RB23 solid-state overload relays have a self-monitoring feature, i.e. the devices constantly monitor their own basic functions and trip if an internal fault is detected.

### Display of the operating status

The particular operating status of the 3RB22/3RB23 solid-state overload relays is displayed by means of four LEDs:

- Green "Ready" LED: A continuous green light signals that the overload relay is ready for operation. The 3RB22/3RB23 overload relays are not ready (LED "OFF") if there is no control supply voltage or if the function test was negative.
- Red "Ground fault" LED: A continuous red light signals a ground fault.
- Red "Thermistor" LED: A continuous red light signals a temperature-dependent trip.
- Red "Overload" LED: A continuous red light signals an inverse-time delayed trip; a flickering red light signals an imminent inverse-time delayed trip (overload warning).

### Auxiliary contacts

The 3RB22/3RB23 solid-state overload relays have two outputs, each with one NO contact and one NC contact. Their basic assignment/function may be influenced by function expansion modules.

The 3RB22 and 3RB23 differ with respect to the tripping characteristics of their auxiliary contacts – monostable or bistable:

The monostable 3RB22 solid-state overload relays will enter the "tripped" state if the control supply voltage fails (> 200 ms), and return to the original state they were in before the control supply voltage failed when the voltage returns. These devices are therefore especially suited for plants in which the control voltage is not strictly monitored.

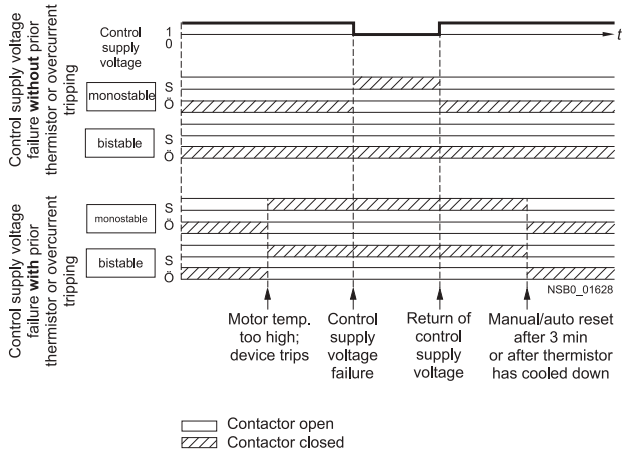
The bistable 3RB23 overload relays do not change their "tripped" or "not tripped" status if the control voltage fails. The auxiliary contacts only switch over in the event of an overload and if the supply voltage is present. These devices are therefore especially suited for plants in which the control voltage is monitored separately.

Response if the control supply voltage fails

If the control supply voltage fails for more than 0.2 s, the output relays respond differently depending on the version: Monostable or bistable.

| Response of the output relays in the event of | Monostable 3RB22 | Bistable 3RB23 |
|---|---|---|
| Failure of the control supply voltage | The device trips | No change of the switching status of the auxiliary contacts |
| Return of the control supply voltage without previous tripping | The device resets | No change of the switching status of the auxiliary contacts |
| Return of the control supply voltage after previous tripping | The device remains tripped<br>Reset:<br>• For overload tripping, after 3 minutes<br>• For thermistor tripping, after the temperature has fallen 5 K below the response temperature<br>• For ground-fault tripping, immediately | The device remains tripped<br>Reset:<br>• For overload tripping, after 3 minutes<br>• For thermistor tripping, after the temperature has fallen 5 K below the response temperature<br>• For ground-fault tripping, immediately |

Monostable and bistable responses of the output relays

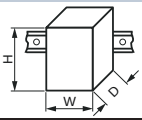


## Technical specifications

The following technical information is intended to provide an initial overview of the various types of device and functions.

Detailed information, see

- Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297
- or specific information on a particular article number via the product data sheet, http://support.automation.siemens.com/WW/view/en/20357046/133200

| **Type – Overload relay: evaluation modules** |  | | **3RB2283-4A.1** | **3RB2383-4A.1** |
|---|---|---|---|---|
| Size contactor | | | S00 ... S10/S12 | |
| Dimensions of evaluation modules (W x H x D) | | mm | 45 x 111 x 95 | |
| **General data** | | | | |
| **Trips in the event of** | | | Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (with corresponding function expansion module) and activation of the thermistor motor protection (with closed PTC sensor circuit) | |
| **Trip class** acc. to IEC 60947-4-1 | | CLASS | 5, 10, 20 and 30 adjustable | |
| **Phase failure sensitivity** | | | Yes | |
| **Overload warning** | | | Yes, from 1.125 x $I_e$ for symmetrical loads and from 0.85 x $I_e$ for unsymmetrical loads | |
| **Reset and recovery** | | | | |
| • Reset options after tripping | | | Manual, automatic and remote RESET | |
| • Recovery time | | | | |
| - For automatic RESET | | min. | - for tripping due to overcurrent: 3 (stored permanently)<br>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature<br>- for tripping due to a ground fault: no automatic RESET | |
| - For manual RESET | | min. | - for tripping due to overcurrent: 3 (stored permanently)<br>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature<br>- for tripping due to a ground fault: Immediately | |
| - For remote RESET | | min. | - for tripping due to overcurrent: 3 (stored permanently)<br>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature<br>- for tripping due to a ground fault: Immediately | |
| **Features** | | | | |
| • Display of operating state on device | | | Yes, with four LEDs:<br>- green LED "Ready"<br>- red LED "Ground Fault"<br>- red LED "Thermistor"<br>- red LED "Overload" | |
| • TEST function | | | Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring | |
| • RESET button | | | Yes, with the TEST/RESET button | |
| • STOP button | | | No | |
| **Protection and operation of explosion-proof motors** | | | | |
| EC type test certificate number according to directive 94/9/EC (ATEX) | | | PTB 05 ATEX 3022 Ex II (2) GD, see http://support.automation.siemens.com/WW/view/en/23115758 | -- |
| **Ambient temperatures** | | | | |
| • Storage/transport | | °C | -40 ... +80 | |
| • Operation | | °C | -25 ... +60 | |
| • Temperature compensation | | °C | +60 | |
| • Permissible rated current | | | | |
| - Temperature inside control cabinet 60 °C | | % | 100 | |
| - Temperature inside control cabinet 70 °C | | % | On request | |
| **Degree of protection** acc. to IEC 60529 | | | IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover. | |
| **Touch protection** acc. to IEC 61140 | | | Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover. | |
| **Shock resistance with sine** acc. to IEC 60068-2-27 | | *g*/ms | 15/11 | |
| **Electromagnetic compatibility (EMC) – Interference immunity** | | | | |
| • Conductor-related interference | | | | |
| - Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3) | | kV | 2 (power ports), 1 (signal port) | |
| - Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3) | | kV | 2 (line to earth), 1 (line to line) | |
| • Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3) | | kV | 8 (air discharge), 6 (contact discharge) | |
| • Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3) | | V/m | 10 | |
| **Electromagnetic compatibility (EMC) – emitted interference** | | | Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22) | |

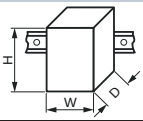
| Type – Overload relay of current measuring module | | 3RB29 | 3RB29 | 3RB29 | 3RB29 |
|---|---|---|---|---|---|
| Size | | S00/S0 | S2/S3 | S6 | S10/S12 |
| Width | | 45 mm | 55 mm | 120 mm | 145 mm |
| **Main circuit** | | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 1000 | | 1000 | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | | 8 | |
| **Rated operational voltage $U_e$** | V | 690 | | 1000 | |
| **Type of current** | | | | | |
| • Direct current | | No | | | |
| • Alternating current | | Yes, 50/60 Hz ± 5 % (other frequencies on request) | | | |
| **Set current** | A | 0.3 ... 3;<br>2.4 ... 25 | 10 ... 100 | 20 ... 200 | 63 ... 630 |
| **Power loss per unit (max.)** | W | 0.5 | | | |
| **Short-circuit protection** | | | | | |
| • With fuse without contactor | | See Selection and Ordering Data | | | |
| • With fuse and contactor | | See Technical Specifications (short-circuit protection with fuses for motor feeders) | | | |
| **Safe isolation between main and auxiliary conducting path** according to IEC 60947-1 | V | 690[1] | | | |
| **Connection for main circuit** | | | | | |
| **Electrical connection version** | | Screw terminals with box terminal | | | |
| **Screw terminal** | | | | | |
| • Terminal screw | | -- | | 4 mm Allen screw | 5 mm Allen screw |
| • Tightening torque | | -- | | 10 ... 12 | 20 ... 22 |
| • Conductor cross-sections (min./max.), 1 or 2 conductors | | | | | |
| - Solid | $mm^2$ | -- | | -- | -- |
| - Finely stranded without end sleeve | $mm^2$ | -- | | With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)<br>With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120) | 2 × (50 ... 185), front clamping point only: 1 × (70 ... 240)<br>rear clamping point only: 1 × (120 ... 185) |
| - Finely stranded with end sleeve | $mm^2$ | -- | | With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)<br>With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120) | 2 × (50 ... 185), front clamping point only: 1 × (70 ... 240)<br>rear clamping point only: 1 × (120 ... 185) |
| - Stranded | $mm^2$ | -- | | With 3RT19 55-4G box terminal: 2 × (max. 70), 1 × (16 ... 70)<br>With 3RT19 56-4G box terminal: 2 × (max. 120), 1 × (16 ... 120) | 2 × (70 ... 240), front clamping point only: 1 × (95 ... 300)<br>rear clamping point only: 1 × (120 ... 240) |
| - AWG conductors, solid or stranded | AWG | -- | | With 3RT19 55-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0)<br>With 3RT19 56-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil) | 2 × (2/0 ... 500 kcmil), front clamping point only: 1 × (3/0 ... 600 kcmil)<br>rear clamping point only: 1 × (250 kcmil ... 500 kcmil) |
| - Ribbon cable conductors (number x width x circumference) | mm | -- | | With 3RT19 55-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8)<br>With 3RT19 56-4G box terminal: 2 × (10 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 10 × 15.5 × 0.8) | 2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5) |
| **Busbar connections** | | | | | |
| • Terminal screw | | -- | | M8 × 25 | M10 × 30 |
| • Tightening torque | Nm | -- | | 10 ... 14 | 14 ... 24 |
| • Conductor cross-section (min./max.) | | -- | | | |
| - Solid with cable lug | $mm^2$ | -- | | 16 ... 95[2] | 50 ... 240[3] |
| - Stranded with cable lug | $mm^2$ | -- | | 25 ... 120[2] | 70 ... 240[3] |
| - AWG connections, solid or stranded, with cable lug | AWG | -- | | 4 ... 250 kcmil | 2/0 ... 500 kcmil |
| - With connecting bar (max. width) | mm | -- | | 15 | 25 |
| **Straight-through transformers** | | | | | |
| • Diameter of opening | mm | 7.5 | 14 | 25 | -- |
| • Conductor cross-section (max.) | | | | | |
| - NYY | $mm^2$ | 4) | 4) | 120 | -- |
| - H07RN-F | $mm^2$ | 4) | 4) | 70 | -- |

1) For grounded networks, otherwise 600 V.

2) When connecting cable lugs according to DIN 46235, use the 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 $mm^2$ to ensure phase spacing.

3) When connecting cable lugs according to DIN 46234 for conductor cross-sections from 240 $mm^2$ as well as DIN 46235 for conductor cross-sections from 185 $mm^2$, use the 3RT19 56-4EA1 terminal cover to ensure phase spacing.

4) On request.

| | | | |
|---|---|---|---|
| **Type – Overload relay: evaluation modules** |  | **3RB2283-4A.1** | **3RB2383-4A.1** |
| Size contactor | | S00 ... S10/S12 | |
| Dimensions of evaluation modules (W x H x D) | mm | 45 x 111 x 95 | |
| **General data (continued)** | | | |
| **Resistance to extreme climates – air humidity** | % | 100 | |
| **Dimensions** | | "Dimensional drawings", see<br>• Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297<br>• Product data sheet, http://support.automation.siemens.com/WW/view/en/20357046/133200 | |
| **Installation altitude above sea level** | m | Up to 2 000 | |
| **Mounting position** | | Any | |
| **Type of mounting** | | | |
| • Evaluation modules | | Stand-alone installation | |
| • Current measuring module | Size | S00 to S3: Stand-alone installation,<br>S6 and S10/S12: stand-alone installation or mounting onto contactors | |

| | | |
|---|---|---|
| **Type – Overload relay: evaluation modules** | | **3RB2283-4A.1, 3RB2383-4A.1** |
| Size contactor | | S00 ... S10/S12 |
| **Auxiliary circuit** | | |
| **Number of NO contacts** | | 2 |
| **Number of NC contacts** | | 2 |
| **Number of CO contacts** | | -- |
| **Auxiliary contacts – assignment** | | • Alternative 1<br>- 1 NO for the signal "tripped by overload and/or thermistor"<br>- 1 NC for disconnecting the contactor<br>- 1 NO for the signal "tripped by ground fault"<br>- 1 NC for disconnecting the contactor<br>or[1)]<br>• Alternative 2<br>- 1 NO for the signal "tripped by overload and/or thermistor and/or ground fault"<br>- 1 NC for disconnecting the contactor<br>- 1 NO for overload warning<br>- 1 NC for disconnecting the contactor |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Auxiliary contacts – contact rating** | | |
| • NC contact with alternating current AC-14/AC-15, rated operational current $I_e$ at $U_e$ | | |
| - 24 V | A | 6 |
| - 120 V | A | 6 |
| - 125 V | A | 6 |
| - 250 V | A | 3 |
| • NO contact with alternating current AC-14/AC-15, rated operational current $I_e$ at $U_e$ | | |
| - 24 V | A | 6 |
| - 120 V | A | 6 |
| - 125 V | A | 6 |
| - 250 V | A | 3 |
| • NC contact, NO contact with direct current DC-13, rated operational current $I_e$ at $U_e$ | | |
| - 24 V | A | 2 |
| - 60 V | A | 0.55 |
| - 110 V | A | 0.3 |
| - 125 V | A | 0.3 |
| - 250 V | A | 0.2 |
| • Conventional thermal current $I_{th}$ | A | 5 |
| • Contact reliability (suitability for PLC control; 17 V, 5 mA) | | Yes |
| **Short-circuit protection** | | |
| • With fuse, operational class gG | A | 6 |
| • With miniature circuit breaker, C characteristic | A | 1.6 |
| **Protective separation between auxiliary current paths** acc. to IEC 60947-1 | V | 300 |
| **CSA, UL, UR rated data** | | |
| **Auxiliary circuit – switching capacity** | | B300, R300 |

[1)] The assignment of auxiliary contacts may be influenced by function expansion modules.

| | | |
|---|---|---|
| **Type – Overload relay: evaluation modules** | | **3RB2283-4A.1, 3RB2383-4A.1** |
| Size contactor | | S00 ... S10/S12 |
| **Control circuit** | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Rated control supply voltage $U_S$** | | |
| • 50/60 Hz AC | V | 24 ... 240 |
| • DC | V | 24 ... 240 |
| **Operating range** | | |
| • 50/60 Hz AC | | $0.85 \times U_{s\,min} \le U_s \le 1.1 \times U_{s\,max}$ |
| • DC | | $0.85 \times U_{s\,min} \le U_s \le 1.1 \times U_{s\,max}$ |
| **Rated power** | | |
| • 50/60 Hz AC | W | 0.5 |
| • DC | W | 0.5 |
| **Mains buffering time** | ms | 200 |
| **Sensor circuit** | | |
| **Thermistor motor protection (PTC thermistor sensor)** | | |
| • Summation cold resistance | kΩ | ≤ 1.5 |
| • Response value | kΩ | 3.4 ... 3.8 |
| • Return value | kΩ | 1.5 ... 1.65 |
| **Ground-fault detection** | | The information refers to sinusoidal residual currents at 50/60 Hz. |
| • Tripping value $I_\Delta$ [1)]<br>- For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$<br>- For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$ | | <br>$> 0.3 \times I_e$<br>$> 0.15 \times I_{motor}$ |
| • Response time $t_{trip}$ | ms | 500 ... 1 000 |
| **Analog output** [1)2)] | | |
| **Rated values** | | |
| • Output signal | mA | 4 ... 20 |
| • Measuring range | | 0 ... $1.25 \times I_e$<br>4 mA corresponds to $0 \times I_e$<br>16.8 mA corresponds to $1.0 \times I_e$<br>20 mA corresponds to $1.25 \times I_e$ |
| • Load, max. | Ω | 100 |
| **Conductor cross-sections for the auxiliary, control and sensor circuit as well as the analog output** | | |
| **Connection type** | | **Screw terminals** |
| **Terminal screw** | | M3, Pozidriv size 2 |
| **Operating devices** | mm | 3.0 x 0.5 |
| **Prescribed tightening torque** | Nm | 0.8 ... 1.2 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | |
| • Solid or stranded | $mm^2$ | 1 × (0.5 ... 4)[3)], 2 × (0.5 ... 2.5)[3)] |
| • Finely stranded without end sleeve | $mm^2$ | -- |
| • Finely stranded with end sleeve (DIN 46228-1) | $mm^2$ | 1 × (0.5 ... 2.5)[3)], 2 × (0.5 ... 1.5)[3)] |
| • AWG cables, solid or stranded | AWG | 2 × (20 ... 14) |
| **Connection type** | | **Spring-type terminals** |
| **Operating devices** | mm | 3.0 x 0.5 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | |
| • Solid or stranded | $mm^2$ | 2 × (0.25 ... 1.5) |
| • Finely stranded without end sleeve | $mm^2$ | -- |
| • Finely stranded with end sleeve (DIN 46228-1) | $mm^2$ | 2 × (0.25 ... 1.5) |
| • AWG cables, solid or stranded | AWG | 2 × (24 ... 16) |

1) For the 3RB22 and 3RB23 overload relays in combination with a corresponding function expansion module.

2) Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22 and 3RB23 relay.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

### *Short-circuit protection with fuses for motor feeders*

For short-circuit currents up to 50 kA at 400 to 690 V

| Overload relays | Contactor | CLASS | | | | | | | | | 690 V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5 and 10 | | | 20 | | | 30 | | | Fuse links[1] | |
| | | | | | | | | | | | LV HRC / DIAZED / NEOZED | Type 3NA / Type 5SB / Type 5SE |
| | | | | | | | | | | | gL/gG operational class | |
| | | Rated operational current $I_e$ AC-3 in A at | | | | | | | | | Type of coordination[2] | |
| Setting range | Type | 400 V | 500 V | 690 V | 400 V | 500 V | 690 V | 400 V | 500 V | 690 V | 1 | 2 |
| **Size S00/S0** | | | | | | | | | | | | |
| 0.3 ... 3 A | 3RT20 15 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 35 | 20 |
| | 3RT20 16 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 35 | 20 |
| 2.4 ... 25 A | 3RT20 15 | 7 | 5 | 4 | 7 | 5 | 4 | 7 | 5 | 4 | 35 | 20 |
| | 3RT20 16 | 9 | 6.5 | 5.2 | 9 | 6.5 | 5.2 | 9 | 6.5 | 5.2 | 35 | 20 |
| | 3RT20 17 | 12 | 9 | 6.3 | 10 | 9 | 6.3 | 9 | 9 | 6.3 | 35 | 20 |
| | 3RT20 23 | 9 | 6.5 | 5.2 | 9 | 6.5 | 5.2 | -- | -- | -- | 63 | 25 |
| | 3RT20 24 | 12 | 12 | 9 | 12 | 12 | 9 | 12 | 12 | 9 | 63 | 25 |
| | 3RT20 25 | 17 | 17 | 13 | 16 | 16 | 13 | 14 | 14 | 13 | 63 | 25 |
| | 3RT20 26 | 25 | 18 | 13 | 16 | 16 | 13 | 14 | 14 | 13 | 100 | 35 |
| **Size S2/S3** | | | | | | | | | | | | |
| On request | 3RT20 35 | On request | | | | | | | | | | |
| | 3RT20 36 | On request | | | | | | | | | | |
| | 3RT20 45 | On request | | | | | | | | | | |
| | 3RT20 46 | On request | | | | | | | | | | |
| | 3RT20 47 | On request | | | | | | | | | | |
| **Size S6** | | | | | | | | | | | | |
| 20 ... 200 A | 3RT10 54 | 115 | 115 | 115 | 81.7 | 81.7 | 81.7 | 69 | 69 | 69 | 355 | 315 |
| | 3RT10 55 | 150 | 150 | 150 | 107 | 107 | 107 | 90 | 90 | 90 | 355 | 315 |
| | 3RT10 56 | 185 | 185 | 170 | 131 | 131 | 131 | 111 | 111 | 111 | 355 | 315 |
| **Size S10/S12** | | | | | | | | | | | | |
| 160 ... 630 A | 3RT10 64 | 225 | 225 | 225 | 160 | 160 | 160 | 135 | 135 | 135 | 500 | 400 |
| | 3RT10 65 | 265 | 265 | 265 | 188 | 188 | 188 | 159 | 159 | 159 | 500 | 400 |
| | 3RT10 66 | 300 | 300 | 280 | 213 | 213 | 213 | 180 | 180 | 180 | 500 | 400 |
| | 3RT10 75 | 400 | 400 | 400 | 284 | 284 | 284 | 240 | 240 | 240 | 630 | 400 |
| | 3RT10 76 | 500 | 500 | 450 | 355 | 355 | 355 | 300 | 300 | 300 | 630 | 500 |
| | 3RT12 64 | 225 | 225 | 225 | 225 | 225 | 225 | 173 | 173 | 173 | 500 | 500 |
| | 3RT12 65 | 265 | 265 | 265 | 265 | 265 | 265 | 204 | 204 | 204 | 500 | 500 |
| | 3RT12 66 | 300 | 300 | 300 | 300 | 300 | 300 | 231 | 231 | 231 | 500 | 500 |
| | 3RT12 75 | 400 | 400 | 400 | 400 | 400 | 400 | 316 | 316 | 316 | 800 | 800 |
| | 3RT12 76 | 500 | 500 | 500 | 500 | 500 | 500 | 385 | 385 | 385 | 800 | 800 |
| | 3TF68[3] | 630 | 630 | 630 | 440 | 440 | 440 | 376 | 376 | 376 | 800 | 500[4] |
| | 3TF69[3] | 630 | 630 | 630 | 572 | 572 | 572 | 500 | 500 | 500 | 800 | 630[4] |

1) Please observe operational voltage.

2) Coordination and short-circuit equipment according to EN 60947-4-1:
**Type of coordination 1:** the contactor or starter must not endanger persons or the installation in the event of a short-circuit. They do not need to be suitable for further operation without repair and the renewal of parts.
**Type of coordination 2:** the contactor or starter must not endanger persons or the installation in the event of a short-circuit. They must be suitable for further operation. There is a risk of contact welding.

3) Contactor cannot be mounted.

4) Please ensure that the maximum AC-3 operational current has sufficient safety clearance from the rated current of the fuses.

## Characteristic curves

The tripping characteristics show the relationship between the tripping time and tripping current as multiples of the set current $I_e$ and are given for symmetrical three-pole and two-pole loads from the cold state.

The smallest current used for tripping is called the minimum tripping current. According to IEC 60947-4-1, this current must be within specified limits. The limits of the minimum tripping current for the 3RB22/3RB23 solid-state overload relays for symmetrical three-pole loads are between 105 % and 120 % of the set current.

The tripping characteristic starts with the minimum tripping current and continues with higher tripping currents based on the characteristics of the so-called trip classes (CLASS 10, CLASS 20 etc.). The trip classes describe time intervals within which the overload relays have to trip with 7.2 times the set current $I_e$ from the cold state for symmetrical three-pole loads.

The tripping times according to IEC 60947-4-1, tolerance band E, are as follows for:

| Trip class | Tripping time |
|---|---|
| CLASS 5 | 3 … 5 s |
| CLASS 10 | 5 … 10 s |
| CLASS 20 | 10 … 20 s |
| CLASS 30 | 20 … 30 s |

The tripping characteristic for a three-pole overload relay from the cold state (see illustration 1) only apply if all three phases are simultaneously loaded with the same current. In the event of a phase failure or a current unbalance of more than 40 %, the 3RB22/3RB23 solid-state overload relays switch off the contactor more quickly in order to minimize heating of the load in accordance with the tripping characteristic for two-pole loads from the cold state (see illustration 2).

Compared with a cold load, a load at operating temperature obviously has a lower temperature reserve. The tripping time of the 3RB22/3RB23 solid-state overload relays are reduced therefore to about 30 % when loaded with the set current $I_e$ for an extended period.

Tripping characteristics for 3-pole loads

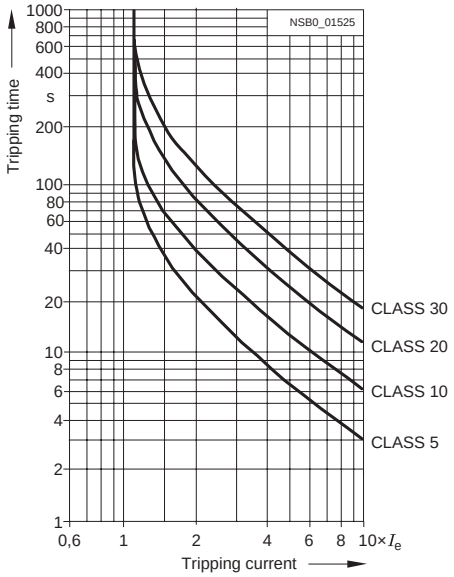



Illustration 1

Tripping characteristics for 2-pole loads

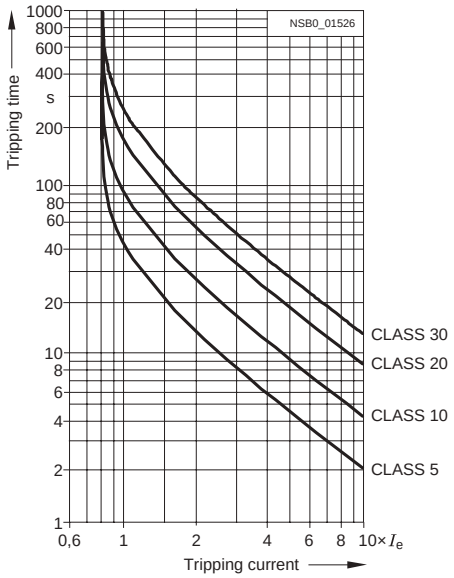
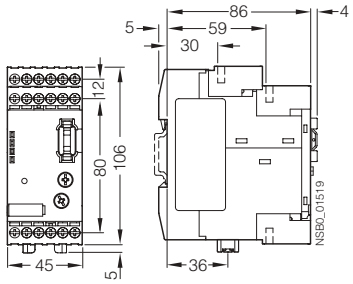



Illustration 2

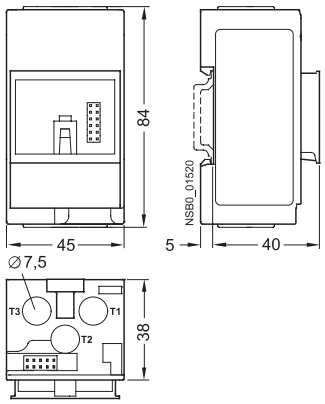
The above illustrations are schematic representations of characteristic curves. The characteristic curves of the individual 3RB22/3RB23 solid-state overload relays can be requested from Technical Assistance at the following e-mail address:

Technical-assistance@siemens.com

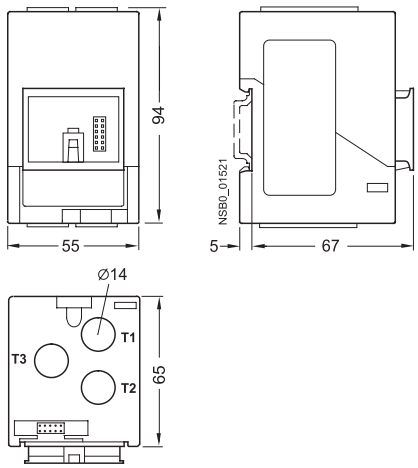
## Dimensional drawings



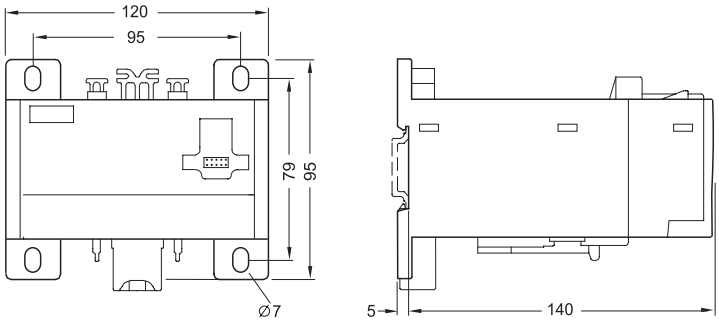

3RB22 83-4, 3RB23 83-4 evaluation module

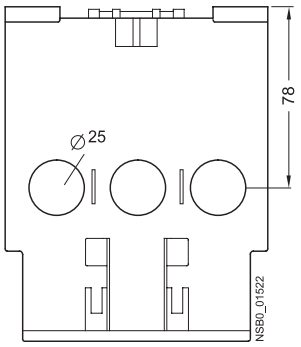



3RB29 06-2BG1, 3RB29 06-2DG1 current measuring module

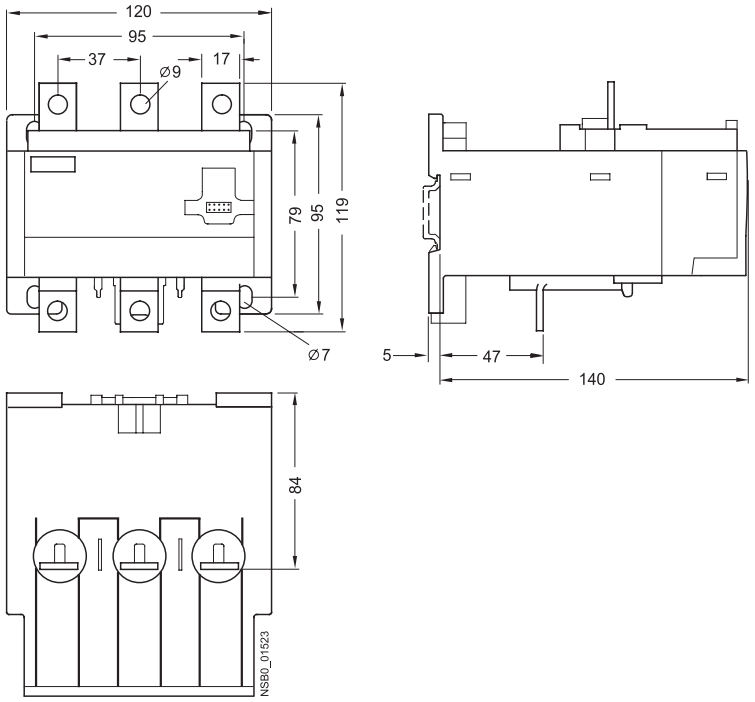



3RB29 06-2JG1 current measuring module

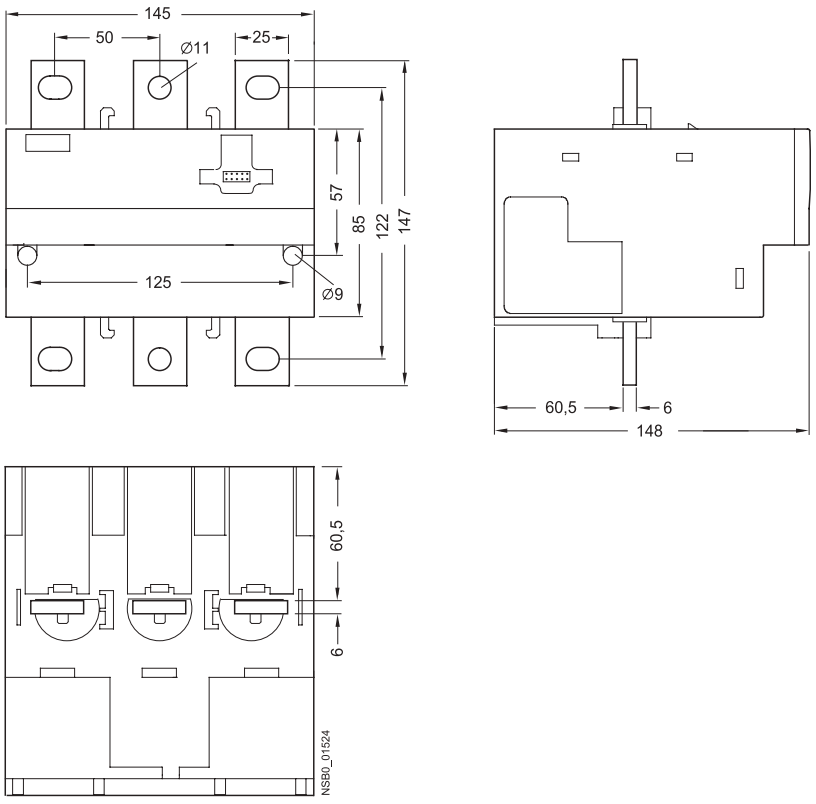



3RB29 56-2TG2 current measuring module




3RB29 56-2TH2 current measuring module

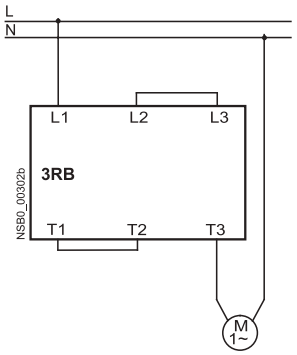



3RB29 66-2WH2 current measuring module

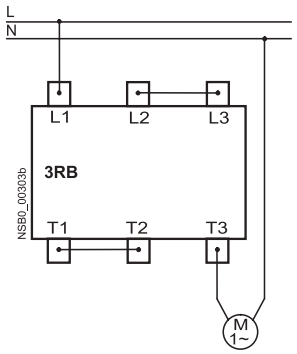
## Schematics

### *Protection of single-phase motors*

(not in conjunction with internal ground-fault detection)

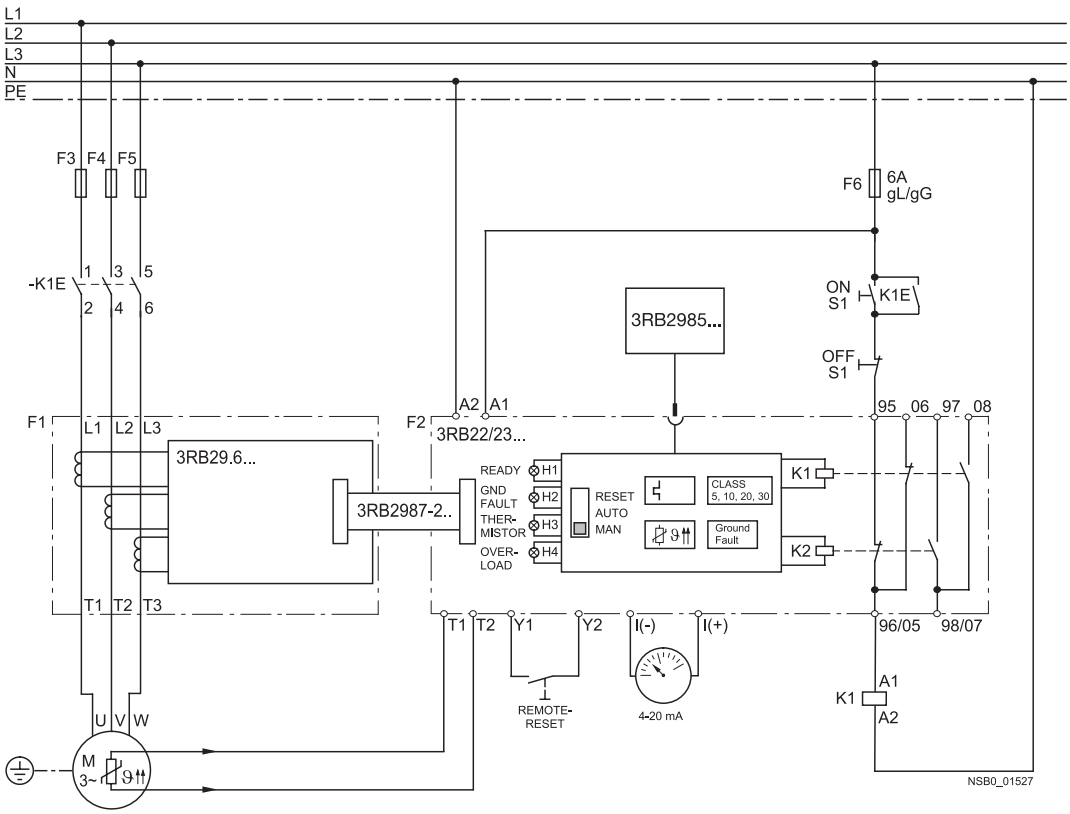



3RB29 06-2.G1, 3RB29 56-2TG2




3RB29 56-2TH2, 3RB29 66-2WH2

### *Schematic representation of a possible application (3-phase)*



Connections

| Evaluation module | Function expansion module | Basic functions | Inputs A1/A2 | T1/T2 | Y1/Y2 |
|---|---|---|---|---|---|
| 3RB22 83-4AA1<br>3RB22 83-4AC1<br>3RB23 83-4AA1<br>3RB23 83-4AC1 | None | Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning | Power supply 24 ... 240 V AC/DC | Connection for PTC sensor | Electrical remote RESET |
| | 3RB29 85-2CA1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning | Power supply 24 ... 240 V AC/DC | Connection for PTC sensor | Electrical remote RESET |
| | 3RB29 85-2CB1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground fault signal | Power supply 24 ... 240 V AC/DC | Connection for PTC sensor | Electrical remote RESET |
| | 3RB29 85-2AA0 | Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning, analog output | Power supply 24 ... 240 V AC/DC | Connection for PTC sensor | Electrical remote RESET |
| | 3RB29 85-2AA1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning, analog output | Power supply 24 ... 240 V AC/DC | Connection for PTC sensor | Electrical remote RESET |
| | 3RB29 85-2AB1 | Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground fault signal, analog output | Power supply 24 ... 240 V AC/DC | Connection for PTC sensor | Electrical remote RESET |

| Evaluation module | Function expansion module | Outputs I (–) / I (+) | 95/96 NC | 97/98 NO | 05/06 NC | 07/08 NO |
|---|---|---|---|---|---|---|
| 3RB22 83-4AA1<br>3RB22 83-4AC1<br>3RB23 83-4AA1<br>3RB23 83-4AC1 | None | No | Switching off the contactor (inverse-time delayed/temperature-dependent protection) | Signal "tripped" | Overload warning | Overload warning |
| | 3RB29 85-2CA1 | No | Switching off the contactor (inverse-time delayed/temperature-dependent protection + ground fault) | Signal "tripped" | Overload warning | Overload warning |
| | 3RB29 85-2CB1 | No | Switching off the contactor (inverse-time delayed/temperature-dependent protection) | Signal "tripped" | Switching off the contactor (ground fault) | Signal "ground fault trip" |
| | 3RB29 85-2AA0 | Analog signal | Switching off the contactor (inverse-time delayed/temperature-dependent protection) | Signal "tripped" | Overload warning | Overload warning |
| | 3RB29 85-2AA1 | Analog signal | Switching off the contactor (inverse-time delayed/temperature-dependent protection + ground fault) | Signal "tripped" | Overload warning | Overload warning |
| | 3RB29 85-2AB1 | Analog signal | Switching off the contactor (inverse-time delayed/temperature-dependent protection) | Signal "tripped" | Switching off the contactor (ground fault) | Signal "ground fault trip" |

## Overview

### *Overload relays for standard applications*

The following accessories are available for the 3RB2/3RB3 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as single units without a terminal bracket)
- One mechanical RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Box terminal blocks for sizes S6 and S10/S12
- Terminal covers for sizes S2 to S10/S12

### *Overload relays for high-feature applications*

The following accessories are available for the 3RB22/3RB23 solid-state overload relays:

- A sealable cover for the evaluation module
- Box terminal blocks for the current measuring modules size S6 and S10/S12
- Terminal covers for the current measuring modules size S6 and S10/S12
- Push-in lugs for screw mounting the size S00 to S3 current measuring modules

## Selection and ordering data

| | Version | | Size | Order No. | Weight per PU approx. kg |
|---|---|---|---|---|---|
| **Terminal brackets for stand-alone installation** [1) 2)] | | | | | |
| 3RU29.6-3AA01 | For separate mounti ng of the overload relay panel mount or snapped onto 35 mm standard mounting rail, size S3 also for 75 mm standard mounting rail | *Screw terminals* | S00<br>S0<br>S2<br>S3 | **3RU29 16-3AA01**<br>**3RU29 26-3AA01**<br>**3RU29 36-3AA01**<br>**3RU29 46-3AA01** | 0.04<br>0.05<br>0.18<br>0.28 |
| | | *Spring Loaded terminals* | S00<br>S0 | **3RU29 16-3AC01**<br>**3RU29 26-3AC01** | 0.04<br>0.06 |
| **Mechanical RESET** [1) 2)] | | | | | |
| 3RU19 00-1A with pushbutton and extension plunger | **Resetting plungers, holders and formers** | | S00 to S3<br>S6 to S12 | **3RB39 80-0A**<br>**3RU19 00-1A** | 0.030<br>0.038 |
| | **Pushbuttons with extended stroke** (12 mm), IP65, Ø 22 mm | | S3 to S12 | **3SB30 00-0EA11** | 0.021 |
| | **Extension plungers** For compensation of the distance between a pushbutton and the unlatching button of the relay | | S3 to S12 | **3SX1 335** | 0.004 |
| | **Complete mechanical reset assembly** | | S3 to S12 | **3SBES-RESET** | |
| **Cable releases with holder for RESET** [1) 2)] | | | | | |
| 3RU19 00-1. | For holes with Ø 6.5 mm in the mounting plate; max. control panel thickness 8 mm | | | | |
| | • Length 400 mm | | S00 to S2 | **3RB39 80-0B** | 0.060 |
| | • Length 600 mm | | S00 to S2 | **3RB39 80-0C** | 0.073 |
| | • Length 400 mm | | S3 to S12 | **3RU19 00-1B** | 0.063 |
| | • Length 600 mm | | S3 to S12 | **3RU19 00-1C** | 0.073 |

1) Accessories with a prefix of 3RB39 are intended for 3RB20/3RB30 overload relays only.
2) Only for 3RB20/3RB21. The accessories are identical to those of the 3RU1/3RU2 thermal overload relays.

## Accessories



| | Version | Size | Order No. | List Price $ | Pack Units | Weight per PU approx. kg |
|---|---|---|---|---|---|---|
| **Sealable covers** | | | | | | |
| 3RB3984-0 | For covering the setting knobs | | | | | |
| | • For 3RB30/3RB31 | S00 to S3 | **3RB39 84-0** | | 10 units | 0.003 |
| | • For 3RB20/3RB21 | S6 to S12 | **3RB29 84-0** | | 10 units | 0.020 |
| | • For 3RB22 to 3RB24 | – | **3RB29 84-2** | | 10 units | 0.050 |
| **Terminal covers** | | | | | | |
| 3RT19 46-4EA1 | **Covers for cable lugs and rail connection** | | | | | |
| | • Length 100 mm | S6 | **3RT19 56-4EA1** | | | 0.067 |
| | • Length 120 mm | S10/S12 | **3RT19 66-4EA1** | | | 0.124 |
| 3RT19 36-4EA2 The figures show mounting on the contactor | **Covers for box terminals** | | | | | |
| | • Length 20.6 mm[1] | S2 | **3RT29 36-4EA2** | | | 0.016 |
| | • Length 20.8 mm[1] | S3 | **3RT29 46-4EA2** | | | 0.023 |
| | • Length 25 mm | S6 | **3RT19 56-4EA2** | | | 0.028 |
| | • Length 30 mm | S10/S12 | **3RT19 66-4EA2** | | | 0.038 |
| | **Covers for screw connections** between contactor and overload relay, without box terminals (1 unit required per combination) | S6 | **3RT19 56-4EA3** | | | 0.021 |
| | | S10/S12 | **3RT19 66-4EA3** | | | 0.062 |
| **Box terminal blocks** | | | | | | |
| 3RT19 5.-4G | For round and ribbon cables | | | | | |
| | up to 70 mm$^2$ 2/0 AWG | S6[2] | **3RT19 55-4G** | | | 0.237 |
| | up to 120mm$^2$ 4/0 AWG | S6 | **3RT19 56-4G** | | | 0.270 |
| | up to 240mm$^2$ 500 mcm | S10/S12 | **3RT19 66-4G** | | | 0.676 |
| | For conductor cross-sections, see LV 1 T "Technical Specifications" | | | | | |
| **Push-in lugs** | | | | | | |
| 3RP19 03 | For screw fixing of 3RB22/3RB23 overload relays | -- | **3RP19 03** | | 10 units | 0.002 |
| 3RB19 00-0B | For screw mounting of 3RB29 06 current measuring modules (2 units are required per module) | S00 ... S3 | **3RB29 00-0B** | | 10 units | 0.100 |

For more accessories (tools for spring-loaded terminals and labeling plates), see page 3/57.

1) Only for 3RB20/3RB21. The accessories are identical to those of the 3RU11 thermal overload relays.

2) In the scope of supply for 3RT10 54-1 contactors (55 kW).

## Overview

### *Overload relays for standard applications*

The following accessories are available for the 3RB20/3RB21 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as stand-alone installation without a terminal bracket)
- One mechanical remote RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Box terminal blocks for sizes S6 and S10/S12
- Terminal covers for sizes S2 to S10/S12

### *Overload relays for High-Feature applications*

The following accessories are available for the 3RB22/3RB23 solid-state overload relays:

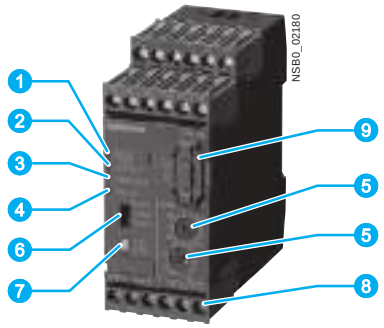
- A sealable cover for the evaluation module
- Box terminal blocks for the current measuring modules size S6 and S10/S12
- Terminal covers for the current measuring modules size S6 and S10/S12

## Technical specifications

### *Terminal brackets for stand-alone installation*

| **Type** | | **3RB29 13-0AA1** | **3RB29 23-0AA1** |
|---|---|---|---|
| **For overload relay** | | **3RB20 16, 3RB21 13** | **3RB20 26, 3RB21 23** |
| **Size** | | **S00** | **S0** |
| **Type of mounting** | | For screw and snap-on mounting onto TH35 standard mounting rail | |
| **Connection for main circuit** | | | |
| **Connection type** | | Screw terminal | |
| **Screw terminal** | | | |
| • Terminal screw | | Pozidriv size 2 | |
| • Tightening torque | Nm | 0.8 ... 1.2 | 2 ... 2.5 |
| • Conductor cross-section (min./max.), 1 or 2 conductors | | | |
| - Solid | $mm^2$ | 1 × (0.5 ... 2.5), Max. 1 × (... 4) | 1 × (1 ... 6), Max. 1 × (... 10) |
| - Finely stranded without end sleeve | $mm^2$ | -- | -- |
| - Finely stranded with end sleeve | $mm^2$ | 1 × (0.5 ... 2.5) | 1 × (1 ... 6) |
| - Stranded | $mm^2$ | 1 × (0.5 ... 2.5), Max. 1 × (... 4) | 1 × (1 ... 6), Max. 1 × (... 10) |
| - AWG conductors, solid or stranded | AWG | 1 × (18 ... 14) | 1 × (14 ... 10) |

## Overview




1. Green LED "DEVICE/IO-Link":
A continuous green light signals that the device is working correctly, a green flickering light signals the communication through IO-Link.
2. Red LED "GND FAULT":
A continuous red light signals an active ground-fault trip.
3. Red LED "THERMISTOR":
A continuous red light signals an active thermistor trip.
4. Red LED "OVERLOAD":
A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).
5. Motor current and trip class setting:
Setting the device to the motor current and to the required trip class dependent on the start-up conditions is easy with the two rotary switches.
6. Selector switch for manual/automatic RESET:
With this switch you can choose between manual and automatic RESET.
7. Test/RESET button:
Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.
8. Connecting terminals (removable terminal block):
The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw connection and alternatively with spring-type connection.
9. Plug-in point for operator panel:
enables connection of the 3RA69 35-0A operator panel.

SIRIUS 3RB24 evaluation module

The modular electronic overload relay 3RB24, which is powered via IO-Link (with monostable auxiliary contacts) up to 630 A (up to 820 A possible with a series transformer) have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",) against excessive temperature rises due to overload, phase unbalance or phase failure. It comprises an evaluation unit, a current measuring module and a connecting cable. The evaluation module 3RB24 also offers an motor starter function: The contactors, which are connected via the auxiliary contacts, can also be actuated for operation via IO-Link. In this way, direct, reversing and star-delta starters up to 630 A (or 830 A) can be connected to the controller wirelessly via the IO-Link controller.

An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current.

This current rise is detected by means of the current measuring module (see page 3/55) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting $I_e$ and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support → "Characteristic Curves"). The "tripped" status is signaled by means of a continuously illuminated red "OVERLOAD" LED and also reported as a group fault via IO-Link.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. This warning can also be reported to the higher-level PLC via IO-Link at the 3RB24 overload relay.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB24 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by connection with broken-wire interlock of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices switch off the contactor, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuously illuminated "THERMISTOR" LED and also reported as a group fault via IO-Link.

To the loads against incomplete ground faults due to damage to the insulation, humidity, condensation, etc., to protect the electronic overload relay 3RB24 offer the possibility of internal ground-fault detection (for details see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",, not possible in conjunction with contactor assembly for wye-delta starting). In the event of a ground fault, the 3RB24 relays trip instantaneously.

The "tripped" status is signaled by means of a flashing red LED "Ground Fault" and reported at the overload relay 3RB24 as a group fault via IO-Link.

The reset after overload, phase unbalance, phase failure, thermistor or ground-fault tripping is performed manually by key on site, via IO-Link or by electrical remote RESET or automatically after the cooling time (motor model) or for thermistor protection after sufficient cooling. Power cuts in devices due to function monitoring (broken wire or short circuit on the thermistor) can only be reset on-site ("Function" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",). In conjunction with a function expansion module, the motor current measured by the microprocessor can be output in the form of an analog signal DC 4 to 20 mA for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

The current values can be transmitted to the higher-level controller via IO-Link.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with all important worldwide standards and approvals.

***Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" in accordance with ATEX Directive 94/9/EC***

The electronic overload relay 3RB24 (monostable) are suitable for the overload protection of explosion-proof motors of types of protection EEx e and EEx d.

They comply with the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d");
see www.siemens.com/sirius/atex.

EC type test certificate for Group II, Category (2) G/D has been submitted. On request.

### Order No. scheme

| Digit of the Order No. | 1st - 3rd | 4th | 5th | 6th | 7th | | 8th | 9th | 10th | 11th |
|---|---|---|---|---|---|---|---|---|---|---|
| | □□□ | □ | □ | □ | □ | – | □ | □ | □ | □ |
| Solid-state overload relays | 3 R B | | | | | | | | | |
| SIRIUS 2nd generation | | 2 | | | | | | | | |
| Device series | | | □ | | | | | | | |
| Size, rated operational current and power | | | | □ | | | | | | |
| Version of the automatic RESET, electrical remote RESET | | | | | □ | | | | | |
| Trip class (CLASS) | | | | | | | □ | | | |
| Setting range of the overload release | | | | | | | | □ | | |
| Connection methods | | | | | | | | | □ | |
| Installation type | | | | | | | | | | □ |
| Example | 3 R B | 2 | 4 | 8 | 3 | – | 4 | A | A | 1 |

Note:

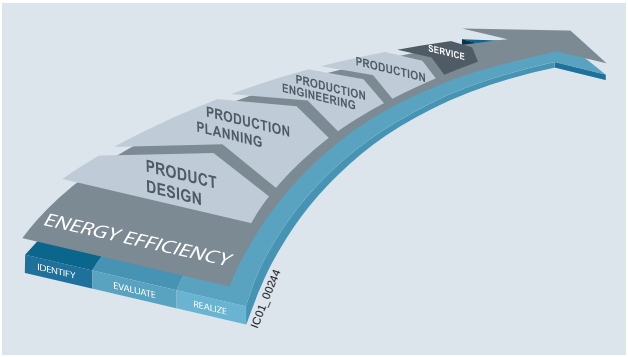
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

## Benefits

The most important features and benefits of the 3RB24 solid-state overload relays for IO-Link are listed in the overview table (see "General Data", page 3/2 onwards).

### Advantages through energy efficiency




Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB24 solid-state overload relays for IO-Link contribute to energy efficiency throughout the plant as follows:

- Transmission of current values
- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

## Application

### Industries

The 3RB24 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

### Application

The 3RB24 solid-state overload relays have been designed for the protection of three-phase asynchronous and single-phase AC motors.

In addition to protection function, these devices can be used together with contactors as direct or reversing starters (star-delta (wye-delta) start also possible), which are controlled via IO-Link. This makes it possible to directly control drives via IO-Link from a higher-level controller or on site via the optional hand-held device lamps and also, for example, to return current values directly via IO-Link.

If single-phase AC motors are to be protected by the 3RB24 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Schematics" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",).

### Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB24 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below –25 °C or above +60 °C on request.

## Selection and ordering data

***3RB24 solid-state overload relays (evaluation module) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable***

| Type | 3RB24 83-4A.1 |
|---|---|
| **Features and technical specifications** | |
| **Overload protection, phase failure protection and unbalance protection** | ✓ |
| **Supplied from an external voltage** | ✓ 24 V DC through IO-Link |
| **Direct-on-line or reversing starters (wye-delta starting also possible) controllable through IO-Link** | ✓ |
| **Auxiliary contacts** | ✓ 1 CO and 1 NO in series |
| **Manual and automatic RESET** | ✓ |
| **Remote-RESET** | ✓ (electrically or via IO-Link) |
| **4 LEDs for operating and status displays** | ✓ |
| **TEST function and self-monitoring** | ✓ |
| **Internal ground-fault detection** | ✓ |
| **Screw or spring-type terminals for auxiliary, control and sensor circuits** | ✓ |
| **Input for PTC sensor circuit** | ✓ |
| **Analog output** | ✓ |
| **IO-Link-specific functions** | |
| • Connection of direct-on-line, reversing and star-delta starters to the controller via IO-Link | ✓ |
| • On-site controlling of the starter using the hand-held device | ✓ |
| • Accessing process data (e.g. current values in all three phases) via IO-Link | ✓ |
| • Accessing parameterization and diagnostics data (e.g. tripped signals) via IO-Link | ✓ |

✓ Available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB24 83-4AA1

3RB24 83-4AC1

| Size of contactor | Version | Screw terminals | | Spring-type terminals | |
|---|---|---|---|---|---|
| | | Order No. | Price per PU | Order No. | Price per PU |
| **Evaluation modules** | | | | | |
| S00 ... S12 | Monostable | **3RB24 83-4AA1** | | **3RB24 83-4AC1** | |

Notes:

- Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 relay.

Current measuring modules and related connecting cables see page 3/55, accessories see pages 3/56 and 3/57.

## Selection and ordering data

### *Current measuring modules for mounting onto contactor[1] and stand-alone installation[1)2)] (essential accessories)*

| | Size contactor[3] | Rating for induction motor,[4] | Current setting of the inverse-time delayed overload release | Short-circuit protection with fuse, type of coordination "2", operational class gG[5] | For overload relays | DT | Order No. | Price per PU | PU (UNIT, SET, M) | Pack Units | PG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | kW | A | A | | | | | | | |
| **Sizes S00/S0[2)6)]** | | | | | | | | | | | |
| 3RB29 06-2.G1 | S00/S0 | 0.09 … 1.1 | 0.3 … 3 | 20 | 3RB22 to 3RB24 | ▶ | **3RB29 06-2BG1** | | 1 | 1 unit | 41G |
| | | 1.1 … 11 | 2.4 … 25 | 63 | | ▶ | **3RB29 06-2DG1** | | 1 | 1 unit | 41G |
| **Sizes S2/S3[2)6)]** | | | | | | | | | | | |
| 3RB29 06-2JG1 | S2/S3 | 5.5 … 45 | 10 … 100 | 315 | 3RB22 to 3RB24 | ▶ | **3RB29 06-2JG1** | | 1 | 1 unit | 41G |
| **Size S6[1)6)]** | | | | | | | | | | | |
| 3RB29 56-2TG2 | S6 with busbar connection | 11 … 90 | 20 … 200 | 315 | 3RB22 to 3RB24 | ▶ | **3RB29 56-2TH2** | | 1 | 1 unit | 41G |
| | For mounting to S6 contactors with box terminals | | | | 3RB22 to 3RB24 | ▶ | **3RB29 56-2TG2** | | 1 | 1 unit | 41G |
| **Sizes S10/S12[1)]** | | | | | | | | | | | |
| 3RB29 66-2WH2 | S10/S12 and size 14 (3TF68/ 3TF69) | 37 … 450 | 63 … 630 | 800 | 3RB22 to 3RB24 | ▶ | **3RB29 66-2WH2** | | 1 | 1 unit | 41G |

Note:

The connecting cable between the current measuring module and the evaluation module is not included in the scope of supply; please order separately.

1) The current measuring modules with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

2) The current measuring modules with an Order No. ending with **"1"** are designed for stand-alone installation.

3) Observe maximum rated operational current of the devices.

4) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

5) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" see
- "Configuration Manual for Configuring SIRIUS – Selection Data for Load Feeders in Fuseless and Fused Designs"
- "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

6) The modules with an Order No. with **"G"** in penultimate position are equipped with a straight-through transformer.

## Accessories

| | Size of contactor | Version | For overload relays | DT | Order No. | Price per PU | PU (UNIT, SET, M) | Pack Units | PG |
|---|---|---|---|---|---|---|---|---|---|
| **Connecting cables (necessary accessories)** | | | | | | | | | |
| 3RB29 87-2. | | For connection between evaluation module and current measuring module | | | | | | | |
| | S00 … S3 | • Length 0.1 m (only for mounting of the evaluation module directly onto the current measuring module) | 3RB24, 3RB29 | ▶ | **3RB29 87-2B** | | 1 | 1 unit | 41F |
| | S00 … S12 | • Length 0.5 m | 3RB24, 3RB29 | ▶ | **3RB29 87-2D** | | 1 | 1 unit | 41F |

Additional general accessories see page 3/57.

## Overview

### *Overload relays for High-Feature applications*

The following optional accessories are available for the 3RB22 to 3RB24 solid-state overload relays:

- Operator panel for the evaluation modules 3RB24
- Manual 3RB24
- Sealable cover for the evaluation modules 3RB22 to 3RB24
- Terminal covers for the 3RB29 current measuring modules sizes S6 and S10/S12
- Box terminal blocks for the 3RB29 current measuring modules sizes S6 and S10/S12
- Push-in lugs for screw fixing for 3RB22 to 3RB24 evaluation modules and 3RB29 06 current measuring modules

## Selection and ordering data

### *Accessories for overload relay 3RB24*

| Version | For overload relays | DT | Order No. | Price per PU | PU (UNIT, SET, M) | Pack Units | PG |
|---|---|---|---|---|---|---|---|
| **Operator panels for evaluation modules** | | | | | | | |
| 3RA69 35-0A<br>**Operator panels (set)**<br>1 set comprises:<br>• 1 x operator panel<br>• 1 x 3RA69 36-0A enabling module<br>• 1 x 3RA69 33-0B interface cover<br>• 1 x fixing terminal<br>Note:<br>The connecting cable between the evaluation module and the operator panel is not included in the scope of supply; please order separately. | 3RB24 | A | **3RA69 35-0A** | | 1 | 1 unit | 42F |
| **Connecting cable**<br>Length 2 m (round),<br>for connecting the evaluation module to the operator panel | 3RB24 | ► | **3UF79 33-0BA00-0** | | 1 | 1 unit | 42J |
| **Enabling modules (replacement)** | 3RB24 | A | **3RA69 36-0A** | | 1 | 1 unit | 42F |
| **Interface covers** | 3RB24 | A | **3RA69 33-0B** | | 1 | 5 units | 42F |

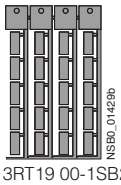
[1] The manual is also available as a free PDF download on the Internet at www.siemens.com/sirius/support → "Manuals/Operating Instructions".

Additional general accessories see next page.

## *General accessories*

| | Version | Size | For overload relays | Order No. | PU (UNIT, SET, M) | Pack Units |
|---|---|---|---|---|---|---|
| **Sealable covers for evaluation modules** | | | | | | |
| 3RB29 84-2 | For covering the setting knobs | -- | 3RB22 to 3RB24 | **3RB29 84-2** | 1 | 10 units |
| **Terminal covers for current measuring modules** | | | | | | |
| | **Covers for cable lugs and busbar connections** | | | | | |
| | • Length 100 mm | S6 | 3RB29 56 | **3RT19 56-4EA1** | 1 | 1 unit |
| | • Length 120 mm | S10/S12 | 3RB29 66 | **3RT19 66-4EA1** | 1 | 1 unit |
| | **Covers for box terminals** | | | | | |
| | • Length 25 mm | S6 | 3RB29 56 | **3RT19 56-4EA2** | 1 | 1 unit |
| | • Length 30 mm | S10/S12 | 3RB29 66 | **3RT19 66-4EA2** | 1 | 1 unit |
| | **Covers for screw terminals** between contactor and overload relay, without box terminals (1 unit required per combination) | S6 | 3RB29 56 | **3RT19 56-4EA3** | 1 | 1 unit |
| | | S10/S12 | 3RB29 66 | **3RT19 66-4EA3** | 1 | 1 unit |
| **Box terminal blocks for current measuring modules** | | | | | | |
| 3RT19 5.-4G | For round and ribbon cables | | | | | |
| | • Up to 70 mm$^2$ | S6[1] | 3RB29 56 | **3RT19 55-4G** | 1 | 1 unit |
| | • Up to 120 mm$^2$ | S6 | 3RB29 56 | **3RT19 56-4G** | 1 | 1 unit |
| | • Up to 240 mm$^2$ | S10/S12 | 3RB29 66 | **3RT19 66-4G** | 1 | 1 unit |
| | Technical specifications for conductor cross-sections see "Reference Manual for Protection Equipment– 3RU1, 3RB2 Overload Relays". | | | | | |
| **Push-in lugs for evaluation modules and current measuring modules** | | | | | | |
| 3RP19 03 | For screw fixing the evaluation modules | -- | 3RB22 to 3RB24 | **3RP19 03** | 1 | 10 units |
| 3RB29 00-0B | For screw fixing the current measuring modules (2 units per module) | S00 ... S3 | 3RB29 06 | **3RB19 00-0B** | 100 | 10 units |

[1] In the scope of supply for 3RT10 54-1 contactors (55 kW).

| | Version | Size | Color | For overload relays | Order No. | PU (UNIT, SET, M) | Pack Units |
|---|---|---|---|---|---|---|---|
| **Tools for opening spring-type terminals** | | | | | | | |
| | | | | | **Spring-type terminals** | | |
| 3RA29 08-1A | **Screwdrivers** For all SIRIUS devices with spring-type terminals | Length approx. 200 mm, 3.0 mm x 0.5 mm | Titanium gray/ black, partially insulated | Main and auxiliary circuit connection: 3RB2 | **3RA29 08-1A** | 1 | 1 unit |
| **Blank labels** | | | | | | | |
|  3RT19 00-1SB20 | **Unit labeling plates**[1] for SIRIUS devices | 20 mm x 7 mm | Titanium gray | 3RB24 | **3RT29 00-1SB20** | 100 | 340 units |
| | | 20 mm x 7 mm | Pastel turquoise | 3RB22, 3RB23 | **3RT29 00-1SB20** | 100 | 340 units |

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see "Appendix" → "External Partners").

## Technical specifications

| | | |
|---|---|---|
| **Type – Overload relay of evaluation modules** | | **3RB24 83-4A.1** |
| **Size of contactor** | | S00 ... S10/S12 |
| **General data** | | |
| **Trips in the event of** | | Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (connectable and disconnectable) and activation of the thermistor motor protection (with closed PTC sensor circuit) |
| **Trip class** acc. to IEC 60947-4-1 | CLASS | 5, 10, 20 and 30 adjustable |
| **Phase failure sensitivity** | | Yes |
| **Overload warning** | | Yes, from 1.125 x $I_e$ for symmetrical loads<br>and from 0.85 x $I_e$ for unsymmetrical loads |
| **Reset and recovery** | | |
| • Reset options after tripping | | Manual and automatic RESET, electrical remote RESET or through IO-Link |
| • Recovery time | | |
| - For automatic RESET | min | - for tripping due to overcurrent: 3 (stored permanently)<br>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature<br>- for tripping due to a ground fault: no automatic RESET |
| - For manual RESET | min | - for tripping due to overcurrent: 3 (stored permanently)<br>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature<br>- for tripping due to a ground fault: Immediately |
| - For remote RESET | min | - for tripping due to overcurrent: 3 (stored permanently)<br>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature<br>- for tripping due to a ground fault: Immediately |
| **Features** | | |
| • Display of operating state on device | | Yes, with 4 LEDs<br>- Green LED "DEVICE/IO-Link"<br>- Red "Ground Fault" LED<br>- Red "Thermistor" LED<br>- Red "Overload" LED |
| • TEST function | | Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring |
| • RESET button | | Yes, with the TEST/RESET button |
| • STOP button | | No |
| **Explosion protection – Safe operation of motors with "increased safety EEX e and explosion-proof enclosure EEx d" type of protection** | | |
| EC type test certificate number according to directive 94/9/EC (ATEX) | | On request |
| **Ambient temperatures** | | |
| • Storage/transport | °C | -40 ... +80 |
| • Operation | °C | -25 ... +60 |
| • Temperature compensation | °C | +60 |
| • Permissible rated current | | |
| - Temperature inside control cabinet 60 °C | % | 100 |
| - Temperature inside control cabinet 70 °C | % | On request |
| **Repeat terminals** | | |
| • Coil repeat terminals | | Not required |
| • Auxiliary contact repeat terminal | | Not required |
| **Degree of protection** acc. to IEC 60529 | | IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover |
| **Touch protection** acc. to IEC 61140 | | Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover |
| **Shock resistance with sine** acc. to IEC 60068-2-27 | g/ms | 15/11 |
| **Electromagnetic compatibility (EMC) – Interference immunity** | | |
| • Conductor-related interference | | |
| - Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3) | kV | 2 (power ports), 1 (signal ports) |
| - Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3) | kV | 2 (line to earth), 1 (line to line) |
| • Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | 8 (air discharge), 6 (contact discharge) |
| • Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3) | V/m | 10 |
| **Electromagnetic compatibility (EMC) – emitted interference** | | Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22) |
| **Resistance to extreme climates – air humidity** | % | 100 |
| **Dimensions** | | "Dimensional drawings" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link". |
| **Installation altitude above sea level** | m | Up to 2000 |
| **Mounting position** | | Any |
| **Type of mounting** | | |
| • Evaluation modules | | Stand-alone installation |
| • Current measuring module | Size | S00 to S3: Stand-alone installation,<br>S6 and S10/S12: stand-alone installation or mounting onto contactors |

| | | |
|---|---|---|
| **Type – Overload relay of evaluation modules** | | **3RB24 83-4A.1** |
| Size of contactor | | S00 ... S10/S12 |
| Dimensions of evaluation modules (W x H x D) | mm | 45 x 111 x 95 |
| **Auxiliary circuit** | | |
| **Number of auxiliary switches** | | 1 CO contact, 1 NO contact connected in series internally |
| **Auxiliary contacts – assignment** | | • 1 CO contact for selecting the contactor (for reversing starter function), actuated by the control system<br>• 1 NO contact for normal switching duty, actuated by the control system (opens automatically when tripping occurs) |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Auxiliary contacts – contact rating** | | |
| • NC contact with alternating current AC-14/AC-15, rated operational current $I_e$ at $U_e$ | | |
| - 24 V | A | 6 |
| - 120 V | A | 6 |
| - 125 V | A | 6 |
| - 250 V | A | 3 |
| • NO contact with alternating current AC-14/AC-15, rated operational current $I_e$ at $U_e$ | | |
| - 24 V | A | 6 |
| - 120 V | A | 6 |
| - 125 V | A | 6 |
| - 250 V | A | 3 |
| • NC contact, NO contact with direct current DC-13, rated operational current $I_e$ at $U_e$ | | |
| - 24 V | A | 2 |
| - 60 V | A | 0.55 |
| - 110 V | A | 0.3 |
| - 125 V | A | 0.3 |
| - 250 V | A | 0.2 |
| • Conventional thermal current $I_{th}$ | A | 5 |
| • Contact reliability (suitability for PLC control; 17 V, 5 mA) | | Yes |
| **Short-circuit protection** | | |
| • With fuse, operational class gG | A | 6 |
| • With miniature circuit breaker, C characteristic | A | 1.6 |
| **Protective separation between auxiliary conducting paths** acc. to IEC 60947-1 | V | 300 |
| **CSA, UL, UR rated data** | | |
| **Auxiliary circuit – switching capacity** | | B300, R300 |
| **Conductor cross-sections of the auxiliary circuit** | | |
| **Connection type** | | **Screw terminals** |
| **Terminal screw** | | M3, Pozidriv size 2 |
| **Operating devices** | mm | 3.0 x 0.5 |
| **Prescribed tightening torque** | Nm | 0.8 ... 1.2 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | |
| • Solid | $mm^2$ | 1 × (0.5 ... 4)[1], 2 × (0.5 ... 2.5)[1] |
| • Finely stranded without end sleeve | $mm^2$ | -- |
| • Finely stranded with end sleeve | $mm^2$ | 1 × (0.5 ... 2.5)[1], 2 × (0.5 ... 1.5)[1] |
| • Stranded | $mm^2$ | -- |
| • AWG cables, solid or stranded | AWG | 2 × (20 ... 14) |
| **Connection type** | | **Spring-type terminals** |
| **Operating devices** | mm | 3.0 x 0.5 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | |
| • Solid | $mm^2$ | 2 × (0.25 ... 1.5) |
| • Finely stranded without end sleeve | $mm^2$ | – |
| • Finely stranded with end sleeve | $mm^2$ | 2 × (0.25 ... 1.5) |
| • AWG cables, solid or stranded | AWG | 2 × (24 ... 16) |

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified

# 3RB24 Solid-State Overload Relays

## 3RB24 for IO-Link, up to 630 A for High-Feature applications

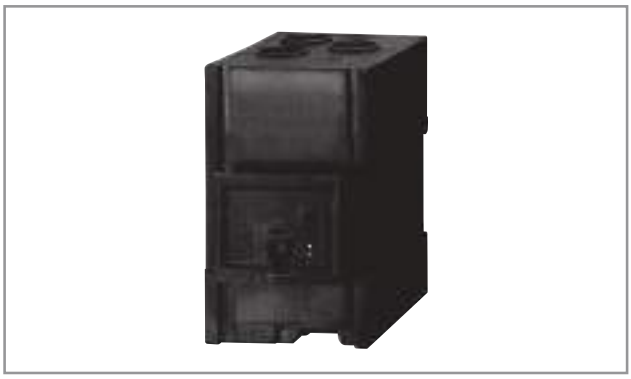


| | | |
|---|---|---|
| **Type – Overload relay of evaluation modules** | | **3RB24 83-4A.1** |
| Size of contactor | | S00 ... S10/S12 |
| **Control and sensor circuit as well as the analog output** | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Rated control supply voltage $U_s$** | | |
| • DC | V | 24 through IO-Link |
| **Operating range** | | |
| • DC | | $0.85 \times U_{s\,min} \leq U_s \leq 1.1 \times U_{s\,max}$ |
| **Rated power** | | |
| • DC | W | 0.5 |
| **Mains buffering time** | ms | 200 |
| **Thermistor motor protection (PTC thermistor detector)** | | |
| • Summation cold resistance | kΩ | ≤ 1.5 |
| • Response value | kΩ | 3.4 ... 3.8 |
| • Return value | kΩ | 1.5 ... 1.65 |
| **Ground-fault detection** | | The information refers to sinusoidal residual currents at 50/60 Hz. |
| • Tripping value $I_\Delta$<br>- For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$<br>- For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$ | | <br>$> 0.3 \times I_e$<br>$> 0.15 \times I_{motor}$ |
| • Response time $t_{trip}$ | ms | 500 ... 1 000 |
| **Analog output**[1] | | |
| • Output signal | mA | 4 ... 20 |
| • Measuring range | | 0 ... $1.25 \times I_e$<br>4 mA corresponds to $0 \times I_e$<br>16.8 mA corresponds to $1.0 \times I_e$<br>20 mA corresponds to $1.25 \times I_e$ |
| • Load, max. | Ω | 100 |
| **Conductor cross-sections for the control and sensor circuit as well as the analog output** | | |
| **Connection type** | | **Screw terminals** |
| **Terminal screw** | | M3, Pozidriv size 2 |
| **Operating devices** | mm | 3.0 x 0.5 |
| **Prescribed tightening torque** | Nm | 0.8 ... 1.2 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | |
| • Solid | $mm^2$ | 1 × (0.5 ... 4)[2], 2 × (0.5 ... 2.5)[2] |
| • Finely stranded without end sleeve | $mm^2$ | — |
| • Finely stranded with end sleeve | $mm^2$ | 1 × (0.5 ... 2.5)[2], 2 × (0.5 ... 1.5)[2] |
| • Stranded | $mm^2$ | — |
| • AWG cables, solid or stranded | AWG | 2 × (20 ... 14) |
| **Connection type** | | **Spring-type terminals** |
| **Operating devices** | mm | 3.0 x 0.5 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | |
| • Solid | $mm^2$ | 2 × (0.25 ... 1.5) |
| • Finely stranded without end sleeve | $mm^2$ | — |
| • Finely stranded with end sleeve | $mm^2$ | 2 × (0.25 ... 1.5) |
| • Stranded | $mm^2$ | 2 × (0.25 ... 1.5) |
| • AWG cables, solid or stranded | AWG | 2 × (24 ... 16) |

1) Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 overload relay.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

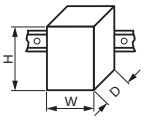
## Overview



SIRIUS 3RB29 06 current measuring module

The current measuring modules are designed as system components for connecting to evaluation units 3RB22 to 3RB24. Using these evaluation units the motor current is measured and the measured value sent to the evaluation unit for evaluation. The current measuring modules in sizes S00 to S3 up to 55 mm wide are equipped with straight-through transformers and can be snap-fitted under the evaluation units. The larger evaluation units are installed directly on the contactor or as stand-alond units.

## Technical specifications

| **Type – Overload relays: Current measuring modules** |  | | **3RB29 06** | | **3RB29 56** | **3RB29 66** |
|---|---|---|---|---|---|---|
| Size of contactor | | | S00/S0 | S2/S3 | S6 | S10/S12 |
| Dimensions of current measuring modules (W x H x D) | | mm | 45 x 84 x 45 | 55 x 94 x 72 | 120 x 119 x 145 | 145 x 147 x 148 |
| **Main circuit** | | | | | | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | V | 1 000 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | 8 | |
| **Rated operational voltage $U_e$** | | V | 1 000 | | | |
| **Type of current** | | | | | | |
| • Direct current | | | No | | | |
| • Alternating current | | | Yes, 50/60 Hz ±5 % | | | |
| **Current setting** | | A | 0.3 ... 3; 2.4 ... 25 | 10 ... 100 | 20 ... 200 | 63 ... 630 |
| **Power loss per unit (max.)** | | W | 0.5 | | | |
| **Short-circuit protection** | | | | | | |
| • With fuse without contactor | | | See "Selection and ordering data" on page 3/55. | | | |
| • With fuse and contactor | | | See<br>- "Configuration Manual for Configuring SIRIUS – Selection Data for Load Feeders in Fuseless and Fused Designs"<br>- "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs" | | | |
| **Protective separation between main and auxiliary conducting paths** acc. to IEC 60947-1 (pollution degree 2) | | V | 690 for grounded networks, otherwise 600 | | | |

# 3RB24 Solid-State Overload Relays

## Current measuring modules for 3RB22, 3RB23, 3RB24



| Type – Overload relays: Current measuring modules | | 3RB29 06 | | 3RB29 56 | 3RB29 66 |
|---|---|---|---|---|---|
| Size of contactor | | S00/S0 | S2/S3 | S6 | S10/S12 |
| Dimensions of current measuring modules (W x H x D) | mm | 45 x 84 x 45 | 55 x 94 x 72 | 120 x 119 x 145 | 145 x 147 x 148 |
| **Conductor cross-sections of the main circuit** | | | | | |
| **Connection type** | | **Screw terminals with box terminal** | | | |
| **Terminal screw** | mm | — | | 4 mm Allen screw | 5 mm Allen screw |
| **Operating devices** | mm | — | | 4 mm Allen screw | 5 mm Allen screw |
| **Prescribed tightening torque** | Nm | — | | 10 ... 12 | 20 ... 22 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | | | | |
| • Solid | $mm^2$ | — | | — | — |
| • Finely stranded without end sleeve | $mm^2$ | — | | With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)<br>With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120) | 2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)<br>Rear clamping point only: 1 × (120 ... 185) |
| • Finely stranded with end sleeve | $mm^2$ | — | | With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)<br>With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120) | 2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)<br>Rear clamping point only: 1 × (120 ... 185) |
| • Stranded | $mm^2$ | — | | With 3RT19 55-4G box terminal: 2 × (max. 70), 1 × (16 ... 70)<br>With 3RT19 56-4G box terminal: 2 × (max. 120), 1 × (16 ... 120) | 2 × (70 ... 240), rear clamping point only: 1 × (95 ... 300)<br>Rear clamping point only: 1 × (120 ... 240) |
| • AWG cables, solid or stranded | AWG | — | | With 3RT19 55-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0)<br>With 3RT19 56-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil) | 2 × (2/0 ... 500 kcmil), rear clamping point only: 1 × (3/0 ... 600 kcmil)<br>Rear clamping point only: 1 × (250 kcmil ... 500 kcmil) |
| • Ribbon cables (number x width x thickness) | mm | — | | With 3RT19 55-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8)<br>With 3RT19 56-4G box terminal: 2 × (10 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 10 × 15.5 × 0.8) | 2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5) |
| **Connection type** | | **Busbar connections** | | | |
| **Terminal screw** | | — | | M8 × 25 | M10 x 30 |
| **Prescribed tightening torque** | Nm | — | | 10 ... 14 | 14 ... 24 |
| **Conductor cross-sections (min./max.),** 1 or 2 conductors can be connected | | | | | |
| • Solid with cable lug | $mm^2$ | — | | 16 ... 95[1] | 50 ... 240[2] |
| • Stranded with cable lug | $mm^2$ | — | | 25 ... 120[1] | 70 ... 240[2] |
| • AWG cable, solid or stranded, with cable lug | AWG | — | | 4 ... 250 kcmil | 2/0 ... 500 kcmil |
| • with connecting bar (max. width) | mm | — | | 17 | 25 |
| **Connection type** | | **Straight-through transformers** | | | |
| Diameter of opening | mm | 7.5 | 14 | 25 | — |

1) When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 $mm^2$ and more, the 3RT19 56-4EA1 terminal cover must be used to ensure phase spacing.

2) When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 $mm^2$ and more as well as to DIN 46235 with conductor cross-sections of 185 $mm^2$ and more, the 3RT19 56-4EA1 terminal cover must be used for to keep the phase clearance.

## Overview

SIMOCODE pro S and SIMOCODE pro V

**More information**

Home page, see www.usa.siemens.com/simocode

Industry Mall, see www.siemens.com/product?3UF7

TIA Selection Tool Cloud (TST Cloud)
- For SIMOCODE pro S, see https://mall.industry.siemens.com/spice/TSTWeb/?kmat=SimocodeProS
- For SIMOCODE pro V, see https://mall.industry.siemens.com/spice/TSTWeb/?kmat=SimocodeProV

SIMOCODE pro is a flexible, modular motor management system for motors with constant speeds in the low-voltage performance range. It optimizes the connection between I&C and motor feeder, increases plant availability and allows significant savings to be made for installation, commissioning, operation and maintenance of a system.

SIMOCODE pro offers, for example:
- Multifunctional, solid-state full motor protection that is independent of the automation system
- Integrated control functions instead of hardware for the motor control
- Detailed operational, service and diagnostics data
- Open communication via PROFIBUS, PROFINET/PROFIsafe, Modbus RTU, and Ethernet IP and OPC UA – which also lets you take advantage of the cloud
- Safety relay function for the fail-safe disconnection of motors up to SIL 3 (IEC 61508, IEC 62061) or PL e with Category 4 (EN ISO 13849-1)
- SIMOCODE ES (TIA Portal) is the software package for SIMOCODE pro parameterization, start up and diagnostics.

### *Device series*

Basic Performance with SIMOCODE pro C

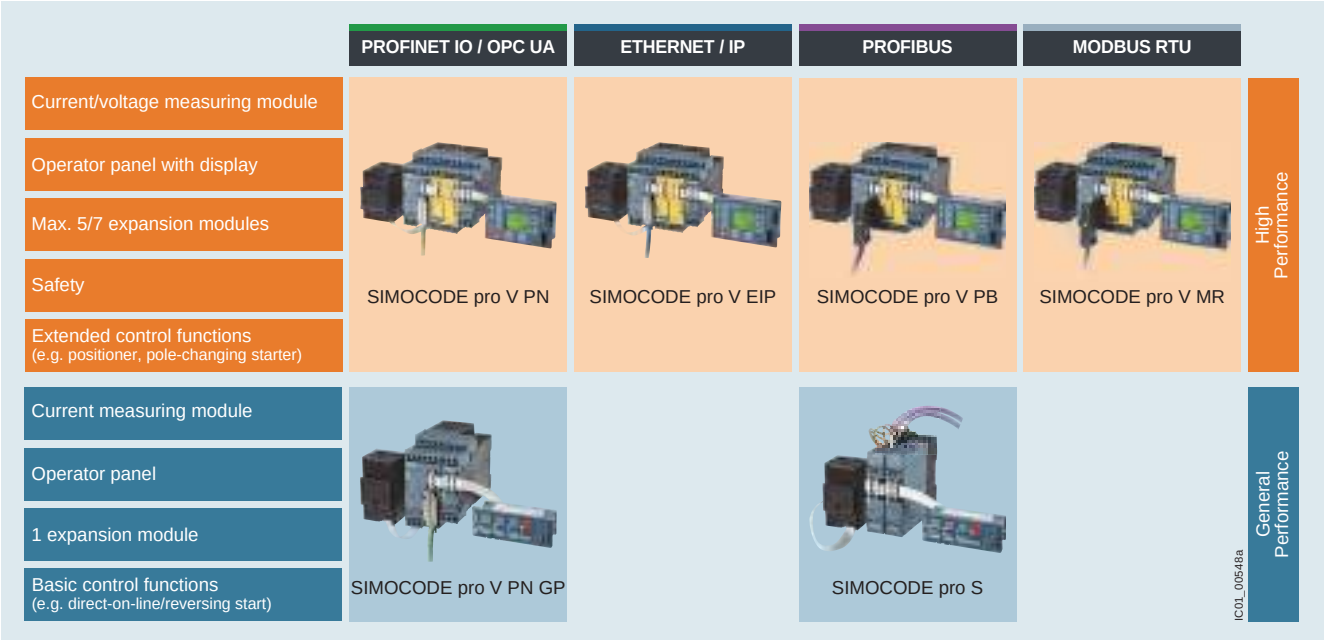
The compact system for direct-on-line starters and reversing starters or for controlling a motor starter protector.

General Performance with SIMOCODE pro S or SIMOCODE pro V PN GP

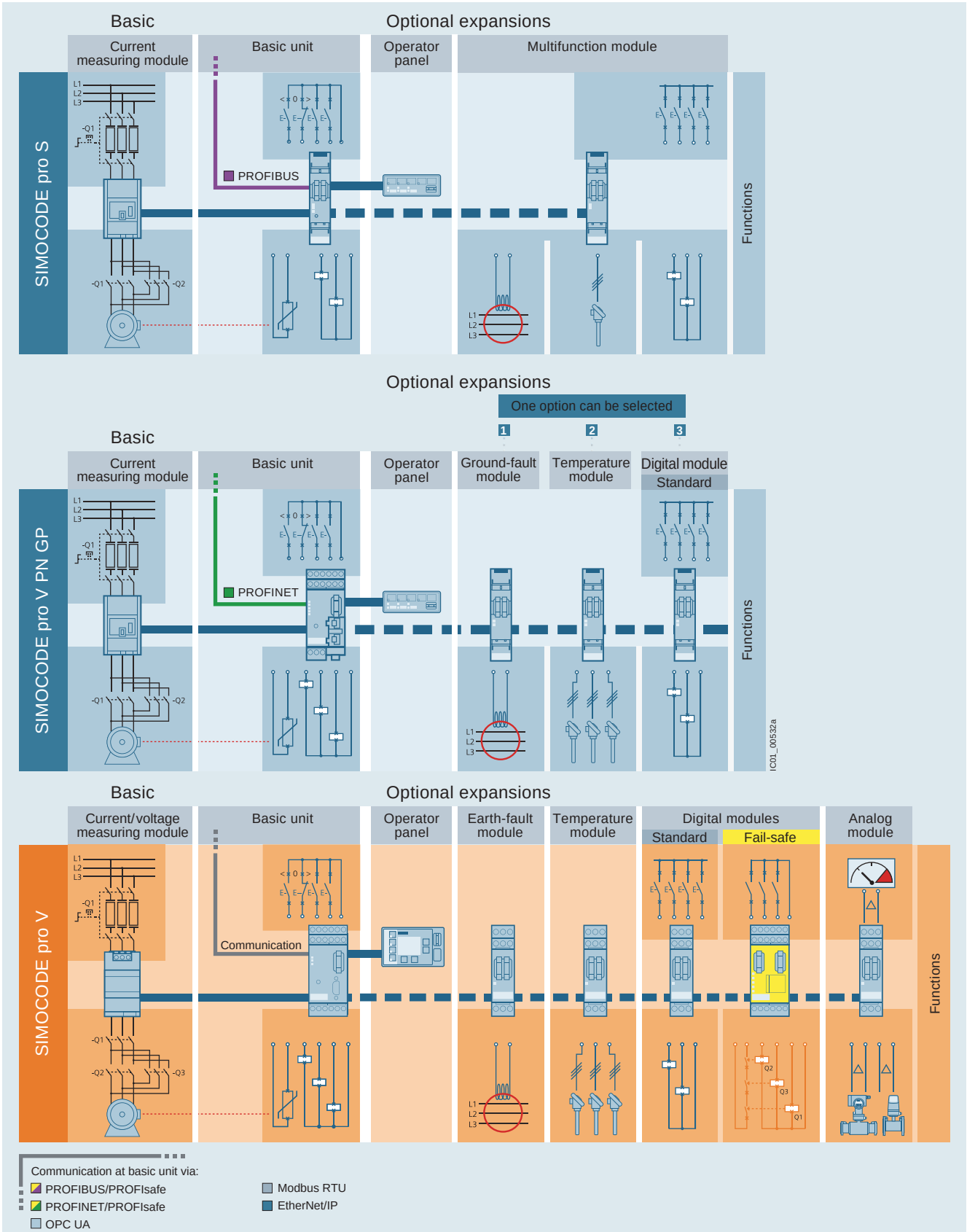
The smart system for direct-on-line, reversing, and wye-delta starters or for controlling a motor starter protector or soft starter. Its expandability with an expansion module/multifunction module provides comprehensive input/output project data volume, precise ground-fault detection via the 3UL23 residual-current transformers and temperature measurement.

High Performance with SIMOCODE pro V

The variable system with all control functions and with the possibility of expanding the inputs, outputs and functions of the system at will using expansion modules




Device series




System structure

| Expansion possibilities | SIMOCODE pro C Basic Performance PROFIBUS | SIMOCODE pro S General Performance PROFIBUS | SIMOCODE pro V General Performance PROFINET GP | SIMOCODE pro V High Performance PROFIBUS/Modbus RTU | SIMOCODE pro V High Performance PROFINET/ EtherNet/IP |
|---|---|---|---|---|---|
| Operator panels | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operator panels with display | -- | -- | -- | ✓ | ✓ |
| Current measuring modules | ✓ | ✓ | ✓ | ✓ | ✓ |
| Current/voltage measuring modules | -- | -- | -- | ✓ | ✓ |
| Expansion modules: | | | | | |
| • Digital modules | -- | -- | 1[2)] | 2 | 2 |
| • Fail-safe digital modules[1)] | -- | -- | -- | 1 | 1 |
| • Analog modules | -- | -- | -- | 1 | 2 |
| • Ground-fault modules | -- | -- | 1 | 1 | 1 |
| • Temperature modules | -- | -- | 1 | 1 | 2 |
| • Multifunction modules | -- | 1 | -- | -- | -- |

✓ Available
-- Not available

1) The fail-safe digital module can be used instead of one of the two digital modules.
2) Only monostable version can be used.

Per feeder each system always comprises one basic unit and one current measuring module. The two modules are connected together electrically through the system interface with a connection cable and can be mounted mechanically connected (one behind the other) or separately (side by side). The motor current to be monitored determines the size of the current measuring module.

An operator panel for mounting in the control cabinet door is optionally connectable through a second system interface on the basic unit. Both the current measuring module and the operator panel are electrically supplied by the basic unit through the connection cable. More inputs, outputs and functions can be added to the SIMOCODE pro V and SIMOCODE pro S by means of optional expansion modules, thus supplementing the inputs and outputs already existing on the basic unit. With the DM-F Local and DM-F PROFIsafe fail-safe digital modules it is also possible to integrate the fail-safe disconnection of motors in the SIMOCODE pro V motor management system.

All modules are connected by connection cables. The connection cables are available in various lengths. The maximum distance between modules (e.g. between the basic unit and the current measuring module) must not exceed 2.5 m. The total length of all the connection cables per system interface of the basic unit may be up to 3 m.

### *Article No. scheme*

| Product versions | | Article number |
|---|---|---|
| **SIMOCODE pro motor management system** | | **3UF7 □ □ □ – 1 □ □ 0 □ – 0** |
| Type of unit/module | e.g. 0 = basic unit | □ |
| Functional version of the module | e.g. 20 = SIMOCODE pro S | □ □ |
| Connection type of the current transformer | e.g. A = through-hole technology | □ |
| Voltage version | e.g. B = 24 V DC | □ |
| Enclosure color | e.g. 1 = titanium gray | □ |
| Example | | **3UF7 0 2 0 – 1 A B 0 1 – 0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

***General customer benefits***

- Integrating the whole motor feeder into the process control by means of PROFIBUS DP, PROFINET/OPC UA, Modbus RTU or EtherNet/IP significantly reduces the wiring between the motor feeder and the PLC
- Decentralization of the automated processes by means of configurable control and monitoring functions in the feeder saves resources in the automation system and ensures full functionality and protection of the feeder even if the I&C or bus system fails
- The acquisition and monitoring of operating, service and diagnostics data in the feeder and process control system increases plant availability as well as maintenance and service-friendliness
- The high degree of modularity allows users to perfectly implement their plant-specific requirements for each motor feeder
- The SIMOCODE pro system offers functionally graded and space-saving solutions for each customer application
- The replacement of the control circuit hardware with integrated control functions decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of electronic full motor protection permits better utilization of the motors and ensures long-term stability of the tripping characteristic and reliable tripping even after years of service
- Thanks to the precision of the current, voltage, power and energy measurements, costs can be internally allocated with a high degree of accuracy
- By virtue of its wide frequency range (20 to 400 Hz), SIMOCODE can be used in combination with the 2nd-generation current/voltage measuring modules in a wide range of motor applications.

***Multifunctional, electronic full motor protection for rated motor currents up to 820 A***

SIMOCODE pro offers comprehensive protection of the motor feeder by means of a combination of different, multi-step and delayable protection and monitoring functions:

- Inverse-time delayed electronic overload protection (CLASS 5E to 40E)
- Thermistor motor protection
- Phase failure/unbalance protection
- Stall protection
- Monitoring of adjustable limit values for the motor current
- Voltage and power monitoring
- Monitoring of the power factor (motor idling/load shedding)
- Ground-fault monitoring
- Temperature monitoring, e.g. via Pt100/Pt1000
- Monitoring of operating hours, downtime and number of starts etc.

***Recording of measuring curves***

SIMOCODE pro can record measuring curves and therefore is able, for example, to present the progression of motor current during motor start up.

***Flexible motor control implemented with integrated control functions (instead of comprehensive hardware interlocks)***

Many predefined motor control functions have already been integrated into SIMOCODE pro, including all necessary logic operations and interlocks:

- Overload relays
- Direct-on-line and reversing starters
- Wye/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing starter); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Actuation of a motor starter protector
- Soft starter actuation (also with direction reversal)

These control functions are predefined in SIMOCODE pro and can be freely assigned to the inputs and outputs of the device (including the PROFIBUS/PROFINET process image).

These predefined control functions can also be flexibly adapted to each customized configuration of a motor feeder by means of freely configurable logic modules (truth tables, counters, timers, edge evaluation, etc.) and with the help of standard functions (power failure monitoring, emergency start, external faults, etc.), without additional auxiliary relays being necessary in the control circuit.

SIMOCODE pro makes a lot of additional hardware and wiring in the control circuit unnecessary, which results in a high level of standardization of the motor feeder in terms of its design and circuit diagrams.

### *Detailed operational, service and diagnostics data*

SIMOCODE pro makes different operational, service and diagnostics data available and helps to detect potential faults in time and to prevent them by means of preventative measures. In the event of a malfunction, a fault can be diagnosed, localized and rectified very quickly – there are no or very short downtimes.

Operating data

- Motor switching state derived from the current flow in the main circuit
- All phase currents
- All phase voltages and phase-to-phase voltages
- Active power, apparent power and power factor
- Phase unbalance and phase sequence
- Ground-fault current
- Frequency
- Time to trip
- Motor temperature
- Remaining cooling time etc.

Service data

- Motor operating hours
- Motor stop times
- Number of motor starts
- Number of overload trips
- Interval for compulsory testing of the enabling circuits
- Energy consumed
- Internal comments stored in the device etc.

Diagnostics data

- Numerous detailed early warning and fault messages
- Internal device fault logging with time stamp
- Time stamping of freely selectable status, alarm or fault messages etc.

### *Easy operation and diagnostics*

Operator panel

The operator panel is used to control the motor feeder and can replace all conventional pushbuttons and indicator lights to save space. It makes SIMOCODE pro or the feeder directly operable in the control cabinet. It features all the status LEDs available on the basic unit and externalizes the system interface for simple parameterization or diagnosis on a PC/PG.

Operator panel with display

As an alternative to the 3UF720 standard operator panel for SIMOCODE pro V, a 3UF721 operator panel with display is also available. This can additionally indicate current measured values, operational and diagnostics data or status information of the motor feeder at the control cabinet. The pushbuttons of the operator panel can be used to control the motor. Furthermore, it is possible to set parameters such as rated motor current, limit values, etc. directly via the operator panel with display (with SIMOCODE pro V PROFIBUS as of E15, SIMOCODE pro V Modbus RTU as of E03 and with all SIMOCODE pro V PROFINET and EtherNet/IP).

### *Communication*

SIMOCODE pro V has either an integrated PROFIBUS DP or Modbus RTU interface (SUB-D or terminal connection) or a PROFINET or EtherNet/IP interface (2 x RJ45).

Fail-safe disconnection through PROFIBUS or PROFINET with the PROFIsafe profile is also possible in conjunction with a fail-safe controller (F-CPU) and the DM-F PROFIsafe fail-safe digital module.

SIMOCODE pro PROFIBUS

SIMOCODE pro PROFIBUS supports, for example:

- Cyclic services (DPV0) and acyclic services (DPV1)
- Extensive diagnostics and hardware interrupts
- Time stamp with high timing precision (SIMATIC S7) for SIMOCODE pro V
- DPV1 communication after the Y-Link

SIMOCODE pro PROFINET

SIMOCODE pro PROFINET supports, for example:

- Line and ring bus topology (for 2-port devices with an integrated switch)
- Media redundancy via MRP protocol (for 2-port devices with an integrated switch)
- Operating, service and diagnostics data via standard web browser
- OPC UA server for open communication with visualization and control system
- NTP-synchronized time
- Interval function and measured values for power management via PROFIenergy
- Module exchange without PC/memory module through proximity detection
- Extensive diagnostics and maintenance alarms

System redundancy with SIMOCODE pro PROFINET

All SIMOCODE PROFINET devices support the system redundancy mechanisms of PROFINET IO and therefore can be operated directly on fault-tolerant systems such as SIMATIC S7-400 H. As such, SIMOCODE pro can provide decisive added value also for the field level of plants in which plant availability and control system redundancy are priorities.

SIMOCODE pro Modbus RTU

SIMOCODE pro Modbus RTU supports, for example:

- Communication at 1 200/2 400/4 800/9 600/19 200 or 57 600 baud
- Access to freely parameterizable process image via Modbus RTU
- Access to all operating, service and diagnostics data via Modbus RTU

SIMOCODE pro EtherNet/IP

SIMOCODE pro EtherNet/IP supports, for example:

- Line and ring bus topology thanks to an integrated switch
- Ring structures via Device Level Ring (DLR) protocol
- Operating, service and diagnostics data via standard web browser
- NTP-synchronized time
- Parameter assignment via SIMOCODE ES V14 or higher – via local device interface and Ethernet

Notes on security

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information on Industrial Security, see www.siemens.com/industrialsecurity.

***Autonomous operation***

An essential feature of SIMOCODE pro is the autonomous execution of all protection and control functions, even when communication to the I&C system is interrupted. This means that even in the event of bus system or automation system failure, full functionality of the feeder is ensured or a specific behavior can be parameterized in case of such a fault, e.g. targeted shutdown of the feeder or execution of particular parameterized control mechanisms (such as reversal of the direction of rotation).

***Advantages from integrated energy management***

As an integrated option for the TIA Portal, the SIMATIC Energy Suite couples energy management with automation efficiently, making energy consumption at your production facility transparent.

Thanks to the simplified configuration of energy-measuring components, e.g. SIMOCODE pro V, configuration effort is also clearly reduced.

Thanks to end-to-end connection with higher-level energy management systems or cloud-based services, you can seamlessly expand the recorded energy data to create a cross-site energy management system.

The advantages at a glance:

- Automatic generation of energy management data
- Integration into TIA Portal and into automation
- Simple configuration

For more information, see www.siemens.com/energysuite.

## Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e.g. chemical, oil/gas, water/wastewater, steel or cement industries) and where it is important to prevent plant downtimes through detailed operational, service and diagnostics data or to localize faults very quickly when they occur.

SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers (MCCs) in the process industry and for power plant technology.

***Applications***

- Protection and control of motors in hazardous areas for types of protection EEx e/d according to ATEX directive 2014/34/EU
  - With heavy starting (paper, cement, metal and water industries)
  - In high-availability plants (chemical, oil, raw material processing industries, power plants)
- New: Dry-running protection of centrifugal pumps based on active power monitoring for type of protection Ex b

***Use of SIMOCODE pro 3UF7 with IE3/IE4 motors***

Note:

When using the SIMOCODE pro 3UF7 in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring, see Application Manual.

***Safety technology for SIMOCODE pro***

The safe disconnection of motors in the process industry is becoming increasingly important as the result of new and revised standards and requirements in the safety technology field.

With the DM-F Local and DM-F PROFIsafe fail-safe expansion modules it is easy to integrate functions for fail-safe disconnection in the SIMOCODE pro V motor management system while retaining service-proven concepts. The strict separation of safety functions and operational functions proves particularly advantageous for planning, configuring and construction. Seamless integration in the motor management system leads to greater transparency for diagnostics and during operation of the system.

Suitable components for this purpose are the DM-F Local and DM-F PROFIsafe fail-safe expansion modules, depending on the requirements:

- The DM-F Local fail-safe digital module for when direct assignment between a fail-safe hardware shutdown signal and a motor feeder is required, or
- The DM-F PROFIsafe fail-safe digital module for when a fail-safe controller (F-CPU) creates the signal for disconnection and transmits it in a fail-safe manner through PROFIBUS/PROFIsafe or PROFINET/PROFIsafe to the motor management system

***New: Dry-running protection of centrifugal pumps with SIMOCODE pro in hazardous areas***

With special versions of the current/voltage measuring modules, SIMOCODE pro enables dry-running protection of centrifugal pumps through active power monitoring and motor switch-off. This applies to centrifugal pumps with progressive flow characteristics, which are also suitable for pumping flammable media and are also installed in hazardous areas. If the active power, and thus the flow rate, falls below a minimum value, the motor – and thus the centrifugal pump – is switched off. When determining the limit values to be monitored, the user is supported by a menu-guided teach-in process in the engineering software.

## Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16337/td | Application Manual "SIRIUS Controls with IE3/IE4 motors", see https://support.industry.siemens.com/cs/ww/en/view/94770820 |
| Manual Collection "SIMOCODE pro", see https://support.industry.siemens.com/cs/ww/en/view/109743951 | Configuration Manual "Load Feeders – SIRIUS Modular System", see https://support.industry.siemens.com/cs/ww/en/view/39714188 |
| System Manual "SIMOCODE pro Safety Fail-Safe Digital Modules", see https://support.industry.siemens.com/cs/ww/en/view/50564852 | |

### General data

| Type | | 3UF7 |
|---|---|---|
| **Permissible ambient temperature** | | |
| • During operation | °C | -25 ... +60; 3UF721: 0 ... +60 |
| • During storage and transport | °C | -40 ... +80; 3UF721: -20 ... +70 |
| **Degree of protection (acc. to IEC 60529)** | | |
| • Measurement modules with busbar connection | | IP00 |
| • Operator panel (front) and door adapter (front) with cover | | IP54 |
| • Other components | | IP20 |
| **Shock resistance (sine pulse)** | *g*/ms | 15/11 |
| **Mounting position** | | Any |
| **Frequency** | Hz | 50/60 ± 5% |
| **EMC interference immunity (according to IEC 60947-1)** | | Corresponds to degree of severity 3 |
| • Conducted interference, burst acc. to IEC 61000-4-4 | kV | 2 (power ports) |
| | kV | 1 (signal port) |
| • Conducted interference, high frequency acc. to IEC 61000-4-6 | V | 10 |
| • Conducted interference, surge acc. to IEC 61000-4-5 | kV | 2 (line to ground); 3UF7320-1AB, 3UF7330-1AB: 1 (line to ground) |
| | kV | 1 (line to line); 3UF7320-1AB, 3UF7330-1AB: 0.5 (line to line) |
| • Electrostatic discharge, ESD acc. to IEC 61000-4-2 | kV | 8 (air discharge); 3UF7020: Operator input during operation only on the front |
| | kV | 6 (contact discharge); 3UF721: 4 (contact discharge) |
| • Field-related interference acc. to IEC 61000-4-3 | V/m | 10 |
| **EMC emitted interference (according to IEC 60947-1)** | | |
| • Conducted and radiated interference emission | | EN 55011/EN 55022 (CISPR 11/CISPR 22) (corresponds to degree of severity A) |
| **Protective separation (acc. to IEC 60947-1)** | | All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, i.e. they are designed with doubled creepage paths and clearances. In this context, compliance with the instructions in the test report "Safe Isolation" No. 2668 is required. |

## Technical data



### Basic units

| | | | |
|---|---|---|---|
| **Type** | | **3UF7000-1AU00-0, 3UF7010-1AU00-0, 3UF7011-1AU00-., 3UF7020-1AU01-0, 3UF7012-1AU00-0, 3UF7013-1AU00-0** | **3UF7000-1AB00-0, 3UF7010-1AB00-0, 3UF7011-1AB00-., 3UF7020-0AB01-0, 3UF7012-1AB00-0, 3UF7013-1AB00-0** |
| ***Control circuit*** | | | |
| **Rated control supply voltage $U_s$ (acc. to IEC 61131-2)** | | 110 ... 240 V AC/DC; 50/60 Hz | 24 V DC |
| **Operating range** | | | |
| • SIMOCODE pro C (3UF7000) and SIMOCODE pro V PROFIBUS (3UF7010) SIMOCODE pro V Modbus RTU (3UF7012) | | 0.85 ... 1.1 x $U_s$ | 0.80 ... 1.2 × $U_s$ |
| • SIMOCODE pro V PROFINET (3UF7011), SIMOCODE pro V EtherNet/IP (3UF7013) and SIMOCODE pro S (3UF7020) | | | |
| - Operation | | 0.85 ... 1.1 x $U_s$ | 0.80 ... 1.2 × $U_s$ |
| - Start up | | 0.85 ... 1.1 x $U_s$ | 0.85 ... 1.2 × $U_s$ |
| **Power consumption**[1] | | | |
| • SIMOCODE pro C (3UF7000) and SIMOCODE pro S (3UF7020) | | 7 VA/5 W | 5 W |
| • SIMOCODE pro V PROFIBUS (3UF7010) and SIMOCODE pro V Modbus RTU (3UF7012) | | 10 VA/7 W | 7 W |
| • SIMOCODE pro V PROFIBUS E15/V4.0 (3UF7010-1A.00-0 -Z B01) and SIMOCODE pro V Modbus RTU E03/V2.0 (3UF7012-1A.00-0-Z B01) | | 7 VA/5 W | 4 W |
| • SIMOCODE pro V PROFINET (3UF7011) and SIMOCODE pro V EtherNet/IP (3UF7013) | | 11 VA/8 W | 8 W |
| **Rated insulation voltage $U_i$** | V | 300 (for pollution degree 3) | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 | |
| **Relay outputs** | | | |
| • Number | | | |
| - SIMOCODE pro C, SIMOCODE pro V (incl. SIMOCODE pro V PN GP) | | 3 monostable relay outputs | |
| - SIMOCODE pro S | | 2 monostable relay outputs | |
| • Specified short-circuit protection for auxiliary contacts (relay outputs) - Fuse links | | 6 A operational class gG; 10 A quick-response (IEC 60947-5-1) | |
| - Miniature circuit breaker | | 1.6 A, C characteristic (IEC 60947-5-1); 6 A, C characteristic ($I_k$ < 500 A) | |
| • Rated uninterrupted current | A | 6 | |
| • Rated switching capacity - AC-15 | | 6 A/24 V AC; 6 A/120 V AC; 3 A/230 V AC | |
| - DC-13 | | 2 A/24 V DC; 0.55 A/60 V DC; 0.25 A/125 V DC | |
| **Inputs (binary)** | | 4 inputs supplied internally by the device electronics (with 24 V DC) and connected to a common potential | |
| **Thermistor motor protection (binary PTC)** | | | |
| • Summation cold resistance | kΩ | ≤ 1.5 | |
| • Response value | kΩ | 3.4 ... 3.8 | |
| • Return value | kΩ | 1.5 ... 1.65 | |

### 2nd-generation current/voltage measuring modules

| | | | | | | |
|---|---|---|---|---|---|---|
| **Type** | | **3UF7..0-1AA01-0** | **3UF7..1-1AA01-0** | **3UF7..2-1AA01-0** | **3UF7..3-1.A01-0** | **3UF7..4-1BA01-0** |
| ***Main circuit*** | | | | | | |
| **Current setting $I_e$** | A | 0.3 ... 4 | 3 ... 40 | 10 ... 115 | 20 ... 200 | 63 ... 630 |
| **Rated insulation voltage $U_i$** | V | 690 | | | | |
| **Rated operational voltage $U_e$** | V | 690 | | | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | | | | |
| **Rated frequency** | Hz | 50/60 | | | | |
| **Type of current** | | Three-phase current | | | | |
| **Short circuit** | | Additional short-circuit protection is required in the main circuit | | | | |
| **Typical voltage measuring range** | | | | | | |
| • Phase-to-phase voltage/line-to-line voltage (e.g. $U_{L1\ L2}$) | V | 110 ... 690 | | | | |
| • Phase voltage (e.g. $U_{L1\ N}$) | V | 65 ... 400 | | | | |
| **Accuracy at 25 °C, 50/60 Hz** | | | | | | |
| Valid for voltage range | | • Phase-to-phase voltage $U_L$ in the range 0.85 x 110 V ... 1.1 x 690 V<br>• Phase voltage $U_L$ in the range 0.85 x 65 V ... 1.1 x 400 V | | | | |
| Valid for current range | A | 0.25 ... 8/ 8 ... 32 | 2.25 ... 80/ 80 ... 320 | 7.5 ... 230/ 230 ... 920 | 15 ... 400/ 400 ... 1 600 | 47 ... 1 260/ 1 260 ... 5 040 |
| • Voltage measurement | % | ± 1.5 | | | | |
| • Current measurement | % | ± 1.5/3 (typical) | | | | |
| • Temperature drift of current measurement | | | | | | |
| - 3UF7110-1AA01-0 | % | ± 0.02 K | | | | |
| - 3UF7111-1AA01-0, 3UF7112-1AA01-0, 3UF7113-1AA01-0, 3UF7113-1BA01-0, 3UF7114-1BA01-0 | % | ± 0.01 K | | | | |
| • Power factor measurement (p.f. ≥ 0.5) | % | ± 1.5/5 (typical) | | | | |
| • Apparent power measurement (p.f. ≥ 0.5) | % | ± 3/5 (typical) | | | | |
| • Active power measurement (p.f. ≥ 0.5) | % | ± 5/10 | | | | |
| • Energy measurement (p.f. ≥ 0.5) | % | ± 5/10 | | | | |
| • Frequency measurement (p.f. ≥ 0.5) | % | ± 1.5 | | | | |
| **Notes on voltage measurement** | | In the supply lines from the main circuit for voltage measurement of SIMOCODE pro it may be necessary to provide additional line protection! | | | | |
| • Supply lines for voltage measurement | | | | | | |

[1] All values are based on a combination consisting of basic unit, current measuring module and operator panel.

| Current measuring modules | | | | | | |
|---|---|---|---|---|---|---|
| **Type** | | **3UF7100-1AA00-0** | **3UF7101-1AA00-0** | **3UF7102-1AA00-0** | **3UF7103-1.A00-0** | **3UF7104-1BA00-0** |
| ***Main circuit*** | | | | | | |
| **Current setting $I_e$** | A | 0.3 ... 3 | 2.4 ... 25 | 10 ... 100 | 20 ... 200 | 63 ... 630 |
| **Rated insulation voltage $U_i$** | V | 690; 3UF7103 and 3UF7104: 1 000 (at pollution degree 3) | | | | |
| **Rated operational voltage $U_e$** | V | 690 | | | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6; 3UF7103 and 3UF7104: 8 | | | | |
| **Rated frequency** | Hz | 50/60 | | | | |
| **Type of current** | | Three-phase current | | | | |
| **Short circuit** | | Additional short-circuit protection is required in the main circuit | | | | |
| **Accuracy of current measurement (in the range of 1 x minimum current setting $I_u$ to 8 x max. current setting $I_o$)** | % | ± 3 (typical) | | | | |

| Digital modules or multifunction modules | | |
|---|---|---|
| **Type** | | **3UF7300, 3UF7310, 3UF7600** |
| ***Control circuit*** | | |
| **Rated insulation voltage $U_i$** | V | 300 (at pollution degree 3) |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Relay outputs** | | |
| • Number | | 2 monostable or bistable relay outputs (depending on the version) |
| • Specified short-circuit protection for auxiliary contacts (relay outputs) | | |
| - Fuse links | | 6 A operational class gG; 10 A quick-response (IEC 60947-5-1) |
| - Miniature circuit breakers | | 1.6 A, C characteristic (IEC 60947-5-1); 6 A, C characteristic ($I_k$ < 500 A) |
| • Rated uninterrupted current | A | 6 |
| • Rated switching capacity | | |
| - AC-15 | | 6 A/24 V AC; 6 A/120 V AC; 3 A/230 V AC |
| - DC-13 | | 2 A/24 V DC; 0.55 A/60 V DC; 0.25 A/125 V DC |
| **Inputs (binary)** | | 4 inputs, electrically isolated, supplied externally with 24 V DC or 110 ... 240 V AC/DC depending on the version, connected to a common potential |

| Ground-fault modules or multifunction modules | | |
|---|---|---|
| **Type** | | **3UF7510, 3UF7600** |
| ***Control circuit*** | | |
| **Connectable residual-current transformer** | | 3UL23 |
| **Type of current for monitoring** | | Type A (AC and pulsating DC residual currents) |
| **Adjustable response value** | | 30 mA ... 40 A |
| **Relative measurement error** | % | 7.5 |

| Temperature modules or multifunction modules | | | | | |
|---|---|---|---|---|---|
| **Type** | | **3UF7600, 3UF7700** | | | |
| ***Sensor circuit*** | | | | | |
| **Number of temperature sensors** | | | | | |
| • 3UF7700 | | 3 temperature sensors | | | |
| • 3UF7600 | | 1 temperature sensor | | | |
| **Typical sensor current** | | | | | |
| • Pt100 | mA | 1 | | | |
| • Pt1000/KTY83/KTY84/NTC | mA | 0.2 | | | |
| **Open-circuit/short-circuit detection** | | | | | |
| • Sensor type | | Pt100/Pt1000 | KTY83-110 | KTY84 | NTC |
| - Open circuit | | ✓ | ✓ | ✓ | -- |
| - Short circuit | | ✓ | ✓ | ✓ | ✓ |
| - Measuring range | °C | -50 ... +500 | -50 ... +175 | -40 ... +300 | 80 ... 160 |
| **Measuring accuracy at 20 °C ambient temperature** (T20) | K | < ± 2 | | | |
| **Deviation due to ambient temperature** (in % of measuring range) | % | 0.05 per K deviation from T20 | | | |
| **Conversion time** | ms | 500 | | | |
| **Connection type** | | Two- or three-wire connection | | | |

✓ Detection possible
-- Detection not possible

## Technical data



| Analog module | | |
|---|---|---|
| **Type** | | **3UF74** |
| ***Control circuit*** | | |
| **Inputs** | | |
| • Channels | | 2 (passive) |
| • Parameterizable measuring ranges | mA | 0/4 ... 20 |
| • Shielding | | Up to 30 m shield recommended, from 30 m shield required |
| • Max. input current (destruction limit) | mA | 40 |
| • Accuracy | % | ± 1 |
| • Input resistance | Ω | 50 |
| • Conversion time | ms | 150 |
| • Resolution | Bit | 12 |
| • Open-circuit detection | | With measuring range 4 ... 20 mA |
| **Outputs** | | |
| • Channels | | 1 |
| • Parameterizable output range | mA | 0/4 ... 20 |
| • Shielding | | Up to 30 m shield recommended, from 30 m shield required |
| • Max. voltage at output | V DC | 30 |
| • Accuracy | % | ± 1 |
| • Max. output load | Ω | 500 |
| • Conversion time | ms | 25 |
| • Resolution | Bit | 12 |
| • Short-circuit proof | | Yes |
| **Connection type** | | Two-wire connection |
| **Electrical separation of inputs/output to the device electronics** | | No |

| Fail-safe digital modules | | | | | |
|---|---|---|---|---|---|
| **Type** | | **3UF7320-1AB00-0** | **3UF7320-1AU00-0** | **3UF7330-1AB00-0** | **3UF7330-1AU00-0** |
| ***Control circuit*** | | | | | |
| **Rated control supply voltage $U_s$** | V | 24 DC | 110 ... 240 AC/DC; 50/60 Hz | 24 DC | 110 ... 240 AC/DC; 50/60 Hz |
| **Power consumption** | | 3 W | 9.5 VA/4.5 W | 4 W | 11 VA/5.5 W |
| **Rated insulation voltage** | V | 300 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 | | | |
| **Relay outputs** | | | | | |
| • Number | | 2 relay enabling circuits, 2 relay outputs | | | |
| **Version of the fuse link** For short-circuit protection of the relay enabling circuit | A | 4, operational class gG | | | |
| **Rated uninterrupted current** | A | 5 | | | |
| **Rated switching capacity** | | | | | |
| • AC-15 | | 3 A/24 V AC; 3 A/120 V AC; 1.5 A/230 V AC | | | |
| • DC-13 | | 4 A/24 V DC; 0.55 A/60 V DC; 0.22 A/125 V DC | | | |
| **Inputs (binary)** | | 5 (with internal power supply from the device electronics) | | | |
| **Cable length** | | | | | |
| • Between sensor/start signal and evaluation electronics | m | 1 500 | 1 500 | -- | -- |
| • For further digital signals | m | -- | -- | 300 | 300 |
| ***Safety data*** [1] | | | | | |
| **SIL level max. according to IEC 61508** | | 3 | | | |
| **Achievable performance level PL according to EN ISO 13849-1** | | e | | | |
| **Achievable category according to EN ISO 13849-1** | | 4 | | | |
| **Stop category according to EN 60204-1** | | 0 | | | |
| **Probability of a dangerous failure for SIL 3 applications** | | | | | |
| • Per hour ($PFH_d$) at a high demand rate according to IEC 62061 | 1/h | $1.0 \times 10^{-8}$ for 2-channel sensor evaluation | | $1.0 \times 10^{-8}$ | |
| • Per hour ($PFD_{avg}$) at a low demand rate according to IEC 61508 | | $2.0 \times 10^{-6}$ for 2-channel sensor evaluation | | $2.0 \times 10^{-6}$ | |
| **T1 value for proof test interval or service duration according to IEC 61508** | a | 20 | | | |

[1] For more safety data, see System Manual "SIMOCODE pro Safety Fail-Safe Digital Modules".

## More information

### *Configuration instructions*

When using an operator panel with display, please note that the type and number of expansion modules that can be connected are limited for the use of a SIMOCODE pro V PROFIBUS basic unit (with product version lower than E15) or SIMOCODE pro V Modbus RTU (with product version lower than E03), see

- TIA Selection Tool
- SIMOCODE pro Manual Collection

### *Protective separation*

All circuits in SIMOCODE pro are safely isolated from each other in accordance with IEC 60947-1. That is, they are designed with double creepages and clearances. In the event of a fault, therefore, no parasitic voltages can be formed in neighboring circuits. The instructions of test log No. 2668 must be complied with.

### *Types of protection EEx e and EEx d*

The overload protection and the thermistor motor protection of the SIMOCODE pro system comply with the requirements for overload protection of explosion-proof motors to the type of protection:

- EEx d "Flameproof enclosure" e.g. according to IEC 60079-1
- EEx e "Increased safety" e.g. according to IEC 60079-7

When using SIMOCODE pro devices with a 24 V DC control voltage, electrical separation must be ensured using a battery or a safety transformer according to IEC 61558-2-6.
EC type test certificate: BVS 06 ATEX F 001
Test report: BVS PP 05.2029 EC.

### *Type of protection Ex b*

The function for dry-running protection of centrifugal pumps in hazardous areas complies with the requirements of the following type of protection:

- Ex b "Control of ignition source", ignition protection system b1, e.g. according to EN 80079-37

SIMOCODE pro is registered for the dry-running protection of centrifugal pumps by means of active power monitoring according to both ATEX and IEC Ex.

## Selection and ordering data

| | Version | SD | Screw terminals ⊕ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **SIMOCODE pro PROFIBUS** | | | | | | |
| 3UF7000-1AB00-0 | **SIMOCODE pro C**<br>PROFIBUS DP interface, 12 Mbps, RS 485<br>4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs<br>Rated control supply voltage $U_S$: | | | | | |
| | • 24 V DC | ▶ | **3UF7000-1AB00-0** | | 1 | 1 unit |
| | • 110 ... 240 V AC/DC | ▶ | **3UF7000-1AU00-0** | | 1 | 1 unit |
| 3UF7020-1AU01-0 | **SIMOCODE pro S**<br>PROFIBUS DP interface, 1.5 Mbps, RS 485<br>4 I/2 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by a multifunction module<br>Note: The connection cable to the current measuring module must be at least 15 cm.<br>Rated control supply voltage $U_S$: | | | | | |
| | • 24 V DC | ▶ | **3UF7020-1AB01-0** | | 1 | 1 unit |
| | • 110 ... 240 V AC/DC | ▶ | **3UF7020-1AU01-0** | | 1 | 1 unit |
| 3UF7010-1AB00-0 | **SIMOCODE pro V**[1]<br>PROFIBUS DP interface, 12 Mbps, RS 485<br>4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules<br>Rated control supply voltage $U_S$: | | | | | |
| | • 24 V DC | ▶ | **3UF7010-1AB00-0** | | 1 | 1 unit |
| | • 110 ... 240 V AC/DC | ▶ | **3UF7010-1AU00-0** | | 1 | 1 unit |
| **SIMOCODE pro PROFINET** | | | | | | |
| 3UF7011-1AB00-1 | **SIMOCODE pro V PROFINET GP** *NEW*<br>ETHERNET/PROFINET IO,<br>OPC UA server and web server, 100 Mbps,<br>PROFINET system redundancy,<br>4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion module,<br>web server in German/English/Chinese/Russian<br>2 x connection to bus through RJ45,<br>Media Redundancy Protocol<br>Rated control supply voltage $U_S$: | | | | | |
| | • 24 V DC | ▶ | **3UF7011-1AB00-1** | | 1 | 1 unit |
| | • 110 ... 240 V AC/DC | ▶ | **3UF7011-1AU00-1** | | 1 | 1 unit |
| | 1 x connection to bus through RJ45,<br>Rated control supply voltage $U_S$: | | | | | |
| | • 24 V DC | ▶ | **3UF7011-1AB00-2** | | 1 | 1 unit |
| | • 110 ... 240 V AC/DC | ▶ | **3UF7011-1AU00-2** | | 1 | 1 unit |
| 3UF7011-1AB00-0 | **SIMOCODE pro V PROFINET**<br>ETHERNET/PROFINET IO,<br>OPC UA server and web server, 100 Mbps,<br>2 x connection to bus through RJ45, PROFINET system redundancy, media redundancy protocol,<br>4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules,<br>web server in German/English/Chinese/Russian<br>Rated control supply voltage $U_S$: | | | | | |
| | • 24 V DC | ▶ | **3UF7011-1AB00-0** | | 1 | 1 unit |
| | • 110 ... 240 V AC/DC | ▶ | **3UF7011-1AU00-0** | | 1 | 1 unit |

[1] For the use of 2nd-generation current/voltage measuring modules, SIMOCODE pro V PROFIBUS with product version E15 (V4.0) must be ordered. This version does not have an NEPSI certificate. It can be ordered at no extra charge. The article number must be supplemented by "–**Z**" and the order code "**B01**", e.g. **3UF7010-1AB00-0 -Z B01**.

| Version | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | Article No. | Price per PU | | |
| **SIMOCODE pro Modbus RTU** | | | | | |
| 3UF7012-1A.00-0 | | | | | |
| **SIMOCODE pro V Modbus RTU[1)5)]** | | | | | |
| Modbus RTU interface, 57.6 Kbps, RS 485, 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules | | | | | |
| Rated control supply voltage $U_S$: | | | | | |
| • 24 V DC | ► | **3UF7012-1AB00-0** | | 1 | 1 unit |
| • 110 ... 240 V AC/DC | ► | **3UF7012-1AU00-0** | | 1 | 1 unit |
| **SIMOCODE pro EtherNet/IP** | | | | | |
| 3UF7013-1AB00-0 | | | | | |
| **SIMOCODE pro V EtherNet/IP[1)]** | | | | | |
| EtherNet/IP interface, web server, 100 Mbps, 2 x connection to bus through RJ45, DLR media redundancy, 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules, web server in German/English/Chinese/Russian | | | | | |
| Rated control supply voltage $U_S$: | | | | | |
| • 24 V DC | ► | **3UF7013-1AB00-0** | | 1 | 1 unit |
| • 110 ... 240 V AC/DC | ► | **3UF7013-1AU00-0** | | 1 | 1 unit |
| **SIMOCODE pro current or current/voltage measuring modules** | | | | | |
| 3UF7103-1AA00-0 | | | | | |
| **Current measuring modules** | | | | | |
| • Straight-through transformers 0.3 ... 3 | 45 | ► | **3UF7100-1AA00-0** | 1 | 1 unit |
| 2.4 ... 25 | 45 | ► | **3UF7101-1AA00-0** | 1 | 1 unit |
| 10 ... 100 | 55 | ► | **3UF7102-1AA00-0** | 1 | 1 unit |
| 20 ... 200 | 120 | ► | **3UF7103-1AA00-0** | 1 | 1 unit |
| • Busbar connection[6)] 20 ... 200 | 120 | ► | **3UF7103-1BA00-0** | 1 | 1 unit |
| 63 ... 630 | 145 | ► | **3UF7104-1BA00-0** | 1 | 1 unit |
| 3UF7110-1AA01-0 | | | | | |
| **2nd-generation current/voltage measuring modules for SIMOCODE pro V[1)2)]** | | | | | |
| Voltage measuring up to 690 V, measured values with increased accuracy, power, power factor and frequency monitoring | | | | | |
| • Straight-through transformers 0.3 ... 4 | 45 | ► | **3UF7110-1AA01-0** | 1 | 1 unit |
| 3 ... 40 | 45 | ► | **3UF7111-1AA01-0** | 1 | 1 unit |
| 10 ... 115 | 55 | ► | **3UF7112-1AA01-0** | 1 | 1 unit |
| 20 ... 200 | 120 | ► | **3UF7113-1AA01-0** | 1 | 1 unit |
| • Busbar connection[6)] 20 ... 200 | 120 | ► | **3UF7113-1BA01-0** | 1 | 1 unit |
| 63 ... 630 | 145 | ► | **3UF7114-1BA01-0** | 1 | 1 unit |
| 3UF7123-1AA01-0 | | | | | |
| **Current/voltage measuring modules for dry-running protection of centrifugal pumps in hazardous areas[2)3)4)]** NEW | | | | | |
| • Straight-through transformers 0.3 ... 4 | 45 | ► | **3UF7120-1AA01-0** | 1 | 1 unit |
| 3 ... 40 | 45 | ► | **3UF7121-1AA01-0** | 1 | 1 unit |
| 10 ... 115 | 55 | ► | **3UF7122-1AA01-0** | 1 | 1 unit |
| 20 ... 200 | 120 | ► | **3UF7123-1AA01-0** | 1 | 1 unit |
| • Busbar connection[6)] 20 ... 200 | 120 | ► | **3UF7123-1BA01-0** | 1 | 1 unit |
| 63 ... 630 | 145 | ► | **3UF7124-1BA01-0** | 1 | 1 unit |

1) The SIMOCODE ES (TIA Portal) V14 software or higher is necessary for parameterization, see page 3/83.

2) When installing the basic unit on a current/voltage measuring module, the connection cable must be at least 15 cm long.

3) The current/voltage measuring modules for dry-running protection require SIMOCODE pro V PROFIBUS basic units as of product version E16 (expected to be available from 03/2019), SIMOCODE pro V PROFINET as of product version E13 (expected to be available from 10/2018) or SIMOCODE pro V EtherNet/IP as of product version E04 (expected to be available from 03/2019).

4) When using an operator panel with display with the current/voltage measuring modules for dry-running protection, an operator panel with display as of product version E03 (both versions 3UF7210-1AA01-0 and 3UF7210-1BA01-0 expected to be available from 03/2019) is required.

5) For the use of 2nd-generation current/voltage measuring modules, SIMOCODE pro V Modbus RTU with product version E03 (V2.0) must be ordered. This version does not have an NEPSI certificate. It can be ordered at no extra charge. The article number must be supplemented by "–**Z**" and the order code "**B01**", e.g. **3UF7012-1AB00-0 -Z B01.**

6) One terminal parts kit 3RT1955-4PA00 or 3RT1966-4PA00 (see page 3/82) is included in the scope of delivery for connection to a contactor.

Note:

SIMOCODE pro V basic unit in a hardened version via SIPLUS extreme upon request.

## Basic units *IE3/IE4* ready



| | Version | Current setting | Width | SD | Screw terminals ⊕ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | A | mm | d | | | | |
| **SIMOCODE pro operator panels** | | | | | | | | |
| 3UF7200-1AA01-0 | **Operator panels** Installation in control cabinet door or front plate, for plugging into all SIMOCODE pro basic units, ten LEDs for status indication and user-assignable buttons for controlling the motor, titanium gray | | | ► | **3UF7200-1AA01-0** | | 1 | 1 unit |
| 3UF7210-1.A01-0 | **Operator panels with display for SIMOCODE pro V** Installation in control cabinet door or front plate, for plugging into SIMOCODE pro V, seven LEDs for status indication and user-assignable buttons for controlling the motor, multilingual display, e.g. for indication of measured values, status information or fault messages, titanium gray | | | | | | | |
| | • English/German/French/Spanish/Portuguese/ Italian/Polish/Finnish | | | ► | **3UF7210-1AA01-0** | | 1 | 1 unit |
| | • English/Chinese/Russian/Korean | | | ► | **3UF7210-1BA01-0** | | 1 | 1 unit |

## Selection and ordering data

| Version | SD | Screw terminals ⊕ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Expansion modules for SIMOCODE pro V** | | | | | |
| With SIMOCODE pro V, it is possible to expand the type and number of inputs and outputs in steps. Each expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro V using a connection cable; through the second system interface, further expansion modules or the operator panel can be connected. The power supply for the expansion modules is provided by the connection cable through the basic unit.<br>Notes:<br>The SIMOCODE pro V PN GP basic unit can be used with the 3UF7300-1A.00-0 monostable digital module, the 3UF7510-1AA00-0 ground-fault module, or the 3UF7700-1AA0-0 temperature module.<br>Please order connection cable separately, see page 10/22. | | | | | |
| **Digital modules**<br>Up to two digital modules can be used to add additional binary inputs and relay outputs to the basic unit. The input circuits of the digital modules are supplied from an external power supply.<br>Four binary inputs and two relay outputs, up to two digital modules can be connected | | | | | |
| Relay outputs: Monostable; Input voltage: 24 V DC | ▶ | **3UF7300-1AB00-0** | | 1 | 1 unit |
| Monostable; 110 ... 240 V AC/DC | ▶ | **3UF7300-1AU00-0** | | 1 | 1 unit |
| Bistable; 24 V DC | ▶ | **3UF7310-1AB00-0** | | 1 | 1 unit |
| Bistable; 110 ... 240 V AC/DC | ▶ | **3UF7310-1AU00-0** | | 1 | 1 unit |
| **Analog modules**<br>By means of the analog module, the basic unit can be optionally expanded by analog inputs and outputs (0/4 ... 20 mA).<br>Two inputs (passive) for input and one output for output of 0/4 ... 20 mA signals, max. one analog module can be connected per pro V PB/MB RTU basic unit and max. two analog modules per pro V PN/EIP basic unit | ▶ | **3UF7400-1AA00-0** | | 1 | 1 unit |
| **Ground-fault modules**<br>Ground-fault monitoring using 3UL23 residual-current transformers and ground-fault modules is used in cases where precise detection of the ground-fault current is required or power systems with high impedance are grounded.<br>With the ground-fault module, it is possible to determine the precise fault current as a measured value, and to define freely selectable warning and trip limits in a wide range from 30 mA ... 40 A.<br>One input for connecting a 3UL23 residual-current transformer, up to one ground-fault module can be connected<br>Note:<br>For corresponding residual-current transformers, see page 11/55. | ▶ | **3UF7510-1AA00-0** | | 1 | 1 unit |
| **Temperature modules**<br>Irrespective of the thermistor motor protection of the basic units, up to an additional three analog temperature sensors can be evaluated using a temperature module.<br>Sensor types: Pt100/Pt1000, KTY83/KTY84 or NTC<br>Three inputs for connecting up to three analog temperature sensors, up to one temperature module can be connected per pro V PB/MB RTU basic unit and up to two temperature modules per pro V PN/EIP basic unit | ▶ | **3UF7700-1AA00-0** | | 1 | 1 unit |

3UF7300-1AB00-0

3UF7400-1AA00-0

3UF7510-1AA00-0

3UF7700-1AA00-0

## Expansion modules



| Version | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | Article No. Price per PU | | |
| **Expansion modules for SIMOCODE pro S** | | | | |
| With SIMOCODE pro S, it is possible to expand the type and number of inputs and outputs. The expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro S using a connection cable; through the second system interface, the operator panel can be connected. The power supply for the expansion module is provided by the connection cable through the basic unit.<br>Note:<br>Please order connection cable separately, see page 3/80. | | | | |
| **Multifunction modules**<br>The multifunction module is the expansion module of the SIMOCODE pro S device series with the following functions:<br>• Digital module function with four digital inputs and two monostable relay outputs<br>• Ground-fault module function with an input for the connection of a 3UL23 residual-current transformer with freely selectable warning and trip limits in a wide zone of 30 mA ... 40 A<br>• Temperature module function with an input for connecting an analog temperature sensor Pt100, Pt1000, KTY83, KTY84, or NTC<br>Max. one multifunction module can be connected per pro S basic unit<br>Input voltage of the digital inputs: | | | | |
| • 24 V DC | ▶ | **3UF7600-1AB01-0** | 1 | 1 unit |
| • 110 ... 240 V AC/DC | ▶ | **3UF7600-1AU01-0** | 1 | 1 unit |

3UF7600-1AU01-0

## Selection and ordering data

| Version | SD d | Screw terminals ⊕ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Fail-safe expansion modules for SIMOCODE pro V** | | | | | |
| Thanks to the fail-safe expansion modules, SIMOCODE pro V can be expanded with the function of a safety relay for the fail-safe disconnection of motors. A maximum of one fail-safe digital module can be connected; it can be used instead of a digital module.<br>The fail-safe expansion modules are equipped likewise with two system interfaces at the front for making the connection to other system components. Unlike other expansion modules, power is supplied to the modules through a separate terminal connection.<br>Note:<br>Please order connection cable separately, see page 3/80. | | | | | |
| **DM-F Local fail-safe digital modules**<br>For fail-safe disconnection using a hardware signal<br>Two relay enabling circuits, joint switching; two relay outputs, common potential disconnected fail-safe; inputs for sensor circuit, start signal, cascading and feedback circuit, safety function adjustable using DIP switches<br>Rated control supply voltage $U_S$: | | | | | |
| <br>3UF7320-1AB00-0 | | | | | |
| • 24 V DC | ▶ | **3UF7320-1AB00-0** | | 1 | 1 unit |
| • 110 ... 240 V AC/DC | ▶ | **3UF7320-1AU00-0** | | 1 | 1 unit |
| **DM-F PROFIsafe fail-safe digital modules**[1]<br>For fail-safe disconnection using PROFIBUS/PROFIsafe or PROFINET/PROFIsafe<br>Two relay enabling circuits, joint switching; two relay outputs, common potential disconnected fail-safe; one input for feedback circuit; three binary standard inputs<br>Rated control supply voltage $U_S$: | | | | | |
| <br>3UF7330-1AB00-0 | | | | | |
| • 24 V DC | ▶ | **3UF7330-1AB00-0** | | 1 | 1 unit |
| • 110 ... 240 V AC/DC | ▶ | **3UF7330-1AU00-0** | | 1 | 1 unit |

[1] Cannot be used in conjunction with SIMOCODE pro V for Modbus RTU or EtherNet/IP communication.

## Selection and ordering data

| | Version | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Connection cables (essential accessory)** | | | | | | | |
| 3UF7932-0AA00-0 | In different lengths for connecting basic unit, current measuring module, current/voltage measuring module, operator panel or expansion modules | | | | | | |
| | Version | Length | | | | | |
| | Flat | 0.025 m | ▶ | **3UF7930-0AA00-0** | | 1 | 1 unit |
| | | 0.1 m | ▶ | **3UF7931-0AA00-0** | | 1 | 1 unit |
| | | 0.15 m NEW | ▶ | **3UF7934-0AA00-0** | | 1 | 1 unit |
| | | 0.3 m | ▶ | **3UF7935-0AA00-0** | | 1 | 1 unit |
| | | 0.5 m | ▶ | **3UF7932-0AA00-0** | | 1 | 1 unit |
| | Round | 0.5 m | ▶ | **3UF7932-0BA00-0** | | 1 | 1 unit |
| | | 1.0 m | ▶ | **3UF7937-0BA00-0** | | 1 | 1 unit |
| | | 2.5 m | ▶ | **3UF7933-0BA00-0** | | 1 | 1 unit |
| **PC cables and adapters** | | | | | | | |
| 3UF7941-0AA00-0 | **USB PC cables** For connecting to the USB interface of a PC/PG, for communication with SIMOCODE pro through the system interface | | ▶ | **3UF7941-0AA00-0** | | 1 | 1 unit |
| | **USB/serial adapters** For connecting an RS 232 PC cable to the USB interface of a PC | | 5 | **3UF7946-0AA00-0** | | 1 | 1 unit |
| **Memory modules** | | | | | | | |
| 3UF7901-0AA01-0 | Enable transmission to a new system, e.g. when a device is replaced, without the need for additional aids or detailed knowledge of the device. | | | | | | |
| | **Memory modules for SIMOCODE pro C** For saving the complete parameterization of a SIMOCODE pro C system, titanium gray | | ▶ | **3UF7900-0AA01-0** | | 1 | 1 unit |
| | **Memory modules for SIMOCODE pro S and pro V** For saving the complete parameterization of a SIMOCODE pro system, titanium gray | | ▶ | **3UF7901-0AA01-0** | | 1 | 1 unit |
| **Interface covers** | | | | | | | |
| 3RA6936-0B | For system interface, titanium gray | | 10 | **3RA6936-0B** | | 1 | 5 units |
| **Addressing plugs** | | | | | | | |
| 3UF7910-0AA00-0 | For assigning the PROFIBUS or Modbus RTU address without using a PC/PG to SIMOCODE pro through the system interface | | ▶ | **3UF7910-0AA00-0** | | 1 | 1 unit |

| | Version | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Accessories for motor control centers** | | | | | | | |
| 3UF7902-0AA00-0 | With the draw-out technology often used in motor control centers it is possible to integrate a SIMOCODE pro initialization module in the switchboard on a permanent basis. Feeder-related parameter and address data can then be permanently assigned to this feeder. | | | | | | |
| | **Initialization modules** For automatic parameterization of SIMOCODE pro S and SIMOCODE pro V basic units (pro V PROFIBUS basic units from product version E09) | | ► | **3UF7902-0AA00-0** | | 1 | 1 unit |
| | **Y connection cables** For use in conjunction with the initialization module; connects the basic unit, current measuring module or current/voltage measuring module, and initialization module | | | | | | |
| | System interface length | Open cable end | | | | | |
| | 0.1 m | 1.0 m | ► | **3UF7931-0CA00-0** | | 1 | 1 unit |
| | 0.5 m | 1.0 m | ► | **3UF7932-0CA00-0** | | 1 | 1 unit |
| | 1.0 m | 1.0 m | ► | **3UF7937-0CA00-0** | | 1 | 1 unit |
| **Bus connection terminals** | | | | | | | |
| 3UF7960-0AA00-0 | For shield support and strain relief of the PROFIBUS cable on a SIMOCODE pro S | | ► | **3UF7960-0AA00-0** | | 1 | 1 unit |
| **Door adapters** | | | | | | | |
| 3UF7920-0AA00-0 | For external connection of the system interface, e.g. outside a control cabinet | | ► | **3UF7920-0AA00-0** | | 1 | 1 unit |
| **Adapters for operator panel** | | | | | | | |
| 3UF7922-0AA00-0 | The adapter enables the smaller 3UF7200 operator panel from SIMOCODE pro to be used in a front panel cutout in which previously, e.g. after a change of system, a larger 3UF52 operator panel from SIMOCODE-DP had been used, degree of protection IP54 | | ► | **3UF7922-0AA00-0** | | 1 | 1 unit |
| **Labeling strips** | | | | | | | |
| 3UF7925-0AA02-0 | • For pushbuttons of the 3UF720 operator panel | | ► | **3UF7925-0AA00-0** | | 100 | 400 units |
| | • For pushbuttons of the 3UF721 operator panel with display | | ► | **3UF7925-0AA01-0** | | 100 | 600 units |
| | • For LEDs of the 3UF720 operator panel | | ► | **3UF7925-0AA02-0** | | 100 | 1 200 units |
| **Push-in lugs** | | | | | | | |
| 3RV2928-0B | For screw fixing, e.g. on mounting plate, 2 units required per device | | | | | | |
| | • Can be used for 3UF71.0, 3UF71.1 and 3UF71.2 | | 2 | **3RV2928-0B** | | 100 | 10 units |
| | • Can be used for 3UF700, 3UF701, 3UF73, 3UF74, 3UF75 and 3UF77 | | 5 | **3RP1903** | | 1 | 10 units |
| | • Can be used for 3UF7020, 3UF7600 | | 2 | **3ZY1311-0AA00** | | 1 | 10 units |

## Accessories



| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Terminal covers** | | | | | | |
| 3RT1956-4EA1 | **Covers for cable lugs and busbar connections** | | | | | |
| | • Length 100 mm, can be used for 3UF71.3-1BA0.-0 | ▶ | **3RT1956-4EA1** | | 1 | 1 unit |
| | • Length 120 mm, can be used for 3UF71.4-1BA0.-0 | 2 | **3RT1966-4EA1** | | 1 | 1 unit |
| | **Covers for box terminals** | | | | | |
| | • Length 25 mm, can be used for 3UF71.3-1BA0.-0 | ▶ | **3RT1956-4EA2** | | 1 | 1 unit |
| | • Length 30 mm, can be used for 3UF71.4-1BA0.-0 | 2 | **3RT1966-4EA2** | | 1 | 1 unit |
| 3RT1956-4EA2 | **Covers for screw terminals** | | | | | |
| | Between contactor and current measuring module or current/voltage measuring module for direct mounting | | | | | |
| | • Can be used for 3UF71.3-1BA0.-0 | ▶ | **3RT1956-4EA3** | | 1 | 1 unit |
| | • Can be used for 3UF71.4-1BA0.-0 | 2 | **3RT1966-4EA3** | | 1 | 1 unit |
| **Terminal parts kit** | | | | | | |
| | Can be used for current and/or current/voltage measuring modules with standard mounting rail connection, complete for one contactor | | | | | |
| | • M 8 x 25 | 5 | **3RT1955-4PA00** | | 1 | 1 unit |
| | • M 10 x 30 | 5 | **3RT1966-4PA00** | | 1 | 1 unit |
| **Box terminal blocks** | | | | | | |
| 3RT195.-4G | For round and ribbon cables | | | | | |
| | • Up to 70 $mm^2$, can be used for 3UF71.3-1BA0.-0 | ▶ | **3RT1955-4G** | | 1 | 1 unit |
| | • Up to 120 $mm^2$, can be used for 3UF71.3-1BA0.-0 | ▶ | **3RT1956-4G** | | 1 | 1 unit |
| | • Up to 240 $mm^2$, can be used for 3UF71.4-1BA0.-0 | ▶ | **3RT1966-4G** | | 1 | 1 unit |
| **Bus termination modules** | | | | | | |
| 3UF1900-1KA00 | With separate control supply voltage for bus termination following the last unit on the bus line | | | | | |
| | Supply voltage: | | | | | |
| | • 115/230 V AC | 5 | **3UF1900-1KA00** | | 1 | 1 unit |
| | • 24 V DC | 5 | **3UF1900-1KB00** | | 1 | 1 unit |

## Overview

Selection of SIMOCODE pro device configuration in SIMOCODE ES (TIA Portal)

**More information**

Industry Mall, see www.siemens.com/product?3ZS1

TIA Selection Tool Cloud (TST Cloud)

Software download
- For SIMOCODE pro S, see https://support.industry.siemens.com/cs/ww/en/view/109752321
- For SIMOCODE pro V, see https://support.industry.siemens.com/cs/ww/en/view/109480470

SIMOCODE ES is the central software for configuration, startup, operation and diagnostics of SIMOCODE pro.

SIMOCODE ES Version 15 is available as a powerful successor to Version 2007, which is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal).

SIMOCODE ES V15 is integrated seamlessly when further TIA Portal-based software such as STEP 7 or WinCC is available, thus enabling users to achieve a consistent, efficient and intuitive solution for all automation tasks.

However, use of SIMOCODE ES V15 as stand-alone software also provides these advantages.

### *Three program versions*

The user can choose between three different versions of SIMOCODE ES:

- SIMOCODE ES Basic
- SIMOCODE ES Standard
- SIMOCODE ES Premium

New: From V15, the powerful SIMOCODE ES Basic tool for startup or maintenance personnel is available for downloading free of charge in the Siemens Industry Online Support (see "More information").

SIMOCODE ES Standard and Premium are the perfect tools for engineers or configuration engineers on account of their larger scope of functions and integrated graphics editor. Unlike the Standard version, SIMOCODE ES Premium also permits parameterization and diagnostics via PROFIBUS/PROFINET/Ethernet. Indication of all operating, service and diagnostics data supplies important information about the current state of the motor and plant at all times – everywhere on PROFIBUS/PROFINET/Ethernet.

| SIMOCODE ES V15 | Basic | Standard | Premium |
|---|---|---|---|
| Access via the local interface on the device | ✓ | ✓ | ✓ |
| Parameter assignment in list form | ✓ | ✓ | ✓ |
| Parameter printing in list form | ✓ | ✓ | ✓ |
| Operating | ✓ | ✓ | ✓ |
| Diagnostics | ✓ | ✓ | ✓ |
| Test | ✓ | ✓ | ✓ |
| Service data | ✓ | ✓ | ✓ |
| Analog value recording[1)] | ✓ | ✓ | ✓ |
| Trend display of measured values | -- | ✓ | ✓ |
| Parameterizing with convenient graphical display | -- | ✓ | ✓ |
| Parameterizing with the integrated graphics editor (CFC-based) | -- | ✓ | ✓ |
| Printing of diagrams | -- | ✓ | ✓ |
| Parameter comparison | -- | ✓ | ✓ |
| Access via PROFIBUS/PROFINET/ Ethernet[2)] | -- | -- | ✓ |
| Teleservice via MPI | -- | -- | ✓ |
| Routing[3)] | -- | -- | ✓ |

✓ Function available

-- Function not available

1) For SIMOCODE pro V.

2) In combination with Modbus devices, SIMOCODE ES Premium does not offer any additional functions compared with SIMOCODE ES Standard.

3) See http://support.automation.siemens.com/WW/view/en/109738745.

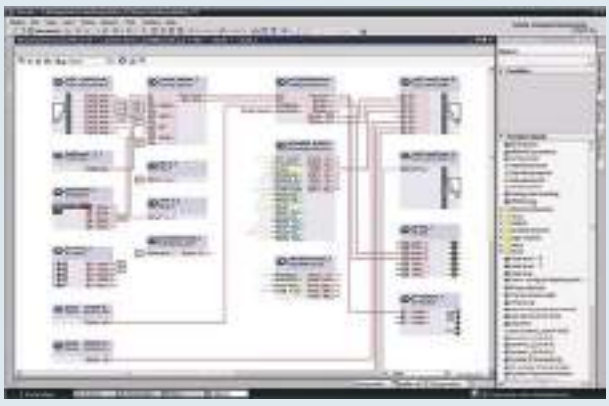
### *Working with libraries*

Users can create copy templates for SIMOCODE pro device configuration and can manage them in global or project libraries.

This way, individual modules, diagrams and complete device configurations can be saved as reusable elements for frequently occurring tasks.

### *Integrated graphics editor*

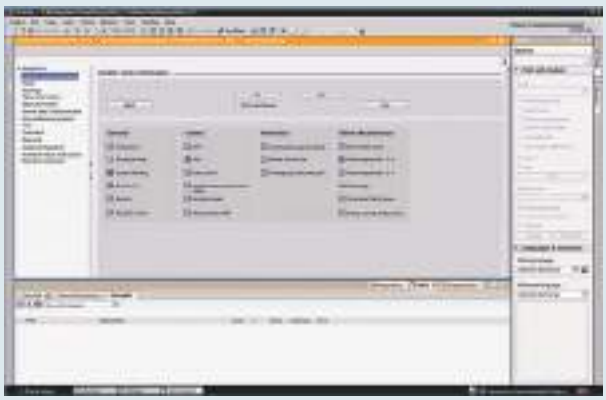
The graphics editor is a part of SIMOCODE ES Standard and SIMOCODE ES Premium. It is based on the Continuous Function Chart (CFC) and adds a powerful tool to the parameterizing interface that enables easy parameterization of devices by drag & drop. What is more, all the parameters can also be edited directly in the graphics editor. Extremely compact documentation of all configured parameters is possible, as is the graphic online presentation of the configured device functions including all signal states during operation.



Parameterize easily and ergonomically with the CFC-based graphics editor of SIMOCODE ES V15

### *Online functions for startup and diagnostics*

To this end, SIMOCODE ES provides powerful functions for startup and diagnostics of motor feeders. Besides a detailed display of status information and the causes of faults, all available measurement and statistics data can be retrieved online. Access to the fault and event memory and also to analog values recorded on the device, e.g. current or voltage, is also possible.



Commissioning functions of SIMOCODE ES V15

### *Trend display of measured values*

With this online function, SIMOCODE ES Standard or Premium can present the trends of different measured values. It is thus possible for example to record and evaluate the start-up characteristic of a motor or its behavior under different load conditions.

Live trend display of SIMOCODE ES V15

### *Additional functions*

SIMOCODE ES V15 offers numerous advantages of the TIA Portal that can be used in an integrated working environment.

Seamless integration

When using other TIA Portal-based software such as STEP 7 or WinCC, for example, the configuration for devices and networks for all components used is created in a standardized environment.

Teleservice via MPI

The SIMOCODE ES (TIA Portal) Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

### Benefits

- Easy parameterization with the graphics editor based on the Continuous Function Chart (CFC) reduces engineering work and shortens startup times
- Clear plant documentation by means of graphic presentation
- Detailed information, also when there are faults, is a help for maintenance personnel and shortens downtimes
- Universally applicable through stand-alone version or seamless integration into the central engineering framework when other TIA Portal-based software such as STEP 7 or WinCC are available
- Parameter changes are also possible during normal operation
- Users can create copy templates for device configurations and can manage them in global libraries

## Selection and ordering data

***Parameterization and service software for SIMOCODE pro 3UF7***

- Delivered without PC cable

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **SIMOCODE ES V15 Basic** | | | | | |
| **Basic functional scope including Premium Trial License**<br>Engineering software, software download, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro, online functions via system interface | ▶ | **3ZS1322-6CE13-0YG8** | | 1 | 1 unit |
| **SIMOCODE ES V15 Standard** | | | | | |
| 3ZS1322-5CC13-0YA5 | | | | | |
| **Floating license for one user**<br>Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), Combo license for parallel use of versions 2007 and V15 of SIRIUS ES, for all SIMOCODE pro, online functions via system interface, parameterizing with the integrated graphics editor (CFC-based) | | | | | |
| • License key on USB flash drive, Class A | ▶ | **3ZS1322-5CC13-0YA5** | | 1 | 1 unit |
| • License key and software download, Class A | ▶ | **3ZS1322-5CE13-0YB5** | | 1 | 1 unit |
| **Upgrade for SIMOCODE ES 2007 Standard**<br>Floating license for one user, engineering software, software and documentation on DVD, license key on USB flash drive, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), Combo license for parallel use of versions 2007 and V15 of SIRIUS ES, for all SIMOCODE pro, online functions via system interface, parameterizing with integrated graphics editor (CFC-based) | 2 | **3ZS1322-5CC13-0YE5** | | 1 | 1 unit |
| **Software Update Service**<br>For 1 year with automatic extension, requires software version of SIMOCODE ES (TIA Portal), engineering software, software and documentation on DVD, online functions via system interface, parameterizing with integrated graphics editor (CFC-based) | ▶ | **3ZS1322-5CC00-0YL5** | | 1 | 1 unit |

Notes:

SIMOCODE ES V12/V13/V14 licenses can also be used for SIMOCODE ES V15.

Please order PC cable separately, see page 3/80.

For a description of the software versions, see page 3/83.

## SIMOCODE ES (TIA Portal) NEW

3ZS1322-6CC13-0YA5

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **SIMOCODE ES V15 Premium** | | | | | |
| **Floating license for one user**<br>Engineering software,<br>software and documentation on DVD,<br>6 languages (German/English/French/Italian/Spanish/Chinese), Combo license for parallel use of versions 2007 and V15 of SIRIUS ES, for all SIMOCODE pro,<br>online functions via system interface and PROFIBUS/PROFINET/Ethernet,<br>parameterizing with the integrated graphics editor (CFC-based) | | | | | |
| • License key on USB flash drive, Class A | ▶ | **3ZS1322-6CC13-0YA5** | | 1 | 1 unit |
| • License key and software download, Class A | ▶ | **3ZS1322-6CE13-0YB5** | | 1 | 1 unit |
| **Upgrade for SIMOCODE ES 2007 Premium**<br>Floating license for one user,<br>engineering software,<br>software and documentation on DVD,<br>license key on USB flash drive, Class A,<br>6 languages (German/English/French/Italian/Spanish/Chinese), Combo license for parallel use of versions 2007 and V15 of SIRIUS ES, for all SIMOCODE pro,<br>online functions via system interface and PROFIBUS/PROFINET/Ethernet,<br>parameterizing with the integrated graphics editor (CFC-based) | 2 | **3ZS1322-6CC13-0YE5** | | 1 | 1 unit |
| **Software Update Service**<br>For 1 year with automatic extension,<br>requires software version of SIMOCODE ES (TIA Portal),<br>engineering software,<br>software and documentation on DVD,<br>online functions via system interface and PROFIBUS/PROFINET/Ethernet,<br>parameterizing with integrated graphics editor (CFC-based) | ▶ | **3ZS1322-6CC00-0YL5** | | 1 | 1 unit |

Notes:

Please order PC cable separately, see page 3/80.

For a description of the software versions, see page 3/83.

## contents

### Self Protected Motor Starters per UL 508 Type E 3RA6

**3RA61 / 3RA62 up to 32 A for mounting rail, surface, comb busbar, infeed system** Page

**Selection and ordering data**


- Direct start, Reversing duty 4/7
- Accessories 4/9-4/13

**3RA64 / 3RA65 up to 32 A for mounting rail, surface, comb busbar, infeed system** Page

**Selection and ordering data**


- Direct start, Reversing duty 4/8
- Accessories 4/9-4/13

**3RA68 up to 100 A for 3RA6 direct and reversing starters** Page

**Selection and ordering data**


- Infeed Components 4/16-4/19
- Accessories 4/20-4/21

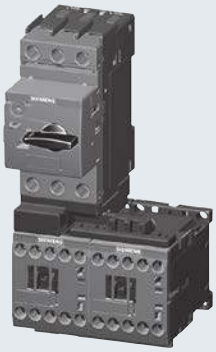

### Combination starters & starters for group installation 3RA2

**3RA21 up to 100 A for mounting rail and Fast Bus busbar systems** Page

**Selection and ordering data**


- Direct start 4/36-4/39
- Accessories 4/44-4/52

Technical data 4/53-4/58
Installation guidelines 4/59-4/68
Circuit diagrams 4/68
Dimension drawings 4/69-4/72

**3RA22 up to 100 A for mounting rail and Fast Bus busbar systems** Page

**Selection and ordering data**


- Reversing duty 4/40-4/43
- Accessories 4/44-4/52

Technical data 4/53-4/58
Installation guidelines 4/59-4/68
Circuit diagrams 4/68
Dimension drawings 4/69-4/72


### Enclosed controllers 3RE4

**3RE4 up to 50Hp @ 460V for non-reversing and reversing applications** Page

**Selection and ordering data**


- Enclosed starters 4/75-4/77
- Enclosed contactors 4/78-4/79

Overload Relay 4/80
Accessories 4/84-4/85
Circuit diagrams 4/87-4/89
Dimension drawings 4/86

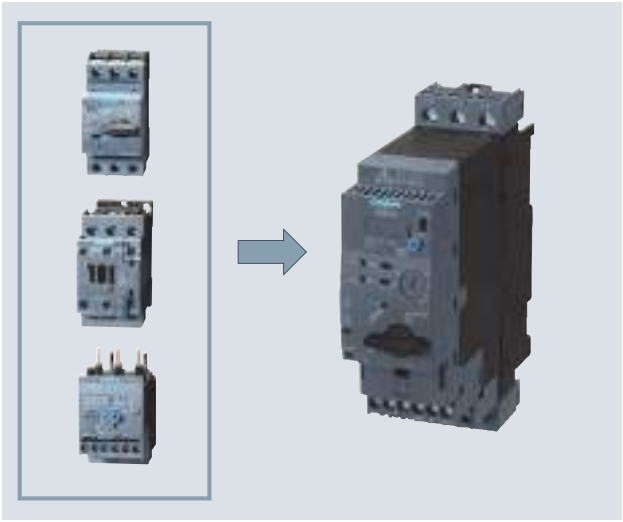
## Overview

***3RA6 fuseless compact starters and infeed system for 3RA6***

3RA62 reversing starter

Integrated functionality

The SIRIUS 3RA6 compact starters are a generation of innovative load feeders with the integrated functionality of a motor starter protector, contactor and electronic overload relay.
In addition, various functions of optional mountable accessories (e.g. auxiliary switches, surge suppressors) are already integrated in the SIRIUS compact starter.



3RA6 compact starters with the integrated functionality of a motor starter protector, contactor and electronic overload relay.

Applications

The SIRIUS compact starters can be used wherever standard three-phase motors up to 32 A (20 HP/460 V) are directly started.

The compact starters are not suitable for the protection of DC loads.

Approvals according to IEC, UL, CSA and CCC standards have been issued for the compact starters.

Low variance of devices

Thanks to wide setting ranges for the rated current and wide voltage ranges, the equipment variance is greatly reduced compared to conventional load feeders.

Very high operational reliability

The high short-circuit breaking capacity and defined shut-down when the end of service life is reached means that the SIRIUS compact starter achieves a very high level of operational reliability that would otherwise have only been possible with considerable additional outlay. This sets it apart from devices with similar functionality.

Safe disconnection

The auxiliary switches (NC contacts) of the 3RA6 compact starters are designed as mirror contacts. This enables their use for safe disconnection - e.g. EMERGENCY STOP up to SIL 1 (IEC 62061) or PL c (ISO 13849-1) or, if used in conjunction with an additional infeed contactor, up to SIL 3 (IEC 62061) or PL e (ISO 13849-1).

Communications integration through AS-Interface

To enable communications integration through AS-Interface there is an AS-i add-on module available in several versions for mounting instead of the control circuit terminals on the SIRIUS compact starter.

The design of the AS-i add-on module permits a group of up to 62 feeders with a total of four cables to be connected to the control system. This reduces wiring work considerably compared to the parallel wiring method.

Communications integration using IO-Link

Up to 4 compact starters in IO-Link version (reversing and direct-on-line starters) can be connected together and conveniently linked to the IO-Link master through a standardized IO-Link connection. The SIRIUS 4SI electronic modules are used e.g. as IO-Link masters for connection to the SIMATIC ET 200S distributed I/O system.

The IO-Link connection enables a high density of information in the local range.

Details of the communications integration using IO-Link, see Chapter 14 Communications.

The diagnostics data of the process collected by the 3RA6 compact starter, e.g. short circuit, end of service life, limit position etc., are not only indicated on the compact starter itself but also transmitted to the higher-level control system through IO-Link.

Thanks to the optionally available operator panel, which can be installed in the control cabinet door, it is easy to control the 3RA6 compact starters with IO-Link from the control cabinet door.

Permanent wiring / easy replacement

Using the SIRIUS infeed system for 3RA6 (see page 4/16) it is possible to carry out the wiring in advance without a compact starter needing to be connected.

A compact starter is very easily replaced simply by pulling it out of the device without disconnecting the wiring.

Even with screw connections or mounting on a standard mounting rail there is no need to disconnect any wiring (on account of the removable main and control circuit terminals) in order to replace a compact starter.

Consistent solution from the infeed to the motor feeder

The SIRIUS infeed system for 3RA6 with integrated PE bar is offered as a user-friendly possibility of feeding in summation currents up to 100 A with a maximum conductor cross-section of 2/0 AWG and connecting the motor cable directly without additional intermediate terminals.

Screw and spring-type terminals

The SIRIUS compact starters and the infeed system for 3RA6 are available with screw and spring-type terminals.

To comply with the clearance and creepage distances demanded according to UL 508 there are the following infeed possibilities:

| Type of infeed | Feeder terminal (according to UL 508, type E) | Type |
|---|---|---|
| Conventional wiring | Terminal block for "Self-Protected Combination Motor Controller (Type E)" | **3RV29 28-1H** |
| Three-phase busbars | Three-phase infeed terminal for constructing "Type E Starters", UL 508 | **3RV29 25-5EB** |
| Infeed systems for 3RA6 | Infeed on left, 50/70 mm$^2$, screw terminal with 3 sockets, outgoing terminal with screw/spring-type connections, including PE bar | **3RA68 13-8AB** (screw terminals), **3RA68 13-8AC** (spring-type terminals) |

### *SIRIUS 3RA6 compact starters*

The SIRIUS 3RA6 compact starters are universal motor starters according to IEC/EN 60947-6-2. As control and protective switching devices (CPS) they can connect, convey and disconnect the thermal, dynamic and electrical loads from short-circuit currents up to $I_q$ = 53 kA, i.e. they are essentially weld-free. They combine the functions of a motor starter protectors, a contactor and a solid-state overload relay in a single enclosure and can be used wherever standard induction motors up to 32 A (up to approx. 20 HP at 480 V AC) are started directly. Available versions are the direct-on-line starters with 45 mm width and the reversing starters with 90 mm width.

The reversing starter version comes with not only an internal electrical interlock but also with a mechanical interlock to prevent simultaneous actuation of both directions of rotation.

3RA6 compact starters are supplied in 5 current setting ranges. The 3RA61 and 3RA62 have 2 control voltage ranges (AC/DC), the 3RA64 and 3RA65 have one control voltage range (DC):

| Current setting range | At 460 V AC for induction motors Standard output P | Rated control supply voltage for | |
|---|---|---|---|
| | | 3RA61, 3RA62 compact starters | 3RA64, 3RA65 compact starters for IO-Link |
| A | HP | V AC/DC | V DC |
| 0.1 ... 0.4 | 0.12 | 24 | 24 |
| 0.32 ... 1.25 | 0.43 ... 1.68 | 110 ... 240 | |
| 1 ... 4 | 1.34 ... 5.36 | | |
| 3 ... 12 | 4.02 ... 16.1 | | |
| 8 ... 32 | 10.7 ... 42.9 | | |

*Note:*

*The 3RA1 motor starters can be used as motor starters > 32 A up to 100 A.*

*The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for motor starters >100 A.*

Operating conditions

The SIRIUS 3RA6 compact starters are suitable for use in nearly all climates. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

The SIRIUS compact starters are generally designed to degree of protection IP20. The permissible ambient temperature during operation is -20 to +60 °C.

The maximum short-circuit current based on UL testing is 30 kA up to 12 A and 15 kA for the 8 ... 32 A versions at 480 V.

*Note:*

*More technical specifications can be found in the system manual at*

www.siemens.com/compactstarter

Overload tripping times

The overload tripping time can be set on the device to less than 10 s (CLASS 10) and less than 20 s (CLASS 20 for heavy starting). As the breaker mechanism still remains closed after an overload, resetting is possible by either local manual reset or autoreset after 3 minutes cooling time.

With autoreset there is no need to open the control cabinet.

Diagnostics options

The compact starter provides the following diagnostics options on site:

- With LEDs
  - Connection to the control voltage
  - Position of the main contacts
- With mechanical indication
  - Tripping due to overload
  - Tripping due to short-circuit
  - Tripping due to malfunction (end of service life reached because of worn switching contacts or a worn switching mechanism or faults in the control electronics)

These states can also be evaluated in the higher-level control system:

- With conventional wiring using the integrated auxiliary and signaling switches of the compact starter
- With AS-Interface or IO-Link in even greater detail using the respective communication interface

Four complement variants for 3RA6 compact starters

- For standard mounting rail or screw mounting:
  basic version including 1 pair of main circuit terminals and 1 pair of control circuit terminals
- For standard mounting rail or screw mounting when using the AS-i add-on module:
  comes without control circuit terminals because the AS-i add-on module is attached in lieu of them
- For use with the infeed system for 3RA6:
  without main circuit terminals because they are supplied with the infeed system and the expansion modules
- For use with the infeed system for 3RA6 and AS-i add-on module:
  without main or control circuit terminals as they are not needed
- The control circuit terminals are always required by the compact starters for IO-Link; the main circuit terminals depend on the use of the infeed system.

Additional components of the 3RA6

The two control circuit terminals on the 3RA61/3RA62 allow access to signalling contacts for overload (1 CO) and short-circuit / malfunction (1 NO). Furthermore, the 3RA61 has two auxiliary contacts (1 NO + 1 NC) for indicating the position of the main contacts, while the 3RA62 has one auxiliary contact (1 NO) per direction of rotation per main contact.

## Function

### Trip units

The SIRIUS 3RA6 compact starters are equipped with the following trip units:
- Inverse-time delayed solid-state overload release
- Instantaneous electronic trip unit (electromagnetic short-circuit release)

The overload releases can be adjusted in accordance with the load current.

The electronic trip units are permanently set to a value 13 times the maximum rated current of the 4 A, 12 A and 32 A starter and thus enable trouble-free starting of motors.

### Trip classes

The trip classes of electronically delayed trip units are based on the tripping time ($t_A$) at 7.2 times the set current in the cold state (excerpt from IEC 60947-4):

CLASS 10: 4s < $t_A$ < 10 s

CLASS 20: 6s < $t_A$ < 20 s (for heavy starting)

The compact starter must trip within this time.

### Disconnection due to malfunction

The following malfunctions can be detected:
- End of service life
  - Worn switching contacts (for electrical endurance see "Technical data")
  - Worn switching mechanisms (for mechanical endurance see "Technical data")
- Faults in the control electronics

### Short-circuit protection

If a short-circuit occurs, the short-circuit releases of the SIRIUS 3RA6 compact starters isolate the faulty motor starter from the network and thus prevent further damage. The short-circuit releases are factory-set to 14 times the value of the maximum rated current $I_n$ of the device.

The SIRIUS compact starters have a short-circuit breaking capacity up to 30 kA at a voltage of 480 V AC.

### Overload relay function

In the event of an overload, the compact starter switches off without the breaker mechanism being opened.

The overload trip can be signaled to the higher-level control system through an integrated signal switch.

The overload signal can be reset automatically or by means of a manual reset.

### Control through AS-Interface

For control through AS-Interface, the AS-i add-on module is mounted instead of the two control circuit terminals on the SIRIUS 3RA6 compact starters (direct-on-line starters and reversing starters).

The AS-i auxiliary voltage and the AS-i data line are installed on the AS-i add-on module easily and quickly without tools by means of two plug-in connector blocks with insulation displacement connection.

The AS-i add-on module is equipped with the latest A/B technology and has an addressing socket onboard.

An addressing unit is required and can be ordered for addressing the AS-i add-on module.

Bit assignment (see below) is similar to that for the SIRIUS motor starters, which means that the same programming can be used here.

| |
|---|
| DI 0.0 ready |
| DI 0.1 motor on |
| DI 0.2 group fault |
| DI 0.3 group warning |

| |
|---|
| DO 0.0 motor on or motor clockwise |
| DO 0.1 motor counterclockwise |

A 24 V DC PELV power supply unit according to EN 61140 safety class III is required for the auxiliary voltage.

The AS-i data line is supplied with voltage by means of a 30 V DC AS-i power supply unit and is controlled by means of the AS-i master.

The AS-i add-on modules are available in the following five versions:
- AS-i add-on module for compact starters
- AS-i add-on module for compact starters with two local inputs for safe disconnection of the "clockwise rotation" or "counter-clockwise rotation" outputs
- AS-i add-on module with two free external inputs
- AS-i add-on module with two free external outputs
- AS-i add-on module with one free external input and output

The AS-i add-on module can only be used with compact starters with a control voltage of 24 V AC/DC.

### Integrated auxiliary switches

The control circuit terminals of the SIRIUS 3RA6 compact starters have the following connections:
- A1/A2 for the control voltage for 3RA61, A1/A2 and B1/B2 for the control voltage for 3RA62
- "Overload" signal switch
- "Fault" signal switch, e. g. "short-circuit"
- Internal auxiliary switch for position of the main contacts (in case of direct-on-line starters: 1 NO + 1 NC with mirror contact to the main contact; in case of reversing starters: 2 NO)

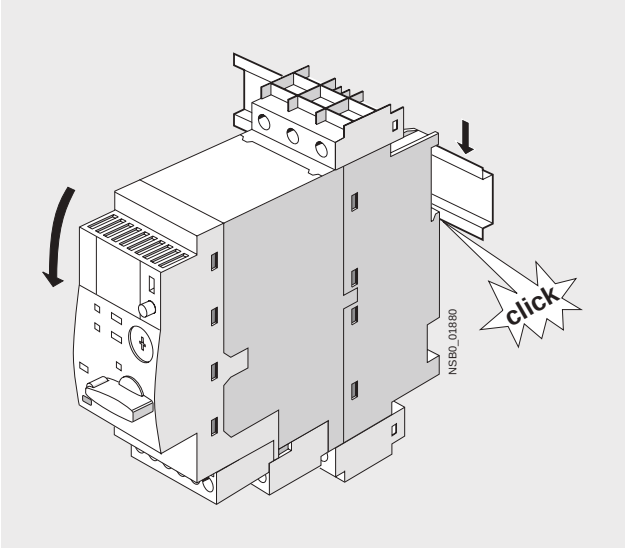
## Design

### *Mounting*

The 3RA6 compact starters can be mounted in 4 ways:

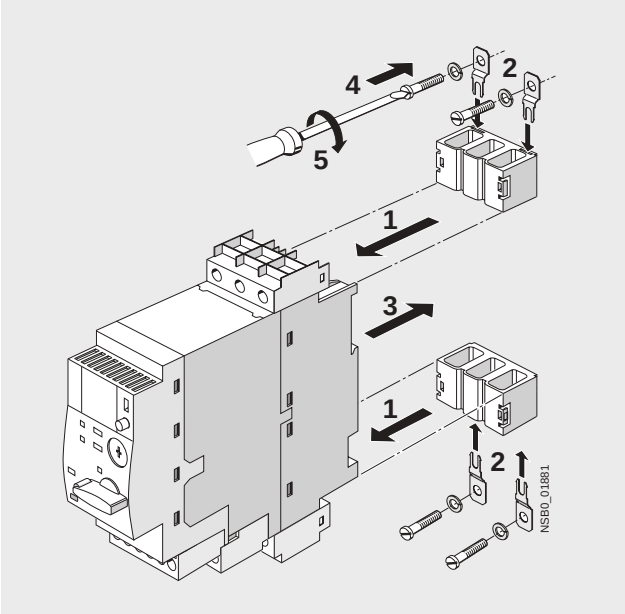
1) By snapping onto a TH 35 standard mounting rail

The SIRIUS compact starters can be snapped onto a standard mounting rail according to EN 60715 with a width of 35 mm.




2) By screw fixing to a flat surface

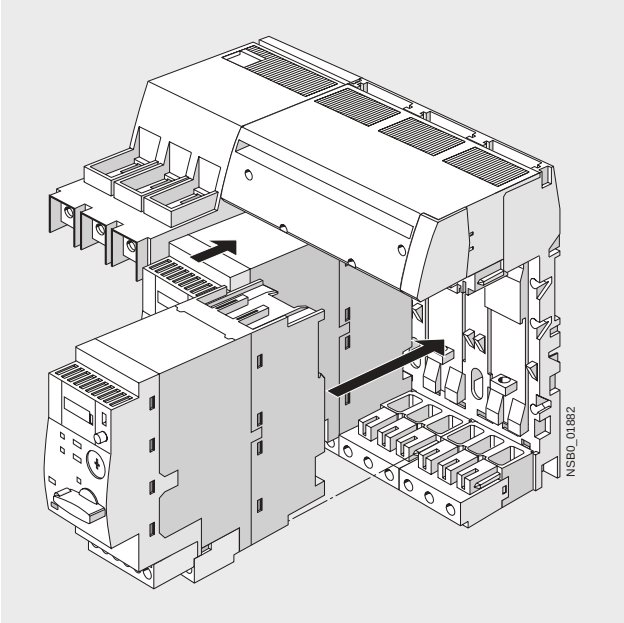
The SIRIUS compact starters are suitable for screw fixing to a flat surface. One set of 3RA69 40-0A adapters for screw connection (including push-in lugs) is required per direct-on-line starter, two sets are required per reversing starter.



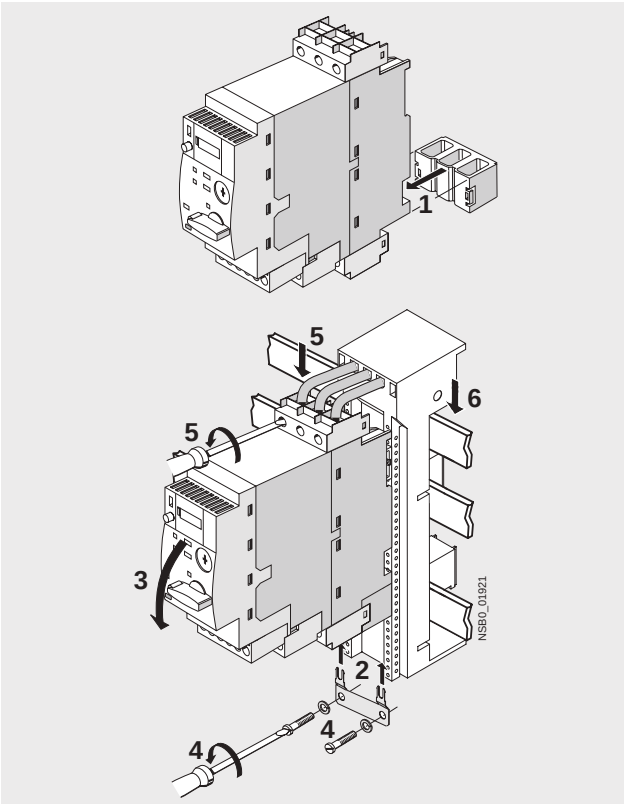

1 ... 5: order of mounting steps

3) By integrating in the infeed system for 3RA6

The SIRIUS compact starters can be assembled with the infeed system for 3RA6 (see "Infeed system for 3RA6").




4) By using the 8US busbar adapter for Fast Bus systems with 60 mm busbar center-to-center clearance

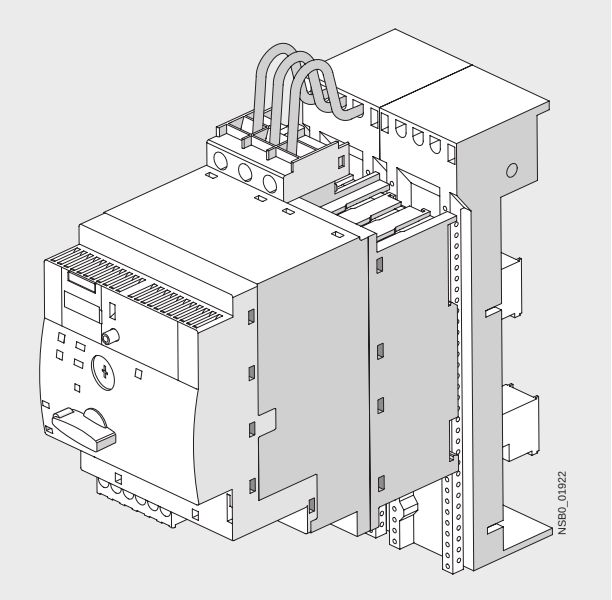



1 ... 6: order of mounting steps

4a) By using an additional device holder in the case of reversing starters

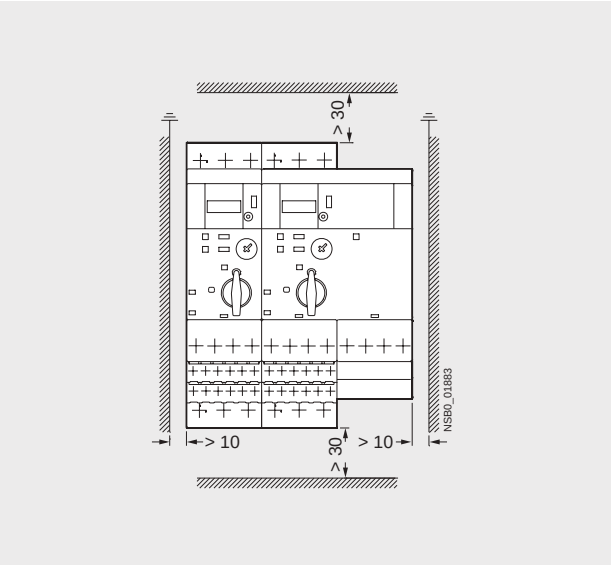
When the 8US busbar adapter is used on Fast Bus systems with 60 mm busbar center-to-center clearance, a device holder is needed in addition for a reversing starter on account of its double width.

The reversing starter is mounted in the same way as the direct-on-line starter on the busbar adapter. Then the device holder is snapped on alongside the busbar adapter.




### *Mounting regulations*

The module can be installed horizontally or vertically. For the different installations attention must be paid however to limit values for protective separation according to IEC/EN 60947-2 of the compact starters (for details see the "Technical specifications").




The following distances must be observed when mounting the compact starters:

- Lateral clearance to grounded components: 10 mm
- Arcing space at top and bottom: 30 mm

## Selection and ordering data

3RA61 20-1CB32

3RA61 20-2EB32

Width 45 mm
One set of 3RA69 40-0A adapters is required for screw fixing.

3RA62 50-1CP32

3RA62 50-1CP32

Width 90 mm
One set of 3RA69 40-0A adapters is required for screw fixing.

| Standard induction motor 4-pole at 400 V AC[1] Standard output *P* | Setting range for solid-state overload release | Order No. | Order No. |
|---|---|---|---|
| HP | A | | |
| **For use with the infeed system for 3RA6 and with the AS-i add-on module or as a replacement device,** without main and control circuit terminals | | | |
| -- | 0.1 ... 0.4 | **3RA6☐☐0-0A ☐32** | — |
| 1/2 | 0.32 ... 1.25 | **3RA6☐☐0-0B ☐32** | — |
| 2 | 1 ... 4 | **3RA6☐☐0-0C ☐32** | — |
| 7 1/2 | 3 ... 12 | **3RA6☐☐0-0D ☐32** | — |
| 20 | 8 ... 32 | **3RA6☐☐0-0E ☐32** | — |
| | | **Screw terminals[2]** | **Spring-type terminals** |
| **For standard mounting rail or screw mounting,** including 1 pair of main circuit terminals and 1 pair of control circuit terminals | | | |
| -- | 0.1 ... 0.4 | **3RA6☐☐0-1A ☐32** | **3RA6☐☐0-2A ☐32** |
| 1/2 | 0.32 ... 1.25 | **3RA6☐☐0-1B ☐32** | **3RA6☐☐0-2B ☐32** |
| 2 | 1 ... 4 | **3RA6☐☐0-1C ☐32** | **3RA6☐☐0-2C ☐32** |
| 7 1/2 | 3 ... 12 | **3RA6☐☐0-1D ☐32** | **3RA6☐☐0-2D ☐32** |
| 20 | 8 ... 32 | **3RA6☐☐0-1E ☐32** | **3RA6☐☐0-2E ☐32** |
| **For use in the infeed system for 3RA6,** without main circuit terminals, with 1 pair of control circuit terminals | | | |
| -- | 0.1 ... 0.4 | **3RA6☐☐0-1A ☐33** | **3RA6☐☐0-2A ☐33** |
| 1/2 | 0.32 ... 1.25 | **3RA6☐☐0-1B ☐33** | **3RA6☐☐0-2B ☐33** |
| 2 | 1 ... 4 | **3RA6☐☐0-1C ☐33** | **3RA6☐☐0-2C ☐33** |
| 7 1/2 | 3 ... 12 | **3RA6☐☐0-1D ☐33** | **3RA6☐☐0-2D ☐33** |
| 20 | 8 ... 32 | **3RA6☐☐0-1E ☐33** | **3RA6☐☐0-2E ☐33** |
| **For standard mounting rail or screw mounting when using the AS-i add-on module** with 1 pair of main circuit terminals, without control circuit terminals | | | |
| -- | 0.1 ... 0.4 | **3RA6☐☐0-1A ☐34** | **3RA6☐☐0-2A ☐34** |
| 1/2 | 0.32 ... 1.25 | **3RA6☐☐0-1B ☐34** | **3RA6☐☐0-2B ☐34** |
| 2 | 1 ... 4 | **3RA6☐☐0-1C ☐34** | **3RA6☐☐0-2C ☐34** |
| 7 1/2 | 3 ... 12 | **3RA6☐☐0-1D ☐34** | **3RA6☐☐0-2D ☐34** |
| 20 | 8 ... 32 | **3RA6☐☐0-1E ☐34** | **3RA6☐☐0-2E ☐34** |
| | | **12** **25** **B** **P** | **12** **25** **B** **P** |

**Order No. supplements for rated control supply voltage**

- Direct-on-line starter
- Reversing duty starter
- 24 V AC/DC (for combining with AS-I add-on module)
- 110 … 240 V AC/DC

[1] Selection depends on the motor full load amps. Horse Power ratings provided for reference only.

[2] A set of 3RA69 40-0A adapters is required for screw mounting.

## Selection and ordering data

3RA64 with 3RA69 11-1A

- **Direct-on-line starters**
- Rated control supply voltage 24 V DC
- Width 45 mm
- One set of 3RA69 40-0A adapters is required for screw fixing

| Standard induction motor 3-pole at 460 V AC Standard output P | Setting range for solid-state overload release | Screw terminals | Spring-type terminals |
|---|---|---|---|
| HP[1] | A | Order No. | Order No. |
| **For standard mounting rail or screw moutning, including 1 pair of main circuit terminals and 1 pair of control circuit terminals** | | | |
| -- | 0.1 … 0.4 | **3RA64 00-1AB42** | **3RA64 00-2AB42** |
| ½ | 0.32 … 1.25 | **3RA64 00-1BB42** | **3RA64 00-2BB42** |
| 2 | 1 … 4 | **3RA64 00-1CB42** | **3RA64 00-2CB42** |
| 7½ | 3 … 12 | **3RA64 00-1DB42** | **3RA64 00-2DB42** |
| 20 | 8 … 32 | **3RA64 00-1EB42** | **3RA64 00-2EB42** |
| **For use in the infeed system for 3RA6, without main circuit terminals, with 1 pair of control circuit terminals** | | | |
| — | 0.1 … 0.4 | **3RA64 00-1AB43** | **3RA64 00-2AB43** |
| ½ | 0.32 … 1.25 | **3RA64 00-1BB43** | **3RA64 00-2BB43** |
| 2 | 1 … 4 | **3RA64 00-1CB43** | **3RA64 00-2CB43** |
| 7½ | 3 … 12 | **3RA64 00-1DB43** | **3RA64 00-2DB43** |
| 20 | 8 … 32 | **3RA64 00-1EB43** | **3RA64 00-2EB43** |

3RA65 with 3RA69 11-1A

- **Reversing starters**
- Rated control supply voltage 24 V DC
- Width 90 mm
- One set of 3RA69 40-0A adapters is required for screw fixing

| | | | |
|---|---|---|---|
| **For standard mounting rail or screw moutning, including 1 pair of main circuit terminals and 1 pair of control circuit terminals** | | | |
| — | 0.1 … 0.4 | **3RA65 00-1AB42** | **3RA65 00-2AB42** |
| ½ | 0.32 … 1.25 | **3RA65 00-1BB42** | **3RA65 00-2BB42** |
| 2 | 1 … 4 | **3RA65 00-1CB42** | **3RA65 00-2CB42** |
| 7½ | 3 … 12 | **3RA65 00-1DB42** | **3RA65 00-2DB42** |
| 20 | 8 … 32 | **3RA65 00-1EB42** | **3RA65 00-2EB42** |
| **For use in the infeed system for 3RA6, without main circuit terminals, with 1 pair of control circuit terminals** | | | |
| — | 0.1 … 0.4 | **3RA65 00-1AB43** | **3RA65 00-2AB43** |
| ½ | 0.32 … 1.25 | **3RA65 00-1BB43** | **3RA65 00-2BB43** |
| 2 | 1 … 4 | **3RA65 00-1CB43** | **3RA65 00-2CB43** |
| 7½ | 3 … 12 | **3RA65 00-1DB43** | **3RA65 00-2DB43** |
| 20 | 8 … 32 | **3RA65 00-1EB43** | **3RA65 00-2EB43** |

1) Selection depends on the motor full load amps. Horse power ratings provided for reference only.

## Overview

### Accessories for SIRIUS 3RA6 compact starters

The following accessories are available for the 3RA6 compact starters:

- AS-i add-on module: see AS-Interface Add-On Modules for 3RA6, page 4/14
- External auxiliary switch blocks: Snap-on auxiliary switch as versions 2 NO, 2 NC and 1 NO +1 NC with screw or spring-type connections; the contacts of the auxiliary switch block open and close jointly with the main contacts of the compact starter. The NC contacts are designed as mirror contacts.
- Control kit: aid for manually closing the main contacts in order to evaluate the wiring and motor direction under conditions of short-circuit protection
- Adapter for screw mounting the compact starter, including push-in lugs
- Main circuit terminals: Available in screw and spring-type terminals
- Main circuit terminals for mixed connection method:
  With the main circuit terminal for the mixed connection method it is also possible in the main circuit to change over from the screw connection method on the incoming side to the spring-type connection method on the outgoing side.
  This enables for example the side-by-side mounting of several compact starters and their cost-effective connection using the three-phase busbars on the infeed side. The motors are then directly connected by the quick and reliably contacting spring-type connection method.

### Accessories for UL applications

The terminal block for "Self-Protected Combination Motor Controller", type E is available for complying with the clearance and creepage distances according to UL 508.

### Accessories for infeed using three-phase busbar systems

The three-phase busbars can be used as an easy, time-saving and clearly arranged means of feeding SIRIUS 3RA6 compact starters with screw connection. Motor starter protectors size S00 and S0 can also be integrated.

The busbars are suitable for between 2 and 5 devices. However, any kind of extension up to a maximum summation current of 63 A is possible by clamping the terminals of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor circuit protector.

A connecting piece is required for the combination with motor starter protector size S00. S00 and S0 motor starter protectors of the 3RV2 series do not require the additional connecting piece. The motor starter protectors are supplied by appropriate feeder terminals. Special feeder terminals are required for constructing "Type E Starters" according to UL/CSA.

The three-phase busbar systems are finger-safe but empty connection terminals must be fitted with covers. They are designed for any short-circuit stress which can occur at the output side of connected SIRIUS 3RA6 compact starters or motor starter protectors.

### 8US Fast Bus busbar adapters for 60 mm systems

The compact starters are mounted directly with the aid of busbar adapters on the Fast Bus busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. These starters are suitable for copper busbars with a width from 12 to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The 8US Fast Bus busbar system can be loaded with a maximum summation current of 630A.

The "reversing starter" version requires a device holder along side the busbar adapter for lateral mounting.

The compact starters are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For more accessories such as incoming and outgoing terminals, flat copper profiles etc., see Section 5 “Fastbus Busbar Systems”.

### Accessories for operation with closed control cabinet doors

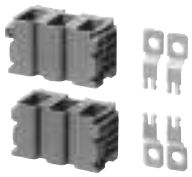
Door-coupling rotary operating mechanisms for standard and emergency-stop applications are available for operating the compact starter with closed control cabinet doors.

### Accessories for SIRIUS 3RA6 compact starters in IO-Link version

The following accessories are available specifically for the 3RA64, 3RA65 compact starters:

- The 4SI SIRIUS solid-state module as IO-Link master allows for the simple and economical connection of SIRIUS controls with IO-Link (e.g up to four groups of 4 compact starters) to the multifunctional SIMATIC ET 200S distributed I/O system.
- Additional connection cables for side-by-side mounting of up to 4 compact starters
- Operator panel for local control and diagnostics of up to 4 compact starters coupled to each other

## Selection and ordering data

| Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|
| **Accessories for 3RA6 compact starters** | | | |
| 3RA69 50-0A<br>**Control kits**<br>For mechanical actuation of the compact starter | **3RA69 50-0A** | 1 unit | 0.004 |
|  3RA69 40-0A<br>**Adapters for screw mounting the compact starter**<br>(set including push-in lugs)<br>Direct-on-line starters require 1 set, reversing starters 2 sets. | **3RA69 40-0A** | 1 unit | 0.152 |
| | **Screw terminals** | | |
| 3RA69 11-1A<br>**Auxiliary switch blocks for compact starters** | | | |
| • 2 NO | **3RA69 11-1A** | 1 unit | 0.018 |
| • 2 NC | **3RA69 12-1A** | 1 unit | 0.018 |
| • 1 NO +1 NC<br>(these auxiliary contacts are positively driven.) | **3RA69 13-1A** | 1 unit | 0.018 |
| 3RA69 20-1A<br>**Main circuit terminals**<br>(line and load side) | **3RA69 20-1A** | 1 unit | 0.038 |
| **Control circuit terminals** | | | |
| 3RA69 20-1B<br>• For 3RA61 | **3RA69 20-1B** | 1 unit | 0.042 |
| • For 3RA62 | **3RA69 20-1C** | 1 unit | 0.042 |
| | **Spring-type terminals** | | |
| 3RA69 11-2A<br>**Auxiliary switch blocks for compact starters** | | | |
| • 2 NO | **3RA69 11-2A** | 1 unit | 0.018 |
| • 2 NC | **3RA69 12-2A** | 1 unit | 0.018 |
| • 1 NO +1 NC<br>(these auxiliary contacts are positively driven.) | **3RA69 13-2A** | 1 unit | 0.018 |
| 3RA69 20-2A<br>**Main circuit terminals**<br>(line and load side) | **3RA69 20-2A** | 1 unit | 0.049 |
| **Control circuit terminals** | | | |
| 3RA69 20-2B<br>• For 3RA61 | **3RA69 20-2B** | 1 unit | 0.036 |
| • For 3RA62 | **3RA69 20-2C** | 1 unit | 0.036 |

| Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|
| **Accessories for 3RA6 compact starters** (continued) | | | |
| 3RA69 20-3A<br>**Main circuit terminals for mixed connection method**<br>One set comprises:<br>• 1 joint block on the line side for the screw connection method<br>• 1 joint block on the motor side for the spring-type connection method | **3RA69 20-3A** | 1 unit | 0.044 |

| Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|
| **Accessories specifically for 3RA64, 3RA65 compact starters with IO-Link** | | | |
| 3RA69 31-0A<br>**Additional connection cables (flat) for side-by-side mounting of up to 4 compact starters** | | | |
| • 10-pole | | | |
| - 8 mm[1] | **3RA69 32-0A** | 5 units | 0.007 |
| - 200 mm[1] | **3RA69 33-0B** | 5 units | 0.012 |
| • 14-pole | | | |
| - 8 mm[2] | **3RA69 31-0A** | 5 units | 0.007 |
| - 200 mm | **3RA69 33-0C** | 5 units | 0.014 |
| 3RA69 35-0A<br>**Operator panels**<br>- 1 operator panel<br>- 1 enabling module<br>- 1 interface cover<br>- 1 fixing terminal | **3RA69 35-0A** | 1 unit | 0.052 |
| **Enabling block** | **3RA69 36-0A** | 1 unit | 0.002 |
| **Blanking covers** | **3RA69 36-0B** | 5 units | 0.001 |
| **Connection cable (round) for connecting the operator panel**<br>10-pole, 2000 mm | **3RA69 33-0A** | 1 unit | 0.114 |
| 3RK1 005-0LB00-0AA0<br>**SIRIUS 4SI solid-state modules**<br>IO-Link master for connection of up to 4 SIRIUS controls (max. 16 in groups of 4) with IO-Link (3-wire connection) to SIMATIC ET 200S,<br>width 15 mm,<br>supports firmware update (STEP 7 V5.4 SP5 and higher)<br>Can be used with the following terminal modules:<br>• TM-E15S26-A1 (screw terminals)<br>• TM-E15C26-A1 (spring-type terminals)<br>• TM-E15N26-A1 (Fast Connect) | **3RK1 005-0LB00-0AA0** | 1 unit | 0.057 |

[1] 10-pole connection cables are required for EMERGENCY-STOP group concepts.

[2] Is included in the scope of supply of the SIRIUS 3RA6 compact starter in IO-Link version.

| Version | | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|---|
| **Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508** | | | | |
| 3RV29 28-1H<br>*Note:*<br>*UL 508 demands 1-inch clearance and 2-inch creepage distance on the line side for "Combination Motor Controller Type E". The following terminal blocks or phase barriers must be used in 3RV20 motor starter protectors.*<br>The terminal blocks or phase barriers cannot be used in combination with the 3RV19 .5 three-phase busbars.<br>For construction with three-phase busbars, see "Busbar accessories". | | | | |
| **Terminal blocks type E**<br>For extended clearance and creepage distances (1 and 2 inch) | S00, S0 | **3RV29 28-1H** | 1 unit | 0.065 |

| | Modular spacing | Number of motor starter protectors that can be connected: Without lateral accessories | With lateral auxiliary switch | With auxiliary release | Rated current $I_n$ at 690 V | For motor starter protectors | Order No. | Std. pack qty. | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|
| | mm | | | | A | Size | | | |
| **Three-phase busbars**[1] | | | | | | | | | |
| 3RV1915-1AB | For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection | | | | | | | | |
| | 45[3] | 2 | -- | -- | 63 | S00, S0[2] | **3RV1915-1AB** | 1 unit | 0.044 |
| | | 3 | -- | -- | 63 | S00, S0[2] | **3RV1915-1BB** | 1 unit | 0.071 |
| 3RV1915-1BB | | 4 | -- | -- | 63 | S00, S0[2] | **3RV1915-1CB** | 1 unit | 0.099 |
| | | 5 | -- | -- | 63 | S00, S0[2] | **3RV1915-1DB** | 1 unit | 0.124 |
| | 55[4] | -- | 2 | -- | 63 | S00, S0[2] | **3RV1915-2AB** | | |
| | | -- | 3 | -- | 63 | S00, S0[2] | **3RV1915-2BB** | | |
| 3RV1915-1CB | | -- | 4 | -- | 63 | S00, S0[2] | **3RV1915-2CB** | | |
| | | -- | 5 | -- | 63 | S00, S0[2] | **3RV1915-2DB** | | |
| | | 2 | -- | -- | 108 | S2 | **3RV1935-1A** | | |
| | | 3 | -- | -- | 108 | S2 | **3RV1935-1B** | | |
| | | 4 | -- | -- | 108 | S2 | **3RV1935-1C** | | |
| 3RV1915-1DB | 63[5] | -- | -- | 2 | 63 | S00, S0[2] | **3RV1915-3AB** | | |
| | | -- | -- | 4 | 63 | S00, S0[2] | **3RV1915-3CB** | | |
| | 75[5] | -- | 2 | 2 | 108 | S2 | **3RV1935-3A** | | |
| | | -- | 3 | 3 | 108 | S2 | **3RV1935-3B** | | |
| | | -- | 4 | 4 | 108 | S2 | **3RV1935-3C** | | |

1) Not suitable for 3RV21 motor starter protectors for motor protection with overload relay function and for 3RV27 and 3RV28 circuit breakers according to UL 489/CSA C22.2 No. 5.

2) Approved for motor starter protectors size S0 with $I_n \leq 32$ A.

3) For 3RV2 motor starter protectors without accessories mounted on the side.

4) For 3RV2 motor starter protectors with auxiliary switches with 1 NO + 1 NC, 2 NO and 2 NC mounted on the left (9 mm wide).

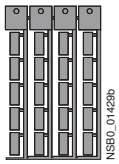
5) For 3RV2 motor starter protectors with mounted accessories (18 mm wide). Auxiliary switches with 2 NO + 2 NC or signaling switch (mounted on the left) or with auxiliary release (mounted on the right).

| | Conductor cross-section: Solid or stranded | Finely stranded with end sleeve | AWG cables, solid or stranded | Tightening torque | For motor starter protectors/ circuit breakers | Order No. | | Weight approx. |
|---|---|---|---|---|---|---|---|---|
| | mm² | mm² | AWG | Nm | Size | | | |
| **Three-phase infeed terminals** | | | | | | | | |
| 3RV2925-5AB | **Connection from top** | | | | | | | |
| | 2.5 ... 25 | 2.5 ... 16 | 10 ... 4 | 3 ... 4 | S00, S0 | **3RV2925-5AB** | | 0.043 |
| 3RV2935-5A | 2 x (2.5 ... 50)[1], 1 x (2.5 ... 70)[1] | 2 x (2.5 ... 35)[1], 1 x (2.5 ... 50)[1] | 2 x (10 ... 1/0)[1], 1 x (10 ... 2/0)[1] | 4 ... 6 | S2 NEW | **3RV2935-5A** | | |
| 3RV2915-5B | **Connection from below** This terminal is connected in place of a switch, please take the space requirement into account. | | | | | | | |
| | 2.5 ... 25 | 2.5 ... 16 | 10 ... 4 | Input: 4, Output: 2 ... 2.5 | S00, S0 | **3RV2915-5B** | | 0.093 |
| **Three-phase infeed terminals for constructing "Type E Starters"** | | | | | | | | |
| 3RV2925-5EB | **Connection from top** | | | | | | | |
| | 2.5 ... 25 | 2.5 ... 16 | 10 ... 4 | 3 ... 4 | S00, S0 | **3RV2925-5EB** | | 0.044 |
| 3RV2935-5E | 2 x (2.5 ... 50)[1], 1 x (2.5 ... 70)[1] | 2 x (2.5 ... 35)[1], 1 x (2.5 ... 50)[1] | 2 x (10 ... 1/0)[1], 1 x (10 ... 2/0)[1] | 4 ... 6 | S2 NEW | **3RV2935-5E** | | |

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

| | Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|---|
| **8US Fast Bus busbar adapters for 60 mm systems** | | | | |
| 8US12 11-1NS10 | For flat copper profiles according to DIN 46433<br>Width: 12 ... 30 mm<br>Thickness: 4 ... 5 mm or 10 mm | **8US12 11-1NS10** | 1 unit | 0.337 |
| **Device holders for lateral mounting along side the Fast Bus busbar adapter for 60 mm systems** | | | | |
| 8US12 50-1AA10 | Required in addition to the busbar adapter for mounting a reversing starter | **8US12 50-1AA10** | 1 unit | 0.239 |

| | Version | Color of handle | Version of extension shaft mm | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|---|---|---|
| **Door-coupling rotary operating mechanisms for operating the compact starter with closed control cabinet doors** | | | | | | |
| | The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and an extension shaft of 130/330 mm in length (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks. | | | | | |
| 3RV29 26-0B | **Door-coupling rotary operating mechanisms** | Black | 130 | **3RV29 26-0B** | 1 unit | 0.111 |
| | **EMERGENCY-STOP door-coupling rotary operating mechanisms** | Red/ Yellow | 130 | **3RV29 26-0C** | 1 unit | 0.110 |

| | Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|---|
| **Tools for opening spring-type terminals by hand** | | | | |
| 3RA29 08-1A | **Screwdrivers**<br>for all SIRIUS devices with spring-type terminals<br>Length approx. 200 mm,<br>3.0 mm x 0.5 mm,<br>titanium gray/black,<br>partially insulated | **Spring-type terminals** <br>**3RA29 08-1A** | 1 unit | 0.045 |
| **Blank labels** | | | | |
|  3RT19 00-1SB20 | **Unit labeling plates**[1]<br>for SIRIUS devices<br>20 mm x 7 mm,<br>titanium gray | **3RT29 00-1SB20** | 340 units | 0.200 |

[1] PC labeling system for individual inscription of unit labeling plates available from: Murrplastik Systems, Inc. www.murrplastik.com.

## Overview

Various AS-i add-on modules are available for communication of the 3RA6 compact starter with the control system using AS-Interface:

- Standard version
- With two local inputs
- With two free external inputs
- With one free external input and one free external output
- With two free external outputs
- For local control

The AS-i add-on modules can be combined only in connection with compact starters with a rated control supply voltage of 24 V AC/DC.

### *AS-i add-on module for communications controlling*

With this new module it is also possible for the connected compact starter to be operated directly using simple switches, i.e. without recourse to AS-i Communication, if required.

"Automatic" mode

NC contacts can be connected to the inputs Y2 and Y4 through the local terminals on the AS-i add-on module. If the "+" connections are connected simultaneously to both local inputs, the AS-i add-on module will be in "Automatic" mode, i.e. it will communicate with the control system through AS-Interface.

Local control

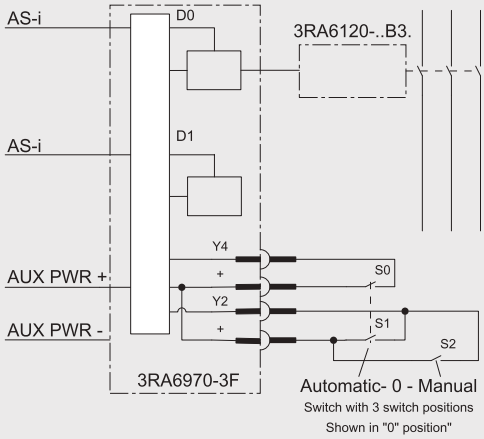
Opening the two inputs Y2 and Y4 will result in the direct disconnection of the compact starter. Operation through AS-i Communication is ended and the compact starter can now be switched on and off directly using NO contacts (one NO contact per direction of rotation on the reversing starter).

"LED AUX Power" must light up green, the 24 V DC supply must be connected and the AS-i control supply voltage must no longer be applied.

Resetting to "Automatic" mode

Simultaneous application of a "1" signal at the local inputs. The availability bit DI 0 is switched to a "1" signal.

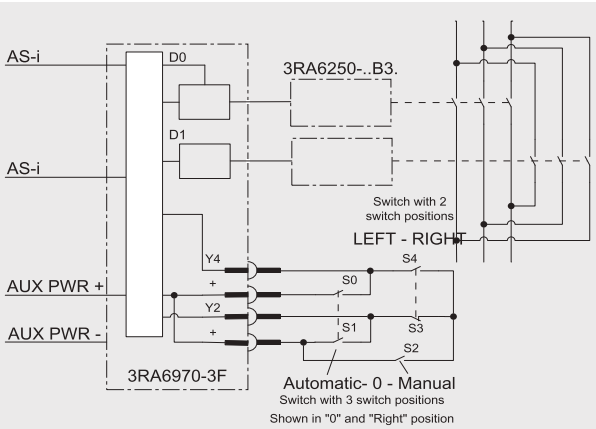
If AS-i Communication is reset, the motor is first switched off and then on again when requested by the control system.




| Switch with 3 switch positions | | | |
|---|---|---|---|
| Switch | Automatic | 0 | Manual |
| S0 | Closed | Open | Open |
| S1 | Closed | Open | Open |
| S2 | Open | Open | Closed |

NSB0_02096

Circuit diagram example for operating a 3RA61 20 direct-on-line starter using an AS-i add-on module for on-site controller




| Switch with 3 switch positions | | | |
|---|---|---|---|
| Switch | Automatic | 0 | Manual |
| S0 | Closed | Open | Open |
| S1 | Closed | Open | Open |
| S2 | Open | Open | Closed |

| Switch with 2 switch positions | | |
|---|---|---|
| Switch | Left | Right |
| S3 | Open | Closed |
| S4 | Closed | Open |

NSB0_02097

Circuit diagram example for operating a 3RA62 50 reversing starter using an AS-i add-on module for on-site controller

## Selection and ordering data

| Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|
| **AS-i add-on modules** | | | |
| 3RA69 70-3A<br> 3RA69 70-3B to -3F | | | |
| **Standard version**<br>For communication of the compact starter with the control system using AS-Interface | **3RA69 70-3A** | 1 unit | 0.045 |
| **With two local inputs**<br>For safe disconnection through local safety relays, e.g. cable-operated switches | **3RA69 70-3B** | 1 unit | 0.045 |
| **With two free external inputs**<br>Replaces the digital standard inputs "Motor On" and "Group warning" | **3RA69 70-3C** | 1 unit | 0.045 |
| **With one free external input and one free external output**<br>Replaces the digital standard input "Group warning" | **3RA69 70-3D** | 1 unit | 0.045 |
| **With two free external outputs**<br>Only for direct-on-line starters, replaces the digital standard output "Motor left" | **3RA69 70-3E** | 1 unit | 0.045 |
| **For local control**<br>Control of the compact starter optionally using AS-Interface or local switches | **3RA69 70-3F** | 1 unit | 0.045 |
| **Spare parts for AS-i add-on modules** | | | |
| | | | |
| **Connectors for data and auxiliary supply cable** with 2 insulation displacement terminations for standard litz wires 2 x 0.5 ... 0.75 mm$^2$ | | | |
| • Flat, yellow, extender | **3RK1901-0NA00** | 5 units | |
| • Flat, black, extender | **3RK1901-0PA00** | 5 units | |
| **Accessories for AS-i add-on modules** | | | |
| 3RK1904-2AB02 | | | |
| **AS-Interface addressing unit V 3.0**<br>• For AS-Interface modules and sensors and actuators with integrated AS-Interface in accordance with AS-i Specification V3.0<br>• For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves)<br>• With input/output test function and many other commissioning functions<br>• Battery operation with 4 batteries type AA (IEC LR6, NEDA 15)<br>• Scope of supply:<br>- Addressing unit with 4 batteries<br>- Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5m | **3RK1904-2AB02** | 1 unit | 0.540 |

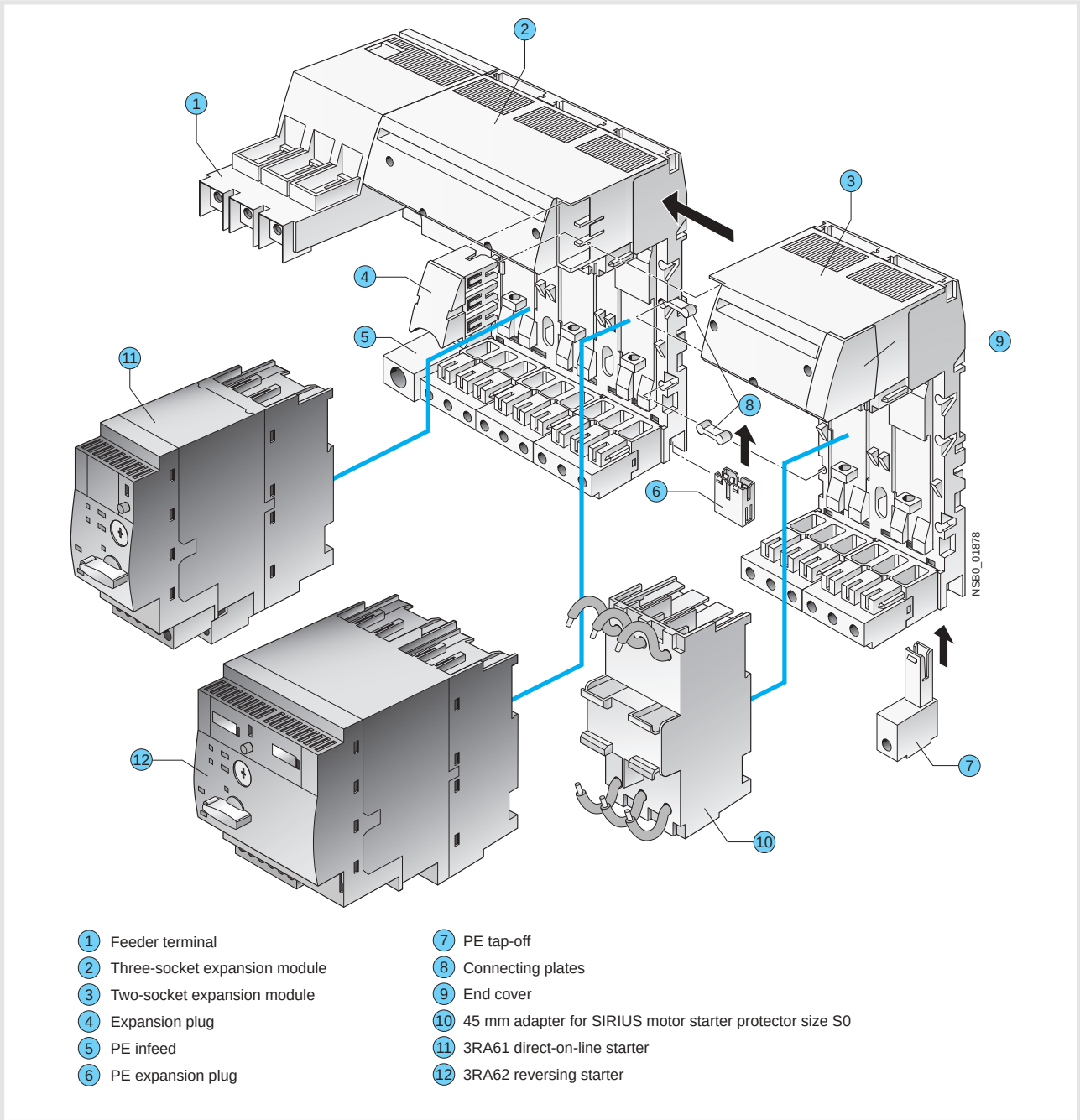
## Overview

The infeed system for 3RA6 compact starters enables far less wiring in the main circuit and, thanks to the easy exchangeability of the compact starters, reduces the usual downtimes for maintenance work during the plant's operating phase.

The infeed system provides the possibility of completely prewiring the main circuit without a compact starter needing to be connected at the same time. As the result of the removable terminals in the main circuit, compact starters can be integrated in an infeed system in an easy manner (without the use of tools).

In addition, the integrated PE bar means it is optionally possible to connect the motor cable directly to the infeed system without additional intermediate terminals. The infeed system for 3RA6 compact starters is designed for summation currents up to 100 A with a conductor cross-section of max. 2/0 AWG on the feeder terminal block.

The infeed system can be mounted on a standard mounting rail or flat surfaces.




1 Feeder terminal
2 Three-socket expansion module
3 Two-socket expansion module
4 Expansion plug
5 PE infeed
6 PE expansion plug
7 PE tap-off
8 Connecting plates
9 End cover
10 45 mm adapter for SIRIUS motor starter protector size S0
11 3RA61 direct-on-line starter
12 3RA62 reversing starter

Infeed system for 3RA6 compact starters

### 1 Infeed

The 3-phase infeed is available as an infeed with screw connection (4-2 AWG up to 63 A or 0-2/0 AWG up to 100 A) and a an infeed with spring-type connection (4-2 AWG up to 63 A).

The infeed with spring-type terminal can be attached to the left side, as well as the right side, of an expansion module.

The screw terminal infeeds are permanently fitted to the left side of a 3-socket expansion module.

The infeeds with screw connection enable connection of the main conductors (L1, L2, L3) either from above or from below.

The infeeds with screw connection come packaged with 1 end cover, while the infeed with spring-type connection comes packaged with 2 end covers.

### 2 Three-socket expansion modules

The expansion module with 3 sockets for compact starters is available with screw connection and with spring-type connection.

Expansion modules enable the infeed system to be expanded and can be connected to each other in any number up to a maximum length of 1.2 meters.

Two expansion modules are held together with the help of 2 connecting plates and 1 expansion plug. These assembly parts are included in the scope of supply of the respective expansion module.

When the infeed system for 3RA6 compact starters is used, the compact starters (plug-in modules) are easily mounted and removed even when live.

Optional possibilities:
- PE connection on motor starter side
- Outfeed for external auxiliary devices
- Connection to 3RV29 infeed system
- Integration of SIRIUS 3RV1 and 3RV2 motor starter protectors size S0 up to 25 A (using 3RA68 90-0BA adapter)

### 3 Two-socket expansion modules

If only 2 instead of 3 additional sockets are required, then the 2-socket expansion module is the right choice. It has the same functionality as the 3-socket expansion module.

### 4 Expansion plug

Two expansion modules can be connected together using the expansion plug. Flexible expansion of the infeed system is thus possible.

### 5 PE infeeds

This module enables a PE cable to be connected.

The PE infeed can be ordered with screw connection and spring-type connection (2 AWG) and can be fitted on the right or left to the expansion block.

### 6 PE expansion plug

The PE expansion plug is inserted from below and enables two PE bars to be connected.

### 7 PE tap-off

The PE tap-off is available with screw connection and spring-type connection (10-8 AWG). It is snapped into the infeed system from below.

### 8 Connecting plates

Two connecting plates are used to hold together 2 adjacent expansion modules.

### 9 End covers

On the last expansion module of a row, the slot provided for the expansion plug can be covered by inserting the end cover.

### 10 45 mm adapters for SIRIUS 3RV motor starter protectors

SIRIUS 3RV1 and 3RV2motor starter protectors size S0 with screw connection can be fitted to the adapter, enabling them to be plugged into the infeed system.

### Terminal blocks

Using the terminal block, three phase power can be fed out of the infeed system; this means that single-phase, two-phase and three-phase components can also be integrated in the system.

If the end cover is removed, the terminal block can be inserted into an expansion module.

### Expansion plug for SIRIUS 3RV29 infeed systems

If the end cover is removed, the expansion plug for the SIRIUS 3RV29 infeed system can be inserted into an expansion module. It connects the infeed system for 3RA6 compact starters with the SIRIUS 3RV29 infeed system.

### Maximum rated operational current

The following maximum rated operational currents apply for the components of the infeed system for 3RA6:

| Component | Maximum rated operational current<br>A |
|---|---|
| Infeed with screw connection 0-2/0 AWG | 100 |
| Infeed with screw connection 4-2 AWG | 63 |
| Infeed with spring-type connection 4-2 AWG | 63 |
| Expansion plugs | 63 |

When several expansion modules are mounted side by side, the maximum rated operational current from the 2nd expansion module to the end of the row is 63 A.

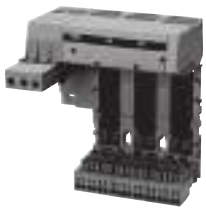
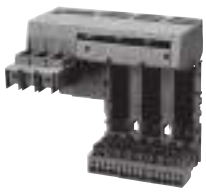
### Proposal for upstream short-circuit protection devices

The following short-circuit data apply for the components of the infeed system for 3RA6 compact starters:

| Conductor cross-section<br>AWG | Inscriptions | Proposal for upstream short-circuit protection device |
|---|---|---|
| **Short-circuit protection for infeed block (4-2 AWG) with screw connection** | | |
| 14-2 | $I_{d,\,max}$ = 19 kA, $I^2t$ = 440 kA²s | **3RV10 41-4JA10** |
| **Short-circuit protection for infeed block (0-2/0 AWG) with screw connection** | | |
| 14-2/0 | $I_{d,\,max}$ = approx. 22 kA | **3RV10 41-4MA10** |
| **Short-circuit protection for infeed block with spring-type connection** | | |
| 12 | $I_{d,\,max}$ = 9.5 kA, $I^2t$ = 85 kA²s | **3RV10 21-4DA10** |
| 10 | $I_{d,\,max}$ = 12.5 kA, $I^2t$ = 140 kA²s | **3RV10 31-4EA10** |
| 8 | $I_{d,\,max}$ = 15 kA, $I^2t$ = 180 kA²s | **3RV10 31-4HA10** |
| 6-4 | $I_{d,\,max}$ = 19 kA, $I^2t$ = 440 kA²s | **3RV10 41-4JA10** |
| **Short-circuit protection for terminal block** | | |
| 16 | $I_{d,\,max}$ = 7.5 kA | **5SY...** [1] |
| 14 | $I_{d,\,max}$ = 9.5 kA | |
| 12 | $I_{d,\,max}$ = 9.5 kA | |
| 10 | $I_{d,\,max}$ = 12.5 kA | |

[1] To prevent the possibility of short-circuits, the cables on the terminal block must be installed so that they are short-circuit proof according to EN 60439-1 Section 7.5.5.1.2.

## Selection and ordering data

| | Version | Order No. | Weight approx. kg |
|---|---|---|---|
| **Three-phase infeeds and expansion modules** | | | |
| 3RA68 12-8AB | ***Infeeds with screw connection 4-2 AWG left*** **Infeed with screw connection** with permanently fitted **3-socket expansion module with screw or spring-type terminals on the outgoing side and integrated PE bar** Expansion module with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter | **Screw terminals** | |
| | • Screw terminals on outgoing side | **3RA68 12-8AB** | 0.957 |
|  3RA68 12-8AC | • Spring-type terminals on outgoing side | **3RA68 12-8AC** | 0.990 |
| 3RA68 13-8AB | ***Infeeds with screw connection 0-2/0 AWG left*** **Infeed with screw connection** with permanently fitted **3-socket expansion module with screw or spring-type terminals** on the outgoing side and integrated PE bar Expansion module with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter, suitable for UL duty according to UL 508 Type E | **Screw terminals** | |
| | • Screw terminals on outgoing side | **3RA68 13-8AB** | 1.146 |
|  3RA68 13-8AC | • Spring-type terminals on outgoing side | **3RA68 13-8AC** | 1.179 |
| 3RA68 30-5AC | ***Infeeds with spring-type connection 4-2 AWG left or right*** Up to 63 A | **Spring-type terminals** **3RA68 30-5AC** | 0.283 |

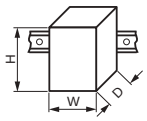
| | Version | Order No. | Weight approx. kg |
|---|---|---|---|
| **Expansion modules** | | | |
| 3RA68 22-0AB | ***Two-socket expansion modules*** **With screw or spring-type terminals** and integrated PE bar with 2 sockets for 2 direct-on-line starters or 1 reversing starter. Expansion plug and 2 connecting plates are included in the scope of supply. | **Screw terminals** | |
| | • Screw terminals | **3RA68 22-0AB** | 0.505 |
| 3RA68 22-0AC | | **Spring-type terminals** | |
| | • Spring-type terminals | **3RA68 22-0AC** | 0.527 |
| 3RA68 23-0AB | ***Three-socket expansion modules*** **With screw or spring-type terminals** and integrated PE bar with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter. Expansion plug and 2 connecting plates are included in the scope of supply. | **Screw terminals** | |
| | • Screw terminals | **3RA68 23-0AB** | 0.717 |
| 3RA68 23-0AC | | **Spring-type terminals** | |
| | • Spring-type terminals | **3RA68 23-0AC** | 0.750 |

## Accessories

| | Version | Order No. | Weight approx. kg |
|---|---|---|---|
| **Accessories for 3RA6 infeed systems** | | | |
| | ***PE infeeds 4-2 AWG*** | | |
| 3RA68 60-6AB | | **Screw terminals** | |
| | • Screw terminals | **3RA68 60-6AB** | 0.060 |
| 3RA68 60-5AC | | **Spring-type terminals** | |
| | • Spring-type terminals | **3RA68 60-5AC** | 0.070 |
| | ***PE tap-offs 10-8 AWG*** | | |
| 3RA68 70-4AB | | **Screw terminals** | |
| | • Screw terminals | **3RA68 70-4AB** | 0.019 |
| 3RA68 70-3AC | | **Spring-type terminals** | |
| | • Spring-type terminals | **3RA68 70-3AC** | 0.017 |
| | ***Expansion plugs*** | | |
| 3RA68 90-0EA | **PE expansion plugs** | **3RA68 90-0EA** | 0.008 |
| 3RA68 90-1AB | **Expansion plugs**<br>between 2 expansion modules<br>Is included in the scope of supply of the expansion modules. | **3RA68 90-1AB** | 0.029 |
| 3RA68 90-1AA | **Expansion plugs for SIRIUS 3RV19/29 infeed system**<br>Connects infeed system for 3RA6 to 3RV29 infeed systems | **3RA68 90-1AA** | 0.079 |

| | Version | Order No. | Weight approx. |
|---|---|---|---|
| **Accessories for infeed systems for 3RA6** (continued) | | | |
| 3RA6890-0BA | ***45 mm adapters***<br>For SIRIUS 3RV1.2 and 3RV2.2 motor starter protectors. Size S0 up to 25 A<br>• Screw terminals (conductor cross-section AWG 10) | **Screw terminals**<br>**3RA6890-0BA** | 0.152 |
| | ***Terminal covers for infeeds with screw connection*** | | |
| 3RA6880-2AB | **IP20 terminal covers for infeeds with screw connection 25/35 mm² (3RA6812-8AB/AC)**<br>(2 units per pack) | **3RA6880-2AB** | |
| 3RA6880-3AB | **IP20 terminal covers for infeeds with screw connection 50/70 mm² (3RA6813-8AB/AC)**<br>(2 units per pack) | **3RA6880-3AB** | |
| | ***Terminal blocks*** | | |
| 3RV2917-5D | For integration of single-phase, 2-phase and 3-phase external components<br>• Spring-type terminals | **Spring-type terminals**<br>**3RV2917-5D** | .0.050 |
| **Tools for opening spring-type terminals** | | | |
| 3RA2908-1A | ***Screwdrivers***<br>For all SIRIUS devices with spring-type terminals<br>Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated | **Spring-type terminals**<br>**3RA2908-1A** | .0.045 |
| **System Manual "SIRIUS Compact Starters and Accessories"** | The system manual can be downloaded free of charge in PDF format from the Internet, see http://support.automation.siemens.com/WW/view/en/27136554/133300 | | |

## More information

| Type<br>Size<br>Number of poles | | | 3RA61<br>S0<br>3 | 3RA62 | 3RA64 | 3RA65 |
|---|---|---|---|---|---|---|
| **General technical specifications** | | | | | | |
| Device standard | | | IEC/EN 60947-6-2 | | | |
| **Mounting dimensions (WxHxD)**<br>• Screw terminals<br>• Spring-type terminals |  | mm<br>mm | 45 x 170 x 165<br>45 x 191 x 165 | 90 x 170 x 165<br>90 x 191 x 165 | 45 x 170 x 165<br>45 x 191 x 165 | 90 x 170 x 165<br>90 x 191 x 165 |
| **Weight** | | kg | 1.4 | 2.3 -2.4 | 1.3 | 2.3 |
| **Permissible mounting positions** | | | No restrictions, preferably vertical or horizontal installation | | | |
| **Max. rated current $I_e$**<br>in the respective setting range | 0.1 ... 0.4 A<br>0.32 ... 1.25 A<br>1 ... 4 A<br>3 ... 12 A<br>8 ... 32 A | A<br>A<br>A<br>A<br>A | 0.4<br>1.25<br>4<br>12<br>32 | | | |
| **Permissible ambient temperature**<br>• During operation<br>• For installation in SIRIUS infeed system for 3RA6<br>• During storage<br>• During transport | <br>Acc. to IEC/EN 60721-3-3<br><br>IEC/EN 60732-3-1<br>IEC/EN 60721-3-2 | <br>°C<br>°C<br>°C<br>°C | <br>-20 ... +60, with derating up to +70<br>-20 ... +40<br>-55 ... +80<br>-55 ... +80 | | | |
| **Permissible rated current of the compact starter,**<br>when several compact starters are mounted side-by-side on a vertical standard mounting rail<br>or in the 3RA6 infeed system<br>• For a control cabinet inside temperature of<br>• For a control cabinet inside temperature of<br>• For a control cabinet inside temperature of | <br><br><br>+40 °C<br>+60 °C<br>+70 °C | <br><br><br>%<br>%<br>% | <br><br><br>100<br>80<br>60 | | | |
| **Relative air humidity** | | % | 10 ... 90 | | | |
| **Installation altitude** | | m | Up to 2000 above sea level without restriction | | | |
| **Rated frequency** | | Hz | 50/60 | | | |
| **Rated insulation voltage $U_i$**<br>(pollution degree 3) | | V | 690 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | | | |
| **Trip class (CLASS)** | Acc. to IEC 60947-4-1,<br>EN 60947-4-1 | | 10/20 | | | |
| **Rated short-circuit current $I_q$**<br>**at AC 50/60 Hz 480 V** | Acc. to IEC 60947-4-1,<br>EN 60947-4-1 | kA | 30 (up to 12 A units)<br>15 (8 ... 32 A unit) | | | |
| **Types of coordination** | Acc. to IEC 60947-6-2,<br>EN 60947-6-2 | | Continuous | | | |
| **Power loss $P_{v\,max}$ of all main current paths**<br>Dependent on the rated current $I_e$<br>(upper setting range) | 0.4 A<br>1.25 A<br>4 A<br>12 A<br>32 A | mW<br>mW<br>W<br>W<br>W | 10<br>100<br>1<br>1.8<br>5.4 | | | |
| **Max. switching frequency** | AC-41<br>AC-43<br>AC-44 | 1/h<br>1/h<br>1/h | 750<br>250<br>15 | | | |
| **Drive losses**<br>Active power | <br>At 24 V<br>• 0.1 ... 12 A<br>• 8 ... 32 A<br>At 110 ... 240 V<br>• 0.1 ... 12 A<br>• 8 ... 32 A | <br><br>W<br>W<br><br>W<br>W | <br><br>2.7<br>2.95<br><br>3.4<br>3.8 | | | |
| **Overload function**<br>Ratio of lower to upper current mark | | | 1:4 | | | |
| **Shock resistance** (sine-wave pulse) | | | $a$ = 60 m/s² = 6 $g$ with 10 ms; for every 3 shocks in all axes | | | |
| **Vibratory load** | | | $f$ = 4 ... 5.8 Hz; $d$ =15 mm; $f$ = 5.8 ... 500 Hz; $a$ = 20 m/s²;10 cycles | | | |
| **Protection class IP on the front** | Acc. to IEC 60529 | | IP20 | | | |
| **Touch protection on the front** | Acc. to IEC 60529 | | Finger-safe, for vertical contact from the front<br>(screw and spring-type terminal) | | | |
| **Isolating features of the compact starter** | Acc. to IEC/EN 60947-3 | | Yes: Isolation is assured only by moving the actuator into the *OFF* position | | | |
| **Main and EMERGENCY-STOP switch characteristics of the compact starter and accessories** | Acc. to IEC 60204 | | Yes | | | |

| **Type**<br>Size<br>Number of poles | | | **3RA61**<br>**S0**<br>**3** | **3RA62** | **3RA64** | **3RA65** |
|---|---|---|---|---|---|---|
| **General technical specifications** (continued) | | | | | | |
| **Protective separation** | Acc. to IEC 60947-2 | | | | | |
| **Control circuit to auxiliary circuit** | | | | | | |
| • Horizontal standard mounting rail | | V | Up to 400 | | | |
| • Other mounting position | | V | Up to 250 | | | |
| **Auxiliary circuit to auxiliary circuit** | | | | | | |
| • Horizontal standard mounting rail | | V | Up to 400 | | | |
| • Other mounting position | | V | Up to 250 | | | |
| **Main circuit to auxiliary circuit** | | | | | | |
| • Any mounting position | | V | Up to 400 | | | |
| **EMC interference immunity** | Acc. to IEC/EN 60947-1 | | Corresponds to degree of severity 3 | | | |
| **Conductor-related interference** | BURST acc. to IEC/EN 61000-4-4 | | | | | |
| • In the main circuit | | kV | 4 | | 4 | |
| • In the auxiliary circuit | | kV | 3 | | 2 | |
| **Conductor-related interference** | SURGE acc. to IEC/EN 61000-4-5 | | | | | |
| • In the main circuit | | | | | | |
| - Conductor - Ground | | kV | 4 | | 2 | |
| - Conductor - Conductor | | kV | 2 | | 1 | |
| • In the auxiliary circuit | | | | | | |
| - Conductor - Ground | | kV | 2 | | 0.5[1] | |
| - Conductor - Conductor | | kV | 1 | | 0.5[1] | |
| **Auxiliary switches** | | | | | | |
| • Integrated | | | | | | |
| - Position of the main contacts | | | 1 NO + 1 NC | 2 NO | 1 NO + 1 NC | 2 NO |
| - Overload/short-circuit signal | | | 1 CO/1 NO | | | |
| • Expandable | | | | | | |
| - Position of the main contacts | | | 2 NO, 2 NC, 1 NO + 1 NC | | | |
| **Surge suppressors** | | | Integrated (Varistor) | | | |
| **Pollution degree** | | | 3 | | | |
| **Depth from standard mounting rail** | | mm | 160 | | | |
| **Electromagnetic operating mechanism** | | | | | | |
| **Control voltage** | | V | 24 AC/DC | | 24 DC | |
| | | V | 110 ... 240 AC/DC | | -- | |
| **Frequency** | At AC | Hz | 50/60 (±5%) | | | |
| **Primary operating range** | | | 0.7 ... 1.25 $U_s$ | | 0.85 ... 1.2 $U_s$ | |
| **No-load switching frequency** | | 1/h | 3600 | | | |
| **Make-time** | | ms | max. 70 | | Max. 70 + IO-Link communication | |
| **Break-time** | | ms | max. 120 | | Max. 120 + IO-Link communication | |

[1] To maintain maximum interference immunity in a harsh electromagnetic environment, additional overvoltage protection should be provided in the control supply current circuit. A suitable choice is for example the Dehn Blitzductor BVT AD 24 V, Art. No. 918 402 or an equivalent protective element.
Manufacturer: DEHN+SÖHNE GmbH+Co. KG, Hans-Dehn-Straße. 1, Postfach 1640, D-92306 Neumarkt

## General data

| Type | | 3RA61 20-.☐B3., 3RA62 50-.☐B3.<br>☐ = A, B, C or D<br>Rated operational current ≤12 A | | | | 3RA61 20-.EB3., 3RA62 50-.EB3.<br>Rated operational current 32 A | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Rated control supply voltage** | **V** | **24 AC** | | **24 DC** | | **24 AC** | | **24 DC** | |
| **Inrush peak current** | A | 0.59 | | 0.47 | | 0.59 | | 0.47 | |
| **Hold current** | A | 0.13 | | 0.12 | | 0.17 | | 0.14 | |
| **Closed** | W | 2.8 | | 2.9 | | 3.5 | | 3.1 | |
| **Operating times, typical** | | | | | | | | | |
| • On | ms | <160 | | <140 | | <160 | | <140 | |
| • Off | ms | <35 | | <35 | | <30 | | <30 | |

| Type | | 3RA61 20-.☐E3., 3RA62 50-.☐P3.<br>☐ = A, B, C or D<br>Rated operational current ≤12 A | | | | 3RA61 20-.EE3., 3RA62 50-.EE3.<br>Rated operational current 32 A | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Rated control supply voltage** | **V** | **110 AC** | **240 AC** | **110 DC** | **240 DC** | **110 AC** | **240 AC** | **110 DC** | **240 DC** |
| **Inrush peak current** | A | 0.24 | 0.40 | 0.17 | 0.29 | 0.24 | 0.40 | 0.17 | 0.29 |
| **Hold current** | A | 0.06 | 0.08 | 0.03 | 0.02 | 0.06 | 0.07 | 0.04 | 0.03 |
| **Closed** | W | 3.8 | 6 | 3.1 | 5.1 | 3.7 | 5.2 | 3.4 | 5.8 |
| **Operating times, typical** | | | | | | | | | |
| • On | ms | <160 | <140 | <150 | <140 | <160 | <140 | <150 | <140 |
| • Off | ms | <50 | <80 | <50 | <70 | <40 | <60 | <40 | <60 |

| Type | | 3RA64 00-.☐B4., 3RA65 00-.☐B4.<br>☐ = A, B, C or D<br>Rated operational current ≤12A | 3RA64 00-.EB4., 3RA65 00-.EB4.<br>Rated operational current 32 A |
|---|---|---|---|
| **Rated control supply voltage** | **V** | **24 DC** | **24 DC** |
| **Inrush peak current** | A | 0.39 | 0.53 |
| **Hold current** | A | 0.13 | 0.15 |
| **Closed** | W | 2.9 | 3.4 |
| **Operating times, typical**[1)] | | | |
| • On | ms | <140 | <140 |
| • Off | ms | <35 | <30 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Type** | | | **3RA61** | **3RA62** | **3RA64** | **3RA65** |
| Size | | | **S0** | | | |
| Number of poles | | | **3** | | | |
| **Electromagnetic operating mechanism** (continued) | | | | | | |
| **Switching capacity at 480 V** | | kA | 30 (up to 12 A)<br>15 (8 ... 32 A) | | | |
| **Switching capacity at 600 V** | | kA | 10 (up to 12 A)<br>5 (8 ... 32 A) | | | |
| **Line protection** | At 10 kA<br>At 50 kA | AWG<br>AWG | 14<br>12 | | | |
| **Shock resistance** | | | | | | |
| • Breaker mechanism OFF | | *g* | 25 | | | |
| • Breaker mechanism ON | | *g* | 15 | | | |
| **Normal switching duty** | | | | | | |
| **Making capacity** | | | 12 x $I_n$ | | | |
| **Breaking capacity** | | | 10 x $I_n$ | | | |
| **Switching capacity dependent on rated current** | Up to 12 A<br>Up to 32 A | HP<br>HP | 7 1/2<br>20 | | | |
| **Endurance in operating cycles** | | | | | | |
| • Electrical endurance | At $I_e$ = 0.9 x $I_n$ and 400 V | | 3 ... 10 000 000 | 2 x 3 ... 10 000 000 | 3 000 000 | 2 x 1 500 000 |
| **Control circuit** | | | | | | |
| **Rated operational voltage** | | | | | | |
| • External auxiliary switch block | | V | 400/690 | | | |
| • Internal auxiliary switch | | V | 400/690 | | | |
| • Short-circuit signaling switch | | V | 400 | | | |
| • Overload signaling switch | | V | 400 | | | |
| **Switching capacity** | | | | | | |
| • External auxiliary switch block | **AC-15** | | | | | |
| | • At $U_e$ = 230 V | A | 6 | | | |
| | • At $U_e$ = 400 V | A | 3 | | | |
| | • At $U_e$ = 289/500 V | A | 2 | | | |
| | • At $U_e$ = 400/690 V | A | 1 | | | |
| | **DC-13** | | | | | |
| | • At $U_e$ = 24 V | A | 6 | | | |
| | • At $U_e$ = 60 V | A | 0.9 | | | |
| | • At $U_e$ = 125 V | A | 0.55 | | | |
| | • At $U_e$ = 250 V | A | 0.27 | | | |
| • Internal auxiliary switch | **AC-15** | | | | | |
| | • At $U_e$ = 230 V | A | 6 | | | |
| | • At $U_e$ = 400 V | A | 3 | | | |
| | • At $U_e$ = 289/500 V | A | 2 | | | |
| | • At $U_e$ = 400/690 V | A | 1 | | | |
| | **DC-13** | | | | | |
| | • At $U_e$ = 24 V | A | 10 | | | |
| | • At $U_e$ = 60 V | A | 2 | | | |
| | • At $U_e$ = 125 V | A | 1 | | | |
| | • At $U_e$ = 250 V | A | 0.27 | | | |
| | • At $U_e$ = 480 V | A | 0.1 | | | |
| • Signaling switch | **AC-15** | | | | | |
| | • At $U_e$ = 230 V | A | 3 | | | |
| | • At $U_e$ = 400 V | A | 1 | | | |
| | **DC-13** | | | | | |
| | • At $U_e$ = 24 V | A | 2 | | | |
| | • At $U_e$ = 250 V | A | 0.11 | | | |

## General data

| Type<br>Size<br>Number of poles | | | 3RA61<br>S0<br>3 | 3RA62 | 3RA64 | 3RA65 |
|---|---|---|---|---|---|---|
| **External auxiliary switch block, internal auxiliary switch** | | | | | | |
| **Endurance in operating cycles** | | | | | | |
| • Mechanical endurance | | | 10 000 000 | | 3 000 000 | |
| • Electrical endurance | **AC-15, 230 V** | | | | | |
| | • At 6 A | | 200 000 | | | |
| | • At 3 A | | 500 000 | | | |
| | • At 1 A | | 2 000 000 | | | |
| | • At 0.3 A | | 10 000 000 | | | |
| | **DC-13, 24 V** | | | | | |
| | • At 6 A | | 300 00 | | | |
| | • At 3 A | | 100 000 | | | |
| | • At 0.5 A | | 2 000 000 | | | |
| | • At 0.2 A | | 10 000 000 | | | |
| | **DC-13, 110 V** | | | | | |
| | • At 1 A | | 40 000 | | | |
| | • At 0.55 A | | 100 000 | | | |
| | • At 0.3 A | | 300 000 | | | |
| | • At 0.1 A | | 2 000 000 | | | |
| | • At 0.04 A | | 10 000 000 | | | |
| | **DC-13, 220 V** | | | | | |
| | • At 0.3 A | | 110 000 | | | |
| | • At 0.1 A | | 650 000 | | | |
| | • At 0.05 A | | 2 000 000 | | | |
| | • At 0.018 A | | 10 000 000 | | | |
| **Contact stability** | At 17 V and 5 mA | Operating cycles | 1 incorrect switching operation per 100 000 000 | | | |
| **Short-circuit protection** | | | | | | |
| • Short-circuit current $I_K \leq 1.1$ kA | Fuse links<br>operational class gG<br>- NEOZED Type 5SE<br>- DIAZED Type 5SB<br>- LV HRC Type 3NA | A | 10 | | | |
| • Short-circuit current $I_K < 400$ A | Miniature circuit breaker up to 230 V with C characteristic | A | 10 | | | |
| **Signaling switches** | | | | | | |
| **Endurance in operating cycles** | | | | | | |
| • Mechanical endurance | | | 20000 | | | |
| • Electrical endurance AC-15 | At 230 V and 3 A | | 6050 | | | |
| **Contact stability** | At 17 V and 5 mA | Operating cycles | 1 incorrect switching operation per 100 000 000 | | | |
| **Short-circuit protection** | | | | | | |
| • Short-circuit current $I_K \leq 1.1$ kA | Fuse links<br>operational class gG<br>- NEOZED Type 5SE<br>- DIAZED Type 5SB<br>- LV HRC Type 3NA | A | 6 | | | |
| • Short-circuit current $I_K < 400$ A | Miniature circuit breaker up to 230 V with C characteristic | A | 6 | | | |
| **Overload** (short-circuit current $I_K \leq 1.1$ kA) | Fuse links<br>operational class gG<br>- NEOZED Type 5SE<br>- DIAZED Type 5SB<br>- LV HRC Type 3NA | A | 4 | | | |

## Technical data

| Connection type | | Screw connection | | Spring-type connection | |
|---|---|---|---|---|---|
| Max. rated current $I_{max}$ | | 12 A | 32 A | 12 A | 32 A |
| **Conductor cross-sections of main circuit terminals** | | | | | |
| **Tools** | | Posidrive size 2 | | (3.5 x 0.5) mm, 8WA2 803 | |
| **Prescribed tightening torque** | NM | 2 ... 2.5 | | -- | |
| **Minimum/maximum conductor cross-sections** | | | | | |
| • Solid | $mm^2$<br>$mm^2$<br>$mm^2$ | 2 x (1.5 ... 2.5)<br>2 x (2.5 ... 6)<br>Max. 1 x 10 | 2 x (2.5 ... 6)<br>Max. 1 x 10 | 2 x (1.5 ... 6)<br>Max. 1 x 10 | 2 x (2.5 ... 6)<br>Max. 1 x 10 |
| • Finely stranded without ferrule | $mm^2$ | -- | -- | 2 x (1.5 ... 6) | 2 x (2.5 ... 6) |
| • Finely stranded with ferrule | $mm^2$<br>$mm^2$ | 2 x (1.5 ... 2.5)<br>2 x (2.5 ... 6) | 2 x (2.5 ... 6) | 2 x (1.5 ... 6) | 2 x (2.5 ... 6) |
| • AWG cables | AWG<br>AWG<br>AWG | 2 x (16 ...14)<br>2 x (14 ...10)<br>1 x 8 | 2 x (14 ...10)<br>1 x 8 | 2 x (16 ...10)<br>1 x 8 | 2 x (14 ...10)<br>1 x 8 |

| Connection type | | Screw connection | Spring-type connection |
|---|---|---|---|
| **Conductor cross-sections of control circuit terminals** | | | |
| **Tools** | | Posidrive size 2 | (3.0 x 0.5) mm, DIN ISO 2380-1A |
| **Prescribed tightening torque** | NM | 0.8 ... 1.2 | -- |
| **Minimum/maximum conductor cross-sections** | | | |
| • Solid | $mm^2$<br>$mm^2$ | 1 x (0.5 ... 4)<br>2 x (0.5 ... 2.5) | 2 x (0.25 ... 1.5) |
| • Finely stranded without ferrule | $mm^2$ | -- | 2 x (0.25 ... 1.5) |
| • Finely stranded with ferrule | $mm^2$<br>$mm^2$ | 1 x (0.5 ... 2.5)<br>2 x (0.5 ... 1.5) | 2 x (0.25 ... 1.5) |
| • AWG cables | AWG | 2 x (20 ... 14) | 2 x (24 ... 16) |
| **Conductor cross-sections of the auxiliary switch for compact starters** | | | |
| **Order No.** | | **3RA69 1.-1A** | **3RA69 1.-2A** |
| **Tools** | | Posidrive size 2 | (2.5 x 0.4) mm, 8WA2 807 |
| **Prescribed tightening torque** | NM | 0.8 ... 1.2 | -- |
| **Conductor cross-sections** | | | |
| • Solid | $mm^2$<br>$mm^2$<br>$mm^2$ | 2 x (0.5 ...1.5)<br>2 x (0.75 ... 2.5)<br>2 x (1 ... 4) | 2 x (0.25 ... 2.5) |
| • Finely stranded without ferrule | $mm^2$ | -- | 2 x (0.25 ... 2.5) |
| • Finely stranded with ferrule | $mm^2$<br>$mm^2$ | 2 x (0.5 ... 1.5)<br>2 x (0.75 ... 2.5) | 2 x (0.25 ... 1.5) |
| • AWG cables | AWG<br>AWG<br>AWG | 2 x (20 ... 16)<br>2 x (18 ... 14)<br>1 x 12 | 2 x (24 ... 14) |

## Technical data

| Order No. | | | 3RA6970-3A, 3RA6970-3B, 3RA6970-3C, 3RA6970-3D, 3RA6970-3E |
|---|---|---|---|
| **General data of the AS-i add-on module** | | | |
| **Permissible ambient temperature** | | | |
| • Storage | Acc. to IEC/EN 60721-3-1 | °C | -25 ... +70 |
| • Transport | Acc. to IEC/EN 60721-3-2 | °C | -25 ... +70 |
| **Degree of protection** | Acc. to IEC/EN 60947-1 | | IP20 |
| **EMC interference immunity** | Acc. to EN 50295 | | |
| **Conductor-related interference** | BURST acc. to IEC/EN 61000-4-4 | kV | 1/2 |
| **Electrostatic discharge** | Acc. to IEC/EN 61000-4-2 | kV | 6/8 |
| **Field-related interference** | Acc. to IEC/EN 61000-4-3 | V/m | 10 (80 MHz ... 2.7 GHz) |
| **Maximum pick-up current** | | mA | 400 |
| **Maximum hold current** | | mA | 200 |
| **Power consumption, max.** | | mA | 30 |
| **IO code** | | | 7 |
| **ID code** | | | A |
| **ID2 code** | | | E |

| Order No. | | | 3RA6970-3B, 3RA6970-3C, 3RA6970-3D, 3RA6970-3E |
|---|---|---|---|
| **Connection type** | | | **Screw connection** |
| **Conductor cross-sections of the AS-i add-on module** | | | |
| **Tools** | | | Posidrive size 1 |
| **Prescribed tightening torque** | | NM | 0.5 ... 0.6 |
| **Conductor cross-sections** | | | |
| • Solid | | $mm^2$ | 1 x (0.5 ... 2.5) |
| | | $mm^2$ | 2 x (0.5 ... 1.0) |
| • Finely stranded with ferrule | | $mm^2$ | 1 x (0.5 ... 2.5) |
| | | $mm^2$ | 2 x (0.5 ... 1.0) |
| • AWG cables | | AWG | 1 x (20 ... 12) |

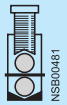
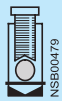
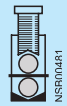
## Technical data

| Type | | | 3RA6. | |
|---|---|---|---|---|
| **General data** | | | | |
| **Max. rated operational current** | | | | |
| • Infeed with screw connection 0-2/0 AWG | | A | 100 | |
| • Infeed with screw connection 4-2 AWG | | A | 63 | |
| • Infeed with spring-type connection 10-3 AWG | | A | 63 | |
| • Expansion plug | | A | 63 | |
| **Permissible ambient temperature** | | | | |
| • During operation | | °C | -20 ... +60 (over +40 current reduction is required) | |
| - Permissible rated current at control cabinet inside temperature: +40 °C | | % | 100 | |
| +60 °C | | % | 80 | |
| • During storage/transport | | °C | -55 ... +80 | |
| **Relative air humidity** | | % | 10 ... 90 | |
| **Installation altitude** | | m | Up to 2000 above sea level without restriction | |
| **Rated operational voltage $U_e$** | | V | 690 AC | |
| **Rated frequency** | | Hz | 50/60 | |
| **Shock resistance** | | | $a$ = 60 m/s² = 6$g$ with 10 ms; for every 3 shocks in all axes | |
| **Vibratory load** | | | $f$ = 1 ... 6 Hz; $d$ = 15 mm 10 cycles<br>$f$ = 150 Hz; $a$ = 2 $g$ | |
| **Degree of protection** | Acc. to IEC 60947-1 | | IP20 (IP 00 terminal compartment) | |
| **Touch protection** | Acc. to EN 50274 | | Finger-safe | |
| **Degree of pollution** | | | 3 | |
| **Short-circuit protection for** | | | | Recommendation for upstream short-circuit protection device |
| **infeed with screw connection 4-2 AWG and infeed with screw connection 0-2/0 AWG** | | | | 3RV1041-4JA10<br>3RV1041-4MA10 |
| | $I_{d,max}$ | kA | < 21 | |
| | $I^2t$ | kA²s | 530 | LV HRC gL/gG 3NA3, 315 A |
| **Short-circuit protection for infeed with spring-type connection** | | | | Recommendation for upstream short-circuit protection device |
| • Conductor cross-section 12 AWG | $I_{d,max}$ | kA | < 9.5 | 3RV2021-4DA10 |
| | $I^2t$ | kA²s | 85 | |
| • Conductor cross-section 10 AWG | $I_{d,max}$ | kA | < 12.5 | 3RV1031-4EA10 |
| | $I^2t$ | kA²s | 140 | |
| • Conductor cross-section 8 AWG | $I_{d,max}$ | kA | < 15 | 3RV1031-4HA10 |
| | $I^2t$ | kA²s | 180 | |
| • Conductor cross-section 6-4 AWG | $I_{d,max}$ | kA | < 19 | 3RV1041-4JA10 |
| | $I^2t$ | kA²s | 440 | |
| **Short-circuit protection for terminal block** | | | | Recommendation for upstream short-circuit protection device |
| • Conductor cross-section 16 AWG | $I_{d,max}$ | kA | 7.5 | 5SY... [1] |
| • Conductor cross-section 14 AWG | $I_{d,max}$ | kA | 9.5 | |
| • Conductor cross-section 12 AWG | $I_{d,max}$ | kA | 9.5 | |
| • Conductor cross-section 10 AWG | $I_{d,max}$ | kA | 12.5 | |

[1] To prevent the possibility of short-circuits, the cables on the terminal block must be installed so that they are short-circuit resistant according to EN 60439-1 Section 7.5.5.1.2.

| Type | | | 3RV29. | |
|---|---|---|---|---|
| **Connection type** | | | **Spring-type connection** | |
| **Conductor cross-sections of terminal block** | | | | |
| **Order No.** | | | **3RV29 17-5D** | |
| **Conductor cross-sections** | | | | |
| • Solid | | mm² | 1.5 ... 6 | |
| • Finely stranded with ferrule | | mm² | 1.5 ... 4 | |
| • Finely stranded without ferrule | | mm² | 1.5 ... 6 | |
| • AWG cables, solid or stranded | | AWG | 15 ... 10 | |

## Technical data

| | | | | | |
|---|---|---|---|---|---|
| **Type** | | | **3RA6.** | | |
| **Connection type** | | | **Screw connection** | | |
| **Conductor cross-sections of infeed with screw connection 16-2 AWG (L1, L2, L3)[1] and PE infeed 2 AWG[2]** | | | | | |
| **Order No.** | | | **3RA68 12-8AB, 3RA68 12-8AC, 3RA68 60-6AB** | | |
| **Tools** | | | Posidrive size 2 | | |
| **Specified tightening torque** | | NM | 3 ... 4.5 | | |
| | | | NSB00479 | NSB00480 |  NSB00481 |
| **Conductor cross-sections** | | | | | |
| • Solid | | $mm^2$ | 2.6 ... 16 | 2.6 ... 16 | max. 2 x 16 |
| • Stranded | | $mm^2$ | 2.5 ... 35 | 2.5 ... 35 | max. 2 x 25 |
| • Finely stranded with ferrule | | $mm^2$ | 2.5 ... 25 | 2.5 ... 25 | max. 2 x 16 |
| • Finely stranded without ferrule | | $mm^2$ | 2.5 ... 25 | 2.5 ... 25 | max. 2 x 16 |
| • AWG cables | | AWG | 12 ... 2 | 12 ... 2 | max. 2 x (16 ... 2) |
| **Connection type** | | | **Screw connection** | | |
| **Conductor cross-sections of infeed with screw connection 10-2/0 AWG (L1, L2, L3)[1]** | | | | | |
| **Order No.** | | | **3RA68 13-8AB, 3RA68 13-8AC** | | |
| **Tools** | | SW | 4 | | |
| **Specified tightening torque** | | NM | 6 ... 8 | | |
| | | |  NSB00479 | NSRI0480 |  NSRI0481 |
| **Conductor cross-sections** | | | | | |
| • Solid | | $mm^2$ | 2.5 ... 16 | 2.5 ... 16 | max. 2 x 16 |
| • Stranded | | $mm^2$ | 4 ... 70 | 10 ... 70 | max. 2 x 50 |
| • Finely stranded with ferrule | | $mm^2$ | 2.5 ... 35 | 2.5 ... 50 | max. 2 x 35 |
| • Finely stranded without ferrule | | $mm^2$ | 4 ... 50 | 10 ... 50 | max. 2 x 35 |
| • AWG cables | | AWG | 10 ... 2/0 | 10 ... 2/0 | max. 2 x (10 ... 1/0) |
| **Connection type** | | | **Spring-type connection** | | |
| **Conductor cross-sections of infeed with spring-type connection 10-3 AWG (L1, L2, L3)[1] and PE infeed 3 AWG** | | | | | |
| **Order No.** | | | **3RA68 30-5AC, 3RA68 60-5AC** | | |
| **Tools** | 8WA2 806 | mm | 5.5 x 0.8 | | |
| **Conductor cross-sections** | | | | | |
| • Solid | | $mm^2$ | 4 ... 16 | | |
| • Stranded | | $mm^2$ | 4 ... 35 | | |
| • Finely stranded with ferrule | | $mm^2$ | 4 ... 25 | | |
| • Finely stranded without ferrule | | $mm^2$ | 6 ... 25 | | |
| • AWG cables | | AWG | 10 ... 3 | | |
| **Connection type** | | | **Screw connection** | **Spring-type connection** | |

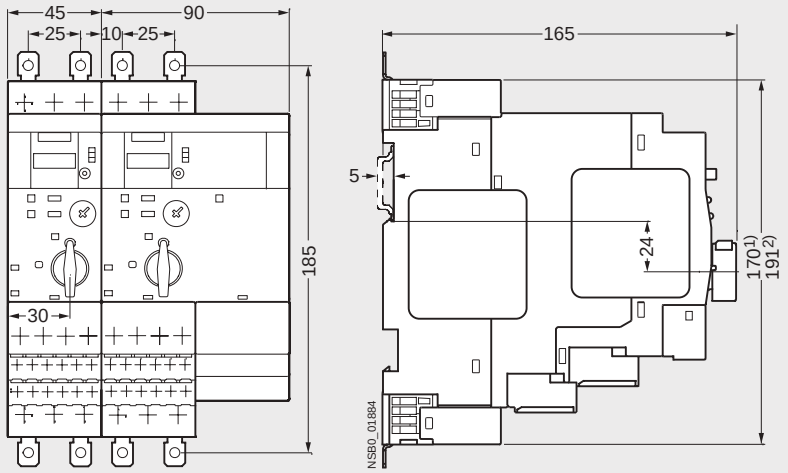
| | | | | | | |
|---|---|---|---|---|---|---|
| **Conductor cross-sections of infeed with screw connection 4-2 AWG (T1, T2, T3)[2], infeed with screw connection 0-2/0 AWG (T1, T2, T3)[2] 2-socket and 3-socket expansion modules (T1, T2, T3)[2] and PE tap-off 10-8 AWG** | | | | | | |
| **Order No.** | | | **3RA68 12-8AB, 3RA68 13-8AB, 3RA68 22-0AB, 3RA68 23-0AB, 3RA68 70-4AB** | | **3RA68 12-8AC, 3RA68 13-8AC, 3RA68 22-0AC, 3RA68 23-0AC, 3RA68 70-3AC** | |
| **Tools** | | | Posidrive size 2 | | (3.5 x 0.5) mm, 8WA2 803 | |
| **Specified tightening torque** | | NM | 2 ... 2.5 | | -- | |
| **Maximum rated current** | | A | **12** | **32** | **12** | **32** |
| **Conductor cross-sections** | | | | | | |
| • Solid | | $mm^2$ | 2 x (1 ... 2.5) | 2 x (2.5 ... 6) | 2 x (1.5 ... 6) | 2 x (2.5 ... 6) |
| | | $mm^2$ | 2 x (2.5 ... 6) | | | |
| | | $mm^2$ | max. 1 x 10 | max. 1 x 10 | max. 1 x 10 | max. 1 x 10 |
| • Finely stranded with ferrule | | $mm^2$ | -- | -- | 2 x (1.5 ... 6) | 2 x (2.5 ... 6) |
| • Finely stranded without ferrule | | $mm^2$ | 2 x (1 ... 2.5) | 2 x (2.5 ... 6) | 2 x (1.5 ... 6) | 2 x (2.5 ... 6) |
| | | $mm^2$ | 2 x (2.5 ... 6) | | | |
| • AWG cables | | AWG | 2 x (16 ... 14) | 2 x (14 ... 10) | 2 x (16 ... 10) | 2 x (14 ... 10) |
| | | AWG | 2 x (14 ... 10) | | | |
| | | AWG | 1 x 8 | 1 x 8 | 1 x 8 | 1 x 8 |

[1] L1, L2, L3 main conductors on input side.

[2] T1, T2, T3 main conductors on output side.

## Dimensional drawings

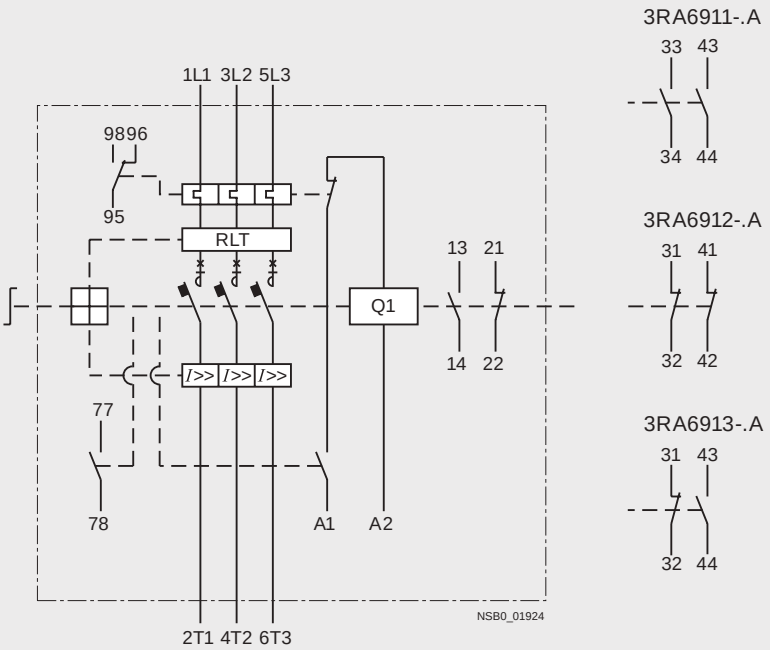
### *Direct-on-line starters and reversing starters*




1) Screw connection
2) Spring-loaded connection

## Schematics

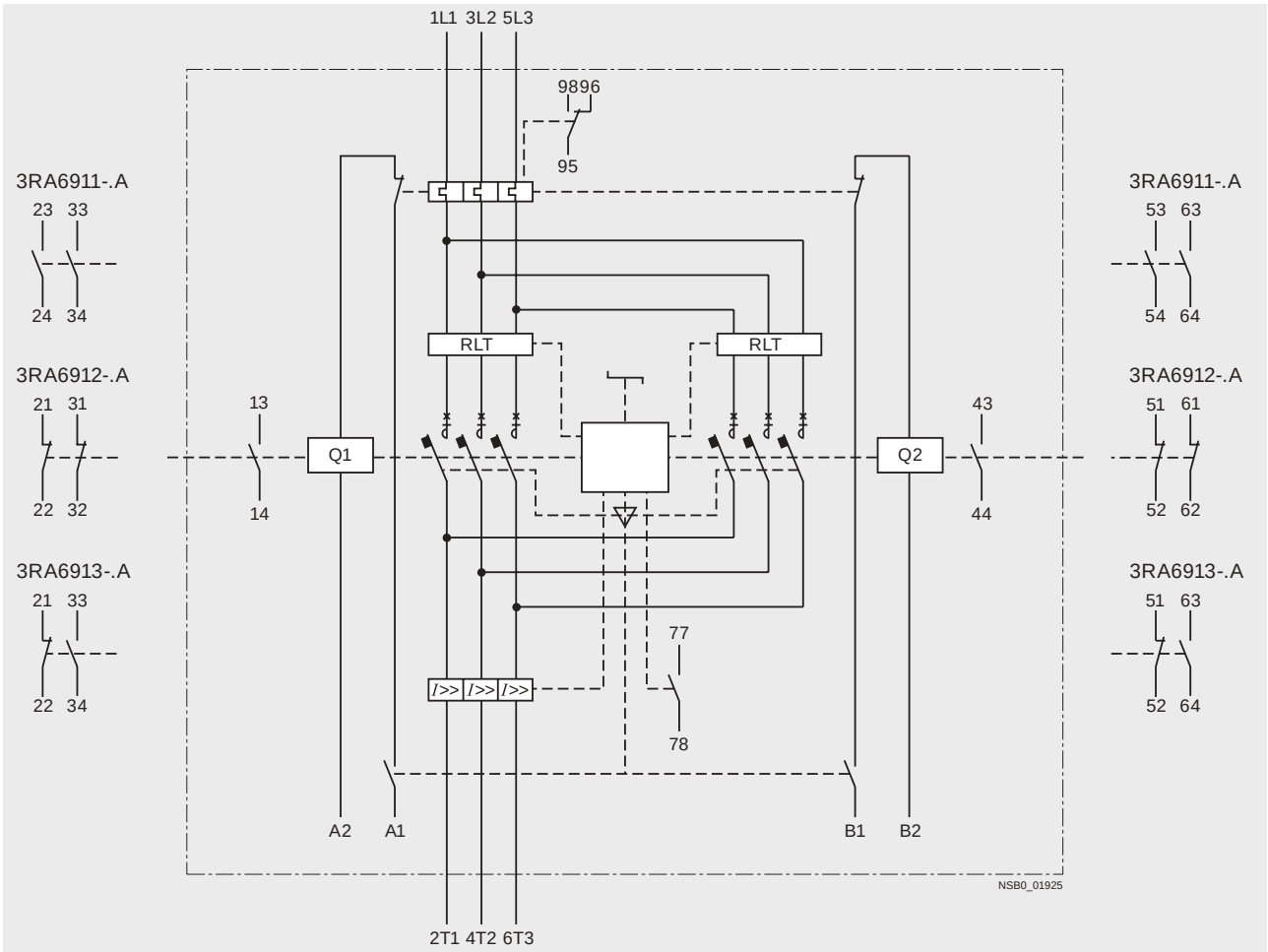
### *3RA61 direct-on-line starters*




Schematic for 3RA61 direct-on-line starters (main circuit)

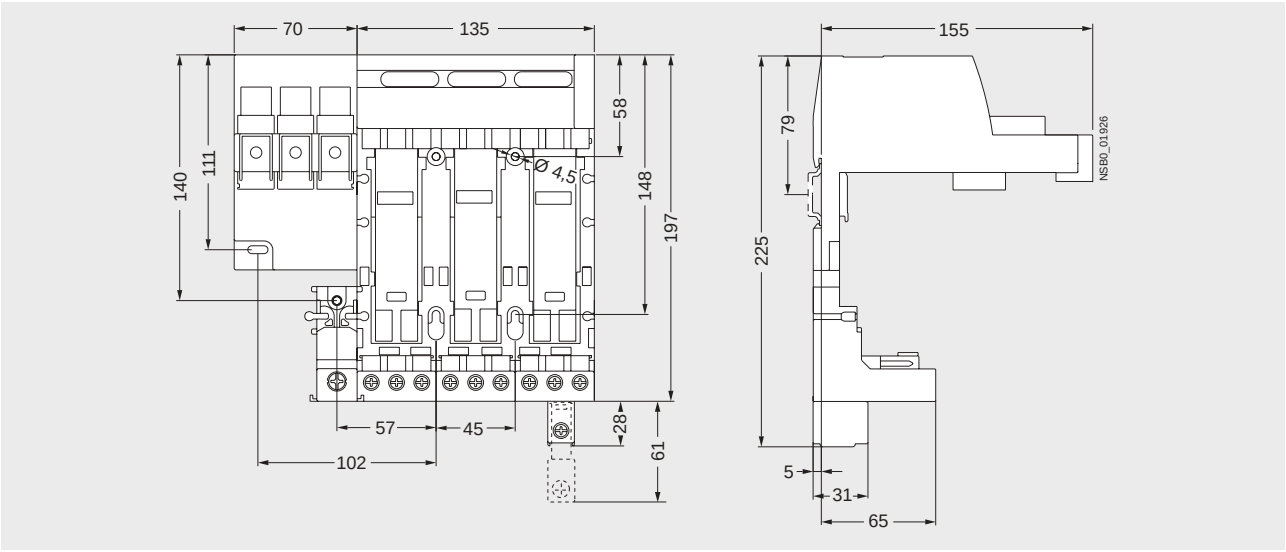
## Dimensional drawings

### *3RA62 reversing starters*

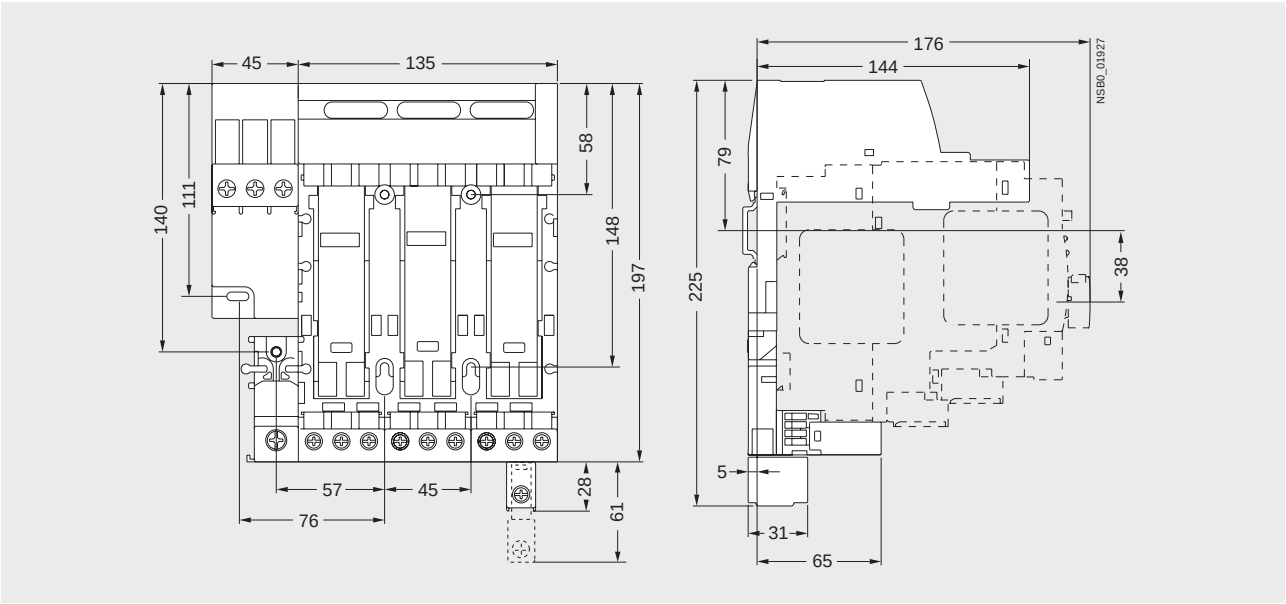



Schematic for 3RA62 reversing starters (main circuit)

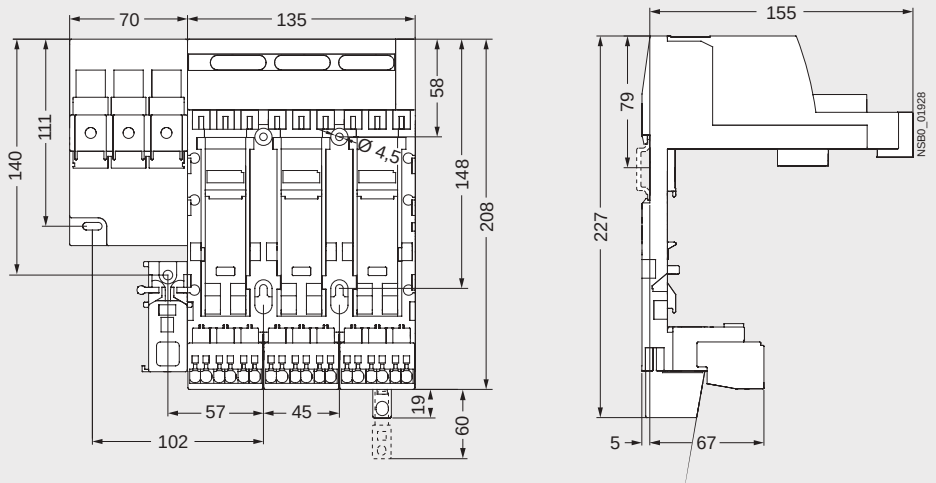
## Dimensional drawings



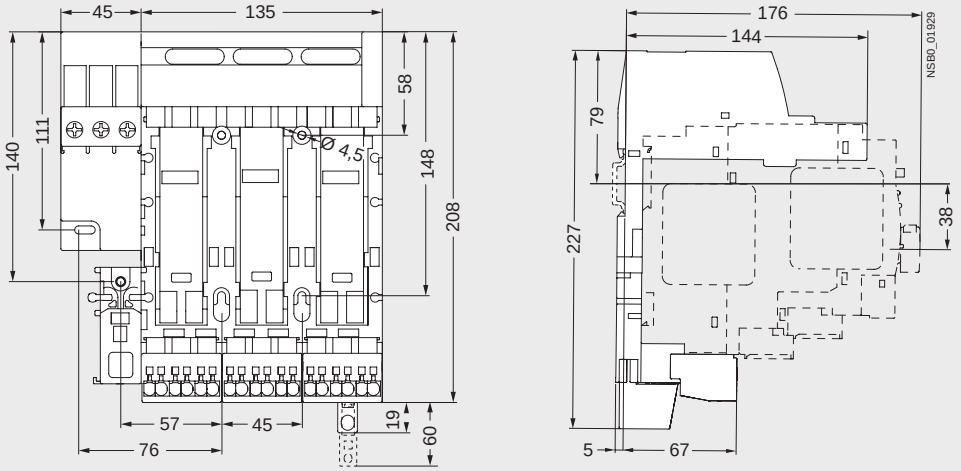

Infeed with screw connection 0-2/0 AWG on left with fixed 3-socket expansion module with outgoing screw terminals



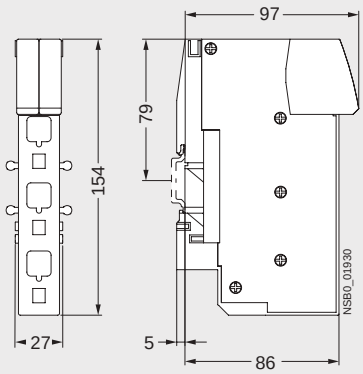

Infeed with screw connection 4-2 AWG on left with fixed 3-socket expansion module with outgoing screw terminals



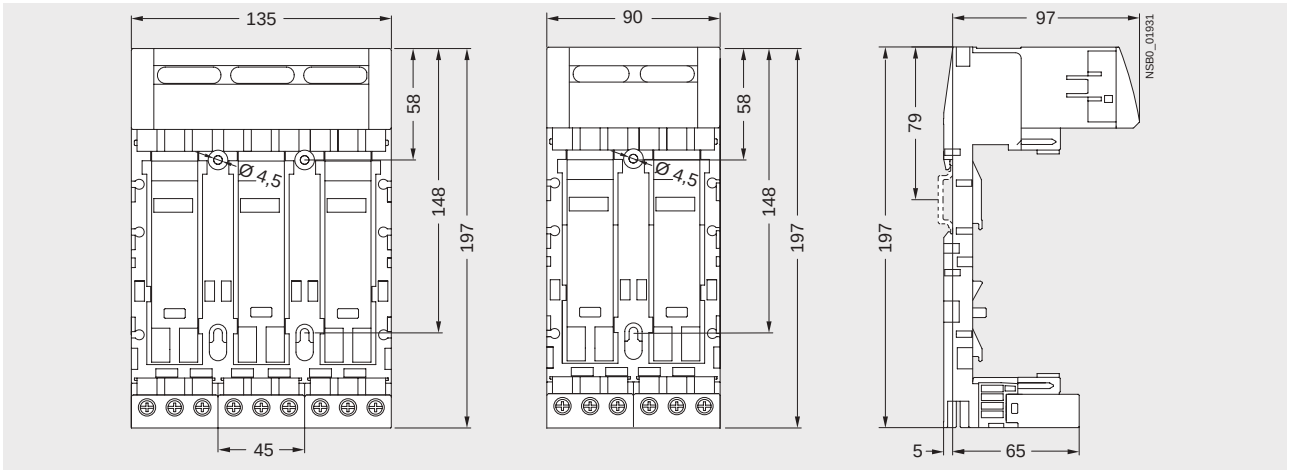

Infeed with screw connection 0-2/0 AWG on left with fixed 3-socket expansion module with outgoing spring-type terminals



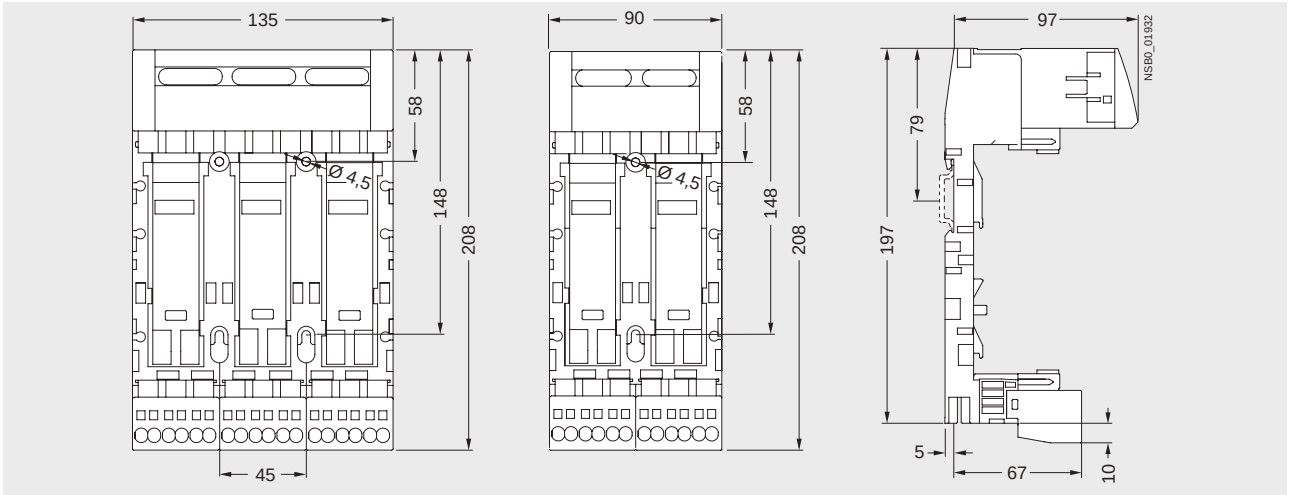

Infeed with screw connection 4-2 AWG on left with fixed 3-socket expansion module with outgoing spring-type terminals



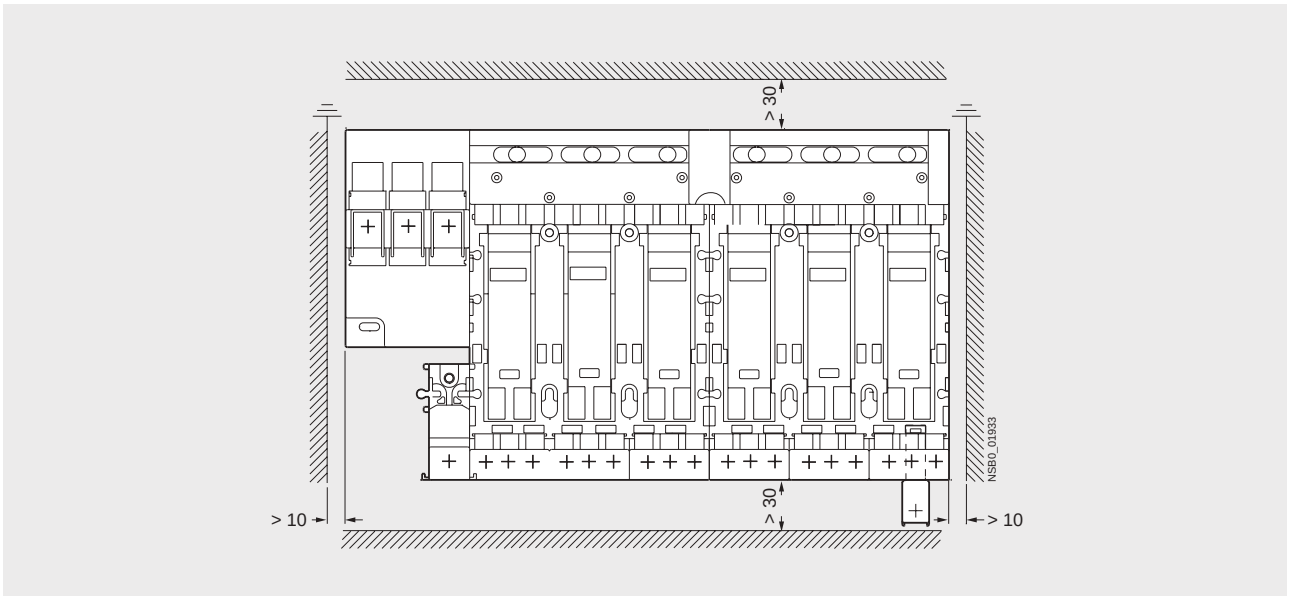

Infeed with spring-type terminals




3-socket expansion module and 2-socket expansion module with outgoing screw terminals




3-socket expansion module and 2-socket expansion module with outgoing spring-type terminals




Minimum clearances to adjacent components when using infeed system for 3RA6

## Selection and ordering data

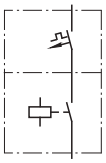
3RA21 10

3RA21 20

3RA21 10

3RA21 20

**Direct-on-line starting**



***Rated control supply voltage 50/60 Hz 110/120 V AC***
***With screw connections***

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  - Contactor size S00: 1 NO;
  - Contactor size S0: 1 NO + 1 NC

**Combination Starter, UL508 Type F**
All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

| Size | UL Data | | | | | | | FLA setting range inverse-time delayed overload release | Consisting of the following single devices | | | Assembled starter | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single-phase HP ratings | | Three-phase[2] HP ratings | | | | SCCR at 480 V | | Motor starter protector | + Contactor | + Link module + Busbar adapter[3] | Screw terminals | |
| | 115 V | 230 V | 200 V | 230 V | 460 V | 575 V | kA | A | | | | Order No. | kg |
| **Selection depends on motor full load amps** | | | | | | | | | | | | | |
| | | | | | | | | | 3RV20 | 3RT20 | 3RA | | |
| **S00** | -- | -- | -- | -- | -- | -- | 65 | 0.11…0.16 | 11-0AA10 | 15-1AK61 | 1921-1DA00 + 8US1251-5DS10 | **3RA21 1□-0A□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.14…0.2 | 11-0BA10 | | | **3RA21 1□-0B□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.18…0.25 | 11-0CA10 | | | **3RA21 1□-0C□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.22…0.32 | 11-0DA10 | | | **3RA21 1□-0D□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.28…0.4 | 11-0EA10 | | | **3RA21 1□-0E□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.35…0.5 | 11-0FA10 | | | **3RA21 1□-0F□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.45…0.63 | 11-0GA10 | | | **3RA21 1□-0G□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.55…0.8 | 11-0HA10 | | | **3RA21 1□-0H□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | -- | 1/2 | 65 | 0.7… 1 | 11-0JA10 | | | **3RA21 1□-0J□15-1AK6** | 0.575 |
| | -- | -- | -- | -- | 1/2 | 1/2 | 65 | 0.9… 1.25 | 11-0KA10 | | | **3RA21 1□-0K□15-1AK6** | 0.575 |
| | -- | 1/10 | -- | -- | 3/4 | 3/4 | 65 | 1.1… 1.6 | 11-1AA10 | | | **3RA21 1□-1A□15-1AK6** | 0.575 |
| | -- | 1/8 | -- | -- | 3/4 | 1 | 65 | 1.4… 2 | 11-1BA10 | | | **3RA21 1□-1B□15-1AK6** | 0.575 |
| | -- | 1/6 | 1/2 | 1/2 | 1 | 1 1/2 | 65 | 1.8… 2.5 | 11-1CA10 | | | **3RA21 1□-1C□15-1AK6** | 0.575 |
| | 1/10 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 65 | 2.2… 3.2 | 11-1DA10 | | | **3RA21 1□-1D□15-1AK6** | 0.575 |
| | 1/8 | 1/3 | 3/4 | 3/4 | 2 | 3 | 65 | 2.8… 4 | 11-1EA10 | | | **3RA21 1□-1E□15-1AK6** | 0.575 |
| | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | | | **3RA21 1□-1F□15-1AK6** | 0.575 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | | **3RA21 1□-1G□15-1AK6** | 0.575 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | 16-1AK61 | | **3RA21 1□-1H□16-1AK6** | 0.575 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA21 1□-1J□16-1AK6** | 0.575 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12 | 11-1KA10 | 17-1AK61 | | **3RA21 1□-1K□17-1AK6** | 0.575 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11… 16 | 11-4AA10 | 18-1AK61 | | **3RA21 1□-4A□18-1AK6** | 0.575 |
| **S0** | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | 24-1AK60 | 2921-1AA00 + 8US1251-5NT10 | **3RA21 2□-1F□24-0AK6** | 0.761 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | | **3RA21 2□-1G□24-0AK6** | 0.761 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | | | **3RA21 2□-1H□24-0AK6** | 0.761 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA21 2□-1J□24-0AK6** | 0.761 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12.5 | 11-1KA10 | | | **3RA21 2□-1K□24-0AK6** | 0.761 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11… 16 | 21-4AA10 | 26-1AK60 | | **3RA21 2□-4A□26-0AK6** | 0.761 |
| | 1 1/2 | 3 | 5 | 5 | 10 | -- | 65 | 14… 20 | 21-4BA10 | | | **3RA21 2□-4B□26-0AK6** | 0.761 |
| | 1 1/2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 17… 22 | 21-4CA10 | 27-1AK60 | | **3RA21 2□-4C□27-0AK6** | 0.761 |
| | 2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 20… 25 | 21-4DA10 | | | **3RA21 2□-4D□27-0AK6** | 0.761 |
| | 2 | 5 | 7 1/2 | 10 | 20 | -- | 50 | 27… 32 | 21-4EA10 | | | **3RA21 2□-4E□27-0AK6** | 0.761 |

**Order No. supplement for:**

| | | |
|---|---|---|
| • Standard DIN rail or screw mounting with no additional auxiliaries | **0** | **A** |
| • Standard DIN rail or screw mounting with 1 SPDT NO/NC MSP auxiliary (S00 frame contactor has 1NO auxiliary and S0 frame contactor has 1NO/1NC auxiliary) | **5** | **A** |
| • With Fast Bus adaptor and no additional auxiliaries | **0** | **D** |
| • With Fast Bus adaptor and 1 SPDT NO/NC MSP auxiliary (S00 frame contactor has 1NO auxiliary and S0 frame contactor has 1NO/1NC auxiliary) | **5** | **D** |

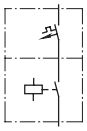
1) For auxiliary switches see Accessories page 4/44.

2) Selection depends on the motor full load amps. HP ratings for reference only.

3) Used only for mounting starter on 8US Fast Bus busbar systems.

## Selection and ordering data

**Direct-on-line starting**



**For 35 mm standard mounting rail or screw mounting**

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches[1]) on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  - Contactor size S2: 1 NO & 1 NC
  - Contactor size S3: 1 NO & 1 NC

**Combination Starter, UL508 Type F**

- Size S2 devices can be applied as Combination Starters. For versions of 50A or higher, the addition of a 3RV2938-1K line side phase barrier is required.
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT2946-4GA07 line side terminal kit

| Single-Phase HP Ratings | | Three-Phase[2]) HP ratings | | | | SCCR at 480Y/277V kA | FLA setting range Inverse-time delayed overload release A | Starter Order No. | Size | Consisting of the following individual devices: Motor starter protector | + Contactor | + Link module + Adapter for standard mounting rail[3]) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 115V | 230V | 200V | 230V | 460V | 575V | | | | | | | |
| **110VAC 50Hz / 120VAC 60 Hz** | | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 65 | 22... 32 | **3RA21 3□-4EA35-□AK6** | **S2** | 3RV20 31-4EA10 | 3RT2035-1AK60 | 3RA2931-1AA00 + 3RA2932-1AA00 (must be ordered separately) |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 28... 36 | **3RA21 3□-4PA36-□AK6** | | 3RV20 31-4PA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 32... 40 | **3RA21 3□-4UA36-□AK6** | | 3RV20 31-4UA10 | 3RT2036-1AK60 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 35... 45 | **3RA21 3□-4VA36-□AK6** | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 65 | 42... 52 | **3RA21 3□-4WA37-□AK6** | | 3RV20 31-4WA10 | 3RT2037-1AK60 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 49... 59 | **3RA21 3□-4XA38-□AK6** | | 3RV20 31-4XA10 | | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 54... 65 | **3RA21 3□-4JA38-□AK6** | | 3RV20 31-4JA10 | 3RT2038-1AK60 | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 28... 40 | **3RA21 4□-4FB45-□AK6** | **S3** | 3RV20 41-4FA10 | | 3RA1941-1AA00 + 3RA2942-1AA00 |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 36... 50 | **3RA21 4□-4HB45-□AK6** | | 3RV20 41-4HA10 | 3RT2045-1AK60 | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 45... 63 | **3RA21 4□-4JB45-□AK6** | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 57... 75 | **3RA21 4□-4KB46-□AK6** | | 3RV20 41-4KA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 65... 84 | **3RA21 4□-4RB46-□AK6** | | 3RV20 41-4RA10 | 3RT2046-1AK60 | |
| 10 | 20 | 30 | 30 | 75 | – | 65 | 75... 93 | **3RA21 4□-4YB46-□AK6** | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 65 | 80...100 | **3RA21 4□-4MB47-□AK6** | | 3RV20 41-4MA10 | 3RT2047-1AK60 | |
| **24V UC** | | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 65 | 22... 32 | **3RA21 3□-4EA35-□NB3** | **S2** | 3RV20 31-4EA10 | 3RT2035-1NB30 | 3RA2931-1AA00 + 3RA2932-1AA00 (must be ordered separately) |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 28... 36 | **3RA21 3□-4PA36-□NB3** | | 3RV20 31-4PA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 32... 40 | **3RA21 3□-4UA36-□NB3** | | 3RV20 31-4UA10 | 3RT2036-1NB30 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 35... 45 | **3RA21 3□-4VA36-□NB3** | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 65 | 42... 52 | **3RA21 3□-4WA37-□NB3** | | 3RV20 31-4WA10 | 3RT2037-1NB30 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 49... 59 | **3RA21 3□-4XA38-□NB3** | | 3RV20 31-4XA10 | | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 54... 65 | **3RA21 3□-4JA38-□NB3** | | 3RV20 31-4JA10 | 3RT2038-1NB30 | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 28... 40 | **3RA21 4□-4FB45-□NB3** | **S3** | 3RV20 41-4FA10 | | 3RA1941-1BA00 + 3RA2942-1AA00 |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 36... 50 | **3RA21 4□-4HB45-□NB3** | | 3RV20 41-4HA10 | 3RT2045-1NB30 | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 45... 63 | **3RA21 4□-4JB45-□NB3** | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 57... 75 | **3RA21 4□-4KB46-□NB3** | | 3RV20 41-4KA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 65... 84 | **3RA21 4□-4RB46-□NB3** | | 3RV20 41-4RA10 | 3RT2046-1NB30 | |
| 10 | 20 | 30 | 30 | 75 | – | 65 | 70... 90 | **3RA21 4□-4YB46-□NB3** | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 65 | 80...100 | **3RA21 4□-4MB47-□NB3** | | 3RV20 41-4MA10 | 3RT2047-1NB30 | |

| **Order No. supplement for:** | | |
|---|---|---|
| • Standard DIN rail or screw mounting with no additional auxiliaries | **0** | **0** |
| • Standard DIN rail or screw mounting with 1 SPDT NO/NC MSP auxiliary (S2 frame contactor has 1NO/1NC integrated auxiliary) | **5** | **0 (S2)** |
| (S3 frame contactor has 1NO top mounted auxiliary) | **5** | **1 (S3)** |

1) For auxilary switches, see accessories page 4/44.

2) Selection depends on motor full load amps. Horsepower ratings for reference only.

3) Adapters for standard mounting rail are included for all S3 starters and optional to be ordered as accessories for S2 non-reversing starters.

Note:

In the S2 frame, for 100kA SCCR versions, replace the prefix 3RA213x with 3RA215x. Rating exceptions would be the 59A and 65A versions having a 30kA SCCR at 480Y/277V. For UL 508 type E/F, order 3RV2938-1K Phase Barrier for field installation on all versions.

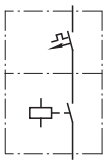
3RA21 10

3RA21 20

3RA21 10

3RA21 20

**Direct-on-line starting**



***Rated control supply voltage 24 V DC***
***With screw connections***

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  - Contactor size S00: 1 NO;
  - Contactor size S0: 1 NO + 1 NC

**Combination Starter, UL508 Type F**
All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

| Size | UL Data | | | | | | | FLA setting range inverse-time delayed overload release | Consisting of the following single devices | | | Assembled starter | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single-phase HP ratings | | Three-phase[2] HP ratings | | | | SCCR at 480 V | | Motor starter protector | + Contactor | + Link module + Busbar adapter[3] | Screw terminals ⊕ | |
| | 115 V | 230 V | 200 V | 230 V | 460 V | 575 V | kA | A ⊏ | | | | Order No. | kg |
| **Selection depends on motor full load amps** | | | | | | | | | | | | | |
| | | | | | | | | | **3RV20** | **3RT20** | **3RA** | | |
| **S00** | -- | -- | -- | -- | -- | -- | 65 | 0.11…0.16 | 11-0AA10 | 15-1BB41 | 1921-1DA00 + 8US1251-5DS10 | **3RA21 1□-0A□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.14…0.2 | 11-0BA10 | | | **3RA21 1□-0B□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.18…0.25 | 11-0CA10 | | | **3RA21 1□-0C□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.22…0.32 | 11-0DA10 | | | **3RA21 1□-0D□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.28…0.4 | 11-0EA10 | | | **3RA21 1□-0E□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.35…0.5 | 11-0FA10 | | | **3RA21 1□-0F□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.45…0.63 | 11-0GA10 | | | **3RA21 1□-0G□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.55…0.8 | 11-0HA10 | | | **3RA21 1□-0H□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | -- | 1/2 | 65 | 0.7… 1 | 11-0JA10 | | | **3RA21 1□-0J□15-1BB4** | 0.630 |
| | -- | -- | -- | -- | 1/2 | 1/2 | 65 | 0.9… 1.25 | 11-0KA10 | | | **3RA21 1□-0K□15-1BB4** | 0.630 |
| | -- | 1/10 | -- | -- | 3/4 | 3/4 | 65 | 1.1… 1.6 | 11-1AA10 | | | **3RA21 1□-1A□15-1BB4** | 0.630 |
| | -- | 1/8 | -- | -- | 3/4 | 1 | 65 | 1.4… 2 | 11-1BA10 | | | **3RA21 1□-1B□15-1BB4** | 0.630 |
| | -- | 1/6 | 1/2 | 1/2 | 1 | 1 1/2 | 65 | 1.8… 2.5 | 11-1CA10 | | | **3RA21 1□-1C□15-1BB4** | 0.630 |
| | 1/10 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 65 | 2.2… 3.2 | 11-1DA10 | | | **3RA21 1□-1D□15-1BB4** | 0.630 |
| | 1/8 | 1/3 | 3/4 | 3/4 | 2 | 3 | 65 | 2.8… 4 | 11-1EA10 | | | **3RA21 1□-1E□15-1BB4** | 0.630 |
| | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | | | **3RA21 1□-1F□15-1BB4** | 0.630 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | | **3RA21 1□-1G□15-1BB4** | 0.630 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | 16-1BB41 | | **3RA21 1□-1H□16-1BB4** | 0.630 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA21 1□-1J□16-1BB4** | 0.630 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12 | 11-1KA10 | 17-1BB41 | | **3RA21 1□-1K□17-1BB4** | 0.630 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11…16 | 11-4AA10 | 18-1BB41 | | **3RA21 1□-4A□18-1BB4** | 0.630 |
| **S0** | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | 24-1BB40 | 2921-1BA00 + 8US1251-5NT10 | **3RA21 2□-1F□24-0BB4** | 0.948 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | | **3RA21 2□-1G□24-0BB4** | 0.948 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | | | **3RA21 2□-1H□24-0BB4** | 0.948 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA21 2□-1J□24-0BB4** | 0.948 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12.5 | 11-1KA10 | | | **3RA21 2□-1K□24-0BB4** | 0.948 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11… 16 | 21-4AA10 | 26-1BB40 | | **3RA21 2□-4A□26-0BB4** | 0.948 |
| | 1 1/2 | 3 | 5 | 5 | 10 | -- | 65 | 14… 20 | 21-4BA10 | | | **3RA21 2□-4B□26-0BB4** | 0.948 |
| | 1 1/2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 17… 22 | 21-4CA10 | 27-1BB40 | | **3RA21 2□-4C□27-0BB4** | 0.948 |
| | 2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 20… 25 | 21-4DA10 | | | **3RA21 2□-4D□27-0BB4** | 0.948 |
| | 2 | 5 | 7 1/2 | 10 | 20 | -- | 50 | 27… 32 | 21-4EA10 | | | **3RA21 2□-4E□27-0BB4** | 0.948 |

**Order No. supplement for:**

| | | |
|---|---|---|
| • Standard DIN rail or screw mounting with no additional auxiliaries | **0** | **A** |
| • Standard DIN rail or screw mounting with 1 SPDT NO/NC MSP auxiliary (S00 frame contactor has 1NO auxiliary and S0 frame contactor has 1NO/1NC auxiliary) | **5** | **A** |
| • With Fast Bus adaptor and no additional auxiliaries | **0** | **D** |
| • With Fast Bus adaptor and 1 SPDT NO/NC MSP auxiliary (S00 frame contactor has 1NO auxiliary and S0 frame contactor has 1NO/1NC auxiliary) | **5** | **D** |

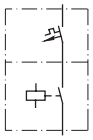
1) For auxiliary switches, see Accessories page 4/44.

2) Selection depends on the concrete motor full load amps. HP ratings for reference only.

3) Use only for mounting starter on 8US Fast Bus busbar systems.

## Selection and ordering data

**Direct-on-line starting**



**For 60mm Fast Bus busbar systems**

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches[1]) on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  - Contactor size S2: 1 NO & 1 NC
  - Contactor size S3: 1 NO & 1 NC

**Combination Starter, UL508 Type F**

- Size S2 devices can be applied as Combination Starters. For versions of 50A or higher, the addition of a 3RV2938-1K line side phase barrier is required.
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT1946-4GA07 line side terminal kit

| Single-Phase HP Ratings | | Three-Phase[2]) HP ratings | | | | SCCR at 480Y/277V kA | FLA setting range Inverse-time delayed overload release A | Starter Order No. | Size | Consisting of the following individual devices: Motor starter protector | + Contactor | + Link module + Adapter for standard mounting rail[3]) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 115V | 230V | 200V | 230V | 460V | 575V | | | | | | | |
| **110VAC 50Hz / 120 VAC 60Hz** | | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 65 | 22... 32 | **3RA21 3□-4ED35-□AK6** | **S2** | 3RV20 31-4EA10 | 3RT2035-1AK60 | 3RA2931-1AA00 + 8US1261-6MT10 |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 28... 36 | **3RA21 3□-4PD36-□AK6** | | 3RV20 31-4PA10 | 3RT2036-1AK60 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 32... 40 | **3RA21 3□-4UD36-□AK6** | | 3RV20 31-4UA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 35... 45 | **3RA21 3□-4VD36-□AK6** | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 65 | 42... 52 | **3RA21 3□-4WD37-□AK6** | | 3RV20 31-4WA10 | 3RT2037-1AK60 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 49... 59 | **3RA21 3□-4XD38-□AK6** | | 3RV20 31-4XA10 | 3RT2038-1AK60 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 54... 65 | **3RA21 3□-4JD38-□AK6** | | 3RV20 31-4JA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 28... 40 | **3RA21 4□-4FD45-□AK6** | **S3** | 3RV20 41-4FA10 | 3RT2045-1AK60 | 3RA1941-1AA00 + 8US1211-4TR00 |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 36... 50 | **3RA21 4□-4HD45-□AK6** | | 3RV20 41-4HA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 45... 63 | **3RA21 4□-4JD45-□AK6** | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 57... 75 | **3RA21 4□-4KD46-□AK6** | | 3RV20 41-4KA10 | 3RT2046-1AK60 | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 65... 84 | **3RA21 4□-4RD46-□AK6** | | 3RV20 41-4RA10 | | |
| 10 | 20 | 30 | 30 | 75 | – | 65 | 75... 93 | **3RA21 4□-4YD46-□AK6** | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 65 | 80...100 | **3RA21 4□-4MD47-□AK6** | | 3RV20 41-4MA10 | 3RT2047-1AK60 | |
| **24V UC** | | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 65 | 22... 32 | **3RA21 3□-4ED35-□NB3** | **S2** | 3RV20 31-4EA10 | 3RT2035-1NB30 | 3RA2931-1AA00 + 8US1261-6MT10 |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 28... 36 | **3RA21 3□-4PD36-□NB3** | | 3RV20 31-4PA10 | 3RT2036-1NB30 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 32... 40 | **3RA21 3□-4UD36-□NB3** | | 3RV20 31-4UA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 65 | 35... 45 | **3RA21 3□-4VD36-□NB3** | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 65 | 42... 52 | **3RA21 3□-4WD37-□NB3** | | 3RV20 31-4WA10 | 3RT2037-1NB30 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 49... 59 | **3RA21 3□-4XD38-□NB3** | | 3RV20 31-4XA10 | 3RT2038-1NB30 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 20 | 54... 65 | **3RA21 3□-4JD38-□NB3** | | 3RV20 31-4JA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 28... 40 | **3RA21 4□-4FD45-□NB3** | **S3** | 3RV20 41-4FA10 | 3RT2045-1NB30 | 3RA1941-1BA00 + 8US1211-4TR00 |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 36... 50 | **3RA21 4□-4HD45-□NB3** | | 3RV20 41-4HA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 65 | 45... 63 | **3RA21 4□-4JD45-□NB3** | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 57... 75 | **3RA21 4□-4KD46-□NB3** | | 3RV20 41-4KA10 | 3RT2046-1NB30 | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 | 65... 84 | **3RA21 4□-4RD46-□NB3** | | 3RV20 41-4RA10 | | |
| 10 | 20 | 30 | 30 | 75 | – | 65 | 75... 93 | **3RA21 4□-4YD46-□NB3** | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 65 | 80...100 | **3RA21 4□-4MD47-□NB3** | | 3RV20 41-4MA10 | 3RT2047-1NB30 | |

**Order No. supplement for:**

| | | |
|---|---|---|
| • Standard DIN rail or screw mounting with no additional auxiliaries | **0** | **0** |
| • Standard DIN rail or screw mounting with 1 SPDT NO/NC MSP auxiliary (S2 frame contactor has 1NO/1NC integrated auxiliary) | **5** | **0 (S2)** |
| (S3 frame contactor has 1NO top mounted auxiliary) | **5** | **1 (S3)** |

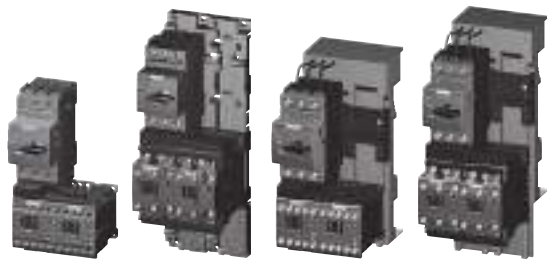
1) For auxiliary switches, see Accessories page 4/44.

2) Selection depends on motor full load amps. Horsepower ratings for reference only.

Note:

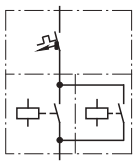
In the S2 frame, for 100kA SCCR versions, replace the prefix 3RA213x with 3RA215x. Rating exceptions would be the 59A and 65A versions having a 30kA SCCR at 480Y/277V. For UL 508 type E/F, order 3RV2938-1K Phase Barrier for field installation on all versions.

## Selection and ordering data



3RA22 10 3RA22 20 3RA22 10 3RA22 20

Reversing duty



***Rated control supply voltage 50/60 Hz 110/120 V AC***
***With screw connections***

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is available for free use.

**Combination Starter, UL508 Type F**
All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

| Size | UL Data | | | | | | | FLA setting range inverse-time delayed overload release | Consisting of the following single devices | | | Assembled starter | Weight approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single-phase HP ratings | | Three-phase[2] HP ratings | | | | SCCR at 480 V | | Motor starter protector | + 2 contactors | + Link module + Assembly kit RH/RS[3] | Screw terminals | |
| | 115 V | 230 V | 200 V | 230 V | 460 V | 575 V | kA | A | | | | Order No. | kg |
| **Selection depends on motor full load amps** | | | | | | | | | **3RV20** | **3RT20** | **3RA** | | |
| **S00** | -- | -- | -- | -- | -- | -- | 65 | 0.11…0.16 | 11-0AA10 | 15-1AK62 | 1921-1DA00 | **3RA22 10-0A ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.14…0.2 | 11-0BA10 | | + 2913-2AA1[4] | **3RA22 10-0B ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.18…0.25 | 11-0CA10 | | + 2913-1DB1 (RS) | **3RA22 10-0C ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.22…0.32 | 11-0DA10 | | | **3RA22 10-0D ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.28…0.4 | 11-0EA10 | | | **3RA22 10-0E ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.35…0.5 | 11-0FA10 | | | **3RA22 10-0F ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.45…0.63 | 11-0GA10 | | | **3RA22 10-0G ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.55…0.8 | 11-0HA10 | | | **3RA22 10-0H ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | -- | 1/2 | 65 | 0.7… 1 | 11-0JA10 | | | **3RA22 10-0J ☐15-2AK6** | 0.824 |
| | -- | -- | -- | -- | 1/2 | 1/2 | 65 | 0.9… 1.25 | 11-0KA10 | | | **3RA22 10-0K ☐15-2AK6** | 0.824 |
| | -- | 1/10 | -- | -- | 3/4 | 3/4 | 65 | 1.1… 1.6 | 11-1AA10 | | | **3RA22 10-1A ☐15-2AK6** | 0.824 |
| | -- | 1/8 | -- | -- | 3/4 | 1 | 65 | 1.4… 2 | 11-1BA10 | | | **3RA22 10-1B ☐15-2AK6** | 0.824 |
| | -- | 1/6 | 1/2 | 1/2 | 1 | 1 1/2 | 65 | 1.8… 2.5 | 11-1CA10 | | | **3RA22 10-1C ☐15-2AK6** | 0.824 |
| | 1/10 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 65 | 2.2… 3.2 | 11-1DA10 | | | **3RA22 10-1D ☐15-2AK6** | 0.824 |
| | 1/8 | 1/3 | 3/4 | 3/4 | 2 | 3 | 65 | 2.8… 4 | 11-1EA10 | | | **3RA22 10-1E ☐15-2AK6** | 0.824 |
| | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | | | **3RA22 10-1F ☐15-2AK6** | 0.824 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | | **3RA22 10-1G ☐15-2AK6** | 0.824 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | 16-1AK62 | | **3RA22 10-1H ☐16-2AK6** | 0.824 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA22 10-1J ☐16-2AK6** | 0.824 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12 | 11-1KA10 | 17-1AK62 | | **3RA22 10-1K ☐17-2AK6** | 0.824 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11…16 | 11-4AA10 | 18-1AK62 | | **3RA22 10-4A ☐18-2AK6** | 0.824 |
| **S0** | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | 24-1AK60 | 2921-1AA00 | **3RA22 20-1F ☐24-0AK6** | 1.434 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | + 2923-1BB1 (RH) | **3RA22 20-1G ☐24-0AK6** | 1.434 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | | + 2923-1DB1 (RS) | **3RA22 20-1H ☐24-0AK6** | 1.434 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA22 20-1J ☐24-0AK6** | 1.434 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12.5 | 11-1KA10 | | | **3RA22 20-1K ☐24-0AK6** | 1.434 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11… 16 | 21-4AA10 | 26-1AK60 | | **3RA22 20-4A ☐26-0AK6** | 1.434 |
| | 1 1/2 | 3 | 5 | 5 | 10 | -- | 65 | 14… 20 | 21-4BA10 | | | **3RA22 20-4B ☐26-0AK6** | 1.434 |
| | 1 1/2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 17… 22 | 21-4CA10 | 27-1AK60 | | **3RA22 20-4C ☐27-0AK6** | 1.434 |
| | 2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 20… 25 | 21-4DA10 | | | **3RA22 20-4D ☐27-0AK6** | 1.434 |
| | 2 | 5 | 7 1/2 | 10 | 20 | -- | 50 | 27… 32 | 21-4EA10 | | | **3RA22 20-4E ☐27-0AK6** | 1.434 |

| | | | Add. weight |
|---|---|---|---|
| **Order No. supplement for mounting onto standard mounting rail or screw fixing** | | | |
| • Without standard mounting rail adapter for size S00[4] | | **1 A** | |
| • With 2 standard mounting rail adapters for size S0 | | **2 B** | |
| Screw fixing with 2 push-in lugs each per motor starter is possible | | | |
| **Order No. supplement for mounting onto Fastbus 60mm busbar system** | for size S00 | **1 D** | 0.486 |
| With 8US Fast Bus busbar adapter | for size S0 | **2 D** | 0.293 |

1) For push-in lugs and auxiliary switches, see Accessories on pages 4/44 and 4/52.

2) Selection depends on the motor full load amps. HP ratings for reference only.

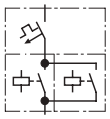
3) According to ordering option:
RH = assembly kit for reversing duty with standard rail mounting adapter in size S0.
RS = assembly kit for reversing duty with 8US Fast Bus busbar mounting.

4) With standard rail mounting or screw fixing, the 3RA29 13-2AA1 wiring kit is required for size S00.

## Selection and ordering data

3RA12 40

**Reversing duty**



**For 35 mm standard mounting rail or screw mounting**

- All starters are suitable for use in Group Installation applications per NEC 430-53 (c)
- Motor starter protector and contactor are linked electrically and mechanically by means of a link module and adapter plate
- Starter includes both electrical and mechanical interlocks
- Auxiliary switches [1]) can be added easily to the MSP and the contactor

**Combination Starter, UL508 Type F**

- Size S2 devices can be applied as Combination Starters. For versions of 50A or higher, the addition of a 3RV2938-1K line side phase barrier is required.
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT1946-4GA07 line side terminal kit
- SCCR: 65kA at 480V

| Single-Phase HP Ratings | | Three-Phase[2]) HP ratings | | | | FLA setting range Inverse-time delayed overload | Starter Order No. | Size | Consisting of the following individual devices | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Motor starter protector | + 2 Contactors + | Link module + assembly kit RH[3]) |
| 115V | 230V | 200V | 230V | 460V | 575V | A | | | | | |
| **110VAC 50Hz / 120VAC 60Hz** | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 22 ... 32 | For customer assembly | S2 | 3RV20 31-4EA10 | 3RT2035-1AK60 | 3RA2931-1AA00 + 3RA2933-1BB1 |
| 3 | 10 | 15 | 15 | 40 | 50 | 28 ... 36 | | | 3RV20 31-4PA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 32 ... 40 | | | 3RV20 31-4UA10 | 3RT2036-1AK60 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 35 ... 45 | | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 42 ... 52 | | | 3RV20 31-4WA10 | 3RT2037-1AK60 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 49 ... 59 | | | 3RV20 31-4XA10 | 3RT2038-1AK60 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 54 ... 65 | | | 3RV20 31-4JA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 28 ... 40 | For customer assembly | S3 | 3RV20 41-4FA10 | 3RT2045-1AK60 | 3RA1941-1AA00 + 3RA1943-1B[4]) |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 36 ... 50 | | | 3RV20 41-4HA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 45 ... 63 | | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 57 ... 75 | | | 3RV20 41-4KA10 | 3RT2046-1AK60 | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 ... 84 | | | 3RV20 41-4RA10 | | |
| 10 | 20 | 30 | 30 | 75 | – | 75 ... 93 | | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 80 ...100 | | | 3RV20 41-4MA10 | 3RT2047-1AK60 | |
| **24VDC** | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 22... 32 | For customer assembly | S2 | 3RV20 31-4EA10 | 3RT2035-1NB30 | 3RA2931-1AA00 + 3RA2933-1BB1 |
| 3 | 10 | 15 | 15 | 40 | 50 | 28... 36 | | | 3RV20 31-4PA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 32... 40 | | | 3RV20 31-4UA10 | 3RT2036-1NB30 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 35... 45 | | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 42... 52 | | | 3RV20 31-4WA10 | 3RT2037-1NB30 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 49... 59 | | | 3RV20 31-4XA10 | 3RT2038-1NB30 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 54... 65 | | | 3RV20 31-4JA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 28 ... 40 | For customer assembly | S3 | 3RV20 41-4FA10 | 3RT2045-1NB30 | 3RA1941-1BA00 + 3RA1943-1B[4]) |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 36 ... 50 | | | 3RV20 41-4HA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 45 ... 63 | | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 57 ... 75 | | | 3RV20 41-4KA10 | 3RT2046-1NB30 | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65 ... 84 | | | 3RV20 41-4RA10 | | |
| 10 | 20 | 30 | 30 | 75 | – | 75 ... 93 | | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 80 ...100 | | | 3RV20 41-4MA10 | 3RT2047-1NB30 | |

RH = Reversing duty for rail mounting.

1) For auxiliary switches, see Accessories page 4/44.

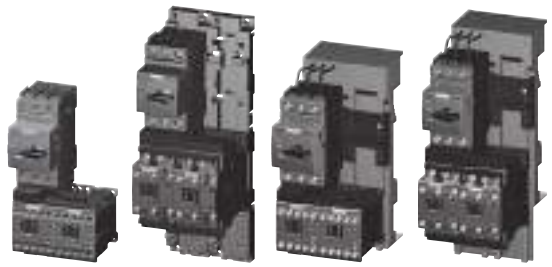
2) Selection depends on motor full load amps. Horse power ratings for reference only.

3) Adapters for standard mounting rail are also suitable for screw mounting.

4) Mechanical interlock must be ordered separately; see Accessories page 4/50

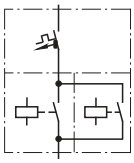
# 3RA2 Starter

## Reversing, DC Coil – up to 22 A



3RA22 10 3RA22 20 3RA22 10 3RA22 20

Reversing duty



***Rated control supply voltage 24 V DC***
***With screw connections***

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is available for free use.

**Combination Starter, UL508 Type F**
All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

| Size | UL Data: Single-phase HP ratings 115 V | 230 V | Three-phase[2] HP ratings 200 V | 230 V | 460 V | 575 V | SCCR at 480 V kA | FLA setting range inverse-time delayed overload release A | Consisting of the following single devices: Motor starter protector | + 2 contactors | + Link module + Assembly kit RH/RS[3] | Assembled starter, Screw terminals, Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Selection depends on motor full load amps** | | | | | | | | | **3RV20** | **3RT20** | **3RA** | | |
| **S00** | -- | -- | -- | -- | -- | -- | 65 | 0.11…0.16 | 11-0AA10 | 15-1BB42 | 1921-1DA00 '+ | **3RA22 10-0A□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.14…0.2 | 11-0BA10 | | 2913-2AA1[4] '+ | **3RA22 10-0B□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.18…0.25 | 11-0CA10 | | 2913-1DB1 (RS) | **3RA22 10-0C□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.22…0.32 | 11-0DA10 | | | **3RA22 10-0D□15-1BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.28…0.4 | 11-0EA10 | | | **3RA22 10-0E□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.35…0.5 | 11-0FA10 | | | **3RA22 10-0F□15-1BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.45…0.63 | 11-0GA10 | | | **3RA22 10-0G□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | -- | -- | 65 | 0.55…0.8 | 11-0HA10 | | | **3RA22 10-0H□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | -- | 1/2 | 65 | 0.7… 1 | 11-0JA10 | | | **3RA22 10-0J□15-2BB4** | 0.934 |
| | -- | -- | -- | -- | 1/2 | 1/2 | 65 | 0.9… 1.25 | 11-0KA10 | | | **3RA22 10-0K□15-2BB4** | 0.934 |
| | -- | 1/10 | -- | -- | 3/4 | 3/4 | 65 | 1.1… 1.6 | 11-1AA10 | | | **3RA22 10-1A□15-2BB4** | 0.934 |
| | -- | 1/8 | -- | -- | 3/4 | 1 | 65 | 1.4… 2 | 11-1BA10 | | | **3RA22 10-1B□15-2BB4** | 0.934 |
| | -- | 1/6 | 1/2 | 1/2 | 1 | 1 1/2 | 65 | 1.8… 2.5 | 11-1CA10 | | | **3RA22 10-1C□15-2BB4** | 0.934 |
| | 1/10 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 65 | 2.2… 3.2 | 11-1DA10 | | | **3RA22 10-1D□15-2BB4** | 0.934 |
| | 1/8 | 1/3 | 3/4 | 3/4 | 2 | 3 | 65 | 2.8… 4 | 11-1EA10 | | | **3RA22 10-1E□15-2BB4** | 0.934 |
| | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | | | **3RA22 10-1F□15-2BB4** | 0.934 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | | **3RA22 10-1G□15-2BB4** | 0.934 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | 16-1BB42 | | **3RA22 10-1H□16-2BB4** | 0.934 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA22 10-1J□16-2BB4** | 0.934 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12 | 11-1KA10 | 17-1BB42 | | **3RA22 10-1K□17-2BB4** | 0.934 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11…16 | 11-4AA10 | 18-1BB42 | | **3RA22 10-4A□18-2BB4** | 0.934 |
| **S0** | 1/6 | 1/2 | 1 | 1 | 3 | 3 | 65 | 3.5… 5 | 11-1FA10 | 24-1BB40 | 2921-1BA00 '+ | **3RA22 20-1F□24-0BB4** | 1.811 |
| | 1/4 | 1/2 | 1 | 1 1/2 | 3 | 5 | 65 | 4.5… 6.3 | 11-1GA10 | | 2923-1BB1 (RH) '+ | **3RA22 20-1G□24-0BB4** | 1.811 |
| | 1/3 | 1 | 2 | 2 | 5 | 5 | 65 | 5.5… 8 | 11-1HA10 | | 2923-1DB1 (RS) | **3RA22 20-1H□24-0BB4** | 1.811 |
| | 1/2 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 65 | 7… 10 | 11-1JA10 | | | **3RA22 20-1J□24-0BB4** | 1.811 |
| | 1/2 | 2 | 3 | 3 | 7 1/2 | 10 | 65 | 9… 12.5 | 11-1KA10 | | | **3RA22 20-1K□24-0BB4** | 1.811 |
| | 1 | 2 | 3 | 5 | 10 | -- | 65 | 11… 16 | 21-4AA10 | 26-1BB40 | | **3RA22 20-4A□26-0BB4** | 1.811 |
| | 1 1/2 | 3 | 5 | 5 | 10 | -- | 65 | 14… 20 | 21-4BA10 | | | **3RA22 20-4B□26-0BB4** | 1.811 |
| | 1 1/2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 17… 22 | 21-4CA10 | 27-1BB40 | | **3RA22 20-4C□27-0BB4** | 1.811 |
| | 2 | 3 | 5 | 7 1/2 | 15 | -- | 50 | 20… 25 | 21-4DA10 | | | **3RA22 20-4D□27-0BB4** | 1.811 |
| | 2 | 5 | 7 1/2 | 10 | 20 | -- | 50 | 27… 32 | 21-4EA10 | | | **3RA22 20-4E□27-0BB4** | 1.811 |

| | | | *Add. weight* |
|---|---|---|---|
| **Order No. supplement for mounting onto standard mounting rail or screw fixing** | | | |
| • Without standard mounting rail adapter for size S00[4] | | **1** **A** | |
| • With 2 standard mounting rail adapters for size S0 | | **2** **B** | |
| Screw fixing with 2 push-in lugs each per motor starter is possible | | | |
| **Order No. supplement for mounting onto Fastbus 60mm busbar system** | for size S00 | **1** **D** | 0.486 |
| With 8US Fast Bus busbar adapter | for size S0 | **2** **D** | 0.306 |

1) For push-in lugs and auxiliary switches, see Accessories on pages 4/44 and 4/52.

2) Selection depends on the motor full load amps. HP ratings for reference only.

3) Code for abbreviations:

RH = assembly kit for reversing duty with standard rail mounting adapter in size S0.

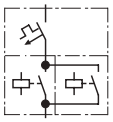
RS = assembly kit for reversing duty with 8US Fast Bus busbar mounting.

4) With standard rail mounting or screw fixing, the 3RA29 13-2AA1 wiring kit and link module are required for size S00.

## Selection and ordering data

Representative image of assembled starter

**Reversing duty**



**For 60 mm Fast Bus busbar systems**

- All starters are suitable for use in Group Installation applications per NEC 430-53 (c)
- Motor starter protector and contactor are linked electrically and mechanically by means of a link module and mounted on a Fast-bus Shoe
- Starter includes both electrical and mechanical interlocks
- Auxiliary switches[1] can be added easily to the MSP and the contactor
- Size S3 is kit form only - assembly required

**Combination Starter, UL508 Type F**

- Size S2 devices can be applied as Combination Starters
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT2946-4GA07 line side terminal kit
- SCCR: 65kA at 480V

| Single-Phase HP Ratings | | Three-Phase[2] HP ratings | | | | FLA setting range Inverse-time delayed overload release | Starter Order No. | Size | Consisting of the following individual devices | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Motor starter protector | + Contactor + | Link module + Adapter shoe for Fastbus |
| 115V | 230V | 200V | 230V | 460V | 575V | A | | | | | |
| **110VAC 50Hz / 120VAC 60Hz** | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 22... 32 | For customer assembly | S2 | 3RV20 31-4EA10 | 3RT2035-1AK60 | 3RA2931-1AA00 + 3RA2933-1DB1 |
| 3 | 10 | 15 | 15 | 40 | 50 | 28... 36 | | | 3RV20 31-4PA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 32... 40 | | | 3RV20 31-4UA10 | 3RT2036-1AK60 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 35... 45 | | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 42... 52 | | | 3RV20 31-4WA10 | 3RT2037-1AK60 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 49... 59 | | | 3RV20 31-4XA10 | | |
| 5 | 15 | 20 | 25 | 50 | 60 | 54... 65 | | | 3RV20 31-4JA10 | 3RT2038-1AK60 | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 28... 40 | For customer assembly | S3 | 3RV20 41-4FA10 | 3RT2045-1AK60 | 3RA1941-1AA00 + 3RA1943-2A[3] |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 36... 50 | | | 3RV20 41-4HA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 32... 40 | | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 57... 75 | | | 3RV20 41-4KA10 | 3RT2046-1AK60 | |
| 10 | 20 | 30 | 30 | 75 | 75 | 42... 52 | | | 3RV20 41-4RA10 | | |
| 10 | 20 | 30 | 30 | 75 | – | 75... 93 | | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 80...100 | | | 3RV20 41-4MA10 | 3RT2047-1AK60 | |
| **24VDC** | | | | | | | | | | | |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 22... 32 | For customer assembly | S2 | 3RV20 31-4EA10 | 3RT2035-1NB30 | 3RA2931-1AA00 + 3RA2933-1DB1 |
| 3 | 10 | 15 | 15 | 40 | 50 | 28... 36 | | | 3RV20 31-4PA10 | | |
| 3 | 10 | 15 | 15 | 40 | 50 | 32... 40 | | | 3RV20 31-4UA10 | 3RT2036-1NB30 | |
| 3 | 10 | 15 | 15 | 40 | 50 | 35... 45 | | | 3RV20 31-4VA10 | | |
| 5 | 10 | 20 | 20 | 50 | 50 | 42... 52 | | | 3RV20 31-4WA10 | 3RT2037-1NB30 | |
| 5 | 15 | 20 | 25 | 50 | 60 | 49... 59 | | | 3RV20 31-4XA10 | | |
| 5 | 15 | 20 | 25 | 50 | 60 | 54... 65 | | | 3RV20 31-4JA10 | 3RT2038-1NB30 | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 28... 40 | For customer assembly | S3 | 3RV20 41-4FA10 | 3RT2045-1NB30 | 3RA1941-1BA00 + 3RA 1943-2A[3] |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 36... 50 | | | 3RV20 41-4HA10 | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | 45... 63 | | | 3RV20 41-4JA10 | | |
| 10 | 20 | 30 | 30 | 75 | 75 | 57... 75 | | | 3RV20 41-4KA10 | 3RT2046-1NB30 | |
| 10 | 20 | 30 | 30 | 75 | 75 | 65... 84 | | | 3RV20 41-4RA10 | | |
| 10 | 20 | 30 | 30 | 75 | – | 75... 93 | | | 3RV20 41-4YA10 | | |
| 10 | 20 | 30 | 40 | 75 | – | 80...100 | | | 3RV20 41-4MA10 | 3RT2047-1NB30 | |

RH = Reversing duty for rail mounting.

1) For auxiliary switches, see Accessories page 4/44.

2) Selection depends on motor full load amps. Horsepower ratings for reference only.

3) Mechanical interlock must be ordered separately; see Accessories page 4/50.

## Overview

The accessories listed here are parts and add-ons for the 3RA2 direct-on-line and reversing starters as well as components for the customer assembly of motor starters

## Selection and ordering data

3RV29 01-1E

3RV29 01-2E

3RV29 01-1A

3RV29 01-2A

3RV29 02-1A

3RV29 02-2D

| | For MSPs Size | Screw Terminals Order No. | Weight approx. kg | Spring-type Terminals Order No. | Weight approx. kg |
|---|---|---|---|---|---|
| **Auxiliary switches for motor starter protectors** [1] | | | | | |
| **Transverse auxiliary switches** For front mounting | | | | | |
| 1 CO | S00 ... S3 | **3RV29 01-1D** | 0.014 | — | |
| 1 NO + 1 NC | S00 ... S3 | **3RV29 01-1E** | 0.016 | **3RV29 01-2E** | 0.016 |
| **Lateral auxiliary switches** Mountable on the left | | | | | |
| 1 NO + 1 NC | S00 ... S3 | **3RV29 01-1A** | 0.036 | **3RV29 01-2A** | 0.035 |

1 One transverse auxiliary switch and one lateral auxiliary switch can be attached per motor starter protector.
When the lateral auxiliary switch with 2 NO + 2 NC is used, a transverse auxiliary switch is not allowed.

| Rated control supply voltage Us | | | | For MSPs | Screw Terminals | Weight approx. | Spring-type Terminals | Weight approx. |
|---|---|---|---|---|---|---|---|---|
| AC 50 Hz V | AC 60 Hz V | AC 50/60 Hz 100% ON period [1] V | AC/DC 50/60 Hz, DC 5s ON period [2] V | Size | Order No. | kg | Order No. | kg |
| **Auxiliary releases for motor starter protectors** [3] | | | | | | | | |
| **Undervoltage releases** | | | | | | | | |
| 415 | 480 | — | — | S00 ... S3 | **3RV29 02-1AV1** | 0.117 | — | |
| **Shunt releases** | | | | | | | | |
| — | — | 20…24 | 20...70 | S00 ... S3 | **3RV29 02-1DB0** | 0.119 | **3RV29 02-2DB0** | 0.115 |
| — | — | 90…110 | 70...190 | | **3RV29 02-1DF0** | 0.119 | **3RV29 02-2DF0** | 0.115 |

1 The voltage range is valid for 100% (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

2 The voltage range is valid for 5s ON period at AC 50 Hz/60 Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

3 One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV21 motor starter protectors with overload reset function).

## Selection and ordering data

| | For Conductors Size | Version | | Screw Terminals Order No. | Weight approx. kg | Spring-type Terminals Order No. | Weight approx. kg |
|---|---|---|---|---|---|---|---|
| **Auxillary switch blocks for snapping on the front for contactors** | | | | | | | |
| **Cable entry from below** | S00 ... S3 | 1-pole | 1 NC | **3RH29 11-1BA10** | 0.020 | — | |
| | S00 ... S3 | 1-pole | 1 NO | **3RH29 11-1BA01** | 0.020 | — | |
| | S00 ... S3 | 2-pole | 1 NO + 1 NC | **3RH29 11-1MA11** | 0.050 | — | |
| | S00 ... S3 | 2-pole | 2 NO | **3RH29 11-1MA20** | 0.050 | — | |
| **Cable entry from two sides** | S00 ... S3 | 4-pole | 2 NO + 2 NC | **3RH29 11-1FA22** | 0.060 | **3RH29 11-2FA22** | 0.049 |
| | S00 | 2-pole | 1 NO + 1 NC | **3RH29 11-1DA11** | 0.039 | **3RH29 11-2DA11** | 0.050 |
| | S00 | 2-pole | 2 NC | **3RH29 11-1DA02** | 0.039 | **3RH29 11-2DA02** | 0.050 |
| | S0 ... S3 | 2-pole | 1 NO + 1 NC | **3RH29 21-1DA11** | 0.039 | **3RH29 21-2DA11** | 0.050 |
| | S0 ... S3 | 2-pole | 2 NC | **3RH29 21-1DA02** | 0.041 | **3RH29 21-2DA02** | 0.050 |
| | S0 ... S3 | 2-pole | 2 NO | **3RH29 21-1DA20** | 0.041 | **3RH29 21-2DA20** | 0.050 |
| **Laterally mountable auxiliary switch blocks for contactors** | | | | | | | |
| | S00 | 2 NC | | **3RH29 11-1DA02** | 0.020 | **3RH29 11-2DA02** | 0.050 |
| | S00 | 1 NO + 1 NC | | **3RH29 11-1DA11** | 0.040 | **3RH29 11-2DA11** | 0.050 |
| | S00 | 1 NO | | **3RH29 11-1DA20** | 0.040 | **3RH29 11-2DA20** | 0.050 |
| | S0 ... S3 | 2 NC | | **3RH29 21-1DA02** | 0.050 | **3RH29 21-2DA02** | 0.050 |
| | S0 ... S3 | 1 NO + 1 NC | | **3RH29 21-1DA11** | 0.050 | **3RH29 21-2DA11** | 0.050 |
| | S0 ... S3 | 2 NO | | **3RH29 21-1DA20** | 0.050 | **3RH29 21-2DA20** | 0.050 |
| **Connection modules for contactors with screw terminals** | | | | | | | |
| **Adaptors for contactors** | Ambient temperature $T_{u\,max}$ = 60 °C | | | | | | |
| | S00 | Rated operational current $I_e$ at AC-3/400 V: 20A | | **3RT19 16-4RD01** | 0.020 | — | |
| | S0 | Rated operational current $I_e$ at AC-3/400 V: 25A | | **3RT19 26-4RD01** | 0.020 | — | |
| **Plugs for contactors** | S00, S0 | | | **3RT19 00-4RE01** | 0.025 | — | |

3RH29 11-1BA10

3RH29 11-1MA20

3RH29 11-1FA22

3RH29 11-1DA11

3RT19 26-4RD01

3RT19 00-4RE01

## Selection and ordering data

| For Conductors Size | Version | Screw Terminals Order No. | Weight approx. kg |
|---|---|---|---|
| **Auxillary switch blocks for snapping on the front for contactors** | | | |

3RV29 28-1H

Note: UL 508 demands for “Combination Motor Controller Type E” 1” air gaps and 2” creepage distances at lineside. The following terminal blocks must be used in S3 MSP’s 3RV10. The S2 MSP 3RV10 conforms with stipulated air gaps and creepage distances without terminal block.
Terminal blocks are not required for use according to CSA. With size S0 these terminal blocks cannot be used in combination with 3-phase busbars 3RV19.5. This also applies to size S3 in combination with transverse auxiliary switches.

3RV29 28-1K

| | | | |
|---|---|---|---|
| **Terminal block type E** for extended air/creepage distance (1” and 2”) | S00, S0 | **3RV29 28-1H** | 0.120 |
| | S00, S0 | **3RV29 28-1K** | 0.120 |
| | S2 | **3RV29 38-1K** | 0.120 |
| | S3 | **3RT29 46-4GA07** | 0.120 |

3RT19 46-4GA07

## Selection and ordering data

| For Conductors Size | Version | Rated control supply voltage $U_S$ AC V | DC V | Surge Suppressors Order No. | Weight approx. kg |
|---|---|---|---|---|---|
| **Auxillary switch blocks for snapping on the front for contactors** | | | | | |
| **Size S00 — For plugging onto the front side of the contactors with and without auxiliary switch blocks** | | | | | |
| 3RT2.1 | Varistors | 24 … 48 AC | 24 … 70 DC | **3RT29 16-1BB00** | 0.010 |
| | | 48 … 127 AC | 70 … 150 DC | **3RT29 16-1BC00** | 0.010 |
| 3RT2.1 | RC elements | 24 … 48 AC | 24 … 70 DC | **3RT29 16-1CB00** | 0.010 |
| | | 48 … 127 AC | 70 … 150 DC | **3RT29 16-1CC00** | 0.010 |
| 3RT2.1 | Noise suppression | | 12 … 250 DC | **3RT29 16-1DG00** | 0.010 |
| 3RT2.1 | Diode assemblies (diode and Zener diode) for DC operation and short break times | | 12 … 250 DC | **3RT29 16-1EH00** | 0.010 |
| **Size S0 — For plugging onto the front side of the contacctors (prior to mounting of the auxiliary switch block)** | | | | | |
| 3RT2.2 | Varistors | 24 … 48 AC | 24 … 70 DC | **3RT29 26-1BB00** | 0.010 |
| | | 48 … 127 AC | 70 … 150 DC | **3RT29 26-1BC00** | 0.010 |
| 3RT2.2 | RC elements | 24 … 48 AC | 24 … 70 DC | **3RT29 26-1CB00** | 0.010 |
| | | 48 … 127 AC | 70 … 150 DC | **3RT29 26-1CC00** | 0.010 |
| 3RT2.2 | Diode assemblies for DC operation and short break times | | 24 DC | **3RT29 26-1ER00** | 0.010 |
| | | | 30 … 250 DC | **3RT29 26-1ES00** | 0.010 |
| **Sizes S2** | | | | | |
| 3RT2.3 | Varistors | 24 ... 48 AC | 24 ... 70 DC | **3RT29 36-1BB00** | 0.010 |
| | | 127 ... 240 AC | 150 ... 250 DC | **3RT29 36-1BD00** | 0.010 |
| | | 48 ... 127 AC | 70 ... 150 DC | **3RT29 36-1BC00** | 0.010 |
| 3RT2.3 | RC elements | 24 ... 48 AC | 24 ... 70 DC | **3RT29 36-1CB00** | 0.010 |
| | | 127 ... 240 AC | 150 ... 250 DC | **3RT29 36-1CD00** | 0.010 |
| | | 48 ... 127 AC | 70 ... 150 DC | **3RT29 36-1CC00** | 0.010 |
| 3RT2.3 | Diode assemblies | -- | 24 DC | **3RT29 36-1ER00** | 0.010 |
| | | -- | 30 ... 250 DC | **3RT29 36-1ES00** | 0.010 |
| **Sizes S3** | | | | | |
| 3RT20 4. | Varistors | 24 … 48 AC | 24 … 70 DC | **3RT29 36-1BB00** | 0.025 |
| | | 48 … 127 AC | 70 … 150 DC | **3RT29 36-1BC00** | 0.025 |
| 3RT20 4. | RC elements | 24 … 48 AC | 24 … 70 DC | **3RT29 36-1CB00** | 0.040 |
| | | 48 … 127 AC | 70 … 150 DC | **3RT29 36-1CC00** | 0.040 |
| 3RT20 4. | Diode assemblies for DC operation and short break times, can be plugged in at bottom | | 24 DC | **3RT29 36-1ER00** | 0.025 |
| | | | 30 … 250 DC | **3RT29 36-1ES00** | 0.025 |

3RT29 16-1EH00

3RT29 26-1BB00

3RT2936-1B.00

3RT2936-1E.00

3RT2936-1CC00

For additional surge suppression, see page 2/79

## Selection and ordering data

### Auxillary switch blocks for snapping on the front for contactors

3RA29 11-2AA00

Electrical and mechanical link between motor starter protector and contactor

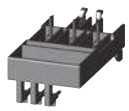
| | For MSP Size | For contactors | Actuating voltage of contactor | Screw Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|---|
| Single-unit packaging | S00, S0 | S00 | AC and DC | **3RA19 21-1DA00** | | |
| | S00, S0 | S0 | AC | **3RA29 21-1AA00** | 1 unit | 0.055 |
| | S00, S0 | S0 | DC | **3RA29 21-1BA00** | 1 unit | 0.068 |
| | S2 | S2 | AC and DC | **3RA29 31-1AA00** | 1 unit | 0.104 |
| | S3 | S3 | AC and DC | **3RA19 41-1AA00** | 1 unit | 0.090 |
| Multi-unit packaging | S00, S0 | S00 | AC and DC | **3RA19 21-1D** | 10 unit | 0.021 |
| | S00, S0 | S0 | AC | **3RA29 21-1A** | 10 unit | 0.001 |
| | S00, S0 | S0 | DC | **3RA29 21-1B** | 10 unit | 0.001 |
| | S2 | S2 | AC and DC | **3RA29 31-1A** | 5 unit | 0.104 |
| | S3 | S3 | AC and DC | **3RA19 41-1A** | 5 unit | 0.073 |

3RA29 11-2AA00

Electrical and mechanical link between motor starter protector and contactor

| | For MSP Size | For contactors | Actuating voltage of contactor | Spring-type Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|---|
| Single-unit packaging | S00 | S00 | AC and DC | **3RA29 11-2AA00** | | |
| | S0 | S0 | AC [1] and DC | **3RA29 21-2AA00** | 1 unit | 0.040 |
| Multi-unit packaging | S00 | S00 | AC and DC | **3RA29 11-2A** | 10 unit | 0.400 |
| | S0 | S0 | AC [1] and DC | **3RA29 21-2A** | 10 unit | 0.770 |

### Hybrid link modules from motor starter protector to contactor


3RA29 11-2FA00

For mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals

| | For MSP Size | For contactors | Actuating voltage of contactor | Screw Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|---|
| Single-unit packaging | S00 | S00 | AC and DC | **3RA29 11-2FA00** | 1 unit | 0.029 |
| | S0 | S0 | AC [1] and DC | **3RA29 21-2FA00** | 1 unit | 0.056 |
| Multi-unit packaging | S00 | S00 | AC and DC | **3RA29 11-2F** | 10 unit | 0.290 |
| | S0 | S0 | AC [1] and DC | **3RA29 21-2F** | 10 unit | 0.560 |

### Link modules from motor starter protector to soft starters

3RA29 11-2GA00

Electrical and mechanical link between motor starter protector and soft starter

| | For MSPs Size | For soft starters Size | Screw Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|
| Single-unit packaging | S00/S0 | S00/S0 | **3RA29 21-1BA00** | 1 unit | 0.001 |
| Multi-unit packaging | S00/S0 | S00/S0 | **3RA29 21-1B** | 10 unit | 0.001 |

Electrical and mechanical link between motor starter protector and soft starter

| | For MSPs Size | For soft starters Size | Spring-type Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|
| Single-unit packaging | S00 | S00 | **3RA29 11-2GA00** | 1 unit | 0.038 |
| | S0 | S0 | **3RA29 21-2GA00** | 1 unit | 0.072 |
| Multi-unit packaging | S00 | S00 | **3RA29 11-2G** | 10 unit | 0.380 |
| | S0 | S0 | **3RA29 21-2G** | 10 unit | 0.720 |

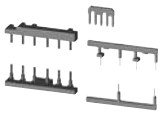
[1] A spacer for height compensation on AC contactors with spring-type terminals, size S0 is optionally available, see page 4/52.

## Accessories

### Wiring kits for contactors

| For Conductors Size | Version | Screw Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|
| **Reversing** | | | | |
| S00 | Electrical and mechanical connection for reversing contactors, optionally with integrated electrical and mechanical interlock<br>The kit contains:<br>2 connecting pins for 2 contactors,<br>wiring modules on the top and bottom<br>• for main and auxiliary circuits | **3RA29 13-2AA1** | 1 unit | 0.001 |
| S0 | | **3RA29 23-2AA1** | 1 unit | 0.001 |
| S2 | | **3RA29 33-2AA1** | 1 unit | 0.120 |
| **Wye-delta starting** | | | | |
| S00 | Electrical and mechanical link for three contactors of same size | **3RA29 13-2BB1** | 1 unit | 0.001 |
| S0 | | **3RA29 23-2BB1** | 1 unit | 0.001 |
| S2-S2-S0 | | **3RA29 33-2C** | 1 unit | 0.070 |
| S2-S2-S2 | | **29RA2933-2BB1** | 1 unit | 0.160 |

3RA29 23-2AA1


3RA29 23-2BB1

| | | Spring-type Terminals | | |
|---|---|---|---|---|
| **Reversing Duty** | | | | |
| S00 | Electrical and mechanical connection for reversing contactors, optionally with integrated electrical and mechanical interlock<br>The kit contains:<br>2 connecting pins for 2 contactors, wiring modules on the top and bottom<br>• for main circuits only | **3RA29 13-2AA2** | 1 unit | 0.001 |
| S0 | | **3RA29 23-2AA2** | 1 unit | 0.001 |
| S2 | | **3RA29 33-2AA2** | 1 unit | 0.001 |
| **Wye-delta starting** | | | | |
| S00 | Electrical and mechanical link for three contactors of same size | **3RA29 13-2BB2** | 1 unit | 0.001 |
| S0 | | **3RA29 23-2BB2** | 1 unit | 0.001 |
| S2-S2-S0 | | **3RA29 33-2C** | 1 unit | 0.001 |
| S2-S2-S2 | | **3RA29 33-2BB2** | 1 unit | 0.001 |

3RA29 23-2AA2

### Wiring kits for contactors

| | | Screw Terminals | | |
|---|---|---|---|---|
| **Reversing** | | | | |
| S00 | Switches 2 contactors in series | **3RA29 16-1A** | 1 unit | 0.001 |
| S0 | | **3RA29 26-1A** | 1 unit | 0.001 |
| S2 | | **3RA29 36-1A** | 1 unit | 0.001 |

3RA29 16-1A

# 3RA2 Accessories

## Mounting kits for Fast Bus

### Accessories

| For Conductors Size | For MSPs Size | Version | Screw Terminals Order No. | Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|
| **Mechanical interlocks** | | | | | |
| S2/S3 | -- | For reversing contactors, laterally mounted, no electrical connections (each contactor has 1NO/1NC auxiliaries) | **3RA29 34-2B** | | 0.010 |
| **Terminals for contactor coil** | | | | | |
| S3 | -- | For A1 and A2 of reversing contactors (includes 2 x A1 and 1 x A2) | **3RA19 23-3B** | | 0.020 |
| **Standard mounting rail adapters** | | | | | |
| | | For mechanical fixing of motor start protector and contactor; for snapping onto standard mounting rail or for screw fixing. | | | |
| S00, S0 | S00, S0 | Single-unit packaging | **3RA29 22-1AA00** | 1 unit | 0.001 |
| S2 | S2 | | **3RA19 31-1AA00** | 1 unit | 0.020 |
| S3 | S3 | | **3RA19 41-1AA00** | 1 unit | 0.250 |
| S00, S0 | S00, S0 | Multi-unit packaging | **3RA29 22-1A** | 5 units | 0.001 |
| **Side modules for standard mounting rail adaptors** | | | | | |
| S00 ...S3 | S00 ...S3 | For standard mountin rail adaptors 10 mm wide, 96 mm long, for widening standard mounting rail adaptors when using lateral auxiliary switches, For size S00 to S2: 2 units required. For size S3: 3 units required | **3RA19 02-1B** | 10 units | 0.009 |
| **RH assembly kits for reversing duty and standard rail mounting** | | | | | |
| | | RH assembly kits for screw terminals | | | |
| S0 | S0 | Comprising: • Wiring kits • 2 standard mounting rail adaptors • 2 connecting wedges Link modules may be ordered seperately. | **3RA29 23-1BB1** | 1 unit | 0.001 |
| S2 | S2 | | **3RA29 33-1BB1** | 1 unit | 0.560 |
| S3 | S3 | | **3RA29 43-1BB1** | 1 unit | 0.810 |
| | | RH assembly kits for spring-type terminals | Spring-type Terminals | | |
| S0 | S0 | Comprising: • Wiring kits • 2 standard mounting rail adaptors • 2 connecting wedges • Spacers Link modules may be ordered seperately. | **3RA29 23-1BB2** | 1 unit | 0.001 |

3RA29 34-2B

3RA19 23-3B

3RA29 22-1AA00

3RA19 02-1B

3RA29 23-1BB1

# 3RA2 Accessories

## Busbar adapters

| | For motor starter protector | For contactors | Version | Order No. | Std. pack qty. | Weight approx. |
|---|---|---|---|---|---|---|
| | Size | Size | | | | kg |
| **Busbar adapters for 60 mm systems** | | | | | | |
| | For flat copper profiles according to DIN 46433<br>Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm<br>also for T and double-T special profiles | | | | | |
| | **For motor starter protectors and contactors with screw terminals** | | | **Screw terminals** | | |
| | S00 | S00 | Rated current 16 A,<br>45 mm wide, 200 mm long | **8US12 51-5DS10** | 1 unit | 0.183 |
| | S0 | S0 | Rated current 32 A,<br>45 mm wide, 260 mm long | **8US12 51-5NT10** | 1 unit | 0.183 |
| | S2 | S2 | Up to 65A,<br>55mm wide, 260mm long | **8US12 61-6MT10** | 1 unit | 0.572 |
| | **For motor starter protectors and contactors with spring-type terminals** | | | **Spring-type terminals** | | |
| | S00 | S00 | Rated current 16 A,<br>45 mm wide, 260 mm long | **8US12 51-5DT11** | 1 unit | 0.183 |
| | S0 | S0 | Rated current 32 A,<br>45 mm wide, 260 mm long | **8US12 51-5NT11** | 1 unit | 0.183 |
| **Device holders for lateral mounting onto busbar adapters for 60 mm system** | | | | | | |
| | S00, S0 | S00, S0 | Up to 25 A,<br>45 mm wide, 200 mm long | **8US12 50-5AS10** | 1 unit | 0.183 |
| | S0 | S0 | Up to 40 A,<br>45 mm wide, 260 mm long | **8US12 50-5AT10** | 1 unit | 0.183 |
| | S2 | S2 | Up to 65A,<br>118mm wide, 260mm long<br>(includes 8US1261-6MT10 adapter) | **8US12 11-6MT10** | 1 unit | 0.873 |
| **Side modules for widening busbar adapters** | | | | | | |
| | -- | -- | Including connecting wedges, for widening busbar adapters or device holders, 9 mm wide, 200 mm long | **8US19 98-2BJ10** | 1 unit | 0.023 |
| **Spacers for fixing the motor starter onto the busbar adapter** | | | | | | |
| | -- | S00, S0 | (1 pack = 100 units) | **8US19 98-1BA10** | 1 pack | 0.183 |
| **Vibration and shock kits for high vibration and shock loads** | | | | | | |
| | -- | S00, S0 | | **8US19 98-1CA10** | 1 unit | 0.183 |
| **RS assembly kits for reversing duty for 60 mm busbar systems** | | | | | | |
| | **RS assembly kits for screw terminals** | | | **Screw terminals** | | |
| | S00, S0<br>S0<br>S00<br>S2 | S00<br>S0<br>S0<br>S2 | Comprising:<br>• Wiring kits<br>• Busbar adapters<br>• Device holders<br>• 2 connecting wedges<br>• Side modules<br>Link modules must be ordered separately. | **3RA29 13-1DB1**<br>**3RA29 23-1DB1**<br>**3RA29 23-1EB1**<br>**3RA29 33-1DB1** | 1 unit<br>1 unit<br>1 unit<br>1 unit | 0.001<br>0.001<br>0.001<br>1.235 |
| | **RS assembly kits for spring-type terminals** | | | **Spring-type terminals** | | |
| | S00<br>S0 | S00<br>S0 | Comprising:<br>• Wiring kits<br>• Busbar adapters<br>• Device holders<br>• 2 connecting wedges<br>• Spacers<br>• Side modules<br>Link modules must be ordered separately. | **3RA29 13-1DB2**<br>**3RA29 23-1DB2** | 1 unit<br>1 unit | 0.001<br>0.001 |

8US12 51-5DS10

8US12 51-5DT11

8US12 50-5AS10

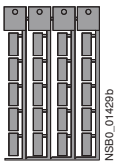
8US12 50-5AT10

3RA29 23-1DB1 only Busbar adapter pictured

3RA29 23-1DB2 only Busbar adapter pictured

## Connecting wedges, spaces, and tools

| | For motor starter protector Size | For contactors Size | Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|---|---|---|
| **Connecting wedges** | | | | | | |
| 8US19 98-1AA00 | | | For mechanical linking of busbar adapters and device holders or of standard mounting rail adapters (2 units per combination required) | **8US19 98-1AA00** | 100 units | 0.100 |
| **Spacers** | | | | | | |
| 3RA29 11-1CA00 | | | For height compensation on AC contactors size S0 with spring-type terminals | **Spring-type terminals** | | |
| | S0 | S0 | **Single-unit packaging** | **3RA29 11-1CA00** | 1 unit | 0.001 |
| | S0 | S0 | **Multi-unit packaging** | **3RA29 11-1C** | 5 units | 0.001 |

| | Version | Order No. | Std. pack qty. | Weight approx. kg |
|---|---|---|---|---|
| **Tools for opening spring-type terminals by hand** | | | | |
| 3RA29 08-1A | **Screwdrivers** for all SIRIUS devices with spring-type terminals<br>Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated | **Spring-type terminals**<br>**3RA29 08-1A** | 1 unit | 0.045 |
| **Blank labels** | | | | |
|  3RT19 00-1SB20 | **Unit labeling plates**[1] for SIRIUS devices 20 mm x 7 mm, pastel turquoise | **3RT29 00-1SB20** | 340 units | 0.200 |

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systems, Inc. www.murrplastik.com .

## Selection and ordering data

| | For MSPs Size | For Conductors Size | Version | Order No. | Std. Pack Qty. | Weight approx. kg |
|---|---|---|---|---|---|---|
| **Push-in lugs for screw fixing** | | | | | | |
| 3RV29 28-0B | S00 | -- | For screwing the motor starter protector onto mounting plates; for each motor starter protector, 2 units are required. | **3RV29 28-0B** | 10 units | 0.100 |

## Components for IEC types of coordination 1 and 2 at AC 500 V

### Technical data

| Three-phase standard motor[1] 4-pole at AC 500 V | | Setting range Inverse-time delayed overload release | Motor starter protector | Contactor[2] | Size |
|---|---|---|---|---|---|
| Standard output | Motor current (guide value) | | Type | Type | |
| $P$ | $I$ | | | | |
| kW | A | A | | | |
| **IEC Type of coordination 1 at $I_q$ = 50 kA/AC 400 V Normal starting Class 10** | | | | | |
| 1.5 | 3.6 | 3.5 ... 5 | 3RV20 11-1FA10 | 3RT20 15-1AP00 | **S00** |
| 2.2 | 4.9 | 4.5 ... 6.3 | 3RV20 11-1GA10 | | |
| 3 | 6.5 | 5.5 ... 8 | 3RV20 11-1HA10 | | |
| 4 | 8.5 | 7 ... 10 | 3RV20 11-1JA10 | 3RT20 16-1AP01 | |
| 5.5 | 11.5 | 9 ... 12.5 | 3RV20 11-1KA10 | 3RT20 17-1AP01 | |
| 7.5 | 15.5 | 11 ... 16 | 3RV20 11-4AA10 | 3RT20 18-1AP01 | |
| **IEC Type of coordination 2 at $I_q$ = 50 kA/AC 400 V Normal starting Class 10** | | | | | |
| 0.06 | 0.2 | 0.14 ... 0.2 | 3RV20 11-0BA10 | 3RT20 15-1AP01 | **S00** |
| 0.06 | 0.2 | 0.18 ... 0.25 | 3RV20 11-0CA10 | | |
| 0.09 | 0.3 | 0.22 ... 0.32 | 3RV20 11-0DA10 | | |
| 0.09 | 0.3 | 0.28 ... 0.4 | 3RV20 11-0EA10 | | |
| 0.12 | 0.4 | 0.35 ... 0.5 | 3RV20 11-0FA10 | | |
| 0.18 | 0.6 | 0.45 ... 0.63 | 3RV20 11-0GA10 | | |
| 0.18 | 0.6 | 0.55 ... 0.8 | 3RV20 11-0HA10 | | |
| 0.25 | 0.85 | 0.7 ... 1 | 3RV20 11-0JA10 | | |
| 0.37 | 1.1 | 0.9 ... 1.25 | 3RV20 11-0KA10 | | |
| 0.55 | 1.5 | 1.1 ... 1.6 | 3RV20 11-0AA10 | | |
| 0.75 | 1.9 | 1.4 ... 2 | 3RV20 11-1BA10 | | |
| 0.75 | 1.9 | 1.8 ... 2.5 | 3RV20 11-1CA10 | | |
| 1.1 | 2.7 | 2.2 ... 3.2 | 3RV20 11-1DA10 | | |
| 1.5 | 3.6 | 2.8 ... 4 | 3RV20 11-1EA10 | | |
| 1.5 | 3.6 | 3.5 ... 5 | 3RV20 11-1FA10 | 3RT20 24-1AP01 | **S0** |
| 2.2 | 4.9 | 4.5 ... 6.3 | 3RV20 11-1GA10 | | |
| 3 | 6.5 | 5.5 ... 8 | 3RV20 11-1HA10 | | |
| 4 | 8.5 | 7 ... 10 | 3RV20 11-1JA10 | | |
| 5.5 | 11.5 | 9 ... 12.5 | 3RV20 11-1KA10 | | |
| 7.5 | 15.5 | 11 ... 16 | 3RV20 21-4AA10 | 3RT20 26-1AP01 | |
| 7.5 | 15.5 | 14 ... 20 | 3RV20 21-4BA10 | | |
| 11 | 22 | 17 ... 22 | 3RV20 21-4CA10 | 3RT20 27-1AP01 | |
| 11 | 22 | 20 ... 35 | 3RV20 21-4DA10 | | |
| 15 | 29 | 27 ... 32 | 3RV20 21-4EA10 | | |

1) Selection depends on the actual startup and rated data of the protected motor.

2) Rated control supply voltage 120 V AC. Other voltages are possible.

## Components for IEC types of coordination 1 and 2 at AC 500 V

### Technical data

| Three-phase standard motor[1]) 4-pole at AC 500 V | | Setting range Inverse-time delayed overload release | Motor starter protector | Contactor[2]) | Size |
|---|---|---|---|---|---|
| Standard output | Motor current (guide value) | | Type | Type | |
| *P* | *I* | | | | |
| kW | A | A | | | |
| **IEC Type of coordination 1 at $I_q$ = 50 kA/AC 500 V Normal starting Class 10** | | | | | |
| On request | | | 3RV2031-4DA10 | 3RT20 35-1AK60 | **S2** |
| On request | | | 3RV2031-4EA10 | 3RT20 35-1AK60 | |
| On request | | | 3RV2031-4FA10 | 3RT20 35-1AK60 | |
| On request | | | 3RV2031-4GA10 | 3RT20 36-1AK60 | |
| On request | | | 3RV2031-4HA10 | 3RT20 36-1AK60 | |
| On request | | | 3RV2041-4JA10 | 3RT20 45-1AK60 | **S3** |
| On request | | | 3RV2041-4KA10 | 3RT20 45-1AK60 | |
| On request | | | 3RV2041-4LA10 | 3RT20 46-1AK60 | |
| **IEC Type of coordination 2 at $I_q$ = 50 kA/AC 500 V Normal starting Class 10** | | | | | |
| On request | | | 3RV20 31-4AA10 | 3RT20 35-1AK60 | **S2** |
| On request | | | 3RV20 31-4BA10 | 3RT20 35-1AK60 | |
| On request | | | 3RV20 31-4DA10 | 3RT20 35-1AK60 | |
| On request | | | 3RV20 31-4EA10 | 3RT20 35-1AK60 | |
| On request | | | 3RV20 31-4FA10 | 3RT20 35-1AK60 | |
| On request | | | 3RV20 31-4GA10 | 3RT20 36-1AK60 | |
| On request | | | 3RV20 31-4HA10 | 3RT20 36-1AK60 | |
| On request | | | 3RV20 31-4JA10 | 3RT20 45-1AK60 | **S3** |
| On request | | | 3RV20 31-4KA10 | 3RT20 45-1AK60 | |
| On request | | | 3RV20 31-4LA10 | 3RT20 46-1AK60 | |

1) Selection depends on the actual startup and rated data of the protected motor.

2) Rated control supply voltage 120 V AC. Other voltages are possible.

## Components for IEC types of coordination 1 and 2 at AC 690 V

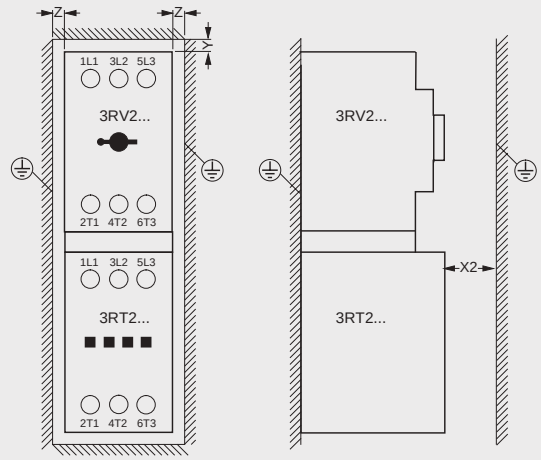
### Technical data

| Three-phase standard motor 4-pole at AC 690 V[3]) | | Setting range MSP | Standard IEC circuit-breaker with limiting function | Subsequent MSP | Contactor[1]) | Size | Short-circuit switching capacity $I_q$ at 690 V |
|---|---|---|---|---|---|---|---|
| Standard output | Motor current (guide value) | | Type | Type | Type | | |
| $P$ | $I$ | | | | | | |
| kW | A | A | | | | | kA |
| **IEC Types of coordination 1 and 2 at AC 690 V Normal starting Class 10** | | | | | | | |
| On request | | 11 ... 16 | 3RV13 31-4HC10 | 3RV20 31-4AA10 | 3RT20 35-1AK60 | **S2** | 50 |
| On request | | 14 ... 20 | Size S2 | 3RV20 31-4BA10 | 3RT20 35-1AK60 | | |
| On request | | 18 ... 25 | $I_n$= 50 A | 3RV20 31-4DA10 | 3RT20 35-1AK60 | | |
| On request | | 22 ... 32 | | 3RV20 31-4EA10 | 3RT20 35-1AK60 | | |
| On request | | 28 ... 40 | | 3RV20 31-4FA10 | 3RT20 45-1AK60[2]) | **S2/S3** | 50 |
| On request | | 36 ... 45 | | 3RV20 31-4GA10 | 3RT20 45-1AK60[2]) | | |
| On request | | 40 ... 50 | | 3RV20 31-4HA10 | 3RT20 46-1AK60[2]) | | |

### *Installation guidelines for AC 400/500 V*

The following distances from earthed components must be observed when installing combinations:

| Motor starter protectors in combination with contactors | | | Distances from earthed or live parts | | |
|---|---|---|---|---|---|
| MSP | Contactor | Rated operational voltage | Y mm | X2[4]) mm | Z mm |
| 3RV2. 1 with | 3RT20 1 | 400/500 V | 20 | 10 | 9 |
| 3RV2. 2 with | 3RT20 1 | 400/500 V | 30 | 10 | 9 |
| | 3RT2 . 2 | 400/500 V | 30 | 10 | 9 |
| | 3RT2 . 3 | 400/500 V | 30 | 10 | 9 |
| 3RV2. 3 with | 3RT20 2 | 400/500 V | 50 | 10 | 10 |
| | 3RT2 . 3 | 400/500 V | 50 | 10 | 10 |
| | 3RT20 4 | 400/500 V | 50 | 10 | 10 |
| 3RV2. 4 with | 3RT20 4 | 400 V | 90 | 10 | 12 |
| | 3RT20 4 | 500 V | 220 | 10 | 20 |




- No upstream circuit-breaker required; short-circuit proof up to 100 kA.

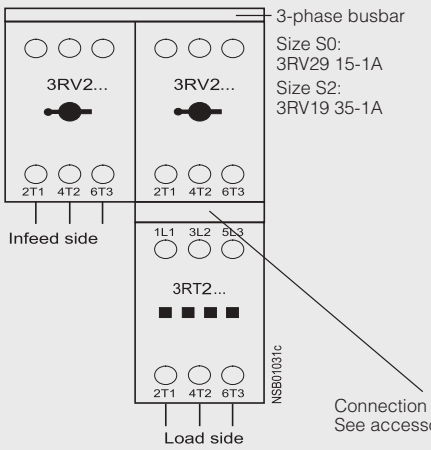
1) Rated control supply voltage 120 V AC. Other voltages are possible.
2) With these combinations, the distance between the subsequent MSP and the contactor must be at least 10 cm.
3) Selection depends on the specific startup and rated data of the protected motor.
4) Minimum distance to contactor at front. For the MSP, no minimum distance at the front must be maintained.

## Technical data

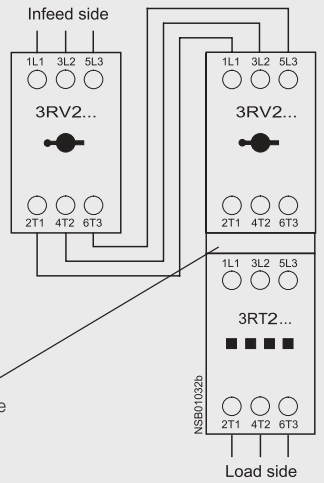
### *Installation guidelines for AC 690 V*

| Size | Mounting method |
|---|---|
| **S0** | Mounting on an insulated base plate. If screws are used for fixing, the screws must not be earthed. Alternatively, the standard rail adapter can be used for all units. |
| **S2/S3** | Mounting on an insulated base plate. Alternatively, the standard rail adapter can also be used without restriction. |

**Standard surface mounting for sizes S0 up to 5.5 kW, S2 and S3**



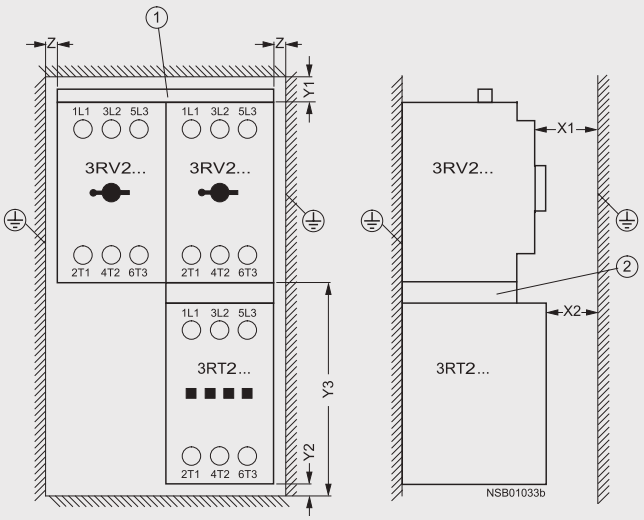

**Surface mounting for sizes S0 from 7.5 to 11 kW**




The following distances from earthed components must be observed when installing combinations:

| Two MSPs in combination with contactors | | | Distances from earthed or live components | | | | | |
|---|---|---|---|---|---|---|---|---|
| MSP | Contactor | Rated operational voltage | Y1 mm | Y2 mm | Y3 mm | X1 mm | X2 mm | Z mm |
| 3RV2. 2 with | 3RT20 2 | 690 V | 80 | 10 | 95 | 20 | 14 | 20 |
| 3RV2. 3 with | 3RT20 3<br>3RT20 4 | 690 V<br>690 V | 50<br>50 | 10<br>10 | 120<br>120 | 10<br>10 | 32<br>40 | 10<br>10 |

a 3-phase busbar:
Size S0: 3RV29 15-1A
Size S2: 3RV19 35-1A




b In combination with size S2 MSPs and size S3 contactors, a spacing of 100 mm must be maintained.

## Technical data

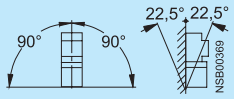
### General data

| | | | | | | |
|---|---|---|---|---|---|---|
| Specifications | | | IEC 60 947-1, EN 60 947-1 (VDE 0660 Part 100)<br>IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101)<br>IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102) | | | |
| **Type**<br>Size<br>Number of poles | | | **3RA2. 1**<br>**S00**<br>3 | **3RA2. 2**<br>**S0**<br>3 | **3RA2. 3**<br>**S2**<br>3 | **3RA2.4**<br>**S3**<br>3 |
| **Max. rated current $I_{nmax}$**<br>(= max. rated operational current $I_e$) | | A | 16 | 32 | 65 | 100 |
| **Permissible ambient temperature** | °C for storage/transport<br>°C for operation | | –55 ... +80<br>–20 ... +60 (restrictions apply at more than +60 °C) | | –50 ... +80<br>–20 ... +60 | |
| **Rated operational voltage $U_e$**<br>**Rated frequency**<br>**Rated insulation voltage $U_i$**<br>**Rated impulse withstand voltage $U_{imp}$** | | V<br>Hz<br>V<br>kV | 690<br>50/60<br>690<br>6 | | | |
| **Release class (CLASS)** | acc. to IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102) | | 10 | | | |
| **Rated fused short-circuit current $I_q$ at 50/60 Hz AC 400 V acc. to IEC 60 947-4-1, DIN EN 60 947-4-1 (VDE 0660 Part 102) Types of coordination to IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102)** | | kA | 150<br>[1] | | 100 | 50 |
| **Power losses $P_{v\,max}$ of all main conducting paths** depending on the rated current $I_n$ (upper current setting range) | • Up to 1.25 A<br>• 1.6 - 6.3 A<br>• 8 - 12 A<br>• 16 A<br>• 5 - 6.3 A<br>• 8 - 12 A<br>• 16 - 32 A<br>• 25 - 32 A<br>• 40 A<br>• 45 - 50 A<br>• 63 A<br>• 75 - 90 A<br>• 100 A | W<br>W<br>W<br>W<br>W<br>W<br>W<br>W<br>W<br>W<br>W<br>W<br>W | 2<br>2.3<br>3.5<br>4.3 | <br><br><br><br>2.3<br>3.5<br>4.3 | <br><br><br><br><br><br><br>16.2<br>17.2<br>21 | <br><br><br><br><br><br><br><br><br><br><br>29<br>45<br>60 |
| **Power consumption of solenoid coils** (with cold coil and $U_s$, 50 Hz) | | | | | | |
| • AC operation | closing<br>p.f.<br>closed<br>p.f. | VA<br><br>VA<br> | 27<br>0.8<br>4.2<br>0.25 | 65<br>0.82<br>8.5<br>0.25 | 190<br>0.72<br>16<br>0.37 | 270<br>0.68<br>22<br>0.27 |
| • DC operation | closing = closed | W | 4 | 5.9 | – | 15 |
| **Coil voltage tolerance for contactors** | low limit at 55 °C<br>at 60 °C | | 0.8 - 1.1 x $U_s$<br>0.8 x $U_s$<br>0.85 x $U_s$ | <br>–<br>– | | |
| **Endurance of MSP**<br>• Mechanical endurance<br>• Electrical endurance<br>• Max. switching frequency per hour (motor starts) | | <br>operating cycles<br>operating cycles<br>1/h | <br>100 000<br>100 000<br>15 | | <br>Up to 52A: 50 000<br>from 65A: On request<br>15 | <br>50 000<br>50 000<br>15 |
| **Endurance of contactor**<br>• Mechanical endurance<br>• Electrical endurance | | <br>operating cycles<br>operating cycles | <br>30 million<br>See endurance curves of contactors in Part 3. | <br>10 million | | |
| **Shock resistance** (sine-wave pulse) | acc. to IEC 60 068 Part 2-27 | g | up to 6 | up to 6 | up to 6 | up to 6 |
| **Touch protection on the front** | acc. to IEC 60529 | | IP 20 | | IP 20 | |
| **Shock-hazard protection** | acc. to DIN VDE 0106 Part 100 | | Finger-safe | | | |
| **Phase failure sensitivity of MSP** | acc. to IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102) | | Yes | | | |
| **Isolating characteristics of MSP**<br>**Main and EMERGENCY-STOP switch characteristics of MSP and accessories** | acc. to IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101)<br>acc. to IEC 60 204-1, EN 60 204-1 (VDE 0113 Part 1) | | Yes<br>Yes (with overvoltage releases of category 1 under conditions of proper use) | | | |
| **Safe isolation between main and auxiliary circuits** | acc. to DIN VDE 0160 Part 101 | | up to 400 V | | | |
| **Positively driven operation at contactors** | | | Yes | Yes, from main contact to auxiliary NC contact | | |

1) See selection and ordering data on pages 4/36 to 4/43.

## Technical data

### Conductor cross-sections of main circuit

| | | | | | |
|---|---|---|---|---|---|
| Specifications | | IEC 60 947-1, EN 60 947-1 (VDE 0660 Part 100)<br>IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101)<br>IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102) | | | |
| **Type**<br>Size<br>Number of poles | | **3RA2. 1**<br>**S00**<br>3 | **3RA2. 2**<br>**S0**<br>3 | **3RA2.3**<br>**S2**<br>3 | **3RA21 4**<br>**S3**<br>3 |
| **Connection type**<br><br>**Terminal screw** | | Screw terminal<br>M3 Posidrive size 2 | Screw terminal<br>M3 Posidrive size 2 | Screw Terminals<br>M6 Pozidriv size 2 | Box terminals<br>Allen screw |
| **Conductor cross-sections (min./max)**<br>1 or 2 conductors can be connected | | | | | |
| • Solid and stranded | mm²<br>mm²<br>mm² | 2 x (0.5 … 1.5)[2] only for contactors<br>2 x (0.75 … 2.5 )[2]<br>max. 2 x 4 | | 2 x (1 ... 25)[2]<br>1 x (1 ... 35)[2]<br>2 x (1 ... 35)[2]<br>1 x (1 ... 50)[2] | |
| • Finely stranded without end sleeve | mm² | – | | | |
| • Finely stranded with end sleeves (DIN 46 228 T1) | mm² | 2 x (0.5 ... 1.5)[2]<br>2 x (0.75 ... 2.5)[2] | | 2 x (1 ... 16)[2]<br>1 x (1 ... 25)[2]<br>2 x (1 ... 25)[2]<br>1 x (1 ... 35)[2] | |
| • AWG cables, solid or stranded | AWG<br>AWG<br>AWG | 2 x (20 ... 16)[2]<br>2 x (18 ... 14)<br>2 x 12 | | 2 x (18 ... 3)[2]<br>1 x (18 ... 2)[2]<br>2 x (18 ... 2)[2]<br>1 x (18 ... 1)[2] | |
| **Minimum/maximum conductor cross-sections** | | | | | |
| • flexible with ferrule | | | | | |
| - 1 conductor | mm² | | | 0.75/25 | 2.5/50[1] |
| - 2 conductors | mm² | | | 0.75/16 | 2.5/35[1] |
| • solid or stranded | | | | | |
| - 1 conductor | mm² | | | 0.75/35 | 2.5/70[1] |
| - 2 conductors | mm² | | | 0.75/25 | 2.5/50[1] |
| **Ribbon cable** | | | | yes | yes |
| **Bus connection** | | | | – | yes |
| • solid or stranded | AWG | | | 2 x (30 ... 2) | – |
| • stranded | AWG | | | – | 2 x (10 ... 1/0) |
| **Connection type** | | Spring Loaded connection | | | |
| • Solid and stranded | mm² | 2 x (0.5 ... 2.5) | – | 2 x (0.5 … 2.5) | |
| • Finely stranded without end sleeve | mm² | | | 2 x (0.5 … 2.5) | |
| • Finely stranded with end sleeves | mm² | | | 2 x (0.5 … 2.5) | |
| • AWG cables, solid or stranded | AWG | 2 x (20 ... 12) | | 2 x (20 … 14) | |
| **Permissible mounting position** | |  <br>Attention:<br>acc. to DIN 43 602<br>Start command "**I**"<br>right-hand or above | | | |

1) Cable-lug and busbar connection possible after removing the box terminals.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

## Overview

The 3RA combination starters consist of the 3RV MSP and the 3RT contactor. MSP and contactor are prewired and mechanically connected with preassembled kits (link modules, connection assembly kits and mounting rail or busbar adapters).

As the 3RA combination starters are constructed from 3RV MSPs and 3RT contactors, the same accessories can be used for the combination starter as for these MSPs and contactors.

Pre-assembled link modules are available as accessories for the power spectrum up to 75 HP. The desired combination starter can thus be assembled quickly and economically by the customer. A time saving is also achieved with the link modules as – unlike with conventional wiring systems – there is no need to rectify possible wiring errors.

As a combination starter rated for tap conductor protection for group installation the 3RV MSP is responsible for overload and short-circuit protection in the motor circuit. Back-up protective devices, such as fuses or SIEMENS Sentron circuit breakers are required as per NEC 430-53 guidelines for group installations for multiple motor applications

The 3RT contactor is ideal for extremely complex switching tasks requiring durable components.

The permissible ambient temperature is 60 °C with butt-mounting and without derating (70 °C possible subject to certain restrictions).

3RA combination starters are available for motors up to 75 Hp at 460 V AC and setting ranges from 0.14 A to 100 A.

3RA combination starters are supplied in four different sizes:

| Size | Overall width | Max. rated current $I_{n\,max}$ | For three-phase motors up to |
|---|---|---|---|
| | mm | A | HP |
| S00 | 45 | 8 | 5 |
| S0 | 45 | 22 | 15 |
| S2 | 55 | 50 | 40 |
| S3 | 70 | 100 | 75 |

### *Operating conditions*

3RA combination starters are climate-proof. They are intended for use in enclosed rooms in which no severe conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable enclosures must be provided for installation in dusty and damp locations.

## Accessories

The accessories for the special equipment, such as auxiliary contacts and undervoltage trips, can also be used for the 3RA combination starters.

In addition, certain accessories have been optimized for the combination starters. They include the top-connected, transverse auxiliary contact on the MSP with one changeover contact or one NO contact + one NC contact. Special auxiliary contact blocks that can be snapped on from below are available for the contactor. These two accessories enable the combination starters to be wired easily without having to route cables via the equipment.

The special accessories for 3RA combination starters take the form of link modules for 3RV MSPs and 3RT contactors.

## Technical data

For technical data, see pages 4/56-4/58. Additional details are contained in the respective tables for the 3RV MSPs and 3RT contactors.

## Configuration

### *Overload tripping times*

All the 3RA combination starters described here are designed for normal starting, in other words for overload tripping times of less than 10 s (CLASS 10). At rated-load operating temperature the tripping times are shorter, depending on the particular equipment and the setting range. The exact values can be derived from the tripping characteristics of the MSPs.

### *Classification types*

DIN VDE 0660 Part 102 and IEC 60 947-4-1 make a distinction between two different types of coordination (types 1 and 2). Any short-circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the equipment by a short-circuit.

IEC Type of coordination 1

The combination starter may be non-operational after a short-circuit has been cleared. Damage to the contactor or to the overload relay is permissible. In 3RA load feeders, the MSP itself always achieves type of coordination 2.

IEC Type of coordination 2

There must be no damage to the overload trip or to any other components after a short-circuit has been cleared. The 3RA combination starter can resume operation without needing to be renewed. At most, it is permissible to weld the contactor contacts if they can be disconnected easily without any significant deformation.

## Mounting

### *Complete equipment*

The 3RA combination starters can be ordered as complete equipment for direct starting or for reversing mode. Control supply voltages of 50 Hz AC 230 V or DC 24 V and assembly on a 35 mm standard mounting rail or in a 40 or 60 mm busbar system are possible.

Special equipment for customer assembly can be ordered if other rated control supply voltages are required. The link modules simplify customer assembly of the load feeders.

The corresponding distances from earthed or live parts, as detailed in the technical data, must be observed.

### *Customer assembly*

The standard devices can be combined optimally in terms of both technical data and dimensions, thanks to the modular system of the SIRIUS series.

The combination starters can thus be assembled easily by the customer. It is simply necessary to assemble the standard 3RV MSP and 3RT contactor and the appropriate link module together.

For the order numbers for special equipment and link modules, see the selection and ordering data.

For the link modules for direct starting or reversing mode and assembly on a standard mounting rail or busbar, see accessories.

If a MSP with a rotary operating mechanism is required for the lower setting ranges up to 12 A, the S0 MSP can also be assembled with an S00 contactor. A special connecting module is available for this purpose.

For the installation of feeders, it is imperative to use standard rail adapters, as from size S2 for direct starting and as from size S0 for reversing, to ensure the necessary mechanical strength. A standard rail adapter is not necessary if a busbar adapter is used.

### *Assembly*

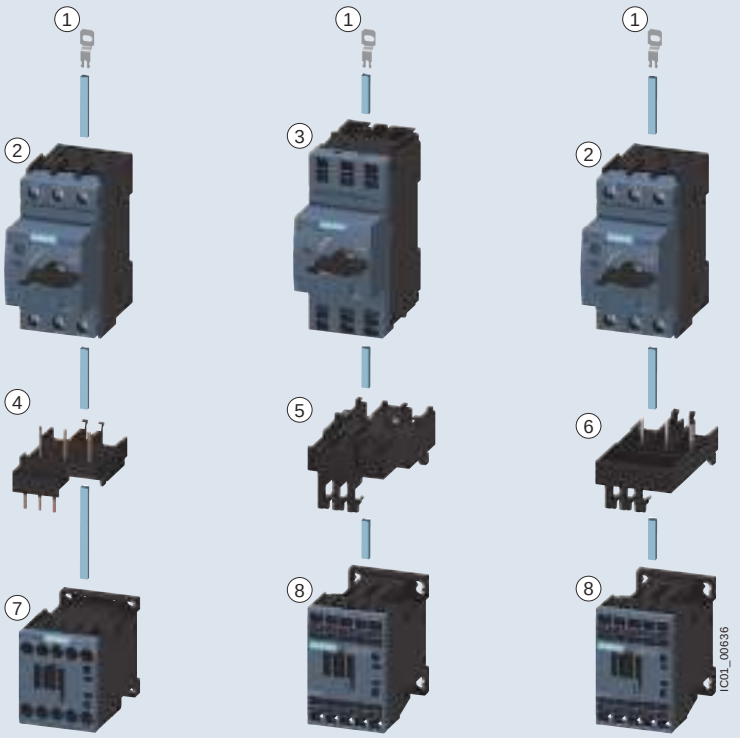
3RA combination starters are available for assembly on standard mounting rails in accordance with EN 50 022-35 x 15 or on busbar adapters with a busbar centre-line spacing of 40 or 60 mm and a busbar thickness of 5 or 10 mm.

The combination starters are also suitable for screw fixing.

Size S00 and S0 can be screwed on with the aid of plug-in clips (see accessories on page 4/47).

## 3RA2 – up to 100 A

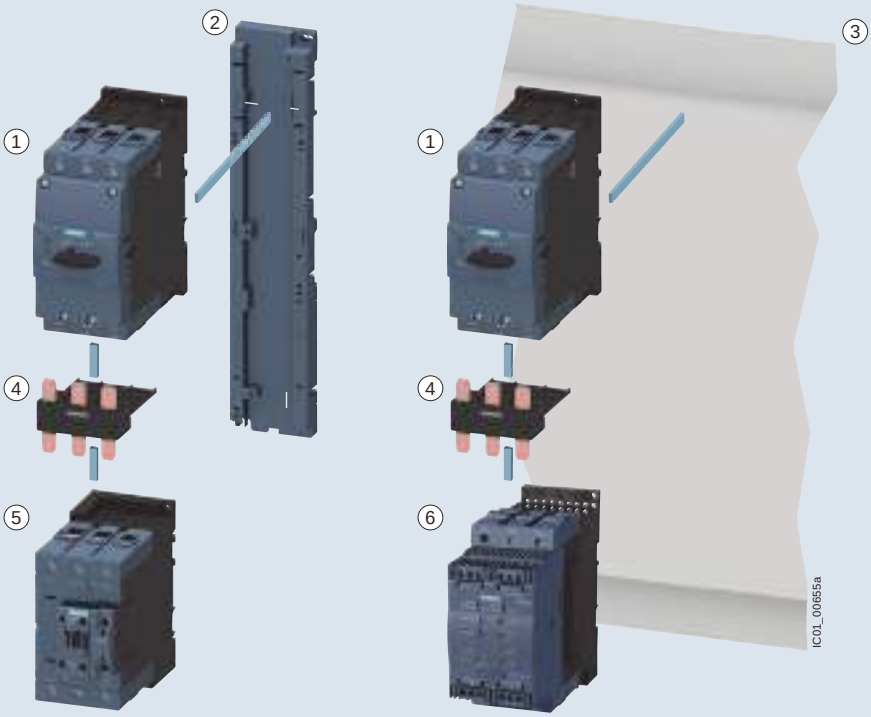
***Direct-on-line starting • For standard rail mounting or screw fixing • Sizes S00 and S0***




1. **2 push-in lugs**
   3RV2928-0B
   (only for screw fixing)
2. **Motor starter protector**
   Size S00/S0
   Screw terminals
3. **Motor starter protector**
   Size S00/S0
   Spring-type terminals
4. **Link module**
   (Screw terminals)
   3RA1921-1DA00 (for S00)
   3RA2921-1AA00 (for S0, AC contactor)
   3RA2921-1BA00 (for S0, DC contactor)
5. **Link module**
   (Spring-type terminals)
   3RA2911-2AA00 for S00
   3RA2921-2AA00 for S0
6. **Link module**
   (Hybrid)
   3RA2911-2FA00 for S00
   3RA2921-2FA00 for S0
7. **Contactor**
   Size S00/S0
   Screw terminals
8. **Contactor**
   Size S00/S0
   Spring-type terminals

Left: 3RA21 load feeder with screw terminals
Center: 3RA21 load feeder with spring-type terminals
Right: Motor starter protector combination with screw terminals, with contactor with spring-type terminals

***Direct-on-line starting · For standard rail mounting · Up to Size S3***

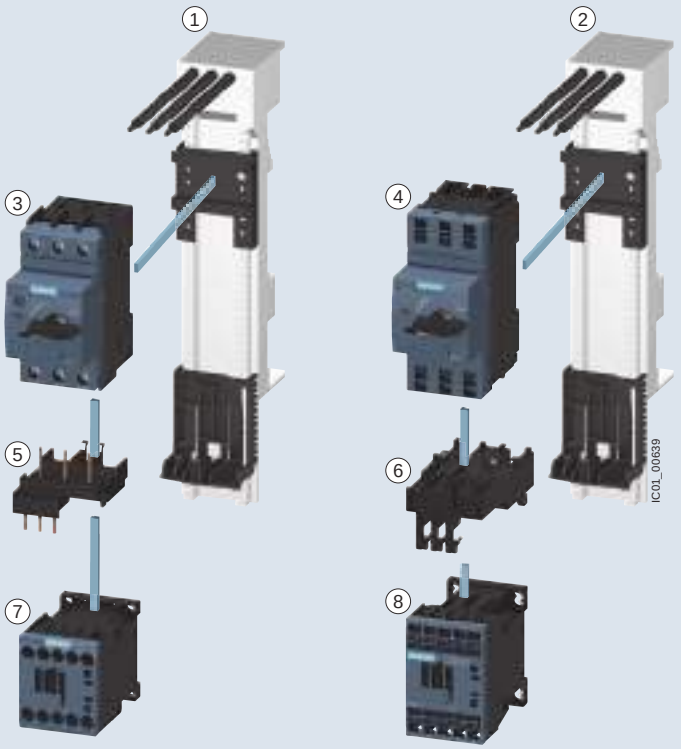



1. **Motor starter protector**
   Size S3
   Screw terminals
2. **Standard mounting rail adapter**
   3RA1942-1AA00
3. **Mounting plate**
4. **Link module**
   3RA1941-1AA00
   Screw terminals
5. **Contactor**
   Size S3
   Screw terminals
6. **Soft starter**
   Size S3
   Screw terminals

Load feeder for direct-on-line starting and standard rail mounting in size S3 (the version with screw terminals is shown in the picture)

## 3RA2 – up to 100 A

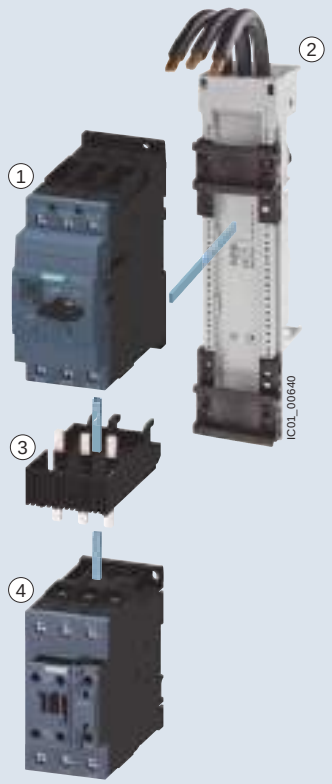
### *Direct-on-line starting · For 60 mm busbar systems · Sizes S00 and S0*




1. **60 mm busbar adapter for screw terminals**
   8US1251-5DS10 for S00
   8US1251-5NT10 for S0
2. **60 mm busbar adapter for spring-type terminals**
   8US1251-5DT11 for S00
   8US1251-5NT11 for S0
3. **Motor starter protector**
   Size S00/S0
   Screw terminals
4. **Motor starter protector**
   Size S00/S0
   Spring-type terminals
5. **Link module**
   Screw terminals
   3RA1921-1DA00 for S00
   3RA2921-1AA00 for S0, AC contactor
   3RA2921-1BA00 for S0, DC contactor
6. **Link module**
   3RA2911-2AA00 for S00
   3RA2921-2AA00 for S0
   (additional 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals)
7. **Contactor**
   Size S00/S0
   Screw terminals
8. **Contactor**
   Size S00/S0
   Spring-type terminals

Left: 3RA21 load feeder for direct-on-line starting with busbar adapter with screw terminals
Right: 3RA21 load feeder for direct-on-line starting with busbar adapter with spring-type terminals

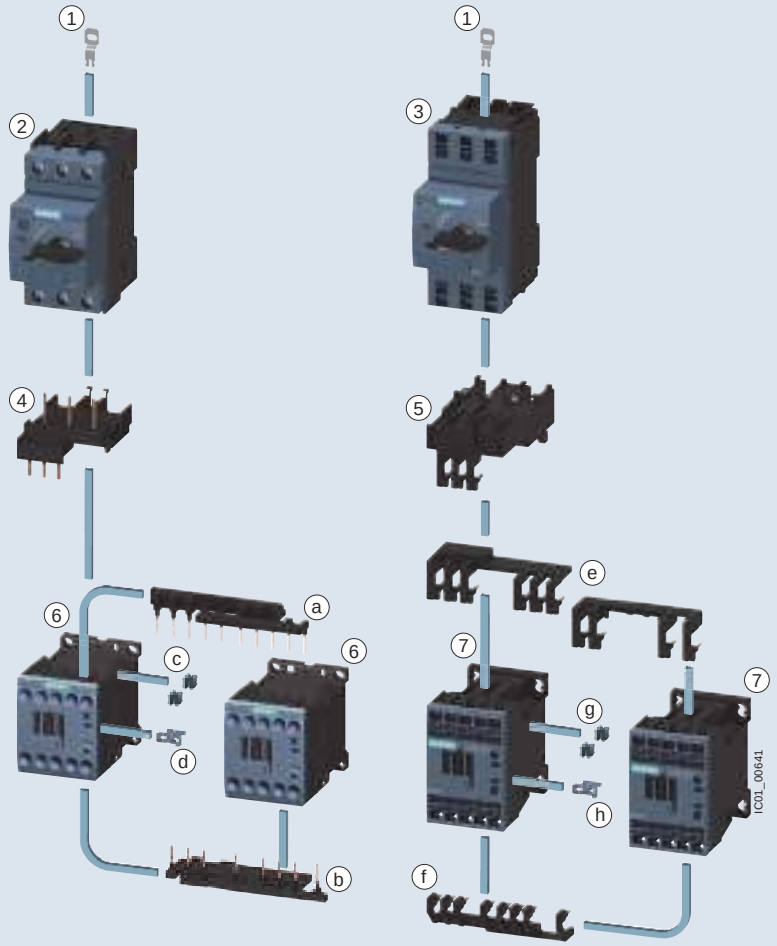
### *Direct-on-line starting · For 60 mm busbar systems · Size S2*




1. **Motor starter protector**
   Size S2
   Screw terminals
2. **Busbar adapter 60 mm**
   8US1261-6MT10
3. **Link module**
   3RA2931-1AA00
   Screw terminals
4. **Contactor**
   Size S2
   Screw terminals

3RA21 load feeder for direct-on-line starting with busbar adapter with screw terminals

***Reversing duty • For standard rail mounting or screw fixing • Size S00***




1. **Push-in lug**
   3RV2928-0B
   (only for screw fixing)
2. **Motor starter protector**
   Size S00/S0
   Screw terminal
3. **Motor starter protector**
   Size S00/S0
   Spring-type terminal
4. **Link module**
   Screw terminal
   3RA1921-1DA00 for S00
   3RA2921-1AA00 for S0, AC contactor
   3RA2921-1BA00 for S0, DC contactor
5. **Link module**
   Spring-type terminal
   3RA2911-2AA00 for S00
   3RA2921-2AA00 for S0
6. **Contactor**
   Size S00/S0
   Screw terminal
7. **Contactor**
   Size S00/S0
   Spring-type terminal

**Wiring kit**
3RA2913-2AA1

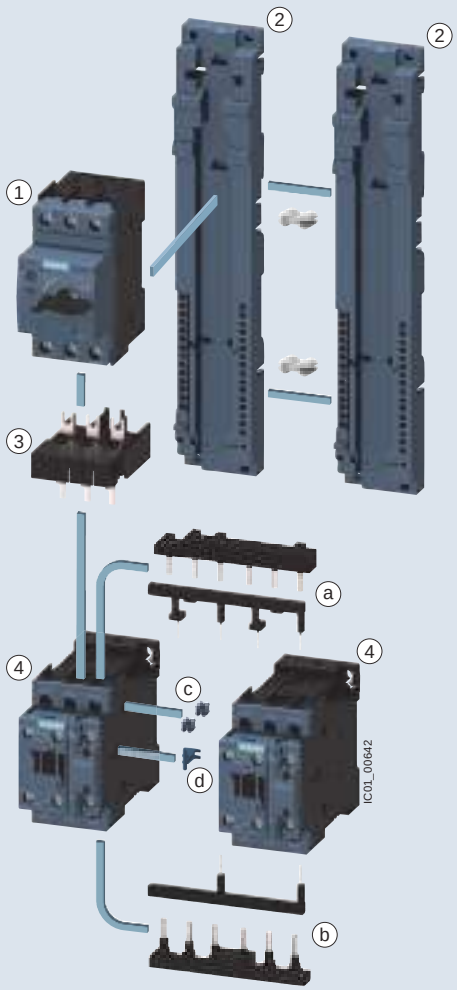
- a Upper wiring module
- b Lower wiring module
- c Two connecting clips for two contactors
- d Mechanical interlock
  (can be removed if necessary)

**Wiring kit**
3RA2913-2AA2

- e Upper wiring module
- f Lower wiring module
- g Two connecting clips for two contactors
- h Mechanical interlock
  (can be removed if necessary)

Left: 3RA22 load feeder with screw terminals with push-in lugs with two contactors for reversing duty and 3RA2913-2AA1 wiring kit for connection of the contactors (incl. mechanical interlocking and connecting clips)
Right: 3RA22 load feeder with spring-type terminals with push-in lugs with two contactors for reversing duty and 3RA2913-2AA2 wiring kit (incl. mechanical interlocking and connecting clips)

***Reversing duty • For standard rail mounting • Size S0***




**RH assembly kit for reversing duty and standard rail mounting in size S0**

Screw terminals
**3RA2923-1BB1**

Spring-type terminals
**3RA2923-1BB2**[1)]

Comprising:
- Wiring kit for the main and auxiliary circuits
- Two standard mounting rail adapters
- Two connecting wedges
- Mechanical interlock
- Two connecting clips
- Fixing accessories

(1) **Motor starter protector**
Size S0
Screw terminals/spring-type terminals

(2) **Standard mounting rail adapters**
3RA2922-1AA00
with two connecting wedges
8US1998-1AA00

(3) **Link module**
Screw terminals:
3RA2921-1AA00 for S0, AC contactor
3RA2921-1BA00 for S0, DC contactor
Spring-type terminals:
3RA2921-2AA00[2)]

(4) **Contactor**
Size S0
Screw terminals/spring-type terminals

**Wiring kit**
Screw terminals:
3RA2923-2AA1
Spring-type terminals:
3RA2923-2AA2

(a) Upper wiring module
(b) Lower wiring module
(c) Two connecting clips for two contactors
(d) Mechanical interlock (can be removed if necessary)

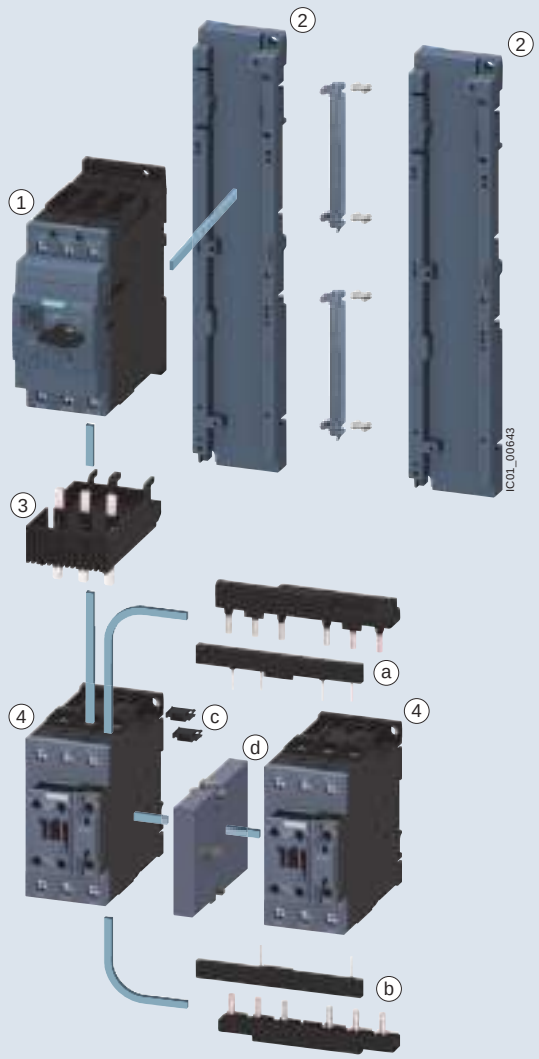
[1)] Contains two 3RA2911-1CA00 spacers for height compensation on AC contactors size S0 with spring-type terminals.

[2)] Additionally two 3RA2911-1CA00 spacers for height compensation on AC contactors size S0 with spring-type terminals.

3RA22 load feeder for reversing duty and standard rail mounting in size S0 (the version with screw terminals is shown in the picture)

RH assembly kits for reversing duty and standard rail mounting in size S0, see page 8/51.

***Reversing duty • For standard rail mounting • Size S2***




**RH assembly kit for reversing duty and standard rail mounting in size S2**

**3RA2933-1BB1**

Comprising:
- Wiring kit for the main and auxiliary circuits
- Two standard mounting rail adapters
- Two side modules
- Four connecting wedges
- Mechanical interlock
- Two connectors for two contactors
- Fixing accessories

(1) **Motor starter protector**
Size S2
Screw terminals

(2) **Standard mounting rail adapter**
3RA2932-1AA00
with two side modules
3RA1902-1B
and four connecting wedges
8US1998-1AA00

(3) **Link module**
3RA2931-1AA00
Screw terminals

(4) **Contactor**
size S2
Screw terminals

**Wiring kit**
Screw terminals
3RA2933-2AA1

(a) Upper wiring module

(b) Lower wiring module

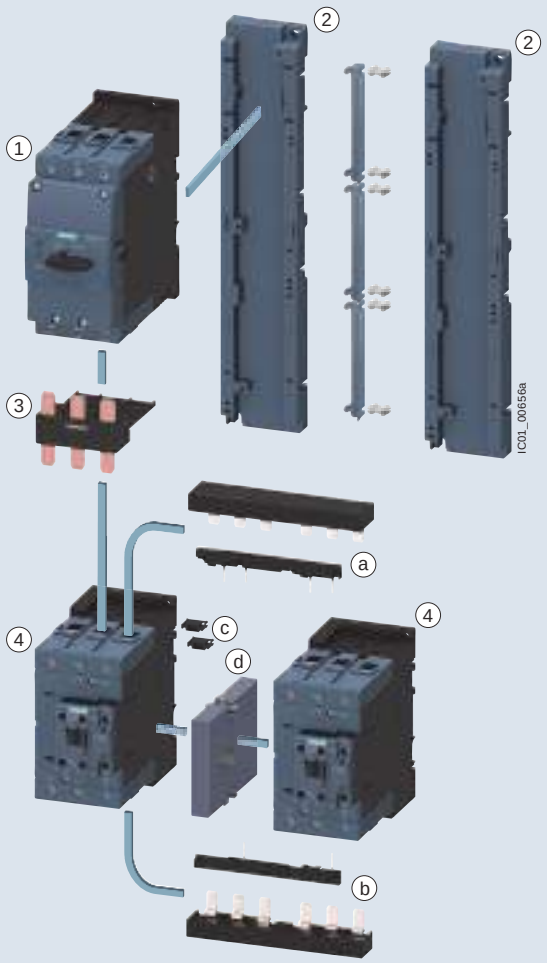
(c) Two connectors for two contactors

(d) Mechanical interlock
3RA2934-2B (not part of the wiring kit, must be ordered separately)

Load feeder for reversing duty and standard rail mounting in size S2 (the version with screw terminals is shown in the picture)

RH assembly kits for reversing duty and standard rail mounting in size S2, see page 8/51.

***Reversing duty • For standard rail mounting • size S3***




**Assembly kit (RH) for reversing duty and mounting onto standard rails in size S3**

**3RA2943-1BB1**

Comprising:
- Wiring kit for the main and auxiliary circuits
- Two standard mounting rail adapters
- Three side modules
- Six connecting wedges
- Mechanical interlock
- Two connectors for two contactors
- Fixing accessories

(1) **Motor starter protector** size S3

(2) **Standard mounting rail adapter** 3RA2932-1AA00
with two side modules 3RA1902-1B
and four connecting wedges 8US1998-1AA00

(3) **Link module** 3RA1941-1AA00

(4) **Contactor** size S3

**Wiring kit**
Screw terminals
3RA2943-2AA1

(a) Upper wiring module

(b) Lower wiring module

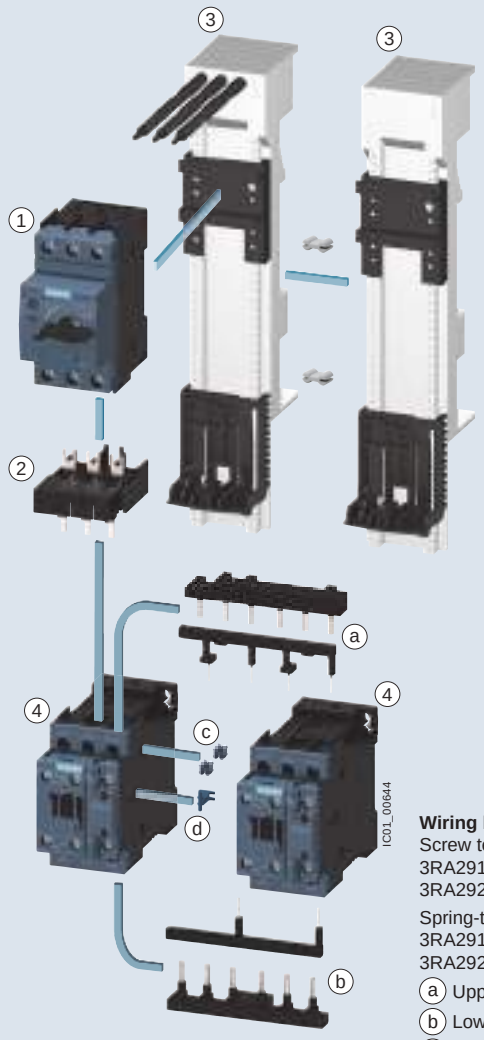
(c) Two connectors for two contactors

(d) Mechanical interlock 3RA2934-2B (not part of the wiring kit, must be ordered separately)

Load feeder for reversing duty and standard rail mounting in size S3 (the version with screw terminals is shown in the picture)

RH assembly kits for reversing duty and standard rail mounting in size S3, see page 8/51.

***Reversing duty • For 60 mm busbar systems • Sizes S00 and S0***




**Wiring kit**
Screw terminals
3RA2913-2AA1 for S00
3RA2923-2AA1 for S0

Spring-type terminals
3RA2913-2AA2 for S00
3RA2923-2AA2 for S0

(a) Upper wiring module
(b) Lower wiring module
(c) Two connecting clips for two contactors
(d) Mechanical interlock (can be removed if necessary)

**RS assembly kit for reversing duty and busbar mounting in size S00/S0**

Screw terminals
**3RA2913-1DB1 for S00**
**3RA2923-1DB1 for S0**

Spring-type terminals
**3RA2913-1DB2 for S00**
**3RA2923-1DB2 for S0**[1)]

Comprising:
- Wiring kit for the main and auxiliary circuits
- Busbar adapter
- Device holder
- Two connecting wedges
- Mechanical interlock
- Two connecting clips for two contactors
- Fixing accessories

(1) **Motor starter protector**
Size S00/S0
Screw terminals/spring-type terminals

(2) **Link module**
Screw terminals
3RA1921-1DA00 for S00
3RA2921-1AA00 for S0, AC contactor
3RA2921-1BA00 for S0, DC contactor

Spring-type terminals
3RA2911-2AA00 for S00
3RA2921-2AA00 for S0[2)]

(3) **60 mm busbar adapter**
Screw terminals
8US1251-5DS10 for S00/S0
8US1251-5NT10 for S0

Spring-type terminals
8US1251-5DT11 for S00/S0
8US1251-5NT11 for S0

2 connecting wedges
8US1998-1AA00

**60 mm device holder**
8US1250-5AS10 or
8US1250-5AT10
(according to left adapter)

(4) **Contactor**
Size S00/S0
Screw terminals/spring-type terminals

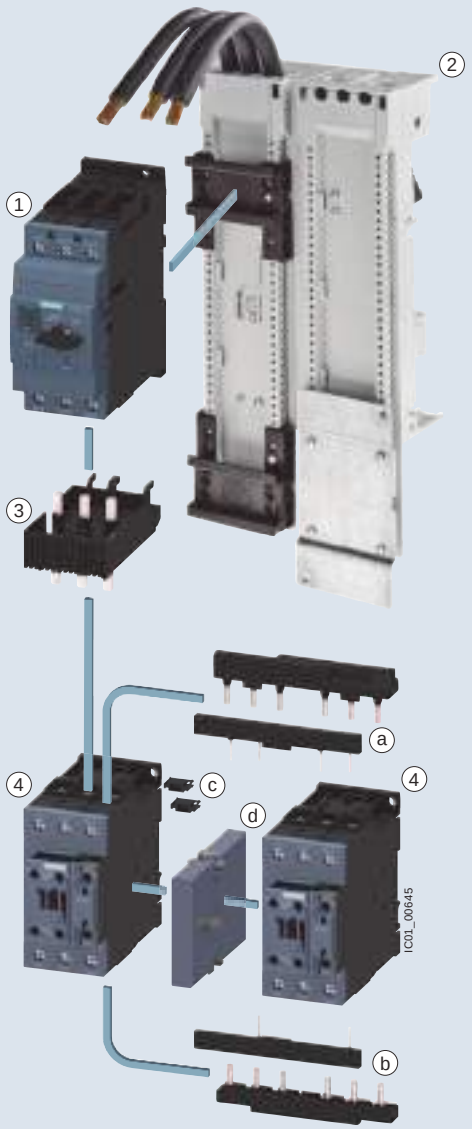
[1)] Contains two 3RA2911-1CA00 spacers for height compensation on AC contactors size S0 with spring-type terminals.

[2)] Additionally two 3RA2911-1CA00 spacers for height compensation on AC contactors size S0 with spring-type terminals.

3RA22 load feeder for reversing duty and 60 mm busbar
(the version with screw terminals is shown in the picture)

RS assembly kits for reversing duty and busbar mounting in size S00/S0, see page 8/53.

***Reversing duty • For 60 mm busbar systems • size S2***




**RS assembly kit for reversing duty and busbar mounting in size S2**

**3RA2933-1DB1**

Comprising:
- Wiring kit for the main and auxiliary circuits
- Busbar adapter
- Mechanical interlock
- Two connectors for two contactors
- Fixing accessories

(1) **Motor starter protector**
Size S2
Screw terminals

(2) **Busbar adapter 60 mm**
8US1211-6MT10

(3) **Link module**
3RA2931-1AA00
Screw terminals

(4) **Contactor**
Size S2
Screw terminals

**Wiring kit**
For screw terminals
3RA2933-2AA1

(a) Upper wiring module

(b) Lower wiring module

(c) Two connecting pins for two contactors

(d) Mechanical interlock
3RA2934-2B (not part of the wiring kit, must be ordered separately)

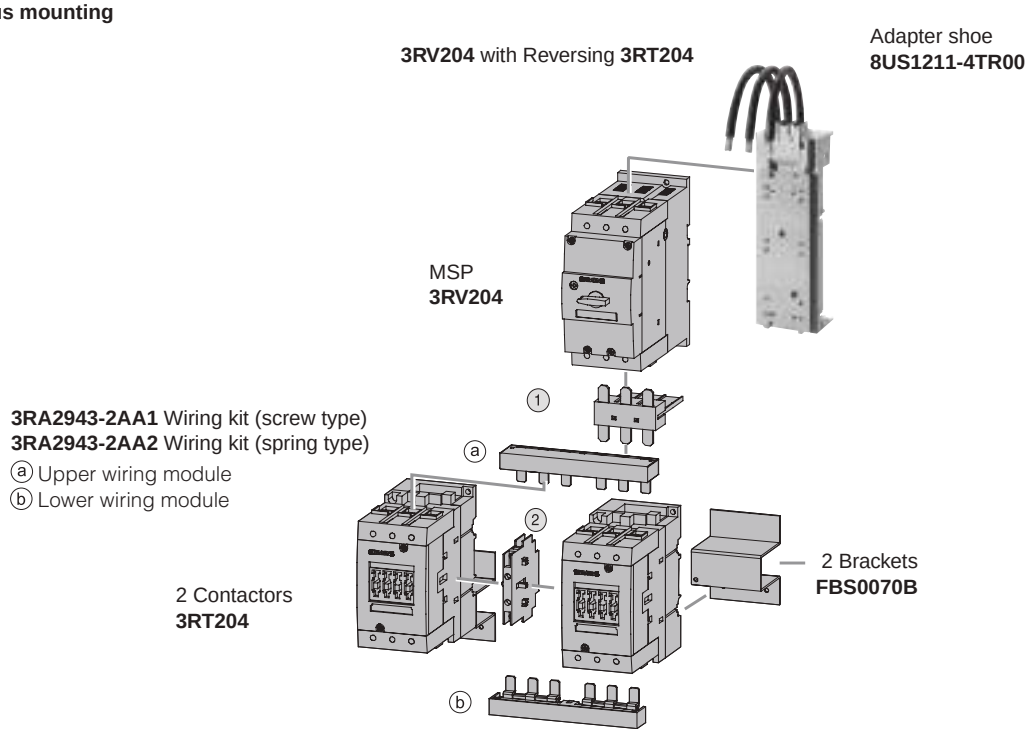
Load feeder for reversing duty and 60 mm busbar in size S2
(the version with screw terminals is shown in the picture)

RS assembly kits for reversing duty and busbar mounting in size S2, see page 8/53.

## Components for Fast Bus mounting

① Link module
for AC: 3RA19 41-1A
for DC: 3RA19 41-1B

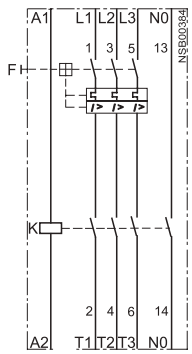
② Mechanical interlock
3RA19 24-2B



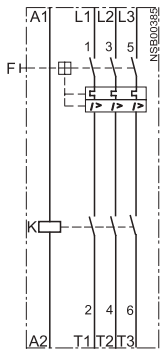

## Circuit diagrams

### *Direct-on-line starting*

**Size S00: 3RA21.1**

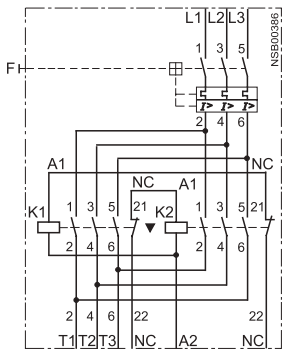



**Sizes S0, S2 and S3: 3RA21 2, 3RA21 3**

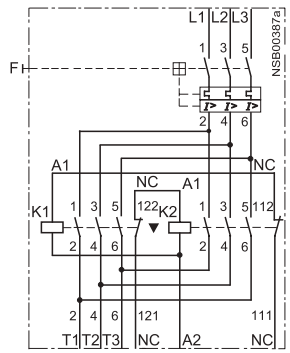



### *Reversing duty*

**Size S00: 3RA22**

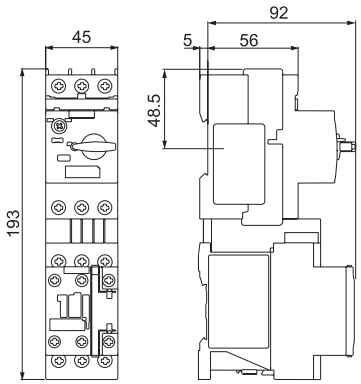



**Size S0: 3RA22**

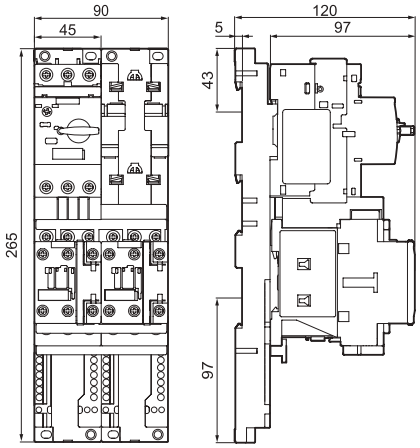


## Dimension drawings

### *Size S00 · for standard rail mounting*

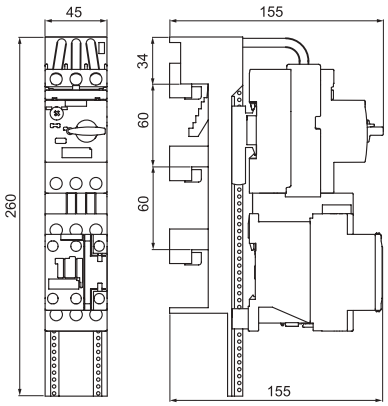



S0 direct-on-line starter,
AC, screw-type connection system
3RA2120-..A

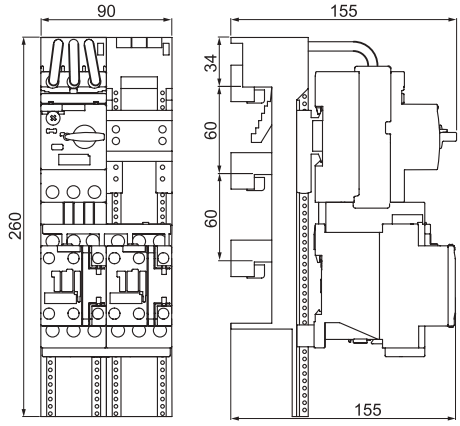



S0/S0 and S00/S0 reversing starters,
AC, screw-type connection system
3RA2220-..B..-0AP0

### *Size S00 · for 40 mm and 60 mm busbar systems*




S0/S0 and S00/S0 direct-on-line starters,
AC, screw-type connection system
3RA2120-..D..-0AP0

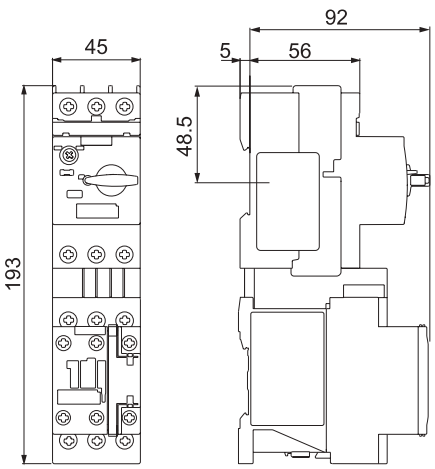



S0/S0 and S00/S0 reversing starters,
AC, screw-type connection system
3RA2220-..D..-0AP0

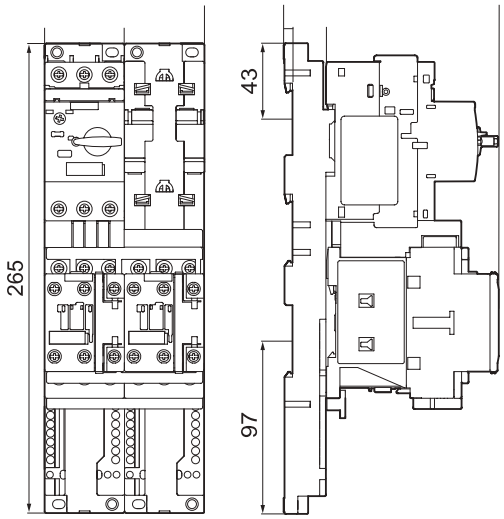
When mounting the combinations, observe the installation guidelines (page 4/60-4/61).

## Dimension drawings

### *Size S0 · for standard rail mounting*

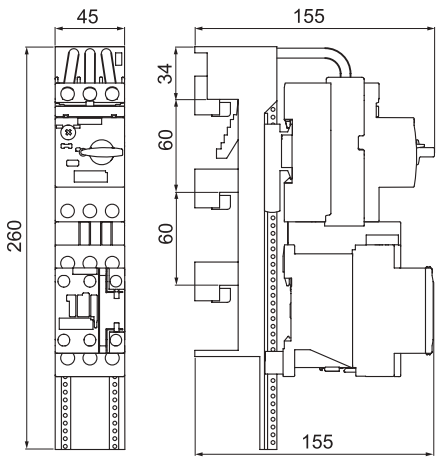



S0 direct-on-line starter, AC, screw-type connection system
3RA2120-..A

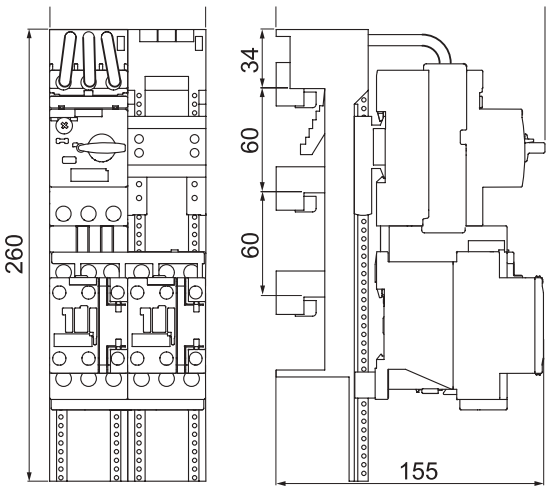



S0/S0 and S00/S0 reversing starters, AC, screw-type connection system
3RA2220-..B..-0AP0

### *Size S0 · for 40 mm and 60 mm busbar systems*




S0/S0 and S00/S0 direct-on-line starters, AC, screw-type connection system
3RA2120-..D..-0AP0



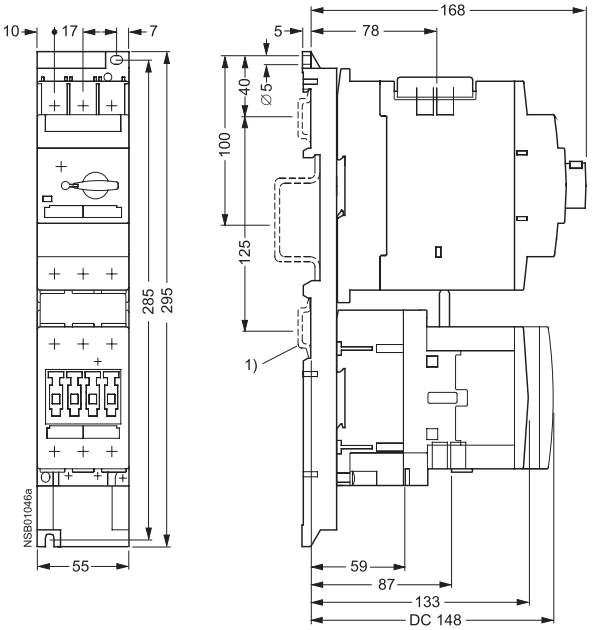

S0/S0 and S00/S0 reversing starters, AC, screw-type connection system
3RA2220-..D..-0AP0

When mounting the combinations, observe the installation guidelines (page 4/60-4/61).

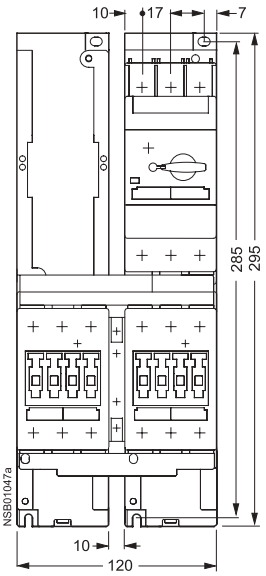
## Dimension drawings

### *Size S2 · for standard rail mounting*

Direct-on-line starting



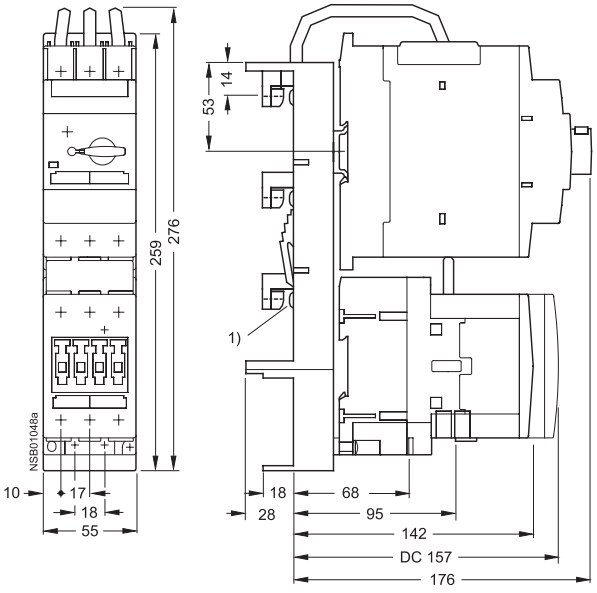

Reversing duty



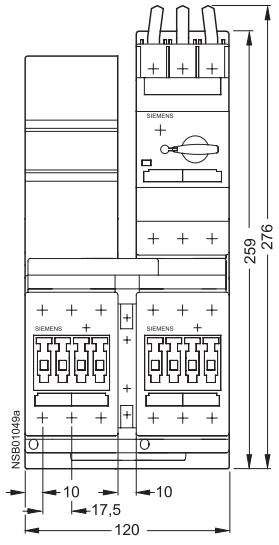

1) Alternative fixing methods
   a) 2 35 mm mounting rails acc. to DIN EN 50022 Spacing: 125 mm Depth: 7.5 or 15 mm.
   b) 1 75 mm mounting rail acc. to DIN EN 50 023.

### *Size S2 · for 40 mm and 60 mm busbar systems*

Direct-on-line starting




Reversing duty



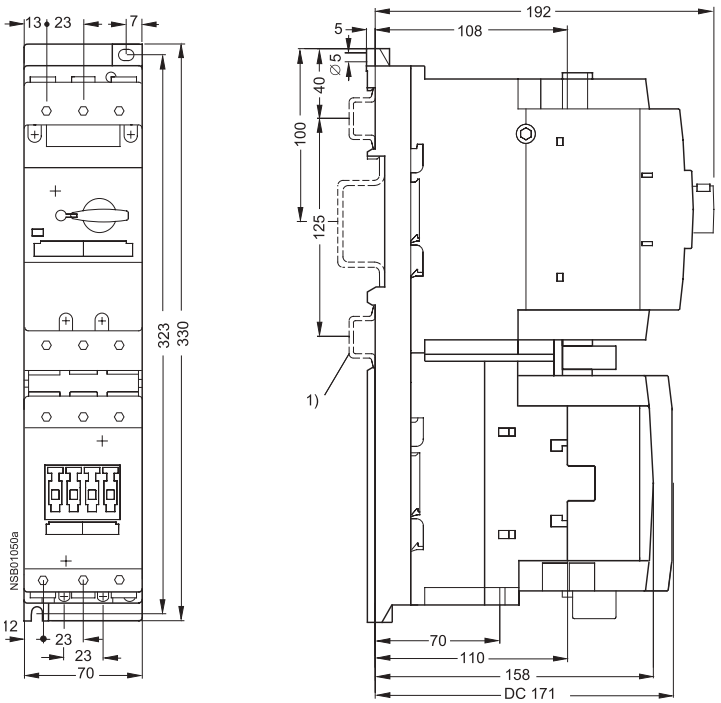

1) Busbar adapter suitable for rail thicknesses of 5 and 10 mm with chamfered edges.

When mounting the combinations, observe the installation guidelines (page 4/60-4/61).

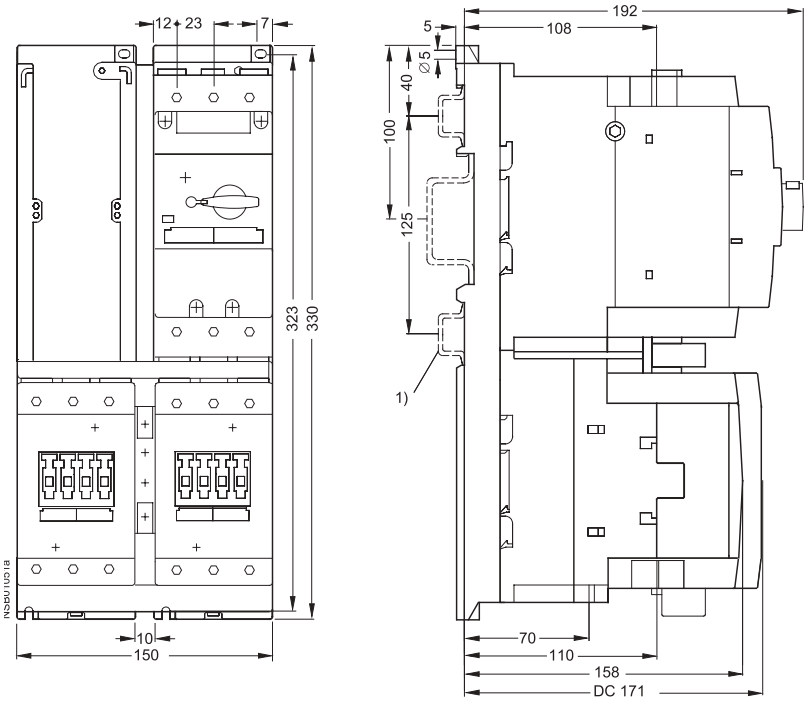
## Dimension drawings

### *Size S3 · for standard rail mounting*

Direct-on-line starting




Reversing duty




1) Alternative fixing methods
   a) 2 35 mm mounting rails acc. to DIN EN 50 022 Spacing: 125 mm Depth: 7.5 or 15 mm.
   b) 1 75 mm mounting rail acc. to DIN EN 50 023.

When mounting the combinations, observe the installation guidelines (page guidelines 4/60-4/64).

# 3RE4 Enclosed IEC Controllers

## Product overview

3RE4 Enclosed IEC motor controllers are well suited for both industrial and commercial applications. They are durable and dependable, particularly when it comes to motor protection. Protecting the performance of motors is a critical priority and the 3RE4 enclosed starters are offered with either thermal or solid-state overload relays to maximize your motor protection.

## Controller Features

*General*

- UL motor horsepower rated
- From fractional up to 60 Hp at 575 V
- Non-combination type starters and contactors
- Reversing and non-reversing controllers
- Single phase and 3-phase loads
- Thermal and solid-state overload relays
- NEMA Type enclosures 1, 3/3R/4/12 and 4X 304 stainless steel
- Standard size and extra larger enclosures
- RoHS compliant
- Standards: UL 60947-4-1
- Certifications: cULus

*Contactor*

- Horsepower rated per UL
- High contact reliability
- NO and NC auxiliary contacts included as standard
- Permanently secured with screws on mounting panel
- Screw type terminal connections

## Overload Relay Features

*Thermal overload relays*

- Trip Class 10
- Phase failure sensitivity
- UL for Single and three phase loads
- Includes NC trip contact and NO alarm contact
- Manual and automatic RESET (selectable)
- Switch position indicator
- TEST function
- STOP button
- Sealable cover (optional)
- Screw-type terminals

*Solid-state overload relays*

- Selectable Trip Class 5, 10, 20 and 30
- Overload, phase failure and unbalance protection
- Internal ground fault detection (selectable)
- Internal power supply
- Includes NC trip contact and NO alarm contact
- Manual and automatic RESET (selectable)
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring
- Sealable cover (optional)
- Screw-type terminals

## Available Factory Mods, Field Kits, Accessories

*Factory modifications*

- Push buttons
- Selector switches
- Pilot lights
- Control power transformers

*Field kits and accessories*

- Push buttons
- Selector switches
- Pilot lights
- Auxiliary contacts
- Control power transformers
- Control relays and timers
- Control circuit fuse block
- Terminal blocks
- etc.

# Catalog Numbering System

## 3RE4 Nomenclature
### Non-Combination Controllers

| 3RE4 | 1 | 2 | 2 | – | 3 | A | A | 3 | 1 | – | 1 | H | Y | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Controller Type**

**11** = Non-combination non-reversing starter,1-phase, 2-pole
**12** = Non-combination non-reversing starter,3-phase, 3-pole
**14** = Non-combination reversing starter, 3-phase, 3-pole
**16** = Non-combination non-reversing contactor
**18** = Non-combination reversing contactor

**Frame Size: UL60947-4-1 Hp Rating**

**15** = S00: 1-Ph Hp (0.25@115V, 0.5@208V, 0.75@230V), 3-Ph Hp (1.5@208V, 2@230V, 3@460V, 5@575V)
**17** = S00: 1-Ph Hp (0.5@115V, 1.5@208V, 2@230V), 3-Ph Hp (3@208V, 3@230V, 7.5@460V, 10@575V)
**23** = S0: 1-Ph Hp (1@115V, 1@208V, 1@230V), 3-Ph Hp (2@208V, 3@230V, 5@460V, 7.5@575V)
**24** = S0: 1-Ph Hp (1@115V, 2@208V, 2@230V), 3-Ph Hp (3@208V, 3@230V, 7.5@460V, 10@575V)
**25** = S0: 1-Ph Hp (1@115V, 2@208V, 3@230V), 3-Ph Hp (5@208V, 5@230V, 10@460V, 15@575V)
**26** = S0: 1-Ph Hp (2@115V, 3@208V, 3@230V), 3-Ph Hp (7.5@208V, 7.5@230V, 15@460V, 20@575V)
**27** = S0: 1-Ph Hp (2@115V, 5@208V, 5@230V), 3-Ph Hp (10@208V, 10@230V, 20@460V, 25@575V)
**28** = S0: 1-Ph Hp (3@115V, 5@208V, 5@230V), 3-Ph Hp (10@208V, 10@230V, 25@460V, 25@575V)
**35** = S2: 1-Ph Hp (3@115V, 5@208V, 7.5@230V), 3-Ph Hp (10@208V, 15@230V, 30@460V, 40@575V)
**36** = S2: 1-Ph Hp (3@115V, 7.5@208V, 10@230V), 3-Ph Hp (15@208V, 15@230V, 40@460V, 50@575V)
**37** = S2: 1-Ph Hp (5@115V, 10@208V, 10@230V), 3-Ph Hp (20@208V, 20@230V, 50@460V, 50@575V)
**38** = S2: 1-Ph Hp (5@115V, 10@208V, 15@230V), 3-Ph Hp (20@208V, 25@230V, 50@460V, 60@575V)

**Enclosure Type and Size**

**A** = NEMA Type 1 - standard size
**B** = NEMA Type 1 - large size①
**C** = NEMA Type 3/3R/4/12 - standard size
**E** = NEMA Type 4X 304 SS - standard size

**Disconnect Type**

**A** = None

**Nominal Coil Voltage**

**1** = 24 V AC 50/60Hz
**2** = 24 V DC
**3** = 110/120 V AC 50/60Hz
**4** = 208 V AC 50/60Hz
**5** = 220/240 V AC 50/60Hz
**6** = 277 V AC 60Hz
**7** = 480 V AC 60Hz
**8** = 600 V AC 60Hz

**Overload Relay Type**

**0** = (none)
**1** = Thermal fixed trip Class 10
**5** = Solid-state selectable trip Class 5-10-20-30

**Overload Relay Amp Range**

**0Y** = No overload relay (contactor)
See amp range selection on page 4/15.

**Special**

**Y0** = (none)
Factory modifications (See selection starting on page 4/47.)

① Large size enclosures are not applicable for some configurations.
Refer to product selection tables for specifics.

# 3RE4 Non-Reversing Starter, 3-Phase, 3-Pole, Thermal or Solid-State Overload Relay

## Ordering Information

- Replace the (●) with the code from the coil table on this page.
- Replace the (□) with the overload relay (OLR) code from this page.
- Replace the (♦♦) with the OLR current adjustment range from pg. 4/80.
- For factory modifications, see page 4/81 – 4/83.
- For accessories, see page 4/84 – 4/85.
- For replacement parts, see page 4/85.
- For dimensions, see page 4/86.
- For wiring diagrams, see page 4/87 – 4/89.

## Coil Selection (●)①

| Nominal Voltage | Code |
|---|---|
| 24 VAC 50/60 Hz | 1 |
| 24 VDC | 2 |
| 110/120 VAC 50/60 Hz | 3 |
| 208 VAC 50/60 Hz | 4 |
| 220/240 VAC 50/60 Hz | 5 |
| 277 VAC 60 Hz | 6 |
| 480 VAC 60 Hz | 7 |
| 600 VAC 60 Hz | 8 |

## Non-Reversing Starter, 3-Phase, 3-Pole, Thermal or Solid-State Overload Relay, Standard Enclosure

| 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Standard Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 208 V | 230 V | 460 V | 575 V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 1.5 | 2 | 3 | 5 | 3RE4121–5AA●□–♦♦Y0 | 3RE4121–5CA●□–♦♦Y0 | 3RE4121–5EA●□–♦♦Y0 | 1 | 0 | S00 | 3RT2015 |
| 3 | 3 | 7.5 | 10 | 3RE4121–7AA●□–♦♦Y0 | 3RE4121–7CA●□–♦♦Y0 | 3RE4121–7EA●□–♦♦Y0 | 1 | 0 | S00 | 3RT2017 |
| 2 | 3 | 5 | 7.5 | 3RE4122–3AA●□–♦♦Y0 | 3RE4122–3CA●□–♦♦Y0 | 3RE4122–3EA●□–♦♦Y0 | 1 | 1 | S0 | 3RT2023 |
| 3 | 3 | 7.5 | 10 | 3RE4122–4AA●□–♦♦Y0 | 3RE4122–4CA●□–♦♦Y0 | 3RE4122–4EA●□–♦♦Y0 | 1 | 1 | S0 | 3RT2024 |
| 5 | 5 | 10 | 15 | 3RE4122–5AA●□–♦♦Y0 | 3RE4122–5CA●□–♦♦Y0 | 3RE4122–5EA●□–♦♦Y0 | 1 | 1 | S0 | 3RT2025 |
| 7.5 | 7.5 | 15 | 20 | 3RE4122–6AA●□–♦♦Y0 | 3RE4122–6CA●□–♦♦Y0 | 3RE4122–6EA●□–♦♦Y0 | 1 | 1 | S0 | 3RT2026 |
| 10 | 10 | 20 | 25 | 3RE4122–7AA●□–♦♦Y0 | 3RE4122–7CA●□–♦♦Y0 | 3RE4122–7EA●□–♦♦Y0 | 1 | 1 | S0 | 3RT2027 |
| 10 | 10 | 25 | 25 | 3RE4122–8AA●□–♦♦Y0 | 3RE4122–8CA●□–♦♦Y0 | 3RE4122–8EA●□–♦♦Y0 | 1 | 1 | S0 | 3RT2028 |
| 10 | 15 | 30 | 40 | 3RE4123–5AA●□–♦♦Y0 | 3RE4123–5CA●□–♦♦Y0 | 3RE4123–5EA●□–♦♦Y0 | 1 | 1 | S2 | 3RT2035 |
| 15 | 15 | 40 | 50 | 3RE4123–6AA●□–♦♦Y0 | 3RE4123–6CA●□–♦♦Y0 | 3RE4123–6EA●□–♦♦Y0 | 1 | 1 | S2 | 3RT2036 |
| 20 | 20 | 50 | 50 | 3RE4123–7AA●□–♦♦Y0 | 3RE4123–7CA●□–♦♦Y0 | 3RE4123–7EA●□–♦♦Y0 | 1 | 1 | S2 | 3RT2037 |
| 20 | 25 | 50 | 60 | 3RE4123–8AA●□–♦♦Y0 | 3RE4123–8CA●□–♦♦Y0 | 3RE4123–8EA●□–♦♦Y0 | 1 | 1 | S2 | 3RT2038 |
| | | | | □ | □ | □ | | | | |
| | | | | Thermal overload relay Class 10 = **1** | **1** | **1** | | | | |
| | | | | Solid-state overload relay selectable Class = **5** | **5** | **5** | | | | |

## Non-Reversing Starter, 3-Phase, 3-Pole, Thermal or Solid-State Overload Relay, Large Enclosure

| 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Large Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 208 V | 230 V | 460 V | 575 V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 1.5 | 2 | 3 | 5 | 3RE4121–5BA●□–♦♦Y0 | | | 1 | 0 | S00 | 3RT2015 |
| 3 | 3 | 7.5 | 10 | 3RE4121–7BA●□–♦♦Y0 | | | 1 | 0 | S00 | 3RT2017 |
| 2 | 3 | 5 | 7.5 | 3RE4122–3BA●□–♦♦Y0 | | | 1 | 1 | S0 | 3RT2023 |
| 3 | 3 | 7.5 | 10 | 3RE4122–4BA●□–♦♦Y0 | | | 1 | 1 | S0 | 3RT2024 |
| 5 | 5 | 10 | 15 | 3RE4122–5BA●□–♦♦Y0 | Not applicable — Standard enclosure includes extra mounting space for accessories. | | 1 | 1 | S0 | 3RT2025 |
| 7.5 | 7.5 | 15 | 20 | 3RE4122–6BA●□–♦♦Y0 | | | 1 | 1 | S0 | 3RT2026 |
| 10 | 10 | 20 | 25 | 3RE4122–7BA●□–♦♦Y0 | | | 1 | 1 | S0 | 3RT2027 |
| 10 | 10 | 25 | 25 | 3RE4122–8BA●□–♦♦Y0 | | | 1 | 1 | S0 | 3RT2028 |
| | | | | □ | | | | | | |
| | | | | Thermal overload relay Class 10 = **1** | | | | | | |
| | | | | Solid-state overload relay selectable Class = **5** | | | | | | |

① For 3-phase controllers, 208 - 600 V coils will be wired for incoming voltage. 24 and120 V coils will be wired as separate source or control power transformer secondary (if ordered). For single phase controllers, 120 and 240 V coils will be wired for incoming voltage. 24 V coils will be wired as separate source or control power transformer secondary (if ordered). 277 - 600 V coils do not apply.

# 3RE4 Non-Reversing Starter, 1-Phase, 2-Pole, Thermal Overload Relay

## Selection

### Ordering Information

- Replace the (●) with the code from the coil table on this page.
- Replace the (□) with the overload relay (OLR) code from this page.
- Replace the (♦♦) with the OLR current adjustment range from pg. 4/80.
- For factory modifications, see page 4/81 – 4/83.
- For accessories, see page 4/84 – 4/85.
- For replacement parts, see page 4/85.
- For dimensions, see page 4/86.
- For wiring diagrams, see page 4/87 – 4/89.

### Coil Selection (●)①

| Nominal Voltage | Code |
|---|---|
| 24 VAC 50/60 Hz | 1 |
| 24 VDC | 2 |
| 110/120 VAC 50/60 Hz | 3 |
| 208 VAC 50/60 Hz | 4 |
| 220/240 VAC 50/60 Hz | 5 |
| 277 VAC 60 Hz | 6 |
| 480 VAC 60 Hz | 7 |
| 600 VAC 60 Hz | 8 |



## Non-Reversing Starter, Single Phase, 2-Pole, Thermal Overload Relay, Standard Enclosure

| 1-Phase Motor Hp Rating per UL | | | NEMA Type Enclosure (Standard Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 115 V | 208 V | 230 V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 0.25 | 0.5 | 0.75 | 3RE4111–5AA●1–♦♦Y0 | 3RE4111–5CA●1–♦♦Y0 | 3RE4111–5EA●1–♦♦Y0 | 1 | 0 | S00 | 3RT2015 |
| 0.5 | 1.5 | 2 | 3RE4111–7AA●1–♦♦Y0 | 3RE4111–7CA●1–♦♦Y0 | 3RE4111–7EA●1–♦♦Y0 | 1 | 0 | S00 | 3RT2017 |
| 1 | 1 | 1 | 3RE4112–3AA●1–♦♦Y0 | 3RE4112–3CA●1–♦♦Y0 | 3RE4112–3EA●1–♦♦Y0 | 1 | 1 | S0 | 3RT2023 |
| 1 | 2 | 2 | 3RE4112–4AA●1–♦♦Y0 | 3RE4112–4CA●1–♦♦Y0 | 3RE4112–4EA●1–♦♦Y0 | 1 | 1 | S0 | 3RT2024 |
| 1 | 2 | 3 | 3RE4112–5AA●1–♦♦Y0 | 3RE4112–5CA●1–♦♦Y0 | 3RE4112–5EA●1–♦♦Y0 | 1 | 1 | S0 | 3RT2025 |
| 2 | 3 | 3 | 3RE4112–6AA●1–♦♦Y0 | 3RE4112–6CA●1–♦♦Y0 | 3RE4112–6EA●1–♦♦Y0 | 1 | 1 | S0 | 3RT2026 |
| 2 | 5 | 5 | 3RE4112–7AA●1–♦♦Y0 | 3RE4112–7CA●1–♦♦Y0 | 3RE4112–7EA●1–♦♦Y0 | 1 | 1 | S0 | 3RT2027 |
| 3 | 5 | 5 | 3RE4112–8AA●1–♦♦Y0 | 3RE4112–8CA●1–♦♦Y0 | 3RE4112–8EA●1–♦♦Y0 | 1 | 1 | S0 | 3RT2028 |
| 3 | 5 | 7.5 | 3RE4113–5AA●1–♦♦Y0 | 3RE4113–5CA●1–♦♦Y0 | 3RE4113–5EA●1–♦♦Y0 | 1 | 1 | S2 | 3RT2035 |
| 3 | 7 | 10 | 3RE4113–6AA●1–♦♦Y0 | 3RE4113–6CA●1–♦♦Y0 | 3RE4113–6EA●1–♦♦Y0 | 1 | 1 | S2 | 3RT2036 |
| 5 | 10 | 10 | 3RE4113–7AA●1–♦♦Y0 | 3RE4113–7CA●1–♦♦Y0 | 3RE4113–7EA●1–♦♦Y0 | 1 | 1 | S2 | 3RT2037 |
| 5 | 10 | 15 | 3RE4113–8AA●1–♦♦Y0 | 3RE4113–8CA●1–♦♦Y0 | 3RE4113–8EA●1–♦♦Y0 | 1 | 1 | S2 | 3RT2038 |

## Non-Reversing Starter, Single Phase, 2-Pole, Thermal Overload Relay, Large Enclosure

| 1-Phase Motor Hp Rating per UL | | | NEMA Type Enclosure (Large Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 115 V | 208 V | 230 V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 0.25 | 0.5 | 0.75 | 3RE4111–5BA●1–♦♦Y0 | Not applicable — Standard enclosure includes extra mounting space for accessories. | | 1 | 0 | S00 | 3RT2015 |
| 0.5 | 1.5 | 2 | 3RE4111–7BA●1–♦♦Y0 | | | 1 | 0 | S00 | 3RT2017 |
| 1 | 1 | 1 | 3RE4112–3BA●1–♦♦Y0 | | | 1 | 1 | S0 | 3RT2023 |
| 1 | 2 | 2 | 3RE4112–4BA●1–♦♦Y0 | | | 1 | 1 | S0 | 3RT2024 |
| 1 | 2 | 3 | 3RE4112–5BA●1–♦♦Y0 | | | 1 | 1 | S0 | 3RT2025 |
| 2 | 3 | 3 | 3RE4112–6BA●1–♦♦Y0 | | | 1 | 1 | S0 | 3RT2026 |
| 2 | 5 | 5 | 3RE4112–7BA●1–♦♦Y0 | | | 1 | 1 | S0 | 3RT2027 |
| 3 | 5 | 5 | 3RE4112–8BA●1–♦♦Y0 | | | 1 | 1 | S0 | 3RT2028 |

① For 3-phase controllers, 208 - 600 V coils will be wired for incoming voltage. 24 and120 V coils will be wired as separate source or control power transformer secondary (if ordered). For single phase controllers, 120 and 240 V coils will be wired for incoming voltage. 24 V coils will be wired as separate source or control power transformer secondary (if ordered). 277 - 600 V coils do not apply.

# 3RE4 Reversing Starter, 3-Phase, 3-Pole, Thermal or Solid-State Overload Relay

## Selection

### Ordering Information

- Replace the (●) with the code from the coil table on this page.
- Replace the (□) with the overload relay (OLR) code from this page.
- Replace the (♦♦) with the OLR current adjustment range from pg. 4/80.
- For factory modifications, see page 4/81 – 4/83.
- For accessories, see page 4/84 – 4/85.
- For replacement parts, see page 4/85.
- For dimensions, see page 4/86.
- For wiring diagrams, see page 4/87 – 4/89.

### Coil Selection (●)①

| Nominal Voltage | Code |
|---|---|
| 24 VAC 50/60 Hz | 1 |
| 24 VDC | 2 |
| 110/120 VAC 50/60 Hz | 3 |
| 208 VAC 50/60 Hz | 4 |
| 220/240 VAC 50/60 Hz | 5 |
| 277 VAC 60 Hz | 6 |
| 480 VAC 60 Hz | 7 |
| 600 VAC 60 Hz | 8 |

### Reversing Starter, 3-Phase, 3-Pole, Thermal or Solid-State Overload Relay, Standard Enclosure

| 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Standard Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 208 V | 230 V | 460 V | 575 V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 1.5 | 2 | 3 | 5 | 3RE4141–5AA●□–♦♦Y0 | 3RE4141–5CA●□–♦♦Y0 | 3RE4141–5EA●□–♦♦Y0 | 2 | 2 | S00 | 3RA2315 |
| 3 | 3 | 7.5 | 10 | 3RE4141–7AA●□–♦♦Y0 | 3RE4141–7CA●□–♦♦Y0 | 3RE4141–7EA●□–♦♦Y0 | 2 | 2 | S00 | 3RA2317 |
| 2 | 3 | 5 | 7.5 | 3RE4142–3AA●□–♦♦Y0 | 3RE4142–3CA●□–♦♦Y0 | 3RE4142–3EA●□–♦♦Y0 | 2 | 0 | S0 | 3RA2323 |
| 3 | 3 | 7.5 | 10 | 3RE4142–4AA●□–♦♦Y0 | 3RE4142–4CA●□–♦♦Y0 | 3RE4142–4EA●□–♦♦Y0 | 2 | 0 | S0 | 3RA2324 |
| 5 | 5 | 10 | 15 | 3RE4142–5AA●□–♦♦Y0 | 3RE4142–5CA●□–♦♦Y0 | 3RE4142–5EA●□–♦♦Y0 | 2 | 0 | S0 | 3RA2325 |
| 7.5 | 7.5 | 15 | 20 | 3RE4142–6AA●□–♦♦Y0 | 3RE4142–6CA●□–♦♦Y0 | 3RE4142–6EA●□–♦♦Y0 | 2 | 0 | S0 | 3RA2326 |
| 10 | 10 | 20 | 25 | 3RE4142–7AA●□–♦♦Y0 | 3RE4142–7CA●□–♦♦Y0 | 3RE4142–7EA●□–♦♦Y0 | 2 | 0 | S0 | 3RA2327 |
| 10 | 10 | 25 | 25 | 3RE4142–8AA●□–♦♦Y0 | 3RE4142–8CA●□–♦♦Y0 | 3RE4142–8EA●□–♦♦Y0 | 2 | 0 | S0 | 3RA2328 |
| 10 | 15 | 30 | 40 | 3RE4143–5AA●□–♦♦Y0 | 3RE4143–5CA●□–♦♦Y0 | 3RE4143–5EA●□–♦♦Y0 | 2 | 0 | S2 | 3RA2335 |
| 15 | 15 | 40 | 50 | 3RE4143–6AA●□–♦♦Y0 | 3RE4143–6CA●□–♦♦Y0 | 3RE4143–6EA●□–♦♦Y0 | 2 | 0 | S2 | 3RA2336 |
| 20 | 20 | 50 | 50 | 3RE4143–7AA●□–♦♦Y0 | 3RE4143–7CA●□–♦♦Y0 | 3RE4143–7EA●□–♦♦Y0 | 2 | 0 | S2 | 3RA2337 |
| 20 | 25 | 50 | 60 | 3RE4143–8AA●□–♦♦Y0 | 3RE4143–8CA●□–♦♦Y0 | 3RE4143–8EA●□–♦♦Y0 | 2 | 0 | S2 | 3RA2338 |
| | | | | □ | □ | □ | | | | |
| | | | | Thermal overload relay Class 10 = **1** | **1** | **1** | | | | |
| | | | | Solid-state overload relay selectable Class = **5** | **5** | **5** | | | | |

### Reversing Starter, 3-Phase, 3-Pole, Thermal or Solid-State Overload Relay, Large Enclosure

| 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Large Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 208 V | 230 V | 460 V | 575 V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 1.5 | 2 | 3 | 5 | 3RE4141–5BA●□–♦♦Y0 | | | 2 | 0 | S00 | 3RA2315 |
| 3 | 3 | 7.5 | 10 | 3RE4141–7BA●□–♦♦Y0 | | | 2 | 0 | S00 | 3RA2317 |
| 2 | 3 | 5 | 7.5 | 3RE4142–3BA●□–♦♦Y0 | | | 2 | 0 | S0 | 3RA2323 |
| 3 | 3 | 7.5 | 10 | 3RE4142–4BA●□–♦♦Y0 | | | 2 | 0 | S0 | 3RA2324 |
| 5 | 5 | 10 | 15 | 3RE4142–5BA●□–♦♦Y0 | Not applicable — Standard enclosure includes extra mounting space for accessories. | | 2 | 0 | S0 | 3RA2325 |
| 7.5 | 7.5 | 15 | 20 | 3RE4142–6BA●□–♦♦Y0 | | | 2 | 0 | S0 | 3RA2326 |
| 10 | 10 | 20 | 25 | 3RE4142–7BA●□–♦♦Y0 | | | 2 | 0 | S0 | 3RA2327 |
| 10 | 10 | 25 | 25 | 3RE4142–8BA●□–♦♦Y0 | | | 2 | 0 | S0 | 3RA2328 |
| | | | | □ | | | | | | |
| | | | | Thermal overload relay Class 10 = **1** | | | | | | |
| | | | | Solid-state overload relay selectable Class = **5** | | | | | | |

① For 3-phase controllers, 208 - 600 V coils will be wired for incoming voltage. 24 and120 V coils will be wired as separate source or control power transformer secondary (if ordered). For single phase controllers, 120 and 240 V coils will be wired for incoming voltage. 24 V coils will be wired as separate source or control power transformer secondary (if ordered). 277 - 600 V coils do not apply.

# 3RE4 Non-Reversing Contactor, 3-Pole (for both 1-Phase and 3-Phase)

## Selection

### Ordering Information

- Replace the (●) with the code from the coil table on this page.
- For factory modifications, see page 4/81 – 4/83.
- For accessories, see page 4/84 – 4/85.
- For replacement parts, see page 4/85.
- For dimensions, see page 4/86.
- For wiring diagrams, see page 4/87 – 4/89.

### Coil Selection (●)①

| Nominal Voltage | Code |
|---|---|
| 24 VAC 50/60 Hz | 1 |
| 24 VDC | 2 |
| 110/120 VAC 50/60 Hz | 3 |
| 208 VAC 50/60 Hz | 4 |
| 220/240 VAC 50/60 Hz | 5 |
| 277 VAC 60 Hz | 6 |
| 480 VAC 60 Hz | 7 |
| 600 VAC 60 Hz | 8 |



### Non-Reversing Contactor, 3-Pole (for both 1-Phase and 3-Phase), Standard Enclosure

| 1-Phase Motor Hp Rating per UL | | | 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Standard Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 115V | 208V | 230V | 208V | 230V | 460V | 575V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 0.25 | 0.5 | 0.75 | 1.5 | 2 | 3 | 5 | 3RE4161–5AA●0–0YY0 | 3RE4161–5CA●0–0YY0 | 3RE4161–5EA●0–0YY0 | 1 | 0 | S00 | 3RT2015 |
| 0.5 | 1.5 | 2 | 3 | 3 | 7.5 | 10 | 3RE4161–7AA●0–0YY0 | 3RE4161–7CA●0–0YY0 | 3RE4161–7EA●0–0YY0 | 1 | 0 | S00 | 3RT2017 |
| 1 | 1 | 1 | 2 | 3 | 5 | 7.5 | 3RE4162–3AA●0–0YY0 | 3RE4162–3CA●0–0YY0 | 3RE4162–3EA●0–0YY0 | 1 | 1 | S0 | 3RT2023 |
| 1 | 2 | 2 | 3 | 3 | 7.5 | 10 | 3RE4162–4AA●0–0YY0 | 3RE4162–4CA●0–0YY0 | 3RE4162–4EA●0–0YY0 | 1 | 1 | S0 | 3RT2024 |
| 1 | 2 | 3 | 5 | 5 | 10 | 15 | 3RE4162–5AA●0–0YY0 | 3RE4162–5CA●0–0YY0 | 3RE4162–5EA●0–0YY0 | 1 | 1 | S0 | 3RT2025 |
| 2 | 3 | 3 | 7.5 | 7.5 | 15 | 20 | 3RE4162–6AA●0–0YY0 | 3RE4162–6CA●0–0YY0 | 3RE4162–6EA●0–0YY0 | 1 | 1 | S0 | 3RT2026 |
| 2 | 5 | 5 | 10 | 10 | 20 | 25 | 3RE4162–7AA●0–0YY0 | 3RE4162–7CA●0–0YY0 | 3RE4162–7EA●0–0YY0 | 1 | 1 | S0 | 3RT2027 |
| 3 | 5 | 5 | 10 | 10 | 25 | 25 | 3RE4162–8AA●0–0YY0 | 3RE4162–8CA●0–0YY0 | 3RE4162–8EA●0–0YY0 | 1 | 1 | S0 | 3RT2028 |
| 3 | 5 | 7.5 | 10 | 15 | 30 | 40 | 3RE4163–5AA●0–0YY0 | 3RE4163–5CA●0–0YY0 | 3RE4163–5EA●0–0YY0 | 1 | 1 | S2 | 3RT2035 |
| 3 | 7 | 10 | 15 | 15 | 40 | 50 | 3RE4163–6AA●0–0YY0 | 3RE4163–6CA●0–0YY0 | 3RE4163–6EA●0–0YY0 | 1 | 1 | S2 | 3RT2036 |
| 5 | 10 | 10 | 20 | 20 | 50 | 50 | 3RE4163–7AA●0–0YY0 | 3RE4163–7CA●0–0YY0 | 3RE4163–7EA●0–0YY0 | 1 | 1 | S2 | 3RT2037 |
| 5 | 10 | 15 | 20 | 25 | 50 | 60 | 3RE4163–8AA●0–0YY0 | 3RE4163–8CA●0–0YY0 | 3RE4163–8EA●0–0YY0 | 1 | 1 | S2 | 3RT2038 |

### Non-Reversing Contactor, 3-Pole (for both 1-Phase and 3-Phase), Large Enclosure

| 1-Phase Motor Hp Rating per UL | | | 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Large Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 115V | 208V | 230V | 208V | 230V | 460V | 575V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 0.25 | 0.5 | 0.75 | 1.5 | 2 | 3 | 5 | 3RE4161–5BA●0–0YY0 | Not applicable — Standard enclosure includes extra mounting space for accessories. | | 1 | 0 | S00 | 3RT2015 |
| 0.5 | 1.5 | 2 | 3 | 3 | 7.5 | 10 | 3RE4161–7BA●0–0YY0 | | | 1 | 0 | S00 | 3RT2017 |
| 1 | 1 | 1 | 2 | 3 | 5 | 7.5 | 3RE4162–3BA●0–0YY0 | | | 1 | 1 | S0 | 3RT2023 |
| 1 | 2 | 2 | 3 | 3 | 7.5 | 10 | 3RE4162–4BA●0–0YY0 | | | 1 | 1 | S0 | 3RT2024 |
| 1 | 2 | 3 | 5 | 5 | 10 | 15 | 3RE4162–5BA●0–0YY0 | | | 1 | 1 | S0 | 3RT2025 |
| 2 | 3 | 3 | 7.5 | 7.5 | 15 | 20 | 3RE4162–6BA●0–0YY0 | | | 1 | 1 | S0 | 3RT2026 |
| 2 | 5 | 5 | 10 | 10 | 20 | 25 | 3RE4162–7BA●0–0YY0 | | | 1 | 1 | S0 | 3RT2027 |
| 3 | 5 | 5 | 10 | 10 | 25 | 25 | 3RE4162–8BA●0–0YY0 | | | 1 | 1 | S0 | 3RT2028 |

① For 3-phase controllers, 208 - 600 V coils will be wired for incoming voltage. 24 and120 V coils will be wired as separate source or control power transformer secondary (if ordered). For single phase controllers, 120 and 240 V coils will be wired for incoming voltage. 24 V coils will be wired as separate source or control power transformer secondary (if ordered). 277 - 600 V coils do not apply.

# 3RE4 Reversing Contactor, 3-Pole (for both 1-Phase and 3-Phase)

## Selection

### Ordering Information

- Replace the (●) with the code from the coil table on this page.
- For factory modifications, see page 4/81 – 4/83.
- For accessories, see page 4/84 – 4/85.
- For replacement parts, see page 4/85.
- For dimensions, see page 4/86.
- For wiring diagrams, see page 4/87 – 4/89.

### Coil Selection (●)①

| Nominal Voltage | Code |
|---|---|
| 24 VAC 50/60 Hz | 1 |
| 24 VDC | 2 |
| 110/120 VAC 50/60 Hz | 3 |
| 208 VAC 50/60 Hz | 4 |
| 220/240 VAC 50/60 Hz | 5 |
| 277 VAC 60 Hz | 6 |
| 480 VAC 60 Hz | 7 |
| 600 VAC 60 Hz | 8 |

## Reversing Contactor, 3-Pole (for both 1-Phase and 3-Phase), Standard Enclosure

| 1-Phase Motor Hp Rating per UL | | 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Standard Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 115V | 230V | 208V | 230V | 460V | 575V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 0.25 | 0.75 | 1.5 | 2 | 3 | 5 | 3RE4181–5AA●0–0YY0 | 3RE4181–5CA●0–0YY0 | 3RE4181–5EA●0–0YY0 | 2 | 2 | S00 | 3RA2315 |
| 0.5 | 2 | 3 | 3 | 7.5 | 10 | 3RE4181–7AA●0–0YY0 | 3RE4181–7CA●0–0YY0 | 3RE4181–7EA●0–0YY0 | 2 | 0 | S00 | 3RA2317 |
| 1 | 1 | 2 | 3 | 5 | 7.5 | 3RE4182–3AA●0–0YY0 | 3RE4182–3CA●0–0YY0 | 3RE4182–3EA●0–0YY0 | 2 | 0 | S0 | 3RA2323 |
| 1 | 2 | 3 | 3 | 7.5 | 10 | 3RE4182–4AA●0–0YY0 | 3RE4182–4CA●0–0YY0 | 3RE4182–4EA●0–0YY0 | 2 | 0 | S0 | 3RA2324 |
| 1 | 3 | 5 | 5 | 10 | 15 | 3RE4182–5AA●0–0YY0 | 3RE4182–5CA●0–0YY0 | 3RE4182–5EA●0–0YY0 | 2 | 0 | S0 | 3RA2325 |
| 2 | 3 | 7.5 | 7.5 | 15 | 20 | 3RE4182–6AA●0–0YY0 | 3RE4182–6CA●0–0YY0 | 3RE4182–6EA●0–0YY0 | 2 | 0 | S0 | 3RA2326 |
| 2 | 5 | 10 | 10 | 20 | 25 | 3RE4182–7AA●0–0YY0 | 3RE4182–7CA●0–0YY0 | 3RE4182–7EA●0–0YY0 | 2 | 0 | S0 | 3RA2327 |
| 3 | 5 | 10 | 10 | 25 | 25 | 3RE4182–8AA●0–0YY0 | 3RE4182–8CA●0–0YY0 | 3RE4182–8EA●0–0YY0 | 2 | 0 | S0 | 3RA2328 |
| 3 | 7.5 | 10 | 15 | 30 | 40 | 3RE4183–5AA●0–0YY0 | 3RE4183–5CA●0–0YY0 | 3RE4183–5EA●0–0YY0 | 2 | 0 | S2 | 3RA2335 |
| 3 | 10 | 15 | 15 | 40 | 50 | 3RE4183–6AA●0–0YY0 | 3RE4183–6CA●0–0YY0 | 3RE4183–6EA●0–0YY0 | 2 | 0 | S2 | 3RA2336 |
| 5 | 10 | 20 | 20 | 50 | 50 | 3RE4183–7AA●0–0YY0 | 3RE4183–7CA●0–0YY0 | 3RE4183–7EA●0–0YY0 | 2 | 0 | S2 | 3RA2337 |
| 5 | 15 | 20 | 25 | 50 | 60 | 3RE4183–8AA●0–0YY0 | 3RE4183–8CA●0–0YY0 | 3RE4183–8EA●0–0YY0 | 2 | 0 | S2 | 3RA2338 |

## Reversing Contactor, 3-Pole (for both 1-Phase and 3-Phase), Large Enclosure

| 1-Phase Motor Hp Rating per UL | | 3-Phase Motor Hp Rating per UL | | | | NEMA Type Enclosure (Large Size) | | | Unused Auxiliary Contacts | | Frame Size | Contactor (for ref. only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Type 1 General Purpose, Indoor only | Type 3/3R/4/12 Weatherproof, Watertight, Dust-tight | Type 4X 304 Stain. Steel Watertight, Dust-tight, Corrosion Resistant | | | | |
| 115V | 230V | 208V | 230V | 460V | 575V | Catalog Number | Catalog Number | Catalog Number | NO | NC | | |
| 0.25 | 0.75 | 1.5 | 2 | 3 | 5 | 3RE4181–5BA●0–0YY0 | Not applicable — Standard enclosure includes extra mounting space for accessories. | | 2 | 0 | S00 | 3RA2315 |
| 0.5 | 2 | 3 | 3 | 7.5 | 10 | 3RE4181–7BA●0–0YY0 | | | 2 | 0 | S00 | 3RA2317 |
| 1 | 1 | 2 | 3 | 5 | 7.5 | 3RE4182–3BA●0–0YY0 | | | 2 | 0 | S0 | 3RA2323 |
| 1 | 2 | 3 | 3 | 7.5 | 10 | 3RE4182–4BA●0–0YY0 | | | 2 | 0 | S0 | 3RA2324 |
| 1 | 3 | 5 | 5 | 10 | 15 | 3RE4182–5BA●0–0YY0 | | | 2 | 0 | S0 | 3RA2325 |
| 2 | 3 | 7.5 | 7.5 | 15 | 20 | 3RE4182–6BA●0–0YY0 | | | 2 | 0 | S0 | 3RA2326 |
| 2 | 5 | 10 | 10 | 20 | 25 | 3RE4182–7BA●0–0YY0 | | | 2 | 0 | S0 | 3RA2327 |
| 3 | 5 | 10 | 10 | 25 | 25 | 3RE4182–8BA●0–0YY0 | | | 2 | 0 | S0 | 3RA2328 |

① For 3-phase controllers, 208 - 600 V coils will be wired for incoming voltage. 24 and120 V coils will be wired as separate source or control power transformer secondary (if ordered). For single phase controllers, 120 and 240 V coils will be wired for incoming voltage. 24 V coils will be wired as separate source or control power transformer secondary (if ordered). 277 - 600 V coils do not apply.

# Selection Tables for 3RE4 Overload Relays

Thermal Overload Relay

Solid-State Overload Relay

## Selection Information

► Replace the (♦♦) within the incomplete 3RE4 catalog number with a code selected from the tables below. The frame size must match that of the 3RE4 product.



### Thermal Overload Relays, Trip Class 10, Single and Three Phase

Features and technical characteristics:

- Phase failure sensitivity
- Includes NC trip contact and NO alarm contact
- Manual and automatic RESET (selectable)
- Switch position indicator
- TEST function
- STOP button
- Sealable cover (optional)
- Screw-type terminals

| Current Adjustment Range (Amp) | Code ♦♦ | Thermal Overload Relay (reference only) |
|---|---|---|
| **Frame Size S00** | | |
| 0.7 - 1 | 0J | **3RU2116-0JB0** |
| 0.9 - 1.25 | 0K | **3RU2116-0KB0** |
| 1.1 - 1.6 | 1A | **3RU2116-1AB0** |
| 1.4 - 2 | 1B | **3RU2116-1BB0** |
| 1.8 - 2.5 | 1C | **3RU2116-1CB0** |
| 2.2 - 3.2 | 1D | **3RU2116-1DB0** |
| 2.8 - 4 | 1E | **3RU2116-1EB0** |
| 3.5 - 5 | 1F | **3RU2116-1FB0** |
| 4.5 - 6.3 | 1G | **3RU2116-1GB0** |
| 5.5 - 8 | 1H | **3RU2116-1HB0** |
| 7 - 10 | 1J | **3RU2116-1JB0** |
| 9 - 12.5 | 1K | **3RU2116-1KB0** |
| 11 - 16 | 4A | **3RU2116-4AB0** |

| Current Adjustment Range (Amp) | Code ♦♦ | Thermal Overload Relay (reference only) |
|---|---|---|
| **Frame Size S0** | | |
| 1.8 - 2.5 | 1C | **3RU2126-1CB0** |
| 2.2 - 3.2 | 1D | **3RU2126-1DB0** |
| 2.8 - 4 | 1E | **3RU2126-1EB0** |
| 3.5 - 5 | 1F | **3RU2126-1FB0** |
| 4.5 - 6.3 | 1G | **3RU2126-1GB0** |
| 5.5 - 8 | 1H | **3RU2126-1HB0** |
| 7 - 10 | 1J | **3RU2126-1JB0** |
| 9 - 12.5 | 1K | **3RU2126-1KB0** |
| 11 - 16 | 4A | **3RU2126-4AB0** |
| 14 - 20 | 4B | **3RU2126-4BB0** |
| 17 - 22 | 4C | **3RU2126-4CB0** |
| 20 - 25 | 4D | **3RU2126-4DB0** |
| 23 - 28 | 4N | **3RU2126-4NB0** |
| 27 - 32 | 4E | **3RU2126-4EB0** |
| 30 - 36 | 4P | **3RU2126-4PB0** |
| 34 - 40 | 4F | **3RU2126-4FB0** |

| Current Adjustment Range (Amp) | Code ♦♦ | Thermal Overload Relay (reference only) |
|---|---|---|
| **Frame Size S2** | | |
| 22 - 32 | 4E | **3RU2136-4EB0** |
| 28 - 40 | 4F | **3RU2136-4FB0** |
| 36 - 45 | 4G | **3RU2136-4GB0** |
| 40 - 50 | 4H | **3RU2136-4HB0** |
| 47 - 57 | 4Q | **3RU2136-4QB0** |
| 54 - 65 | 4J | **3RU2136-4JB0** |
| 62 - 73 | 4K | **3RU2136-4KB0** |
| 70 - 80 | 4R | **3RU2136-4RB0** |

### Solid-State Overload Relays, Selectable Trip Class 5, 10, 20 and 30, Three Phase Only

Features and technical characteristics:

- Overload, phase failure and unbalance protection
- Internal ground fault detection (selectable)
- Internal power supply
- Includes NC trip contact and NO alarm contact
- Manual and automatic RESET (selectable)
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring
- Sealable cover (optional)
- Screw-type terminals

| Current Adjustment Range (Amp) | Code ♦♦ | Solid-State Overload Relay (reference only) |
|---|---|---|
| **Frame Size S00** | | |
| 0.32 - 1.25 | 4N | **3RB3113-4NB0** |
| 1 - 4 | 4P | **3RB3113-4PB0** |
| 3 - 12 | 4S | **3RB3113-4SB0** |
| 4 - 16 | 4T | **3RB3113-4TB0** |

| Current Adjustment Range (Amp) | Code ♦♦ | Solid-State Overload Relay (reference only) |
|---|---|---|
| **Frame Size S0** | | |
| 0.32 - 1.25 | 4N | **3RB3123-4NB0** |
| 1 - 4 | 4P | **3RB3123-4PB0** |
| 3 - 12 | 4S | **3RB3123-4SB0** |
| 6 - 25 | 4Q | **3RB3123-4QB0** |
| 10 - 40 | 4V | **3RB3123-4VB0** |

| Current Adjustment Range (Amp) | Code ♦♦ | Solid-State Overload Relay (reference only) |
|---|---|---|
| **Frame Size S2** | | |
| 12 - 50 | 4U | **3RB3133-4UB0** |
| 20 - 80 | 4W | **3RB3133-4WB0** |

## Selection Information

- These tables apply to 3RE4 products.
- Replace the last two characters of the 3RE4 catalog number (Y0), with a code selected from the tables below.

### Start-Stop Push Button Combinations

| Description | Code (Y0) | Restrictions |
|---|---|---|
| (No modifications included) | Y0 | — |
| Start-Stop Push Buttons | B0 | 1 |
| Start-Stop Push Buttons, Red On Pilot Light | B1 | 1 |
| Start-Stop Push Buttons, Red On Pilot Light, Green Off Pilot Light | B2 | 1 |
| Start-Stop Push Buttons, CPT Std Capacity① 208:120V | B3 | 1 and 2 |
| Start-Stop Push Buttons, CPT Std Capacity① 208:120V, Red On Pilot Light | B4 | 1 and 2 |
| Start-Stop Push Buttons, CPT Std Capacity① 208:120V, Red On Pilot Light, Green Off Pilot Light | B5 | 1 and 2 |
| Start-Stop Push Buttons, CPT Std Capacity① 208:24V | B6 | 1 and 3 |
| Start-Stop Push Buttons, CPT Std Capacity① 208:24V, Red On Pilot Light | B7 | 1 and 3 |
| Start-Stop Push Buttons, CPT Std Capacity① 208:24V, Red On Pilot Light, Green Off Pilot Light | B8 | 1 and 3 |
| Start-Stop Push Buttons, CPT Std Capacity① 240:120V | C0 | 1 and 2 |
| Start-Stop Push Buttons, CPT Std Capacity① 240:120V, Red On Pilot Light | C1 | 1 and 2 |
| Start-Stop Push Buttons, CPT Std Capacity① 240:120V, Red On Pilot Light, Green Off Pilot Light | C2 | 1 and 2 |
| Start-Stop Push Buttons, CPT Std Capacity① 240:24V | C3 | 1 and 3 |
| Start-Stop Push Buttons, CPT Std Capacity① 240:24V, Red On Pilot Light | C4 | 1 and 3 |
| Start-Stop Push Buttons, CPT Std Capacity① 240:24V, Red On Pilot Light, Green Off Pilot Light | C5 | 1 and 3 |
| Start-Stop Push Buttons, CPT Std Capacity① 480/240:120V | C6 | 1, 2 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 480/240:120V, Red On Pilot Light | C7 | 1, 2 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 480/240:120V, Red On Pilot Light, Green Off Pilot Light | C8 | 1, 2 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 480/240:24V | D0 | 1, 3 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 480/240:24V, Red On Pilot Light | D1 | 1, 3 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 480/240:24V, Red On Pilot Light, Green Off Pilot Light | D2 | 1, 3 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 600:120V, Red On Pilot Light | P0 | 1, 2 and 4 |
| Start-Stop Push Buttons, CPT Std Capacity① 600:24V, Red On Pilot Light | P2 | 1, 3 and 4 |

### Fwd-Rev-Stop Push Button Combinations

| Description | Code (Y0) | Restrictions |
|---|---|---|
| (No modifications included) | Y0 | — |
| Fwd-Rev-Stop Push Buttons | D3 | 5 |
| Fwd-Rev-Stop Push Buttons, Red On Pilot Light | D4 | 5 |
| Fwd-Rev-Stop Push Buttons, Red On Pilot Light, Green Off Pilot Light | D5 | 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 208:120V | D6 | 2 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 208:120V, Red On Pilot Light | D7 | 2 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 208:120V, Red On Pilot Light, Green Off Pilot Light | D8 | 2 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 208:24V | E0 | 3 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 208:24V, Red On Pilot Light | E1 | 3 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 208:24V, Red On Pilot Light, Green Off Pilot Light | E2 | 3 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 240:120V | E3 | 2 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 240:120V, Red On Pilot Light | E4 | 2 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 240:120V, Red On Pilot Light, Green Off Pilot Light | E5 | 2 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 240:24V | E6 | 3 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 240:24V, Red On Pilot Light | E7 | 3 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 240:24V, Red On Pilot Light, Green Off Pilot Light | E8 | 3 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 480/240:120V | F0 | 2, 4 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 480/240:120V, Red On Pilot Light | F1 | 2, 4 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 480/240:120V, Red On Pilot Light, Green Off Pilot Light | F2 | 2, 4 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 480/240:24V | F3 | 3, 4 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 480/240:24V, Red On Pilot Light | F4 | 3, 4 and 5 |
| Fwd-Rev-Stop Push Buttons, CPT Std Capacity① 480/240:24V, Red On Pilot Light, Green Off Pilot Light | F5 | 3, 4 and 5 |

① A CPT in a NEMA type 1 enclosure with a size S00 or S0 controller requires a large size enclosure. A CPT in a NEMA type 1 enclosure with a size S2 controller requires a standard size enclosure. All other enclosure types may be standard size.

**Restrictions:**

1. Valid only with non-reversing controllers.
2. Valid only with 120 V coil.
3. Valid only with 24 VAC coil.
4. Not valid with single-phase controllers.
5. Not valid in NEMA Type 1 enclosures.

## Selection Information

- These tables apply to 3RE4 products.
- Replace the last two characters of the 3RE4 catalog number (Y0), with a code selected from the tables below.

### Hand-Off-Auto Selector Switch Combinations

| Description | Code (Y0) | Restrictions |
|---|---|---|
| (No modifications included) | Y0 | — |
| Hand-Off-Auto Selector Switch | F6 | 1 |
| Hand-Off-Auto Selector Switch, Red On Pilot Light | F7 | 1 |
| Hand-Off-Auto Selector Switch, Red On Pilot Light, Green Off Pilot Light | F8 | 1 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 208:120V | G0 | 1 and 2 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 208:120V, Red On Pilot Light | G1 | 1 and 2 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 208:120V, Red On Pilot Light, Green Off Pilot Light | G2 | 1 and 2 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 208:24V | G3 | 1 and 3 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 208:24V, Red On Pilot Light | G4 | 1 and 3 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 208:24V, Red On Pilot Light, Green Off Pilot Light | G5 | 1 and 3 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 240:120V | G6 | 1 and 2 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 240:120V, Red On Pilot Light | G7 | 1 and 2 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 240:120V, Red On Pilot Light, Green Off Pilot Light | G8 | 1 and 2 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 240:24V | H0 | 1 and 3 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 240:24V, Red On Pilot Light | H1 | 1 and 3 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 240:24V, Red On Pilot Light, Green Off Pilot Light | H2 | 1 and 3 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 480/240:120V | H3 | 1, 2 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 480/240:120V, Red On Pilot Light | H4 | 1, 2 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 480/240:120V, Red On Pilot Light, Green Off Pilot Light | H5 | 1, 2 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 480/240:24V | H6 | 1, 3 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 480/240:24V, Red On Pilot Light | H7 | 1, 3 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 480/240:24V, Red On Pilot Light, Green Off Pilot Light | H8 | 1, 3 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 600:120V, Red On Pilot Light | P1 | 1, 2 and 4 |
| Hand-Off-Auto Selector Switch, CPT Std Capacity① 600:24V, Red On Pilot Light | P3 | 1, 3 and 4 |

### On-Off Selector Switch Combinations

| Description | Code (Y0) | Restrictions |
|---|---|---|
| (No modifications included) | Y0 | — |
| On-Off Selector Switch | J0 | 1 |
| On-Off Selector Switch, Red On Pilot Light | J1 | 1 |
| On-Off Selector Switch, Red On Pilot Light, Green Off Pilot Light | J2 | 1 |
| On-Off Selector Switch, CPT Std Capacity① 208:120V | J3 | 1 and 2 |
| On-Off Selector Switch, CPT Std Capacity① 208:120V, Red On Pilot Light | J4 | 1 and 2 |
| On-Off Selector Switch, CPT Std Capacity① 208:120V, Red On Pilot Light, Green Off Pilot Light | J5 | 1 and 2 |
| On-Off Selector Switch, CPT Std Capacity① 208:24V | J6 | 1 and 3 |
| On-Off Selector Switch, CPT Std Capacity① 208:24V, Red On Pilot Light | J7 | 1 and 3 |
| On-Off Selector Switch, CPT Std Capacity① 208:24V, Red On Pilot Light, Green Off Pilot Light | J8 | 1 and 3 |
| On-Off Selector Switch, CPT Std Capacity① 240:120V | K0 | 1 and 2 |
| On-Off Selector Switch, CPT Std Capacity① 240:120V, Red On Pilot Light | K1 | 1 and 2 |
| On-Off Selector Switch, CPT Std Capacity① 240:120V, Red On Pilot Light, Green Off Pilot Light | K2 | 1 and 2 |
| On-Off Selector Switch, CPT Std Capacity① 240:24V | K3 | 1 and 3 |
| On-Off Selector Switch, CPT Std Capacity① 240:24V, Red On Pilot Light | K4 | 1 and 3 |
| On-Off Selector Switch, CPT Std Capacity① 240:24V, Red On Pilot Light, Green Off Pilot Light | K5 | 1 and 3 |
| On-Off Selector Switch, CPT Std Capacity① 480/240:120V | K6 | 1, 2 and 4 |
| On-Off Selector Switch, CPT Std Capacity① 480/240:120V, Red On Pilot Light | K7 | 1, 2 and 4 |
| On-Off Selector Switch, CPT Std Capacity① 480/240:120V, Red On Pilot Light, Green Off Pilot Light | K8 | 1, 2 and 4 |
| On-Off Selector Switch, CPT Std Capacity① 480/240:24V | L0 | 1, 3 and 4 |
| On-Off Selector Switch, CPT Std Capacity① 480/240:24V, Red On Pilot Light | L1 | 1, 3 and 4 |
| On-Off Selector Switch, CPT Std Capacity① 480/240:24V, Red On Pilot Light, Green Off Pilot Light | L2 | 1, 3 and 4 |

① A CPT in a NEMA type 1 enclosure with a size S00 or S0 controller requires a large size enclosure. A CPT in a NEMA type 1 enclosure with a size S2 controller requires a standard size enclosure. All other enclosure types may be standard size.

**Restrictions:**

1. Valid only with non-reversing controllers.
2. Valid only with 120 V coil.
3. Valid only with 24 VAC coil.
4. Not valid with single-phase controllers.

## Selection Information

- These tables apply to 3RE4 products.
- Replace the last two characters of the 3RE4 catalog number (Y0), with a code selected from the tables below.

### Fwd-Off-Rev Selector Switch Combinations

| Description | Code (Y0) | Restrictions |
|---|---|---|
| (No modifications included) | Y0 | — |
| Fwd-Off-Rev Selector Switch | L3 | — |
| Fwd-Off-Rev Selector Switch, Red On Pilot Light | L4 | — |
| Fwd-Off-Rev Selector Switch, Red On Pilot Light, Green Off Pilot Light | L5 | — |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 208:120V | L6 | 1 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 208:120V, Red On Pilot Light | L7 | 1 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 208:120V, Red On Pilot Light, Green Off Pilot Light | L8 | 1 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 208:24V | M0 | 2 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 208:24V, Red On Pilot Light | M1 | 2 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 208:24V, Red On Pilot Light, Green Off Pilot Light | M2 | 2 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 240:120V | M3 | 1 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 240:120V, Red On Pilot Light | M4 | 1 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 240:120V, Red On Pilot Light, Green Off Pilot Light | M5 | 1 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 240:24V | M6 | 2 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 240:24V, Red On Pilot Light | M7 | 2 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 240:24V, Red On Pilot Light, Green Off Pilot Light | M8 | 2 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 480/240:120V | N0 | 1 and 3 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 480/240:120V, Red On Pilot Light | N1 | 1 and 3 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 480/240:120V, Red On Pilot Light, Green Off Pilot Light | N2 | 1 and 3 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 480/240:24V | N3 | 2 and 3 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 480/240:24V, Red On Pilot Light | N4 | 2 and 3 |
| Fwd-Off-Rev Selector Switch, CPT Std Capacity① 480/240:24V, Red On Pilot Light, Green Off Pilot Light | N5 | 2 and 3 |

**Restrictions:**

1. Valid only with 120 V coil.
2. Valid only with 24 VAC coil.
3. Not valid with single-phase controllers.

① A CPT in a NEMA type 1 enclosure with a size S00 or S0 controller requires a large size enclosure. A CPT in a NEMA type 1 enclosure with a size S2 controller requires a standard size enclosure. All other enclosure types may be standard size.

## Pilot Devices

| | Device① | Enclosure NEMA Type | Catalog Number |
|---|---|---|---|
| 49SDPB5 49SDSBJ 49SDSB4 Start Push Button Stop Push Button 2-Position Selector Switch 3-Position Selector Switch | Start-Stop Push Buttons, momentary② | 1 | 49SDPB5 |
| | | 3/3R/4/12 & 4X | 49SDP05 |
| | Fwd-Rev-Stop Push Buttons, momentary② | 1 | NA |
| | | 3/3R/4/12 & 4X | 49SDP02 |
| | Hand-Off-Auto Selector Switch | 1 | 49SDSBJ |
| | | 3/3R/4/12 & 4X | 49SDS01 |
| | On-Off Selector Switch | 1 | 49SDSB4 |
| | | 3/3R/4/12 & 4X | 49SDS04 |
| | Fwd-Off-Rev Selector Switch | 1 | 49SDSBJ |
| | | 3/3R/4/12 & 4X | 49SDS02 |

## Pilot Lights

| | Device① | Enclosure NEMA Type | Voltage | Catalog Number |
|---|---|---|---|---|
| | Light module and lens color: RED, GREEN, and AMBER. Legends include: ON, RUN, OFF③, OLR TRIPPED④ | 1 | 24 to 240 V AC/DC | 49SDLBU |
| | | | 277 V AC | 49SDLBL |
| | Red FORWARD, Red REVERSE | 1 | 24 to 240 V AC/DC | 49SDLB7RU |
| | | | 277 V AC | 49SDLB7RL |
| | | 3/3R/4/12 & 4X 3/3R/4/12 & 4X | 24 to 240 V AC/DC | 49SDL07RU |
| | | | 277 V AC | 49SDL07RL |
| | Green FORWARD, Green REVERSE | 1 | 24 to 240 V AC/DC | 49SDLB7GU |
| | | | 277 V AC | 49SDLB7GL |
| | | 3/3R/4/12 & 4X 3/3R/4/12 & 4X | 24 to 240 V AC/DC | 49SDL07GU |
| | | | 277 V AC | 49SDL07GL |
| | Red ON | 3/3R/4/12 & 4X 3/3R/4/12 & 4X | 24 to 240 V AC/DC | 49SDL0BRU |
| | | | 277 V AC | 49SDL0BRL |
| | Red OFF③ | 3/3R/4/12 & 4X 3/3R/4/12 & 4X | 24 to 240 V AC/DC | 49SDL0ARU |
| | | | 277 V AC | 49SDL0ARL |
| | Green ON | 3/3R/4/12 & 4X 3/3R/4/12 & 4X | 24 to 240 V AC/DC | 49SDL0BGU |
| | | | 277 V AC | 49SDL0BGL |
| | Green OFF③ | 3/3R/4/12 & 4X 3/3R/4/12 & 4X | 24 to 240 V AC/DC | 49SDL0AGU |
| | | | 277 V AC | 49SDL0AGL |

## Auxiliary Contacts

| | Device | Frame Size | Catalog Number |
|---|---|---|---|
| | 1 NO & 1 NC laterally mounted, screw terminals | S00 | 3RH2911-1DA11 |
| | | S0 and S2 | 3RH2921-1DA11 |
| | 2 NO laterally mounted, screw terminals | S00 | NA |
| | | S0 and S2 | 3RH2921-1DA20 |
| | 2 NC laterally mounted, screw terminals | S00 | 3RH2911-1DA02 |
| | | S0 and S2 | 3RH2921-1DA02 |

① 3SU 22 mm devices. Pilot lights include LED bulbs.
② Each contactor must have a normally open (NO) auxiliary contact available for seal-in circuit. Order separately as needed.
③ To use as an OFF indicator, the contactor must have a normally closed (NC) auxiliary contact available for the circuit. Order separately as needed.
④ To use as an overload relay (OLR) trip indicator, the OLR must have a normally open (NO) auxiliary contact available for the circuit.

## Control Power Transformers①

| | Device | Frame Size | Catalog Number | Transformer Table | | |
|---|---|---|---|---|---|---|
| | | | | Primary Volts | Secondary Volts | Code |
| | 45 VA, 1-secondary fuse | S00 | **KT*050** | 120 | 24 | 1 |
| | 75 VA, 2-primary and 1-secondary fuses | S0 & S2 | **KT*075** | 208 | 24 | G |
| | ► Replace * with code from Transformer Table.<br>► 45VA CPT does not require primary fuses per NEC. | | | 208 | 120 | H |
| | | | | 240/480 | 24 | 4 |
| | | | | 240/480 | 120 | 8 |
| | | | | 277 | 24 | 5 |
| | | | | 277 | 120 | 7 |
| | | | | 600 | 24 | 6 |
| | | | | 600 | 120 | 9 |

## Control Relays and Timers①②

| | Device | Catalog Number | Coil Voltage Table | |
|---|---|---|---|---|
| | | | Voltage | Code |
| Relay Timer | Control relay, 4 NO / 0 NC | **3RH2140-1●●●0** | 24 VAC 50/60 Hz | AB0 |
| | Control relay, 3 NO / 1 NC | **3RH2131-1●●●0** | 24 VDC | BB4 |
| | Control relay, 2 NO / 2 NC | **3RH2122-1●●●0** | 110/120 VAC 50/60 Hz | AK6 |
| | ON-delay timer, 0.05 sec. – 100 hr., 24 – 240V AC/DC | **3RP2525-1BW30** | 208 VAC 50/60 Hz | AM2 |
| | OFF-delay timer, 0.05 sec. – 100 hr., 24 – 240V AC/DC | **3RP2535-1AW30** | 220/240 VAC 50/60 Hz | AP6 |
| | ► Replace ●●● with code from Coil Voltage Table.<br>► Relays and timers include screw terminals. | | 277 VAC 60 Hz | — |
| | | | 480 VAC 60 Hz | AV6 |
| | | | 600 VAC 60 Hz | — |

## Miscellaneous

| | Device | Catalog Number |
|---|---|---|
| **3NW7513-0HG** **8WA1808** **75D28182001** **MTR5** | 1-pole fuse block for control circuit, 600V / 30A, DIN rail mounted, CC fuses (not included) | **3NW7513-0HG** |
| | 2-pole fuse block for control circuit, 600V / 30A, DIN rail mounted, CC fuses (not included) | **3NW7523-0HG** |
| | Ground Lug, 3 Conductor, 2-14 AWG AL/CU Wire | **75D28182001** |
| | Terminal block, 1-point unwired, DIN rail mounted, 6mm, 26A② | **8WA10111DF11** |
| | End retainer for DIN rail② | **8WA1808** |
| | DIN rail kit, 35mm x 5 in, for mounting optional accessories① | **MTR5** |
| | Sealable cover for rotary dial on overload relay (10 per package) | **3RV29 08-0P** |

## Replacement Parts

| | Device | Catalog Number |
|---|---|---|
| | Contactor parts (Obtain Cat. No. from device and refer to Industrial Control Catalog). | — |
| | Overload relay (Obtain Cat. No. from device and refer to Industrial Control Catalog). | — |
| | Overload Relay Reset Operator for all NEMA Type enclosures | **49MBRS** |

## Enclosure Kits

| | Controller Frame Size & Type<br>NR = Non-Reversing<br>R = Reversing | Type 1<br>Standard Size<br>Catalog Number | Type 1<br>Large Size⑤<br>Catalog Number | Type 3/3R/4/12<br>Standard Size⑥<br>Catalog Number | Type 4X 304 S.S.<br>Standard Size⑥<br>Catalog Number |
|---|---|---|---|---|---|
| | S00 NR, S0 NR | **49EC14EB110705R** | **49EC14GB140807R③** | **49EFN121006XRX** | **49EFW121006XRX** |
| | S00 R, S0 R | **49EC14GB140807R③** | **49EC14IB201208R④** | **49EFN121006XRX** | **49EFW121006XRX** |
| | S2 NR, S2 R | **49EC14IB201208R④⑥** | — | **49EFN141208XRX** | **49EFW141208XRX** |

① The accessory in a NEMA type 1 enclosure requires a large size enclosure. All other enclosure types may be standard size.
② Requires DIN rail kit or equivalent.
③ Enclosure 49EC14GB140807R requires mounting adaptor plate 49EFA070500XXA which is sold seperately.
④ Enclosure 49EC14IB201208R requires mounting adaptor plate 49EFA060800XXA which is sold seperately.
⑤ These large enclosures are required for certain accessories as indicated in the Field Modification pages.
⑥ These standard size enclosures include extra mounting space for accessories.

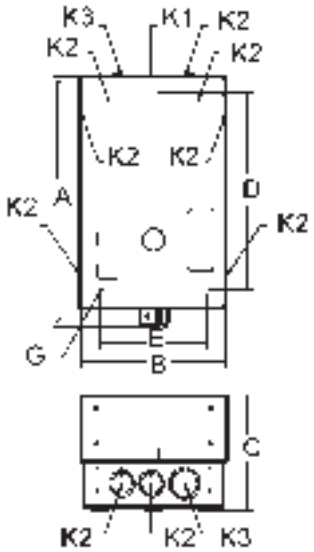



Figure 1

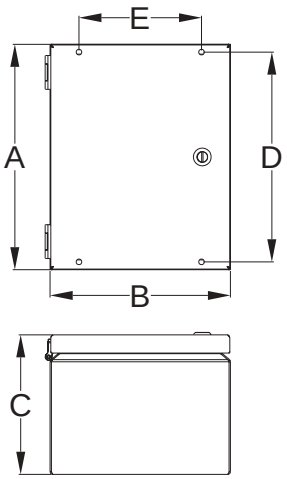



Figure 2

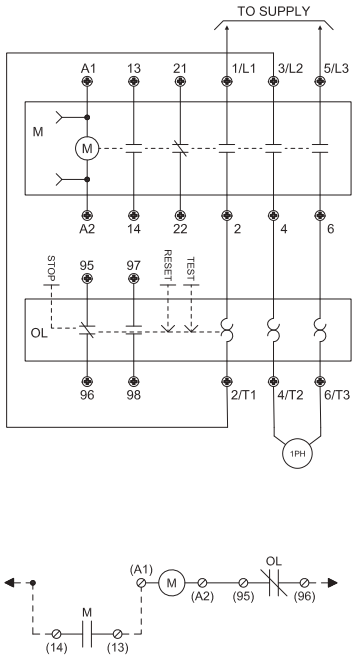


### 3RE4 Non-Combination Type Controllers

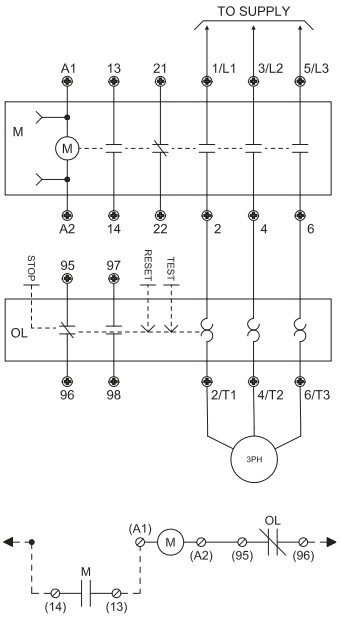
| Enclosure Type | Contactor Rating | Fig. | Outline Dimensions | | | Mounting | | Conduit Size | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | K1 | K2 | K3 |
| 1 (standard size) | S00 NR, S0 NR | 1 | 10.97 | 6.41 | 5.03 | 8.22 | 4.62 | 0.5 | 0.50-0.75 | 0.75–1 |
| | S00 R, S0 R | 1 | 13.53 | 7.97 | 6.38 | 10.25 | 6.00 | 0.50-0.75 | 0.75-1 | 1-1.25 |
| | S2 NR, S2 R | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.50-0.75 | 1-1.25 | 1.5-2 |
| 1 (large size) | S00 NR, S0 NR | 1 | 13.53 | 7.97 | 6.38 | 10.25 | 6.00 | 0.50-0.75 | 0.75-1 | 1-1.25 |
| | S00 R, S0 R | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.50-0.75 | 1-1.25 | 1.5-2 |
| 3/3R/4/12 & 4X 304 SS | S00 NR, S00 R, S0 NR, S0 R | 2 | 12.00 | 10.00 | 6.00 | 11.30 | 7.44 | — | — | — |
| | S2 NR, S2 R | 2 | 14.00 | 12.00 | 8.00 | 13.30 | 9.44 | — | — | — |

Sxx = Frame size; NR = Non-reversing; R = Reversing
Mounting screw G is 0.25".
Dimensions are in inches.

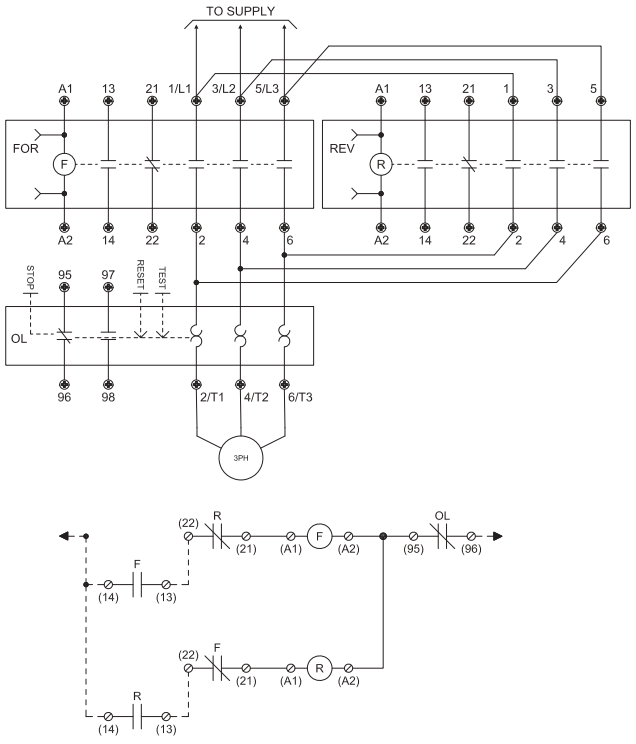
### Non-combination non-reversing starter,1-phase, 2-pole



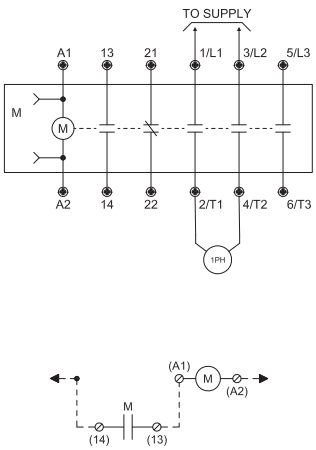

### Non-combination non-reversing starter,3-phase, 3-pole



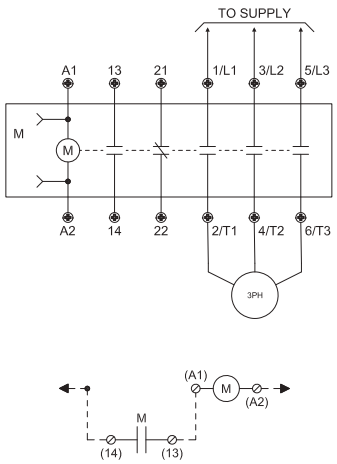

### Non-combination reversing starter, 3-phase, 3-pole



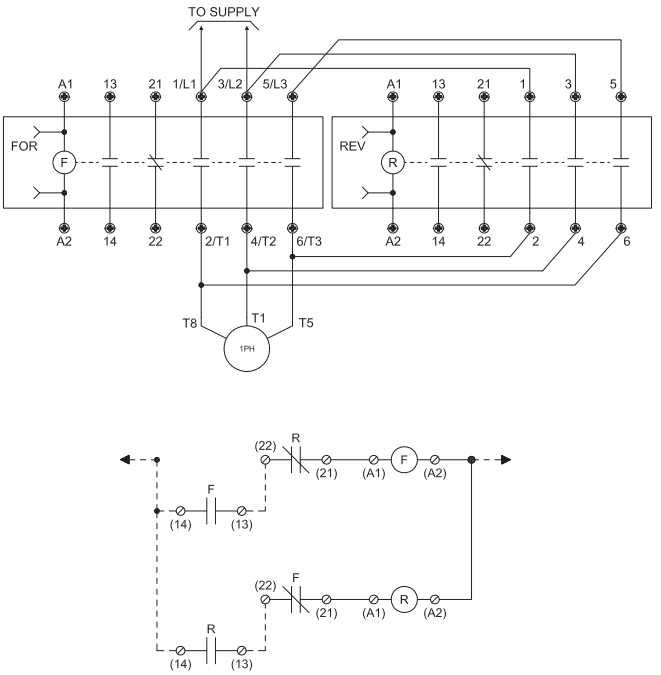

### Non-combination non-reversing contactor,1-phase, 2-pole



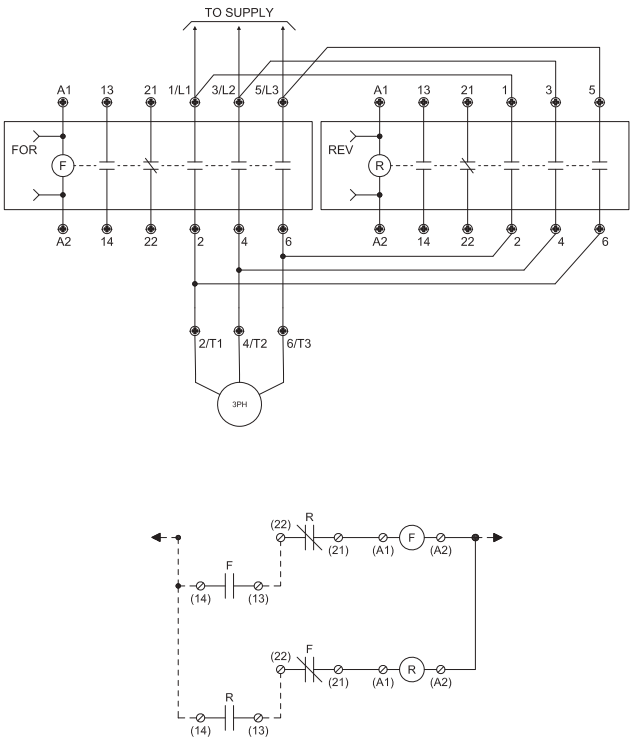
## Non-combination non-reversing contactor,3-phase, 3-pole



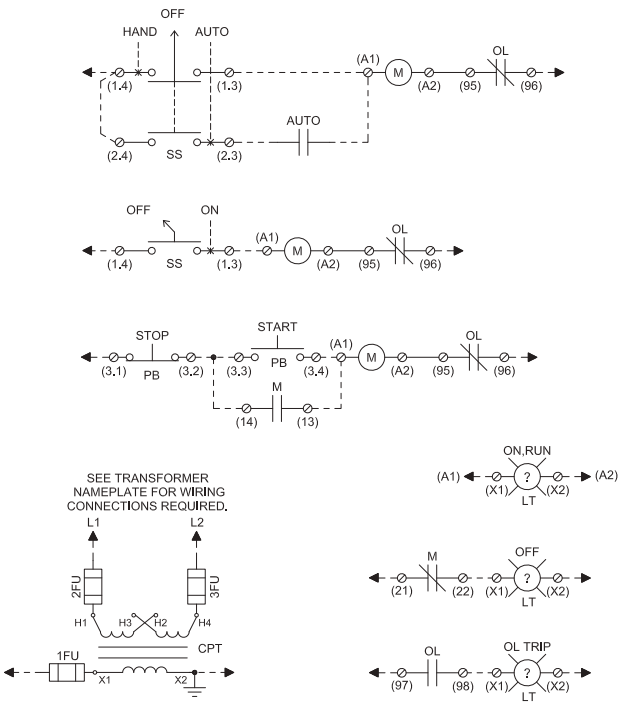

## Non-combination reversing contactor, 1-phase, 3-wlre, 2-pole



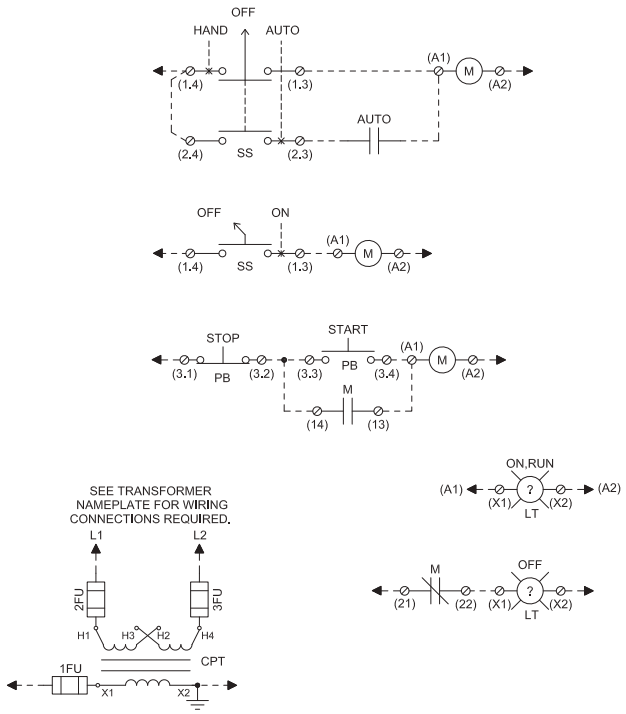

## Non-combination reversing contactor, 3-phase, 3-pole



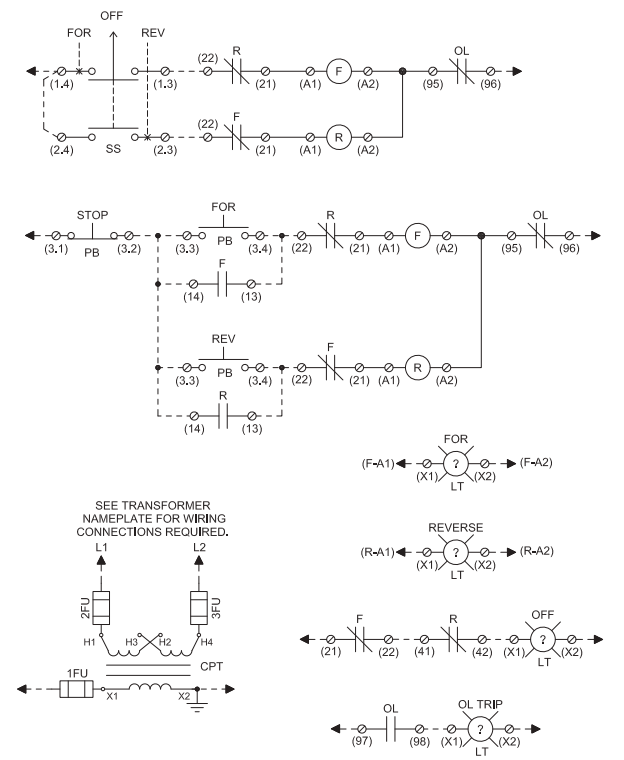
## Control options for non-reversing starters



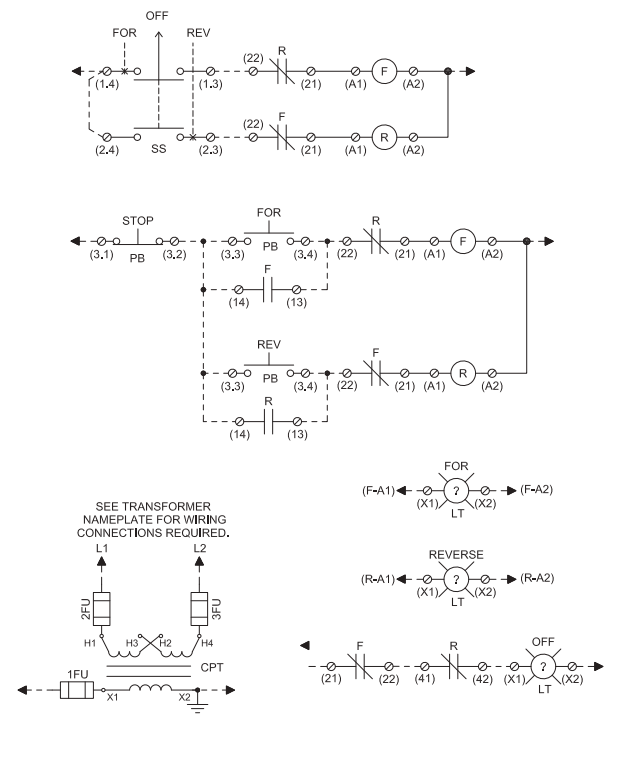

## Control options for non-reversing contactors




## Control options for reversing starters




## Control options for reversing contactors



## Notes

## contents

### Fast Bus busbar adapter system

**60 mm system** Page

**Selection and ordering data**


- Busbar holders (Supports) 5/8 – 5/9
- Copper busbar 5/8
- Busbar covers 5/9 – 5/11
- Incoming supply terminals (Connection modules) 5/12 – 5/17
- Fast Bus adapter shoes (Device adapters and device holders) 5/20 – 5/27
- Other accessories 5/29

Overview 5/2 – 5/3
Introduction 5/4 – 5/6
Quick selection guide 5/7
Dimension drawings 5/31 – 5/36

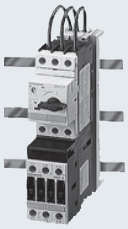

### FBCB Fast Bus circuit breakers

**FBCB Fast Bus main and feeder circuit breakers** Page

**Selection and ordering data**


- Fast Bus circuit breakers assemblies and kits 5/30


### Fast Bus combination starters



**3RA2 Fast Bus combinations starters**
**3RA6 Fast Bus compact starters**

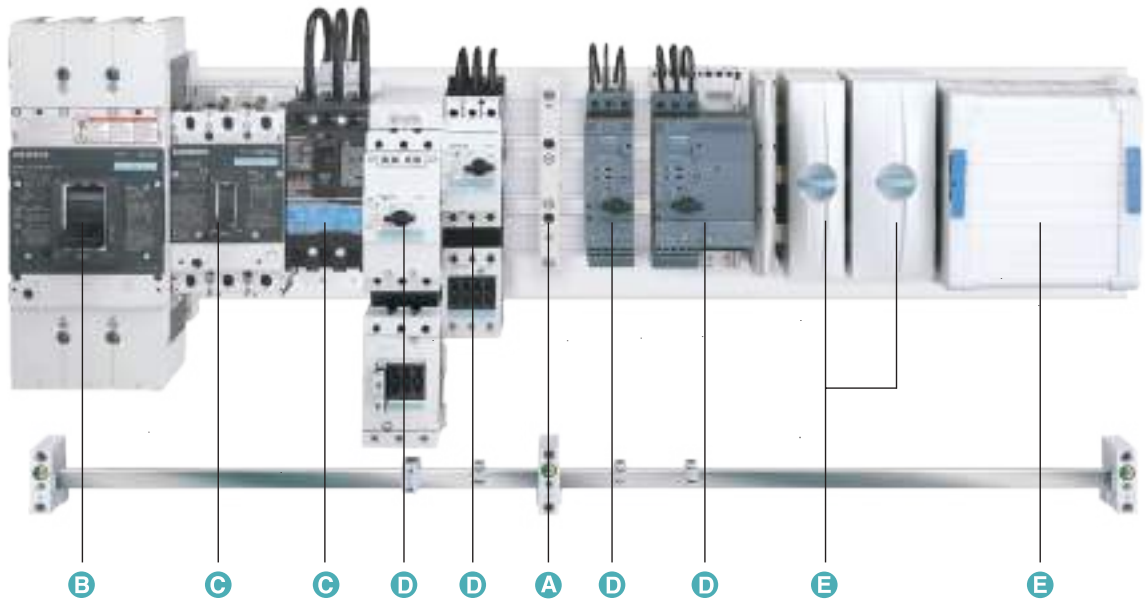
**Selection and ordering data**


- See Section 4

Technical Data 5/37 – 5/40
Dimension drawings 5/41 – 5/43

## Busbar adapter systems

**Busbar adapter systems
with busbar centerline spacing of 60 mm**




### 60 mm busbar system

for sharp-edged copper busbars
to DIN 46 433,
width 20 mm to 30 mm,
thickness 5 mm and 10 mm

**A Busbar holder (Supports)**
End and intermediate holders
for flat copper profiles

**B Fast Bus main circuit breakers**
from 15 to 500A

**C Fast Bus circuit breakers**
from 15 to 500A

**D 3RA2 Combination Starters**

**E Incoming supply terminals**

# System overview

## ❶ Basic assemblies

Busbar supports

N/PE busbar supports

## Accessories

Flat copper profiles

TT special profiles

Connection pieces

Cover profiles

Blanking covers

## ❷ Infeeds and connection methods

Connection modules

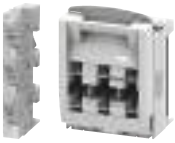
Terminals

## Accessories

Covers

## ❸ Built-in components

Bus-mounting fuse bases



Bus-mounting fuse holders

Bus-mounting switch disconnectors

## Accessories

Covers

Auxiliary switches

Lateral modules

## ❹ Device adapters

Device adapters

Device holders

## Accessories

N/PE modules

Lateral modules

Vibration & shock kits

# Busbar Adapter System

## Introduction

### General

The Fast Bus Multi-Motor Control system is a 3-phase insulated busbar system and is ideal for space saving in panel designs. The system saves considerable line side wiring and space for multi-motor panels. It is also ideal for panels where several feeder breakers are used and will save significant wiring space and wiring labor. The system is also ideal for future expansion planning. when building control panels. SIRIUS 3RV/3RT starter combinations and Siemens circuit breakers are all adaptable to Fast Bus for convenient mounting and faster replacement times.

Fast Bus is ideal for industrial applications where system availability is important.

### Features

- Simple economical installation
- Compact design
- Requires fewer mounting holes
- Domestic and International approvals
- Touch safe
- Modular design
- Provision for system expansion
- Clip-on shoes provide mechanical and electrical connections to panel mounted busbars
- Main and Feeder breakers mount to busbars

### Benefits

- Saves installation time
- Reduces space requirements
- Minimizes layout time
- Allows flexibility for domestic and export business
- Protection for maintenance personnel
- Improves equipment mounting density
- Reduces time and costs associated with system expansion
- Reduces mounting and wiring time and provides trouble free connections
- Allows for quick retrofitting of breakers

### How to Select Fast Bus

1) Determine the required load.

2) Select method to power Fastbus.

—Main lug up to 800A using a single set of lugs or up to 1400A using a double set of lugs.

—Circuit breakers, 15A to 500A

If load exceeds 500A, the CB must be separately panel mounted and fed to a main lug infeed module.

3) Select 3RV MSP & 3RT contactor components and appropriate adapter shoe or select preassembled 3RA starters. See section 4.

4) Select appropriate length busbar, busbar holders, insulation covers and any other required components.

### General Ratings of Fastbus System

| | IEC | Domestic |
|---|---|---|
| Rated operating voltage | 690V | 600V |
| Rated insulation voltage, IEC VDE | AC 1000V | N/A |
| Temperature stability | Up to 105 degrees C | N/A |
| Busbar support and adapter shoe material | Glass-reinforced polyamide | Same |
| Color | RAL 7035, light gray | Same |

### Ampacity

| Busbar thickness and width | | |
|---|---|---|
| 5 x 20 mm | 3/16" x 3/4" | 362A |
| 5 x 25 mm | 3/16" x 1" | 432A |
| 5 x 30 mm | 3/16" x 1 1/8" | 500A |
| 10 x 20 mm | 3/8" x 3/4" | 564A |
| 10 x 25 mm | 3/8" x 1" | 660A |
| 10 x 30 mm | 3/8" x 1 1/8" | 756A |
| 720mm$^2$ | --- | 1400A |

For technical information on E and F frame circuit breakers used as main and feeder breakers, see section 17

*Thermal busbar currents, E-Cu, bare, at 35 °C ambient temperature in accordance with DIN 43 6711*

| Busbar dimensions | System | Thermal current at Busbar temperature 65 °C | 85 °C | 105 °C |
|---|---|---|---|---|
| mm | mm | A | A | A |
| 20 x 5 | 60 | 274 | 362 | 430 |
| 25 x 5 | 60 | 327 | 432 | 513 |
| 30 x 5 | 60 | 379 | 500 | 595 |
| 20 x 10 | 60 | 427 | 564 | 670 |
| 30 x 10 | 60 | 573 | 756 | 900 |

# Busbar Adapter System

## Introduction

## Fast Bus set-up

The Fast Bus system is designed to be easy to use and to save set up time.

### *8US Busbar holders*

The 8US busbar holders are designed to accommodate ampacities up to 1400A. In some cases, the busbar holder will accept busbars in either 5mm or 10mm widths. Refer to page 5/6 for selection details.

### *High quality material*

Busbar supports and fuse bases are manufactured from glass-fiber reinforced, thermoplastic polyester with the color RAL 7035, light gray. The material ensures excellent mechanical, chemical and electrical properties. Furthermore, the material has an extremely low flammability and meets the requirements of UL 94 V0.

### *8WC Busbar and busbar systems*

The most common size busbar for applications in the US is the 8WC5053 (20 mm x 5 mm), however there are other styles available depending on your application.

Busbar systems with 60 mm busbar center-to-center clearance have now become firmly established in the US market.

The permissible busbar temperature is a decisive factor when dimensioning the busbars. The busbar temperature is dependent on the current, the current distribution, the busbar cross-section, the busbar surface, the position of the busbar, the convection and the ambient temperature. The values stated in the table on page 5/3 can only be considered as reference values because the conditions vary with each location. The values are based on constant current over the whole busbar length.

The trend toward busbars proves most advantageous when the incoming supply is centrally located and the load is distributed symmetrically on both sides.

For the assemblies of a busbar system in the feeder circuit the UL directives specify components with large clearance in air and creepage distances (see the table below). Components of the 8US1 busbar system which meet this requirement can be found in this chapter.

*Note:*

*The design of an 8US1 busbar system for use in the feeder circuit always presumes the use of the UL base plate (8US19 22-2UA01) so that the clearance in air and creepage distance requirements are met.*

### *Feeder/branch circuit according to UL 508A*

The feeder circuit is that part of a circuit which comes in front of the last short circuit protection device (SCPD). The branch circuit is that part of the circuit which follows after the last short circuit protection device. When the 8US1 busbar system is used in a switchgear which must comply with UL directives, it is important to establish whether it is to be used in the feeder circuit or the branch circuit. Components used in the feeder circuit require larger clearance in air and creepage distances than in the branch circuit.

### *Simple Fast Bus system*

The two illustrations above show the very basic items needed when setting up a Fastbus system.

① 8US1 Busbar holder *(5/6)*

② 8US1 Ground busbar support *(shown attached however can be mounted separately 5/6)*

③ Ground busbar available in 5 x 20 mm to 10 x 30 mm

④ 8WC Busbar *(8WC5053 shown)* FBB36 Busbar (5/6)

## Short-circuit strength

The short-circuit strength of the busbar system is dependent on the spacing of the busbar holders and on the busbar cross-section.

The short-circuit strength of the whole system is dependent on the short-circuit strength of the busbar system and the components that are mounted to the system.

## Applications

The 8US Fast Bus distribution system is ideal for control panel builders with multiple motor applications. These applications are most common in the material handling, automotive, food processing, pharmaceutical and paper processing industries.

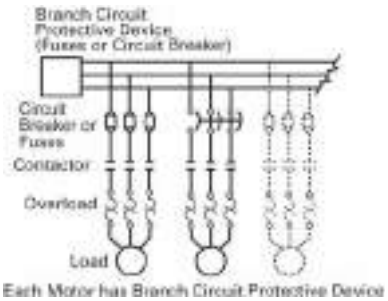
| | Clearance in air | Creepage distance |
|---|---|---|
| Between live parts | 25.4 mm (1 inch) | 50.8 mm (2 inch) |
| Between live parts and grounded, non-insulated metal parts | 25.4 mm (1 inch) | 25.4 mm (1 inch) |

# Fast Bus combination starters and group installation assemblies

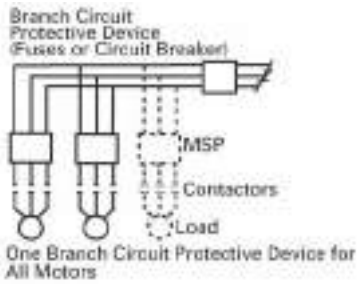
### *Ratings for Group Installations per NEC 430-53*

Group Installation is an approach to building multiple motor control systems in accordance with Section 430-53 of the National Electrical Code. In Group installation, multiple motor starters can be grouped under one short circuit protective device. The 3RV MSPs have been UL listed for use in Group Installations both with and without 3RT contactors when mounted on the Fast Bus system. A 3RT contactor is added when remote operation of the motor is required.

**Standard Installation, NEC 430-52**




**Group Installation, NEC 430-53**




| MSP Type | FLA Amp Range | FLA Amp Range | Maximum rating of Group Branch Circuit Protective Device | | Short Circuit Current Ratings [1) 2)] | | |
|---|---|---|---|---|---|---|---|
| | | | Fuse | Circuit Breaker | 240V | 480V | 600V |
| **3RV201** | S00 | 0.11-12.5 | The main fuse should be selected based on the FUSE selection procedure listed below. | The main CB should be selected based on the CIRCUIT BREAKER selection procedure listed below. | 65kA | — | 30kA |
| **3RV201** | S00 | 0.11-16 | | | 65kA | 65kA | — |
| **3RV202** | S0 | 3.5-12.5 | | | 65kA | — | 30kA |
| **3RV202** | S0 | 3.5-25 | | | 65kA | 65kA | — |
| **3RV202** | S0 | 28-32 | | | 65kA | 50kA | — |
| **3RV202** | S0 | 36-40 | | | 65kA | 12kA | — |
| **3RV203** | S2 | 11-50 | | | 65kA | 65kA | 25kA |
| **3RV204** | S3 | 28-100 | | | 65kA | 65kA | 30kA |

### *The selection of components for Group Installation is a simple process of the following three steps:*

1. Selection of the Branch Circuit Protective Device, fuse or circuit breaker.
2. Selection of the 3RA Motor Starter based on the motor Full Load Amps.

### *Circuit Breaker Selection*

Select a circuit breaker (CB) between:
Minimum CB size (per NEC430-110): Sum of all motor FLC (per NEC table 430-150) x115%.
Maximum CB size (per NEC430-53c): 250% x FLC of the largest motor + FLC of all other motors.

### *Fuse Selection*

Calculate the maximum fuse size per NEC430-53c.
Max Fuse Size =175% x FLC of largest motor + FLC of all other motors (FLC's from NEC table 430-150).

| Assembled Starter Type | Starter Frame Size | FLA Amp Range | Short Circuit Current Ratings (Type E) [1)] | | |
|---|---|---|---|---|---|
| | | | 240V | 480Y/277V | 600Y/347V |
| **3RA201** | S00 | 0.11-12.5 | — | — | 30kA |
| **3RA201** | S00 | 0.11-16 | 65kA | 65kA | — |
| **3RA202** | S0 | 0.45-12.5 | — | — | 30kA |
| **3RA202** | S0 | 0.45-25 | 65kA | 65kA | — |
| **3RA202** | S0 | 28-32 | 50kA | 50kA | — |
| **3RA203** | S2 | 11-50 | 65kA | 65kA | 25kA |
| **3RA204** | S3 | 28-75 | — | — | 30kA |
| **3RA204** | S3 | 28-100 | 65kA | 65kA | — |

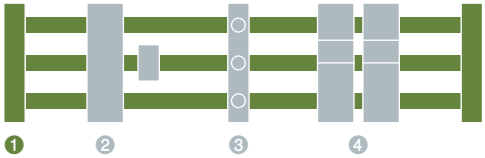
[1)] Branch Circuit Protective Device for 480V-Ratings: The appropriate BCPD need to be determined in accordance with the National Electrical Code, Article 430-53 and the application. The following devices are permitted:
Fuses: Classes RK1, RK5, J, G, T, CC or Circuit breakers: Listed Siemens type, with a marked short-circuit rating equal or larger than the available short-circuit current rating. These devices were tested for group installation use at the above levels without any upstream branch circuit device.
[2)] 3RA2 used as Manual Motor Controller; Branch Circuit Protective Device for 600V-Ratings: Max. Class J 50A
[3)] Starter sizes S00,S0 and S3 require additional type E line side terminal adaptors on the MSP for type F applications. See section 1 accessories

# Quick selection guide

| | | 60 mm busbar system flat copper profile | 60 mm busbar system TT profile |
|---|---|---|---|
| **Busbars** | | | |
| Busbar center-to-center spacing | | 60 mm | 60 mm |
| Flat copper profiles | 5 mm | 12 × 5 mm<br>15 × 5 mm<br>20 × 5 mm<br>25 × 5 mm<br>30 × 5 mm | – |
| | 10 mm | 20 × 10 mm<br>30 × 10 mm | – |
| TT special profile | | – | 2400 × 30 × 40 mm |
| **Rated values** | | | |
| Rated operational current $I_e$ | IEC | 200 ... 900 A | 1020 ... 1600 A |
| | UL 508 | 630 A | 1400 A |
| Rated operational voltage $U_e$ | IEC | 690 V AC | 690 V AC |
| | UL 508 | 600 V AC | 600 V AC |
| **Standards** | | | |
| IEC | | ■ | ■ |
| UL 508 | | ■ | ■ |
| **Connection modules and terminals for** | | | |
| Circular conductors | IEC | Cu 1.5 ... 300 $mm^2$<br>Al 95 ... 300 $mm^2$ | Cu 16 ... 300 $mm^2$ |
| | UL 508 | Cu AWG 16 ... MCM 600<br>Al AWG 3 | Cu AWG 4 ... MCM 600 |
| Laminated copper | | Cu lam.<br>3 × 20 × 1 ...10 × 32 × 1 mm | Cu lam.<br>2 × 40 × 10 mm |
| Cable lugs | | Max. 240 $mm^2$ | – |
| **Built-in components for** | | | |
| NEOZED bus-mounting fuse bases | | ■ | ■ |
| DIAZED bus-mounting fuse bases | | ■ | ■ |
| Bus-mounting fuse holders for cylindrical fuses 10 × 38 mm | | ■ | ■ |
| Class CC bus-mounting fuse holders | | ■ | ■ |
| Class J bus-mounting fuse holders | | ■ | ■ |
| NEOZED bus-mounting switch disconnectors | | ■ | ■ |
| **Device adapters for** | | | |
| Universal application 3P/5P | | ■/■ | ■/■ |
| Molded case circuit breakers | | ■ | ■ |
| Switch disconnectors | | ■ | ■ |
| Fuse switch disconnectors | | ■ | ■ |
| SIRIUS 3RM1 motor starters | | – | – |
| SIRIUS load feeders | | ■ | ■ |
| 3RM193 fuse module | | – | – |
| 5SY miniature circuit breakers | | – | – |

# ❶ Basic assemblies

## Up to 630 A




| Flat copper profiles | | | | | | | Standard |
|---|---|---|---|---|---|---|---|
| 12 × 5 mm | 15 × 5 mm | 20 × 5 mm | 25 × 5 mm | 30 × 5 mm | 20 × 10 mm | 30 × 10 mm | |
| **Interior mounting** | | | | | | | |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | IEC 61439-1 |
| – | – | ■ | – | – | ■ | ■ | IEC 61439-1, UL 508 [1] |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | IEC 61439-1 |
| ■ | – | ■ | – | ■ | ■ | ■ | IEC 61439-1 |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | IEC 61439-1, UL 508 |
| **Exterior mounting** | | | | | | | |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | IEC 61439-1 |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | IEC 61439-1 |

[1] Only with base plate 8US1922-2UA01

## Suitable accessories

**Flat copper profile**

| | Surface | Length | Size | Rated operational current | Cross-section | Standard | Article No. |
|---|---|---|---|---|---|---|---|
| | Bare | 2400 mm | 12 × 5 mm | 200 A | 60 mm$^2$ | EN 12167 | 8WC5123 |
| | | | 15 × 5 mm | 250 A | 75 mm$^2$ | EN 12167 | 8WC5121 |
| | | | 20 × 5 mm | 320 A | 100 mm$^2$ | EN 12167 | 8WC5126 |
| | | | 25 × 5 mm | 400 A | 125 mm$^2$ | EN 12167 | 8WC5131 |
| | | | 30 × 5 mm | 447 A | 150 mm$^2$ | EN 12167 | 8WC5133 |
| | | | 20 × 10 mm | 520 A | 200 mm$^2$ | EN 12167 | 8WC5128 |
| | | | 30 × 10 mm | 630 A | 300 mm$^2$ | EN 12167 | 8WC5134 |
| | Tin-plated | 2000 mm | 20 × 5 mm | 320 A | 100 mm$^2$ | EN 12167 | 8WC5053 |
| | | | 25 × 5 mm | 400 A | 125 mm$^2$ | EN 12167 | 8WC5054 |
| | | | 30 × 5 mm | 447 A | 150 mm$^2$ | EN 12167 | 8WC5055 |
| | | | 20 × 10 mm | 520 A | 200 mm$^2$ | EN 12167 | 8WC5063 |
| | | | 30 × 10 mm | 630 A | 300 mm$^2$ | EN 12167 | 8WC5065 |

**End covers**



- For covering free busbar ends

| For connection | For busbar support | Standard | Article No. |
|---|---|---|---|
| L1–L3 | 8US1923-2AA01, 8US1923-3AA01, 8US1923-3UA01 | IEC, UL 508 | 8US1922-1AC00 |

**Cover profiles for busbars**

| Length | Width | Depth | Flat copper profile size | Standard | Article No. |
|---|---|---|---|---|---|
| 1000 mm | 15 mm | 10 mm | 12 × 5 mm | UL 508 | 8US1922-2CA00 |
| | 40 mm | 9 mm | 15, 20, 25, 30 × 5 mm | UL 508 | 8US1922-2AA00 |
| | 40 mm | 14 mm | 12, 15, 20, 25, 30 × 10 mm | UL 508 | 8US1922-2BA00 |

| No. of poles | End and intermediate supports |
|---|---|
| | 3P |
| | |
| **Connection L1–L3** | |
| | 8US1923-3AA01 |
| | 8US1923-3UA01 |
| | – |
| | – |
| | – |
| | 8US1923-2AA01 |
| | – |



**Blanking covers**

| Length | Height | Depth | Standard | Article No. |
|---|---|---|---|---|
| 700 mm | 195 mm | 63 mm | UL 508 | 8US1922-2EB00 |

**Supports for blanking covers**

| Depth | Standard | Article No. |
|---|---|---|
| 32 mm | UL 508 | 8US1922-2EA00 |
| 107 mm | UL 508 | 8US1922-2EA01 |

**Base plates**



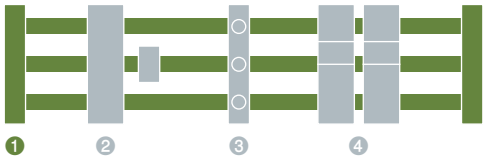
| Version | Length | Width | Standard | Article No. |
|---|---|---|---|---|
| For 3-pole system | 1100 mm | 240 mm | UL 508 | 8US1922-2UA01 |

**Connecting piece for flat copper profiles**

| Length | For flat copper profiles | Article No. |
|---|---|---|
| 40 mm | 20 × 5 mm, 25 × 5 mm, 30 × 5 mm, 20 × 10 mm, 25 × 10 mm, 30 × 10 mm | 8US1921-2BE00 |
| 55 mm | 12 × 5 mm, 15 × 5 mm, 20 × 5 mm 12 × 10 mm, 15 × 10 mm, 20 × 10 mm | 8US1921-2BF00 |

# ❶ Basic assemblies

## Up to 1600 A




| Copper profile | Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Short-circuit current rating SCCR | | Standard |
|---|---|---|---|---|---|---|---|
| | IEC | UL 508 | IEC | UL 508 | IEC | UL 508 | |
| **Interior mounting** | | | | | | | |
| TT special profile | 1600 A | **1400 A** | 690 V AC | **600 V AC** | 90 kA | **100 kA** | IEC, UL 508 |

1 pack = 2 busbar supports + finger-safe end covers



## Suitable accessories

**TT special copper profile**

| Surface | Length | Rated operational current | Rated operational voltage | Cross-section |
|---|---|---|---|---|
| Tin-plated | 2400 mm | 1600 A | 690 V AC | 720 $mm^2$ |

**Cover profile for TT special copper profile**

| Length |
|---|
| 1000 mm |

**Blanking covers**

| Length | Height | Depth | Standard |
|---|---|---|---|
| 700 mm | 195 mm | 63 mm | UL 508 |

**Supports for blanking covers**

| Depth | Standard |
|---|---|
| 32 mm | UL 508 |
| 107 mm | UL 508 |

**Connecting piece for TT special profile**

**Partitions, closed**

- For additional lateral touch protection at the top/bottom

| Length | Depth |
|---|---|
| 2400 mm | 76 mm |

| Busbar supports | |
|---|---|
| No. of poles | 3P |
| | |
| Connection | |
| L1–L3 | |
| | 8US1943-3AA00 |

| | |
|---|---|
| Article No. | |
| | 8US1948-2AA00 |

| | |
|---|---|
| Article No. | |
| | 8US1922-2DA00 |

| | |
|---|---|
| Article No. | |
| | 8US1922-2EB00 |

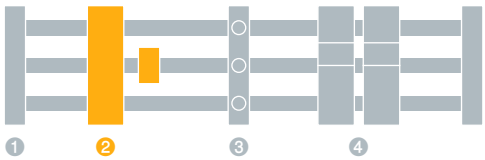
| | |
|---|---|
| Article No. | |
| | 8US1922-2EA00 |
| | 8US1922-2EA01 |

| | |
|---|---|
| Article No. | |
| | 8US1941-2BF01 |

| | |
|---|---|
| Article No. | |
| | 8US1922-1JA00 |

# ❷ Infeeds and connection methods

## Up to 1600 A




| Conductor cross-section, circular conductor | | Conductor cross-section, laminated copper | Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Standard | Length |
|---|---|---|---|---|---|---|---|---|
| IEC | UL 508 | | IEC | UL 508 | IEC | UL 508 | | |
| **With cover** | | | | | | | | |
| Cu 1.5 ... 16 mm$^2$ | **Cu AWG 16 ... 4** | Cu lam. 8 × 6 × 0.5 mm | 63 A | **48 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 200 mm |
| Cu 6 ... 50 mm$^2$ | **Cu AWG 10 ... 2** | – | 175 A | **175 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 200 mm |
| Cu 25 ... 120 mm$^2$ | **Cu AWG 6 ... MCM 250** | – | 250 A | **250 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 200 mm |
| **Without cover** | | | | | | | | |
| Cu 95 ... 300 mm$^2$ | **AWG 3/0 ... MCM 600** | – | 500 A | **420 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 184 mm |
| – | – | Cu lam. 3 × 20 × 1 ... 10 × 32 × 1 mm | 550 A | **420 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 184 mm |
| **For 4th pole (PE/N)** [1] | | | | | | | | |
| Cu 1.5 ... 16 mm$^2$ | – | – | – | – | 690 V AC | **600 V AC** | IEC, UL 508 | 242 mm |

[1] For mounting on device adapter or device holder

## Suitable accessories

**Cover for connection module**

| Description |
|---|
| Cover for 8US1941-2AA03/04 |

**Connection modules complete assembly**

| Description |
|---|
| Fast Bus Infeed Module 560A With Cover |

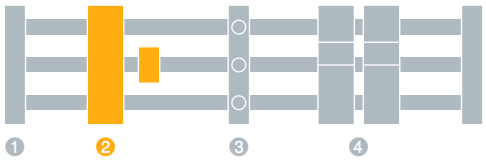
| | Connection modules For 5 mm and 10 mm flat copper profiles | For 5 mm and 10 mm flat copper profiles and TT special profile | | For laminated copper |
|---|---|---|---|---|
| | | | | |
| **Width** | **Connection modules 3P** | **Connection modules 3P** | **Connection modules PE/N** | **Connection modules 3P** |
| 20 mm | 5SH3538 | – | – | – |
| 54 mm | – | 8US1921-1BA00 | – | – |
| 81 mm | – | 8US1921-1AA00 | – | – |
| 153 mm | – | – | – | 8US1941-2AA03 |
| 153 mm | – | – | – | 8US1941-2AA04 |
| 18 mm | – | – | 8US1200-0AA00 | – |

| | | | | |
|---|---|---|---|---|
| | **Article No.** | **Article No.** | **Article No.** | **Article No.** |
| | – | – | – | 8US1922-1GC00 |

| | | | | |
|---|---|---|---|---|
| | **Article No.** | **Article No.** | **Article No.** | **Article No.** |
| | – | – | – | FBT600F |

# ❷ Infeeds and connection methods

## Up to 1600 A




| Conductor cross-section, circular conductor | | Conductor cross-section, laminated copper | Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Standard | Minimum order quantity |
|---|---|---|---|---|---|---|---|---|
| IEC | UL 508 | | IEC | UL 508 | IEC | UL 508 | | |
| Cu 1.5 ... 16 mm² | **AWG 16 .. 6** | Cu lam. 8 × 6 × 0.5 mm | 65 A | **55 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 15 units<br>100 units |
| Cu 4 ... 35 mm² | **AWG 10 ... 2** | Cu lam. 3 × 9 × 0.8 mm,<br>Cu lam. 6 × 9 × 0.8 mm | 115 A | **115 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 15 units<br>50 units |
| Cu 16 ... 70 mm² | **AWG 4 ... 2/0** | Cu lam. 2 × 9 × 0.8 mm,<br>Cu lam. 6 × 9 × 0.8 mm,<br>Cu lam. 6 × 13 × 0.5 mm | 175 A | **175 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 15 units<br>50 units |
| Cu 16 ... 120 mm² | **AWG 4 ... MCM 250** | Cu lam. 4 × 15.5 × 0.8 mm,<br>Cu lam. 6 × 15.5 × 0.8 mm,<br>Cu lam. 10 × 15.5 × 0.5 mm | 250 A | **255 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 15 units<br>50 units |

## Suitable accessories

**Terminal covers for circular conductors**

- Fixing to busbar

| Length | Width |
|---|---|
| 200 mm | 84 mm |

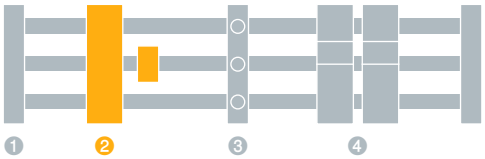
# Busbar Systems

## 60 mm 8US busbar system

| Terminals | | | | | | |
|---|---|---|---|---|---|---|
| For 12 × 5 mm, 15 × 5 mm, 20 × 5 mm, 25 × 5 mm and 30 × 5 mm flat copper profiles | | | For 12 × 10 mm, 15 × 10 mm, 20 × 10 mm, 25 × 10 mm and 30 × 10 mm flat copper profiles and TT special profile | | | |
| | | | | | | |
| 8US1921-2AA01 | – | – | – | – | – | – |
| 8US1921-2AA00 | – | – | 8US1921-2BA00 | – | – | – |
| – | 8US1921-2AB01 | – | – | – | – | – |
| – | 8US1921-2AB00 | – | – | 8US1921-2BB00 | – | – |
| – | – | 8US1921-2AD01 | – | – | – | – |
| – | – | 8US1921-2AD00 | – | – | 8US1921-2BD00 | – |
| – | – | – | – | – | – | – |
| – | – | – | – | – | – | 8US1921-2BC00 |
| **Article No.** | **Article No.** | **Article No.** | **Article No.** | **Article No.** | **Article No.** | **Article No.** |
| 8US1922-1GA00 | 8US1922-1GA00 | 8US1922-1GA00 | 8US1922-1GA00 | 8US1922-1GA00 | 8US1922-1GA00 | 8US1922-1GA00 |

# ❷ Infeeds and connection methods

## Up to 1600 A




| Conductor cross-section, circular conductor | | Conductor cross-section, laminated copper | Conductor cross-section, cable lugs | Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Standard |
|---|---|---|---|---|---|---|---|---|
| IEC | UL 508 | | | IEC | UL 508 | IEC | UL 508 | |
| Cu 95 ... 185 mm$^2$<br>Al 95 ... 185 mm$^2$ | **AWG 3/0 ... MCM 350** | – | – | 300 A | **310 A** | 690 V AC | **600 V AC** | IEC,<br>UL 508 |
| Cu 95 ... 300 mm$^2$<br>Al 120 ... 140 mm$^2$ | **AWG 3/0 ... MCM 600** | – | – | 500 A | **420 A** | 690 V AC | **600 V AC** | IEC,<br>UL 508 |
| – | – | Cu lam. 3 × 20 ×<br>1 ... 10 × 24 × 1 mm | – | 500 A | **420 A** | 690 V AC | **600 V AC** | IEC,<br>UL 508 |

## Suitable accessories

**Terminal covers for circular conductors**

- Fixing to busbar

| Length | Width |
|---|---|
| 200 mm | 270 mm |

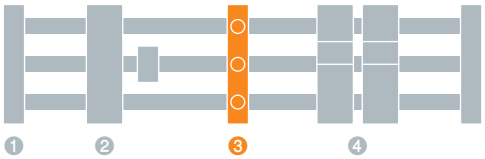
# Busbar Systems

## 60 mm 8US busbar system

| | Terminals | | | | |
|---|---|---|---|---|---|
| | For 20 × 5 mm, 25 × 5 mm and 30 × 5 mm flat copper profiles | | For 20 × 10 mm, 25 × 10 mm and 30 × 10 mm flat copper profiles | | For 40 × 25 mm and 30 × 10 mm flat copper profiles and TT special profile |
| | | | | | |
| **Fixing** | | | | | |
| – | 8US1941-2AA01 | – | – | – | – |
| – | 8US1941-2AA02 | – | – | – | – |
| M16 threaded pin, size 8 Allen key | – | 8US1941-2BB00 | – | 8US1941-2BB00 | – |
| | | | | | |
| | **Article No.** | **Article No.** | **Article No.** | **Article No.** | **Article No.** |
| | 8US1922-1GA02 | – | – | – | – |

# ❸ Built-in components

## Up to 630 A




| | Bus-mounting fuse holders | | | |
|---|---|---|---|---|
| | Class CC | Class J | | |
| Mounting width | 1.5 MW | 106 mm | 184 mm | 256 mm |
| | | | | |

| For flat copper profiles | Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | | Standard | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | IEC | UL 508 | IEC AC | IEC DC | UL | | | 3P | 3P | 3P |
| **Box terminals** | | | | | | | | | | |
| 5 mm and 10 mm | 25 A | – | 500 V AC | – | – | IEC | – | – | – | – |
| | 63 A | – | 400 V AC | 250 V DC | – | IEC | – | – | – | – |
| | | | 690 V AC | – | – | IEC | – | – | – | – |
| | – | 30 A | 690 V AC | – | 600 V AC | IEC, cULus, CSA | – | – | – | – |
| | | | – | – | 600 V AC | UL, CSA | 3NW7431-0HG | – | – | – |
| | | 100 A | – | – | 600 V AC | cULus | – | 3NW7431-6HG | – | – |
| | | 200 A | – | – | 600 V AC | cULus | – | – | 3NW7431-7HG | – |
| | | 400 A | – | – | 600 V AC | CSA, cULus | – | – | – | 3NW7431-8HG |

**Note:**
NEOZED adapter sleeves or DIAZED screw adapters are required for NEOZED and DIAZED bus-mounting fuse bases.

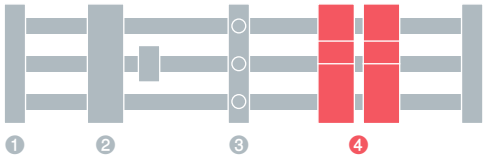
## Suitable accessories

| NEOZED covers for standard version | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Size | Version | Modular width | Article No. | Article No. | Article No. | Article No. |
| | D02 | Standard | 1.5 MW | 5SH5241 | – | – | – |

(Page intentionally left blank)

# ❹ Device adapters and device holders

## For load feeders up to 1600 A




| Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | | Standard | For copper profile | Adapters | | Connecting cable | | Device |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IEC | UL 508 | IEC | UL 508 | cULus, CSA | | | Length | Width | Cross-section | Max. temp. | Size |
| **Screw terminals** | | | | | | | | | | | |
| 25 A | **25 A** | 690 V AC | **600 V AC** | – | IEC, UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 45 mm | AWG 12 | 150 °C | S00 |
| | | | | | | | | | | | S0 |
| | | | | | | | 260 mm | 45 mm | AWG 12 | 150 °C | S00 |
| 32 A | **32 A** | 690 V AC | **600 V AC** | – | IEC, UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 45 mm | AWG 10 | 150 °C | S0 |
| | | | | | | | 260 mm | 45 mm | AWG 10 | 150 °C | S0 |
| | | – | **–** | 690 V AC | cULus, CSA | 5 mm, 10 mm, TT profile | 200 mm | 45 mm | AWG 10 | 105 °C | S00/S0 |
| 65 A | **65 A** | 690 V AC | **600 V AC** | – | IEC, UL 508 | 5 mm, 10 mm, TT profile | 260 mm | 54 mm | AWG 4 | 150 °C | S2 |
| | | | | | | | | 119 mm | AWG 4 | 150 °C | S2 |
| 80 A | **80 A** | 690 V AC | **600 V AC** | – | IEC, UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 54 mm | AWG 4 | 150 °C | S2 |
| | | | | | | | 215 mm | 72 mm | AWG 4 | 150 °C | S3 |
| **Spring-loaded terminals** | | | | | | | | | | | |
| 25 A | **25 A** | 690 V AC | **600 V AC** | – | IEC, UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 45 mm | AWG 12 | 150 °C | S00 |
| | | | | | | | 260 mm | 45 mm | AWG 12 | 150 °C | S00 |
| 32 A | **32 A** | 690 V AC | **600 V AC** | – | IEC, UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 45 mm | AWG 10 | 150 °C | S0 |
| | | | | | | | 260 mm | 45 mm | AWG 10 | 150 °C | S0 |

## Suitable accessories

**Vibration & shock kit S2**

| Use |
|---|
| For size 2 devices |

**Lateral modules**

- For extending device adapters and device holders of the same length

| Length | Width |
|---|---|
| 200 mm | 9 mm |

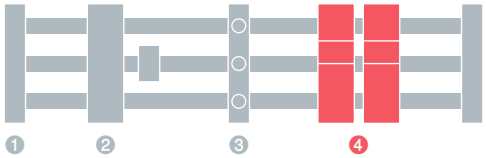
## 60 mm 8US busbar system

| For 3-pole system<br>Device adapters for load feeders<br>SIRIUS 3RV2/3RT2<br>Circuit breakers | Direct-on-line starters | Reversing starters | SIRIUS 3RV1/3RT1<br>Circuit breakers | SIRIUS 3RA6<br>Direct-on-line starters | Reversing starters |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 8US1251-5DS10 | 8US1251-5DS10 | 8US1251-5DS10 + 8US1250-5AS10 | – | – | – |
| 8US1251-5DS10 | – | – | – | – | – |
| – | 8US1251-5DT10 | – | – | – | – |
| 8US1251-5NS10 | – | – | – | – | – |
| 8US1251-5NT10 | 8US1251-5NT10 | 8US1251-5NT10 + 8US1250-5AT10 | – | – | – |
| – | – | – | – | 8US1211-1NS10 | 8US1211-1NS10 + 8US1250-1AA10 |
| – | 8US1261-6MT10 | – | – | – | – |
| – | – | 8US1211-6MT10 | – | – | – |
| 8US1261-5MS13 | – | – | – | – | – |
| – | – | – | 8US1211-4TR00 | – | – |
| | | | | | |
| 8US1251-5DS11 | – | – | – | – | – |
| 8US1251-5DT11 | 8US1251-5DT11 | 8US1251-5DT11 + 8US1250-5AT10 | – | – | – |
| 8US1251-5NS11 | – | – | – | – | – |
| 8US1251-5NT11 | 8US1251-5NT11 | 8US1251-5NT11 + 8US1250-5AT10 | – | – | – |

| Article No. | Article No. | Article No. | Article No. | Article No. | Article No. |
|---|---|---|---|---|---|
| – | – | – | – | – | – |
| | | | | | |
| Article No. | Article No. | Article No. | Article No. | Article No. | Article No. |
| 8US1998-2BJ10 | 8US1998-2BJ10 | 8US1998-2BJ10 | – | 8US1998-2BJ10 | 8US1998-2BJ10 |

# ❹ Device adapters and device holders

## For molded case circuit breakers and switch disconnectors up to 1600 A

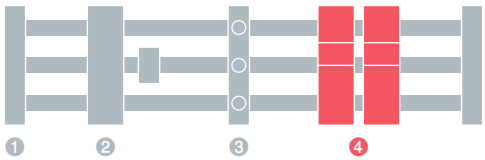



| Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Standard | For copper profile | Adapters | | Connecting cable |
|---|---|---|---|---|---|---|---|---|
| IEC | **UL 508** | IEC | **UL 508** | | | Length | Width | |
| **Screw terminals** | | | | | | | | |
| 80 A | **80 A** | – | **600 V AC** | UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 81 mm | AWG 4 |
| 125 A | **125 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 200 mm | 90 mm | Cu laminated 6 × 9 × 0.8 mm |
| **Tubular contacts** | | | | | | | | |
| 150 A | **150 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 190 mm | 105 mm | – |
| 250 A | **250 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 190 mm | 105 mm | – |
| | | | | | | 240 mm | 105 mm | – |
| 400 A | **400 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 296 mm | 140 mm | – |
| 540 A | **540 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 296 mm | 140 mm | – |
| 590 A | **600 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 300 mm | 140 mm | – |

| | Device adapter For molded case circuit breakers | | |
|---|---|---|---|
| | 3VA Top Feed | 3VA Bottom Feed | 3VL |
| | | | |
| Device<br>Size/type | 3-pole | 3-pole | 3-pole |
| | | | |
| NGG, HGG, LGG | 8US1240-5MA00 | – | – |
| 3VA10, 3VA11, 3VA51, NGG, HGG, LGG (connection at top) | 8US1211-4SS00 | – | – |
| 3VA10, 3VA11, 3VA51 (connection at bottom) | – | 8US1215-4SS00 | – |
| | | | |
| VL150X UL CG frame | – | – | 8US1213-4AQ01 |
| VL150 UL DG frame | – | – | 8US1213-4AQ03 |
| VL250 UL FG frame | – | – | 8US1213-4AQ03 |
| 3VA12, 3VA20, 3VA21, 3VA22, 3VA52, 3VA61, 3VA62 | 8US1213-4AP03 | – | – |
| VL400 UL JG frame | – | – | 8US1213-4AH00 |
| VL400X UL LG frame | – | – | 8US1213-4AH00 |
| 3VA13, 3VA14, 3VA23, 3VA24, 3VA53, 3VA54, 3VA63, 3VA64 | 8US1213-4AH04 | – | – |

# ❹ Device adapters and device holders

## For 3RM motor starters




| Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Standard | For flat copper profiles | | Dimensions | | | Min. order quantity |
|---|---|---|---|---|---|---|---|---|---|---|
| IEC | UL 508 | IEC | UL 508 | | 12 × 5 mm | 12 × 10 mm | Height | Width | Length | |
| 16 A | – | 690 V AC | – | IEC | – | – | 160 mm | 22.5 mm | 122 mm | 4 units |
| | | | | | | | 200 mm | 22.5 mm | 122 mm | 5 units |
| 25 A | – | 690 V AC | – | IEC | ■ | – | 160 mm | 22.5 mm | 41.5 mm | 5 units |
| | | | | | | | 185 mm | 22.5 mm | 23.5 mm | 5 units |
| | | | | | | | 200 mm | 22.5 mm | 41.5 mm | 5 units |
| 32 A | – | 690 V AC | – | IEC | ■ | – | 160 mm | 18 mm | 73 mm | 12 units |
| | **25 A** | 690 V AC | **600 V AC** | IEC, UL 508 | ■ | ■ | 160 mm | 45 mm | 63 mm | 4 units |
| 63 A | – | 690 V AC | – | IEC | ■ | – | 160 mm | 18 mm | 73 mm | 12 units |
| | | | | | | | 160 mm | 18 mm | 82 mm | 12 units |
| | **65 A** | 690 V AC | **600 V AC** | IEC, UL 508 | ■ | ■ | 160 mm | 54 mm | 63 mm | 4 units |

## Suitable accessories

### N modules

| Rated voltage $U_e$ | Connecting terminal | Dimensions | Minimum order quantity |
|---|---|---|---|
| 690 V AC | 1.5 ... 16 $mm^2$ | 9 × 160 × 114 mm | 12 units |

### PE modules

| Rated voltage $U_e$ | Connecting terminal | Dimensions | Minimum order quantity |
|---|---|---|---|
| 690 V AC | 1.5 ... 16 $mm^2$ | 9 × 160 × 114 mm | 12 units |

### Support modules

| Dimensions | Minimum order quantity |
|---|---|
| 18 × 160 × 54 mm | 6 units |

### Lateral modules

| Dimensions | Minimum order quantity |
|---|---|
| 9 × 160 × 47 mm | 12 units |

### Set of module connectors

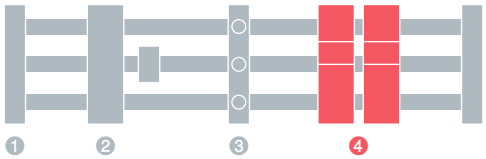
| Use | Package |
|---|---|
| For connecting adapters | 1 pack = 100 units |

## 60 mm 8US busbar system

| | For 5-pole system<br>For SIRIUS 3RM1 motor starters and for relays | For 3RM193, 8US1615 and 8US1215 fuse modules | |
|---|---|---|---|
| | | | |
| | With fuse module and DIN mounting rail | | With DIN mounting rail |
| | 8US1615-5CK10 | – | – |
| | 8US1215-5CS10 | – | – |
| | – | 8US1616-0AK02 | – |
| | – | – | 8US1716-0RK00 |
| | – | 8US1216-0AS00 | – |
| | – | – | – |
| | – | – | – |
| | – | – | – |
| | – | – | – |
| | – | – | – |
| | Article No. | Article No. | Article No. |
| | 8US1600-0RE02 | 8US1600-0RE02 | 8US1600-0RE02 |
| | Article No. | Article No. | Article No. |
| | 8US1600-0RF02 | 8US1600-0RF02 | 8US1600-0RF02 |
| | Article No. | Article No. | Article No. |
| | 8US1620-5AK02 | 8US1620-5AK02 | 8US1620-5AK02 |
| | Article No. | Article No. | Article No. |
| | 8US1998-2BH02 | 8US1998-2BH02 | 8US1998-2BH02 |
| | Article No. | Article No. | Article No. |
| | 8US1998-1AA02 | 8US1998-1AA02 | 8US1998-1AA02 |

# ❹ Device adapters and device holders

## For universal application up to 1600 A




| Rated operational current $I_e$ | | Rated operational voltage $U_e$ | | Standard | For copper profiles | Adapters | | Connecting cable | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IEC | UL 508 | IEC | UL 508 | | | Width | Height | Cross-section | Max. temp. | Length |
| 25 A | **25 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 45 mm | 200 mm | AWG 12 | 150 °C | 99 mm |
| | | | | | | | | | | 167 mm |
| | | | | | | | 260 mm | AWG 12 | 150 °C | 99 mm |
| | | | | | | | | | | 167 mm |
| 32 A | **32 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 45 mm | 200 mm | AWG 10 | 105 °C | 118 mm |
| | | | | | | | | | 150 °C | 99 mm |
| | | | | | | | | | | 167 mm |
| | | | | | | | | – | – | – |
| | | | | | | | 260 mm | AWG 10 | 150 °C | 99 mm |
| | | | | | | | | | | 167 mm |
| | | | | | | | | – | – | – |
| 80 A | **80 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 54 mm | 200 mm | AWG 4 | 150 °C | 150 mm |
| | | | | | | | 260 mm | AWG 4 | 150 °C | 150 mm |
| | | | | | | 119 mm | 260 mm | AWG 4 | 150 °C | 150 mm |
| 100 A | **100 A** | 690 V AC | **600 V AC** | IEC, UL 508 | 5 mm, 10 mm, TT profile | 72 mm | 200 mm | AWG 4 | 105 °C | 210 mm |
| – | – | – | – | – | 5 mm, 10 mm, TT profile | 45 mm | 200 mm | – | – | – |
| | | | | | | | | – | – | – |
| | | | | | | | 260 mm | – | – | – |

## Accessories

**Lateral modules**



- For extending device adapters and device holders of the same length

| Length | Width |
|---|---|
| 200 mm | 9 mm |

# Busbar Systems

## 60 mm 8US busbar system

| Device adapters<br>For plug-in units | Device adapters with connecting cables<br>For contact with busbars | | | | | | Device holders<br>No electrical contact | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | For lateral mounting on device adapter |
| – | 8US1251-5DS10 | – | – | – | – | – | – | – |
| – | 8US1251-5DS11 | – | – | – | – | – | – | – |
| – | 8US1251-5DT10 | – | – | – | – | – | – | – |
| – | 8US1251-5DT11 | – | – | – | – | – | – | – |
| – | – | 8US1211-1NS10 | – | – | – | – | – | – |
| – | – | – | 8US1251-5NS10 | – | – | – | – | – |
| – | – | – | 8US1251-5NS11 | – | – | – | – | – |
| 8US1216-5AS80 | – | – | – | – | – | – | – | – |
| – | – | – | 8US1251-5NT10 | – | – | – | – | – |
| – | – | – | 8US1251-5NT11 | – | – | – | – | – |
| 8US1216-5AT80 | – | – | – | – | – | – | – | – |
| – | – | – | – | 8US1261-5MS13 | – | – | – | – |
| – | – | – | – | 8US1261-6MT10 | – | – | – | – |
| – | – | – | – | – | – | 8US1211-6MT10 | – | – |
| – | – | – | – | – | 8US1211-4TR00 | – | – | – |
| – | – | – | – | – | – | – | – | 8US1250-1AA10 |
| – | – | – | – | – | – | – | 8US1250-5AS10 | – |
| – | – | – | – | – | – | – | 8US1250-5AT10 | – |

| Article No. | Article No. | Article No. | Article No. | Article No. | Article No. | Article No. | Article No. | Article No. |
|---|---|---|---|---|---|---|---|---|
| 8US1998-2BJ10 | 8US1998-2BJ10 | 8US1998-2BJ10 | 8US1998-2BJ10 | 8US1998-2BJ10 | – | – | 8US1998-2BJ10 | – |

# ❹ Device adapters and device holders

## Accessories for universal application up to 1600 A



### Accessories

**Plug-in connectors to make contact with the 3RV2 motor starter protectors for 8US1216-5AS80 and 8US1216-5AT80**

| Use | Version | Size | Article No. |
|---|---|---|---|
| For spring-loaded terminals | Single-unit packaging | S00 [1] | 3RV2917-5AA00 |
| | | S0 [2] | 3RV2927-5AA00 |
| | Multi-unit packaging | S00 [1] | 3RV2917-5A |
| | | S0 [2] | 3RV2927-5A |
| For screw terminals | Single-unit packaging | S00 [1] [3] | 3RV2917-5CA00 |
| | | S0 [2] [4] | 3RV1927-5AA00 |
| | Multi-unit packaging | S00 [1] [3] | 3RV2917-5C |
| | | S0 [2] [4] | 3RV1927-5A |

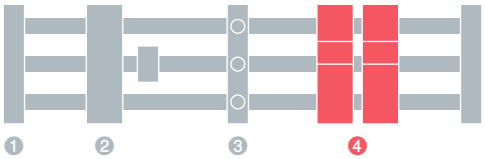
**Plug-in connectors to make contact with the 3RV1011 motor starter protectors**

| Use | Version | Size | Article No. |
|---|---|---|---|
| For screw terminals | Single-unit packaging | S00 | 3RV1917-5CA00 |
| | Multi-unit packaging | S00 | 3RV1917-5C |

[1] I > 14 A, please note derating.
[2] I > 16 A, please note derating.
[3] The plug-in connector cannot be used for the 3RV2711 and 3RV2811 circuit breakers with size S00.
[4] The plug-in connector can be used for the 3RV2711, 3RV2811 (size S00) and 3RV2721, 3RV2821 (size S0) circuit breakers.

# ❹ Device adapters and device holders

## Accessories for device adapters for SIRIUS 3RV2 / 3RT2 load feeders




**Support rails (35 mm) made of plastic with fixing screws**

| | Width | For adapter width | Article No. |
|---|---|---|---|
| | 45 mm | 45 mm | 8US1998-7CB45 |
| | 54 mm | 54 mm | 8US1998-7CB54 |
| | 72 mm | 54 mm | 8US1998-7CB72 |

**Spacers**

- Fix the feeder to the busbar adapter

| Article No. |
|---|
| 8US1998-1BA10 |

**Vibration & shock kit**

| Article No. |
|---|
| 8US1998-1CA10 |

## Selection and ordering data

Description

**FBCB Fast Bus circuit breakers**
Offer a full range of feeder circuit breakers from 15A to 500A. All Sentron kits 125A and under are pre-assembled on 60 mm Fast Bus adaptor shoes and ready to place on the busbar. All other circuit breaker kits are pre-packaged for fast user assembly and must be torqued down to the busbar prior to assembly. For VL breakers, adaptors are available for up to 500A breakers (both main and feeder orientation).
See page 5/8.

| Design | UL Current Rating | Breaker Frame (SCCR Rating [1]) | | |
|---|---|---|---|---|
| **Sentron and GG Feeder Circuit Breakers** | | ED (25kA) | HHED (65kA) | FXD (35kA) |
| 3 pole/600V fully assembled breakers and adaptors that quickly snap onto the Busbar. | 15A | **FBCB015** | — | — |
| | 20A | **FBCB020** | **FBCB020H** | — |
| | 25A | **FBCB025** | **FBCB025H** | — |
| | 30A | **FBCB030** | **FBCB030H** | — |
| | 35A | **FBCB035** | **FBCB035H** | — |
| | 40A | **FBCB040** | **FBCB040H** | — |
| | 45A | **FBCB045** | **FBCB045H** | — |
| | 50A | **FBCB050** | — | — |
| | 60A | **FBCB060** | — | — |
| | 70A | **FBCB070** | — | — |
| | 80A | **FBCB080** | — | — |
| | 90A | **FBCB090** | — | — |
| | 100A | **FBCB100** | — | — |
| | 110A | **FBCB110** | — | — |
| | 125A | **FBCB125** | — | — |
| 3 pole/600V kitted components for customer assembly that require the adaptor to be torqued down to the Busbars prior to assembly. | 150A | — | — | **FBCB150** |
| | 175A | — | — | **FBCB175** |
| | 200A | — | — | **FBCB200** |
| | 225A | — | — | **FBCB225** |
| | 250A | — | — | **FBCB250** |

FBCB100

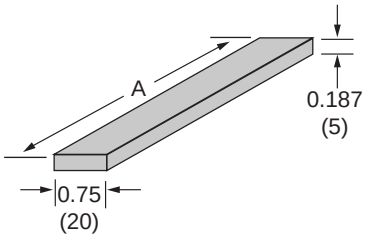
| Design | UL Current Rating | Breaker Frame (SCCR Rating) | | |
|---|---|---|---|---|
| **Sentron Main Circuit Breakers** | | FXD (25kA)[2] | HFXD (65kA) | |
| 3 pole/600V kitted components for customer assembly that require the adaptor to be torqued down to the Busbars prior to assembly. | 100A | **FBCB100M** | **FBCB100M-HB** | — |
| | 125A | **FBCB125M** | **FBCB125M-HB** | — |
| | 150A | **FBCB150M** | **FBCB150M-HB** | — |
| | 175A | **FBCB175M** | **FBCB175M-HB** | — |
| | 200A | **FBCB200M** | **FBCB200M-HB** | — |
| | 225A | **FBCB225M** | **FBCB225M-HB** | — |
| | 250A | **FBCB250M** | **FBCB250M-HB** | — |

FBCB250M

1) UL Short Circuit Current ratings are based on 480V. Contact Siemens for 600 V ratings.
2) FBCB100M -125M SCCR = 25kA @ 480V
FBCB150M -250M SCCR = 65kA @ 480V

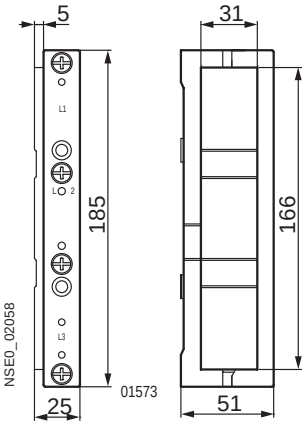
## Dimension drawings

**FBB36/FBB60 Copper Busbar**

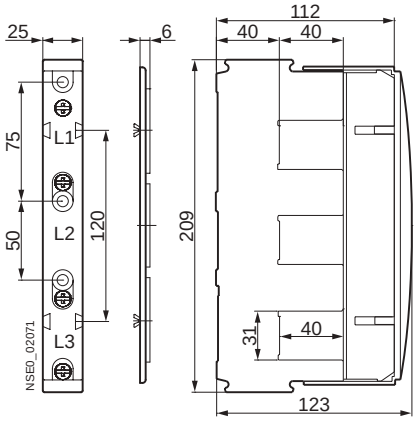



| Dimension | A |
|---|---|
| FBB36 | 36 (914) |
| FBB60 | 60 (1524) |

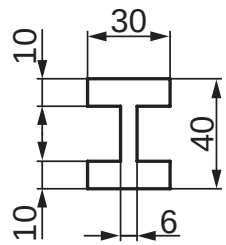
**8US19 23-3UA01**




**8US19 43-3AA00**

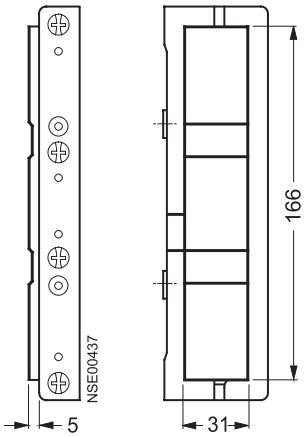



**Copper Busbar/TT profile, 8US19 48-2AA00**

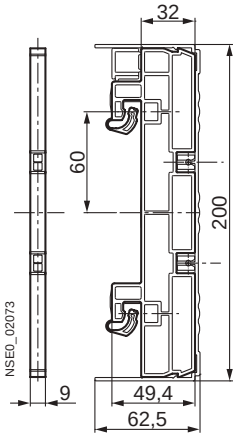



NSE0_02070

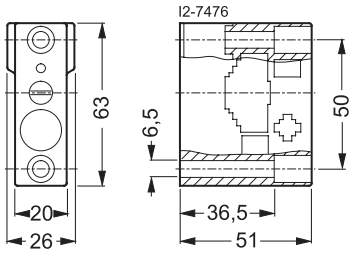
**8US19 22-1AC00 with 8US19 23-3UA01**
**8US19 22-1AC00 with 8US19 23-3AA01**



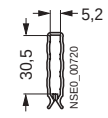

**Support for blanking covers, 8US1922-2EA00**




**8US19 23-1AA01**

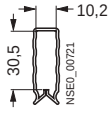



**8US19 22-2AA00**



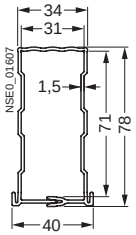

Length 1000 mm

**8US19 22-2BA00**

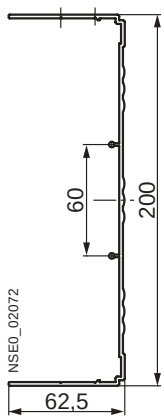



Length 1000 mm

**8US19 22-2DA00**

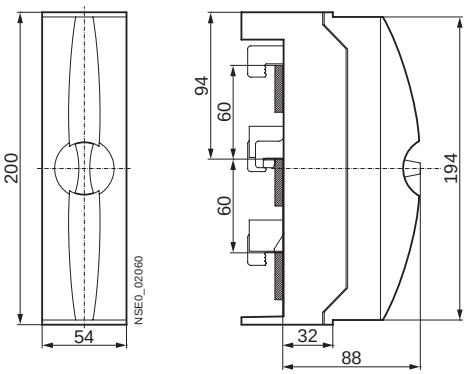



**Blanking cover, 8US1922-2EB00**

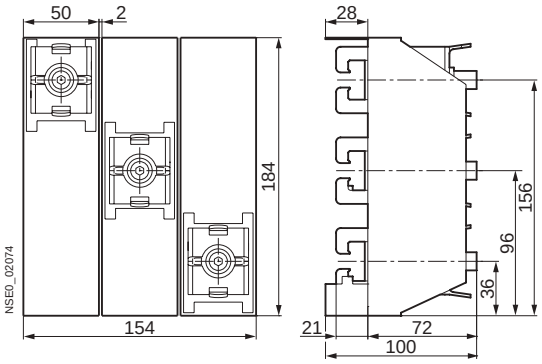


## Dimension drawings

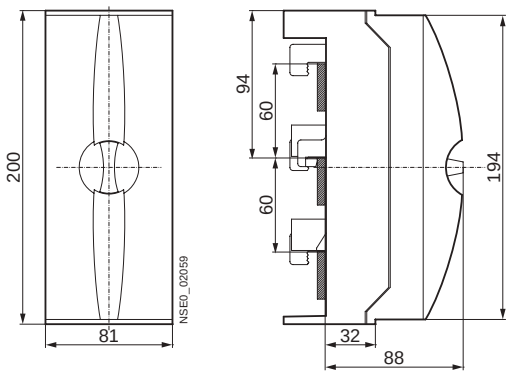
**Infeed, 8US19 21-1BA00**



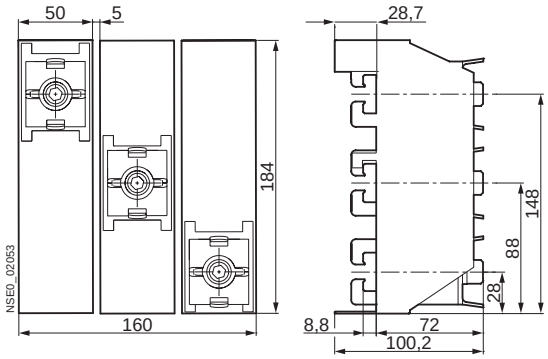

**Infeed, 8US19 41-2AA03**



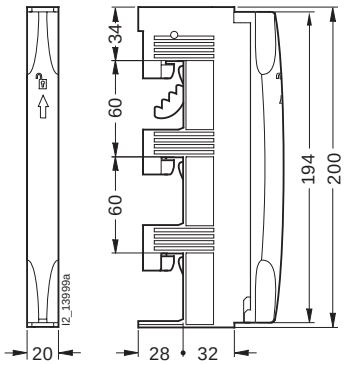

**Infeed, 8US19 21-1AA00**



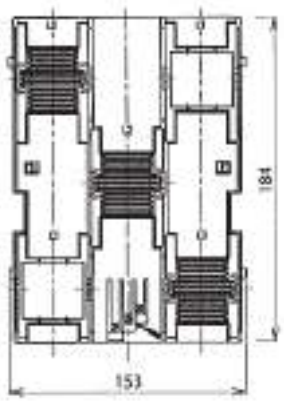

**Infeed, 8US19 41-2AA04**



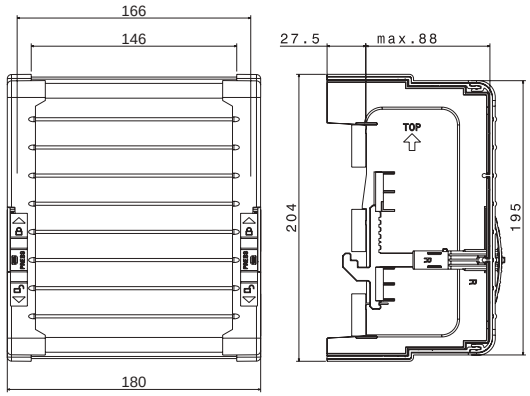

**Infeed 5SH3538**




**FBT600F (supplied with cover)**

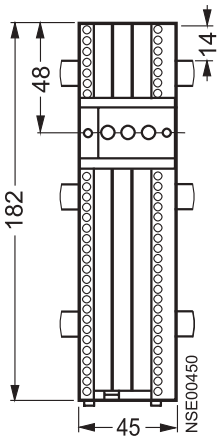



**FBT600F Cover**

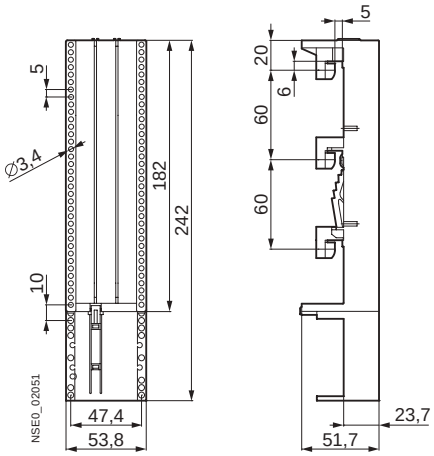


## Dimension drawings

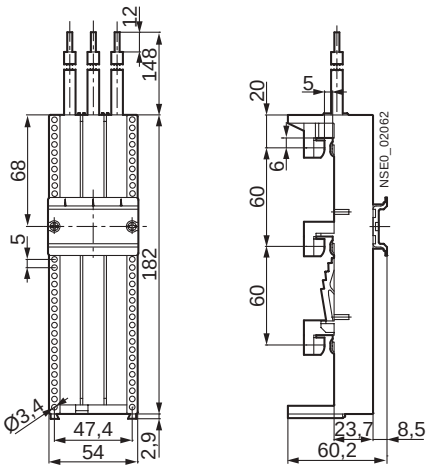
**Busbar device adapter, 8US12 50-5AM00**



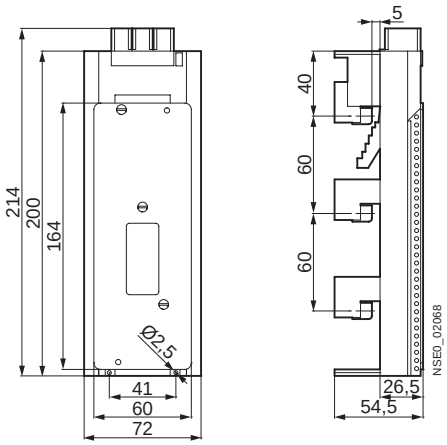

**Busbar device adapter, 8US12 60-5AP00**



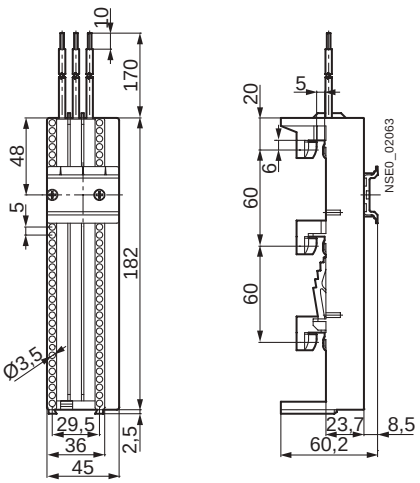

**Busbar device adapter, 8US12 61-5FM08**



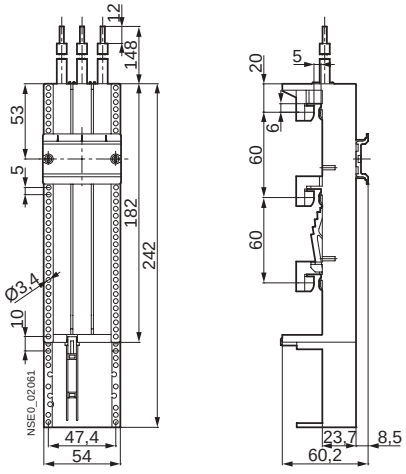

**Busbar device adapter, 8US12 11-4TR00**




**Busbar device adapter, 8US12 51-5DM07**

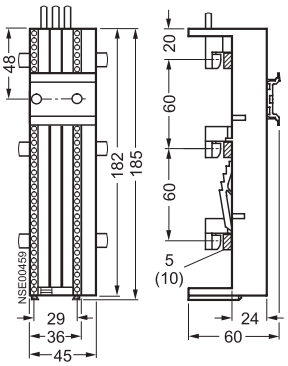



**Busbar device adapter, 8US12 61-5FP08**

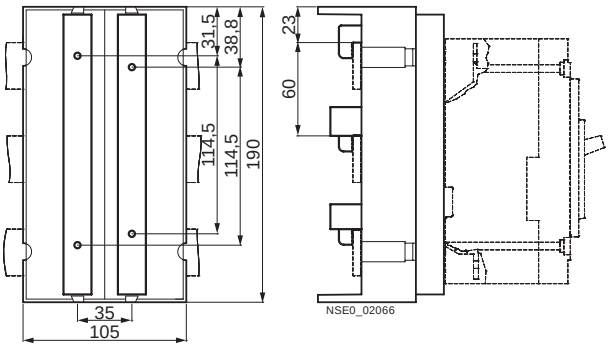


## Dimension drawings

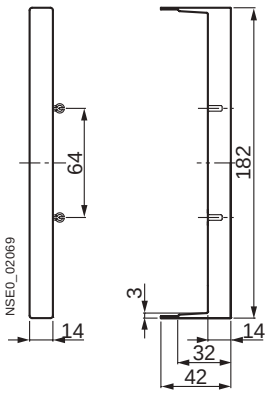
**Busbar device adapter, 8US12 51-5CM47**



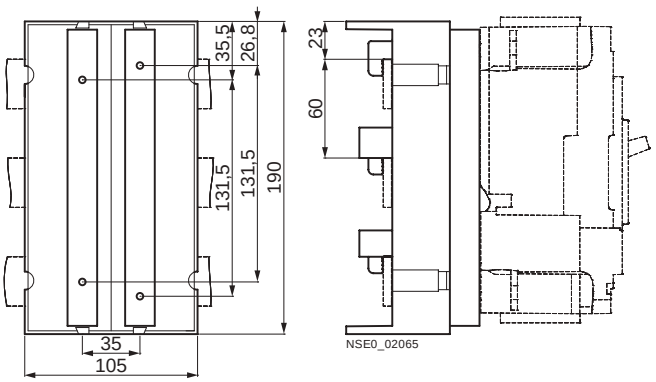

**Busbar device adapter, 8US12 13-4AQ01**



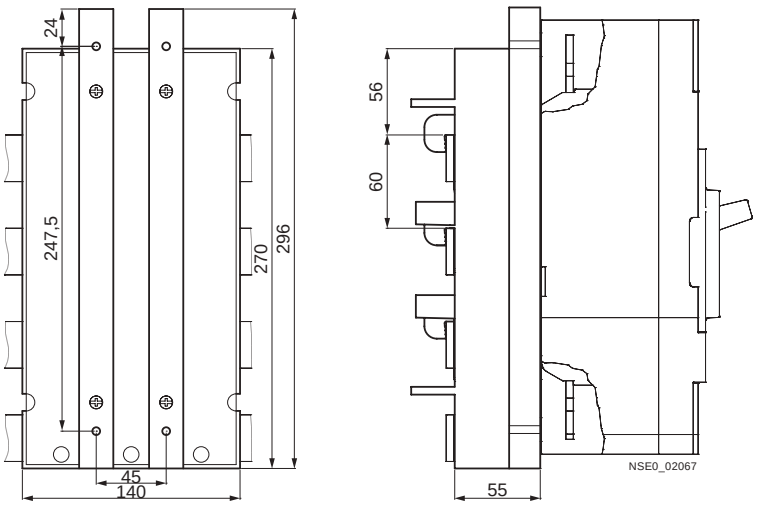

**8US19 98-2BM00**




**Busbar device adapter, 8US12 13-4AQ03**



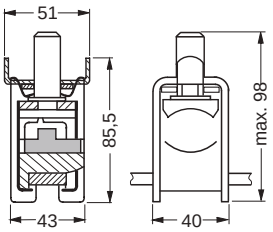

**Busbar device adapter, 8US12 13-4AH00**



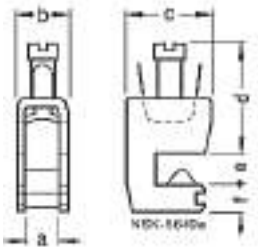
## Dimension drawings

| | Type | a | b | c | d | e | f | Max tighening torque |
|---|---|---|---|---|---|---|---|---|
| 5mm | 8US1921-2AA0. | 7.5 | 11.5 | 22.5 | 25 | 5 | 10 | 4 Nm |
| | 8US1921-2AB0. | 10.5 | 15.5 | 29 | 35 | 5 | 10 | 6 Nm |
| | 8US1921-2AC0. | 17 | 23.5 | 36 | 55 | 5 | 12 | 15 Nm |
| | 8US1921-2AD0. | 14.5 | 20.5 | 32 | 42 | 5 | 12 | 10 Nm |
| 10mm | 8US1921-2BA0. | 7.5 | 11.5 | 22.5 | 25 | 10 | 10 | 4 Nm |
| | 8US1921-2BB0. | 10.5 | 15.5 | 29 | 35 | 10 | 10 | 6 Nm |
| | 8US1921-2BC0. | 17 | 23.5 | 36 | 55 | 10 | 12 | 15 Nm |
| | 8US1921-2BD0. | 14.5 | 20.5 | 32 | 42 | 10 | 12 | 10 Nm |

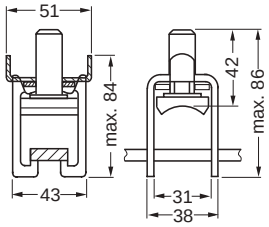
**8US1941-2AA01**



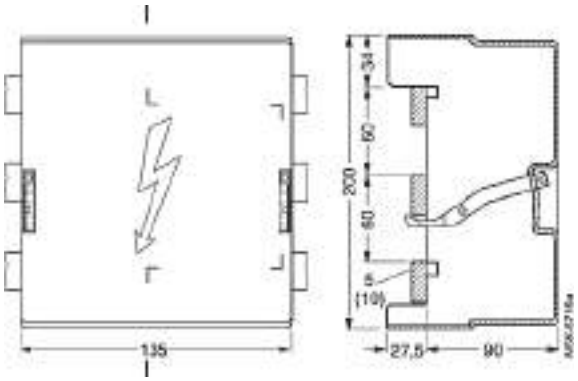

**8US1921-2A / -2B**



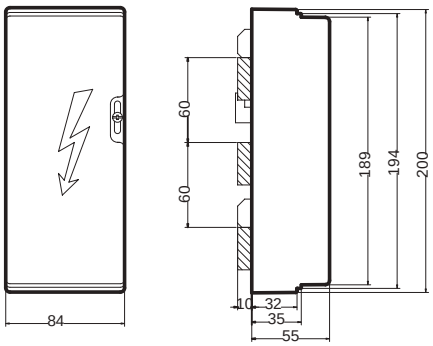

**8US1941-2AA02**



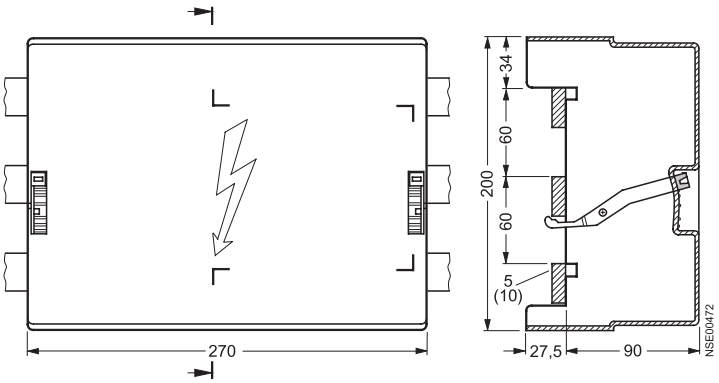

**FBC135**




**8US1922-1GA00**

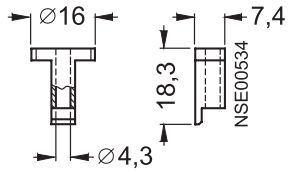



**8US19 22-1GA02**

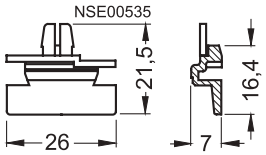


## Dimension drawings

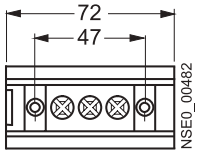
**8US19 98-1CA00**



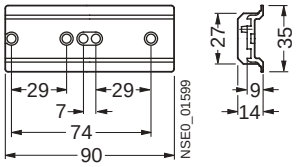

**8US19 98-1DA00**



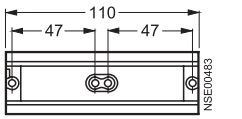

**8US19 98-4AA00**



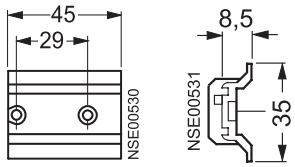

**8US19 98-7CA08**



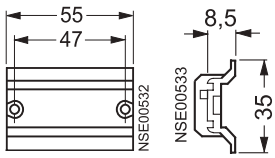

**8US19 98-7CA10**



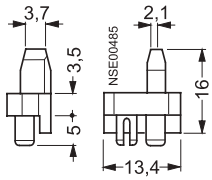

**8US19 98-7CA15**



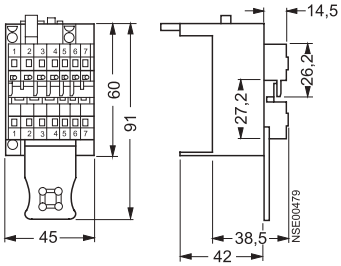

**8US19 98-7CA16**



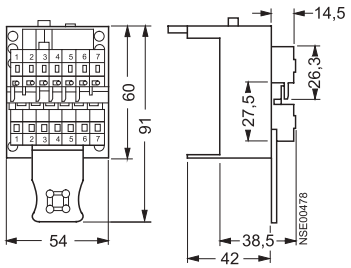

**8US19 98-1BA00**



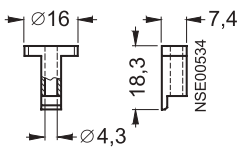

**8US19 98-8AM07**



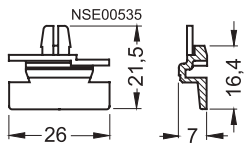

**8US19 98-8AA10**




**8US19 98-1CA00**




**8US19 98-1DA00**



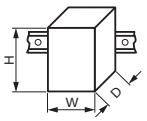
## Order No. scheme

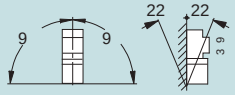
| Digit of the Order No. | 1st - 3rd | 4th | 5th | 6th | 7th | | 8th | 9th | 10th | 11th | 12th | | 13th | 14th | 15th | 16th |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | □□□ | □ | □ | □ | 0 | – | □ | □ | □ | □ | □ | – | □ | □ | □ | □ |
| **SIRIUS starters** | **3 R A** | | | | | | | | | | | | | | | |
| **SIRIUS 2nd generation** | | **2** | | | | | | | | | | | | | | |
| **Type of starter (direct-on-line starter = 1, reversing starter = 2)** | | | □ | | | | | | | | | | | | | |
| **Size (S00 = 1, S0 = 2)** | | | | □ | | | | | | | | | | | | |
| **Setting range for overload release** | | | | | | | □ | □ | | | | | | | | |
| **Design type and connection method** | | | | | | | | | □ | | | | | | | |
| **Rated power at 460 V AC** | | | | | | | | | | □ | □ | | | | | |
| **Integrated auxiliary switches of the contactor** | | | | | | | | | | | | | □ | | | |
| **Operating range / solenoid coil circuit (contactor)** | | | | | | | | | | | | | | □ | | |
| **Rated control supply voltage (contactor)** | | | | | | | | | | | | | | | □ | □ |
| **Example** | **3 R A** | **2** | **1** | **1** | **0** | **–** | **0** | **B** | **A** | **1** | **5** | **–** | **1** | **A** | **K** | **6** |

*Note:*

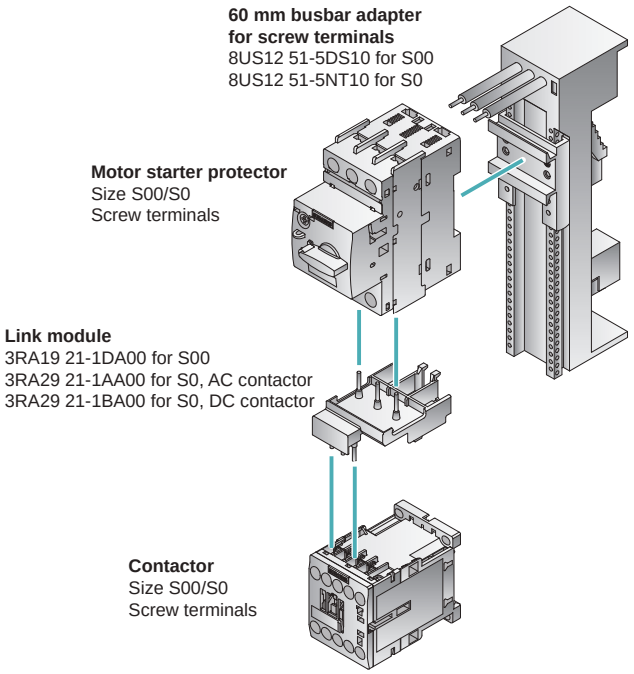
*The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers. For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.*

## Technical specifications

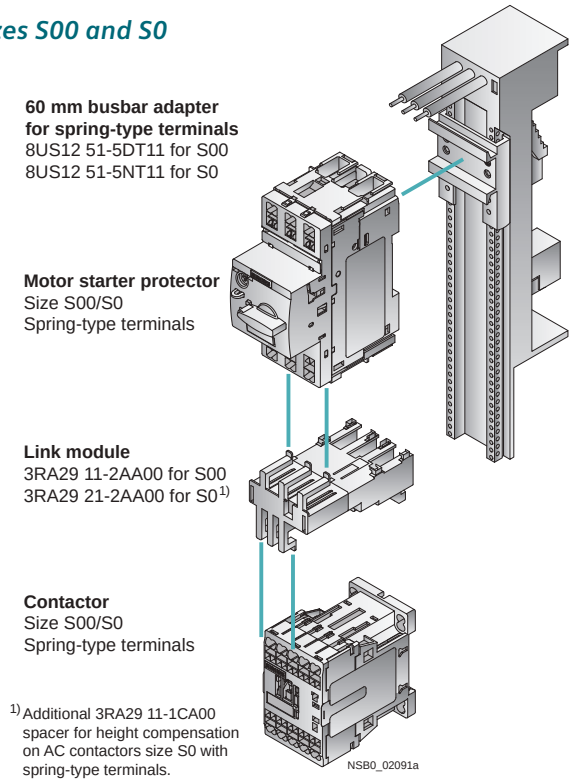
| Direct-on-line starters/ reversing starters | Size | Connection methods | Mounting | Control voltage | Width W | Height H | Depth D |
|---|---|---|---|---|---|---|---|
| | | | | | mm | mm | mm |
| **Mounting dimensions** | | | | | | | |
| Direct-on-line starters 3RA21. | S00 3RA21 1. | Screw terminals | Standard mounting rails | AC/DC | 45 | 167 | 97 |
| | | | Busbar adapters | AC/DC | 45 | 200 | 155 |
| | | Spring-type terminals | Standard mounting rails | AC/DC | 45 | 198 | 97 |
| | | | Busbar adapters | AC/DC | 45 | 260 | 155 |
|  | S0 3RA21 2. | Screw terminals | Standard mounting rails | AC | 45 | 193 | 97 |
| | | | | DC | 45 | 193 | 107 |
| | | | Busbar adapters | AC | 45 | 260 | 155 |
| | | | | DC | 45 | 260 | 165 |
| | | Spring-type terminals | Standard mounting rails | AC/DC | 45 | 243 | 107 |
| | | | Busbar adapters | AC/DC | 45 | 260 | 165 |
| Reversing starters 3RA22. | S00 3RA22 1. | Screw terminals | Standard mounting rails | AC/DC | 90 | 170 | 97 |
| | | | Busbar adapters | AC/DC | 90 | 200 | 155 |
| | | Spring-type terminals | Standard mounting rails | AC/DC | 90 | 204 | 97 |
| | | | Busbar adapters | AC/DC | 90 | 260 | 155 |
| | S0 3RA22 2. | Screw terminals | Standard mounting rail adapters | AC | 90 | 265 | 120.3 |
| | | | | DC | 90 | 265 | 130 |
| | | | Busbar adapters | AC | 90 | 260 | 155 |
| | | | | DC | 90 | 260 | 165 |
| | | Spring-type terminals | Standard mounting rail adapters | AC/DC | 90 | 270 | 131 |
| | | | Busbar adapters | AC/DC | 90 | 260 | 165 |

| | | | **Type** Size Number of poles | **3RA2. 1 S00 3** | **3RA2. 2 S0 3** |
|---|---|---|---|---|---|
| **Mechanics and environment** | | | | | |
| **Permissible ambient temperature** | | | | | |
| • During operation | | °C | | -20 ... +60 | |
| • Storage and transport | | °C | | -55 ... +80 | |
| **Weight** | | kg | | 0.6 ... 1.5 | 0.8 ... 2.3 |
| **Permissible mounting positions** | | | |  Important: Acc. to DIN 43602 start command "I" at the right or top | |
| **Shock resistance** (sine-wave pulse) | Acc. to IEC 60086 Part 2-27 | *g* | | Up to 6 | Up to 6 |
| **Degree of protection** | Acc. to IEC 60947-1 | | | IP20 | |

## *Direct-on-line starting • For 60 mm busbar systems • Sizes S00 and S0*

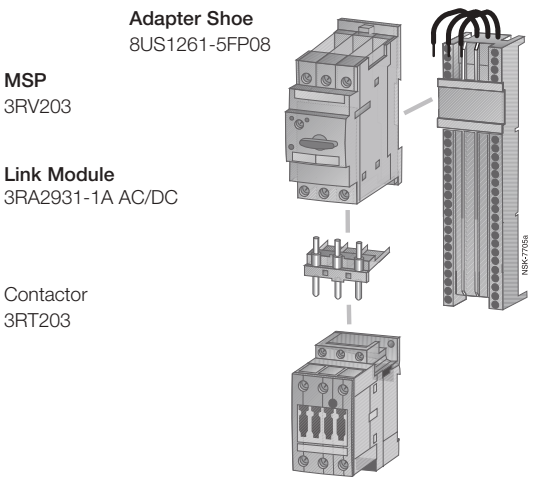



Left: 3RA21 motor starter for direct-on-line starting with busbar adapters with screw connection

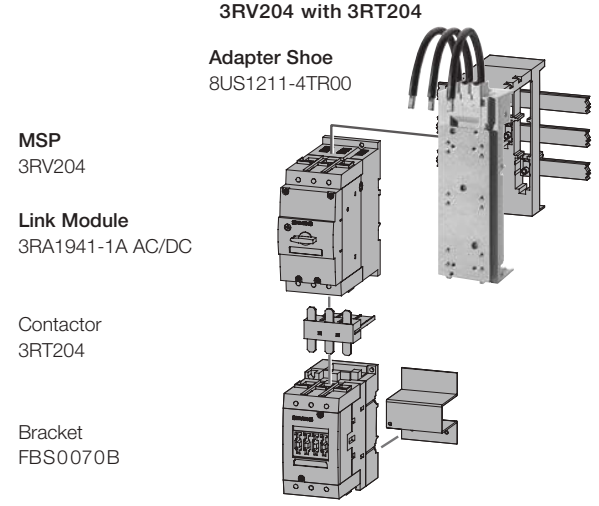



Right: 3RA21 motor starter for direct-on-line starting with busbar adapters with spring-type connection

**3RV203 with 3RT203**



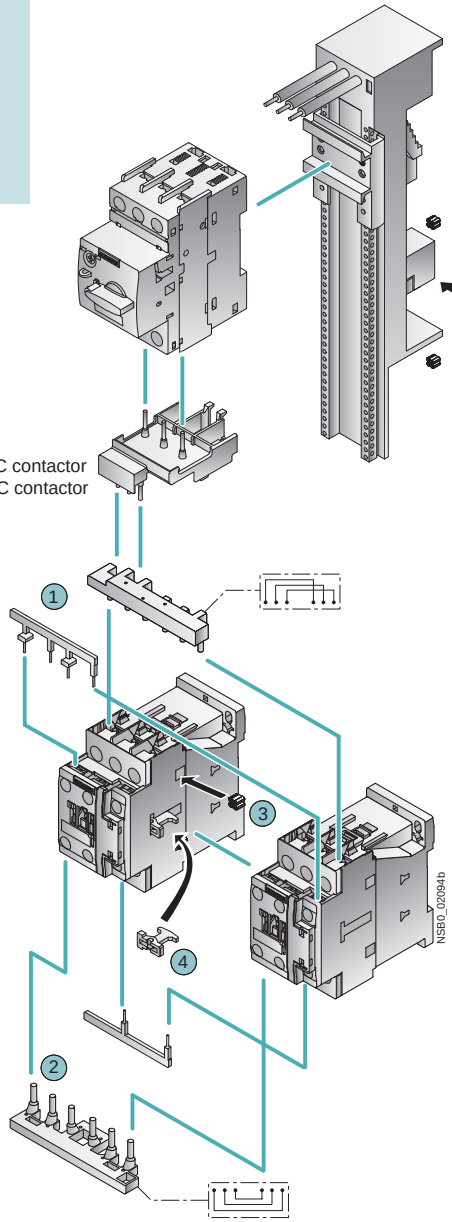

**3RV204 with 3RT204**



## *Reversing duty • For 60 mm busbar systems • Sizes S00 and S0*

**RS assembly kit for reversing duty and busbar mounting**
Screw connection:
3RA29 13-1DB1 for S00
3RA29 23-1DB1 for S0
For spring-type connection:
3RA29 13-1DB2 for S00
3RA29 23-1DB2 for S0[1)]
Comprising:
1 wiring kit
1 busbar adapter
1 device holder
2 connecting wedges

[1)] Also includes 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.




**60 mm busbar adapter**
For screw terminals:
8US12 51-5DS10 for S00
8US12 51-5NT10 for S0
For spring-type terminals:
8US12 51-5DT11 for S00
8US12 51-5NT11 for S0

**2 connecting wedges**
8US19 98-1AA00

**60 mm device holder**
8US12 51-5AS10

**Motor starter protector**
Size S00/S0
Screw terminals/
spring-type terminals

**Link module**
For screw terminals:
3RA19 21-1DA00 for S00
3RA29 21-1AA00 for S0, AC contactor
3RA29 21-1BA00 for S0, DC contactor
For spring-type terminals:
3RA29 11-2AA00 for S00
3RA29 21-2AA00 for S0[2)]

**2 contactors**
Size S00/S0
Screw terminals/
spring-type terminals

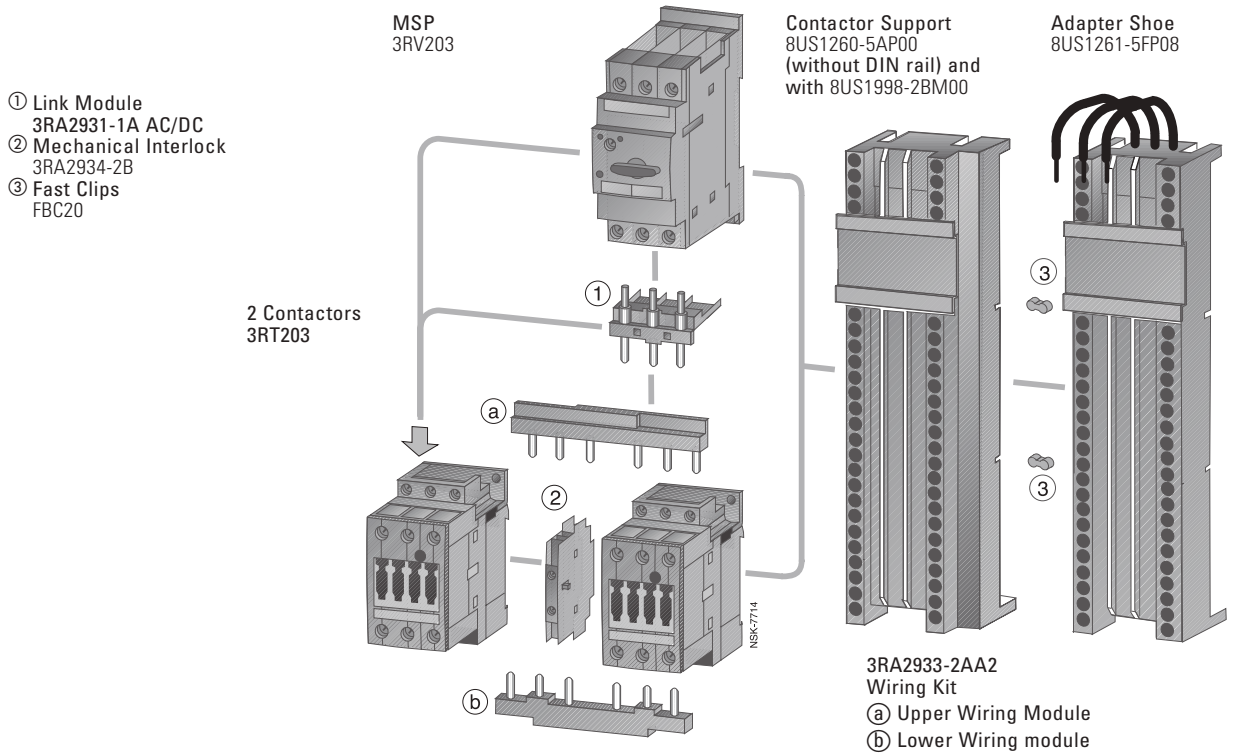
**Wiring kit**
Screw connection:
3RA29 13-2AA1 for S00
3RA29 23-2AA1 for S0
Spring-type connection:
3RA29 13-2AA2 for S00
3RA29 23-2AA2 for S0
1 Upper wiring module
2 Lower wiring module
3 2 connecting clips
4 Mechanical interlock (can be removed if necessary)

[2)] Additional 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

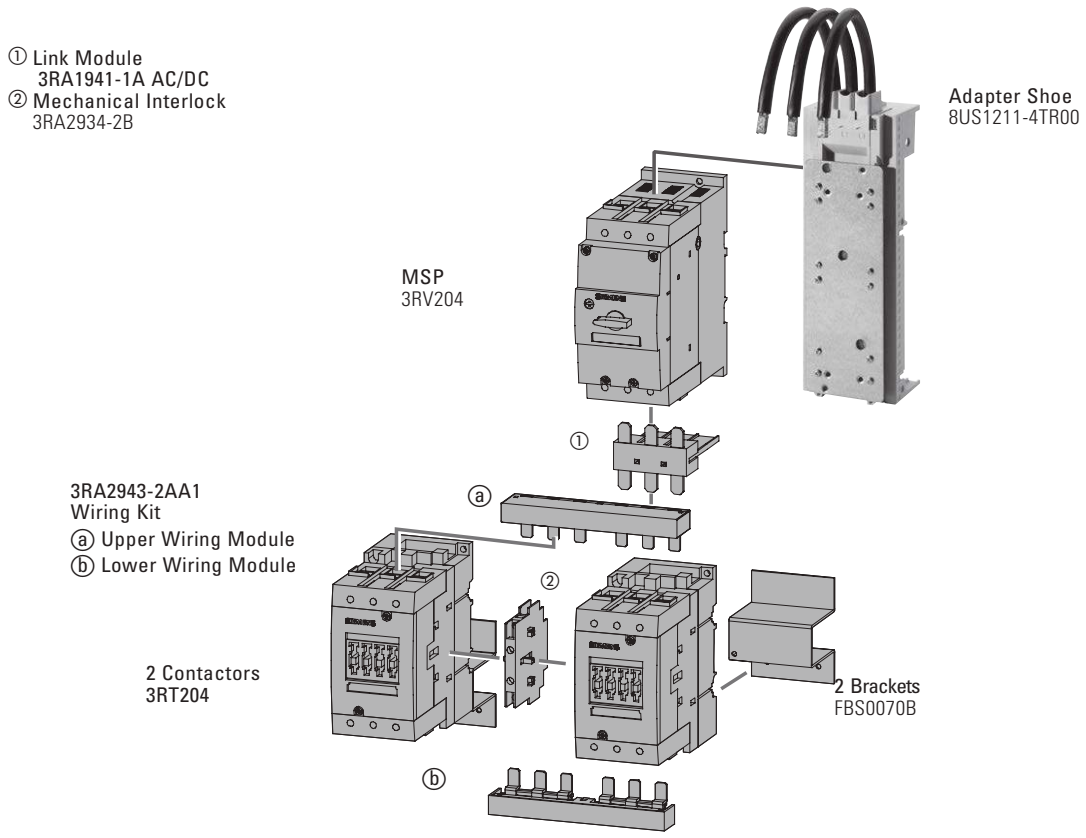
3RA22 motor starter for reversing duty and 60 mm standard mounting rail in size S00/S0 (the version with screw connection is shown in the picture)

## *Required Components for Fast Bus Mounting*

3RV203 with Reversing 3RT203

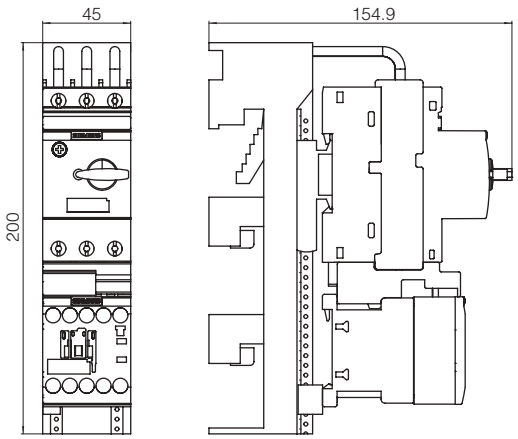



3RV204 with Reversing 3RT204

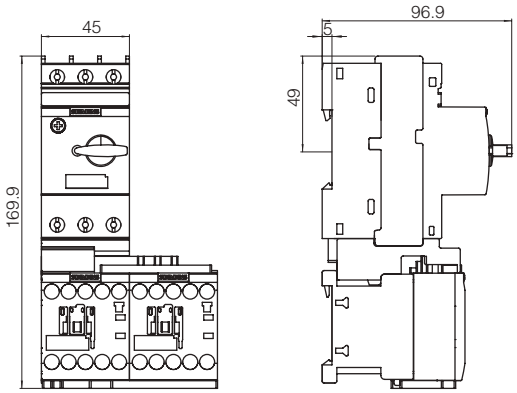


## 3RV201 with 3RT201

3RA2110
Fast Bus Non-reversing



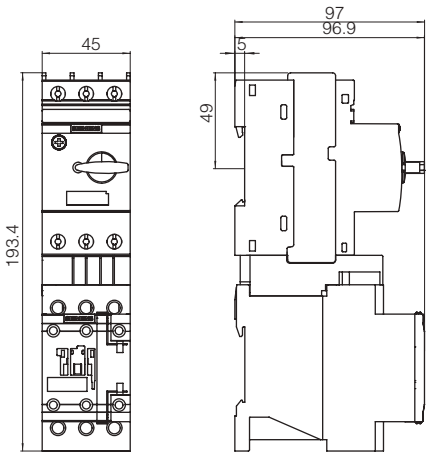

3RA2210
Fast Bus Reversing



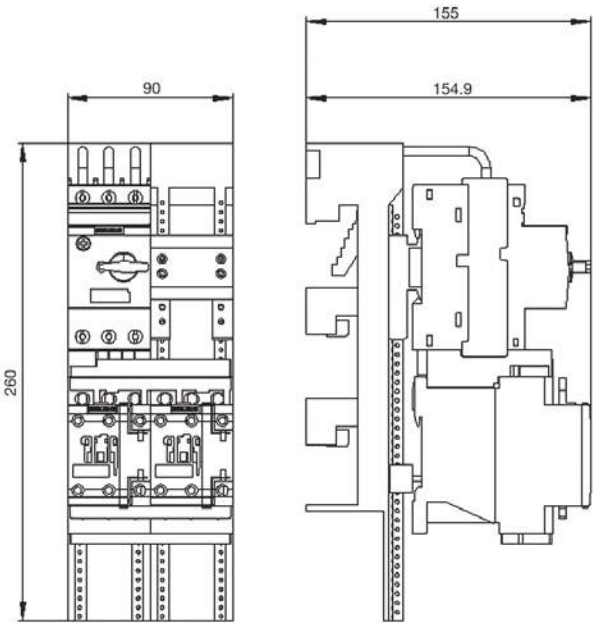

1) Lockable in OFF position. Padlock diameter 5 mm.
2) When a front auxiliary is installed on the contactor, add 44 mm to the depth of the contactor.

## 3RV202 with 3RT201

3RA2120
Fast Bus Non-reversing




3RA2220
Fast Bus Reversing




1) Lockable in OFF position. Padlock diameter 5 mm.
2) When a front mount auxiliary is installed on the contactor, add 44 mm to the depth of the contactor.

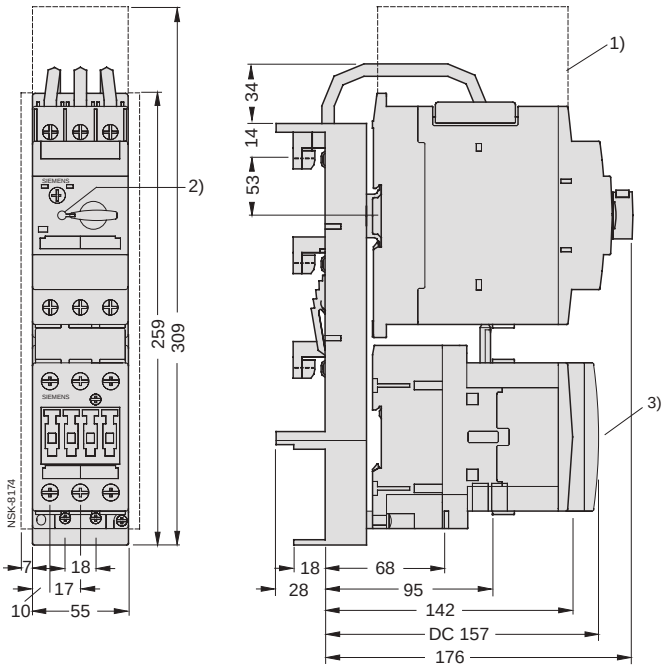
All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.

# SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

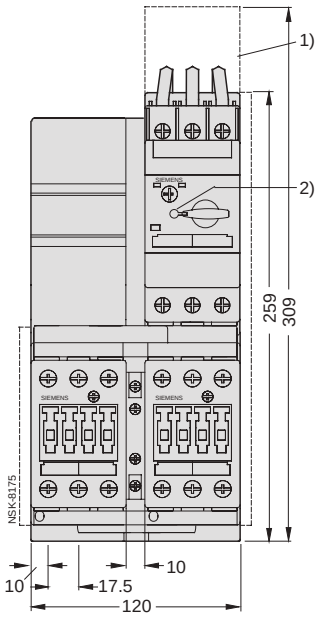
## Dimensions

### *3RV203 with 3RT203*

3RA2130
Fast Bus Non-reversing



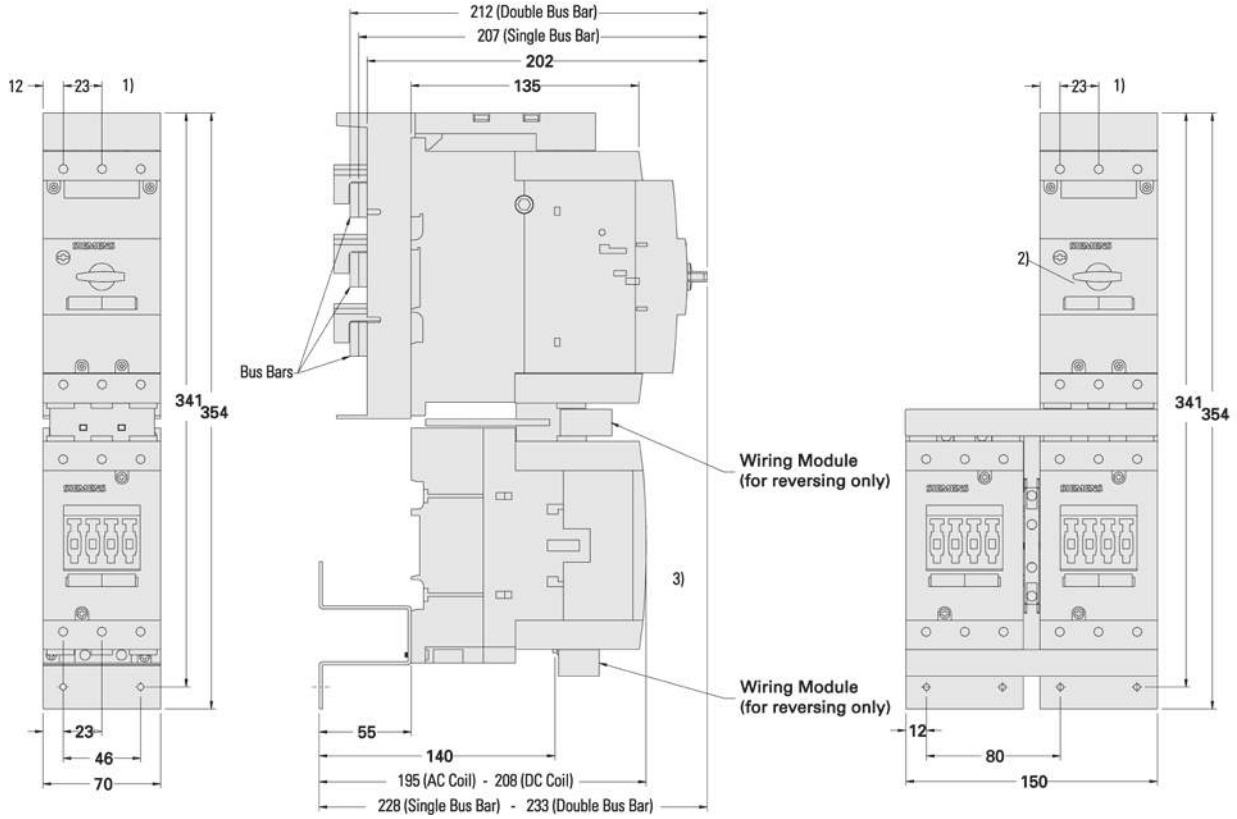

3RA2230
Fast Bus Reversing




Lateral clearance to grounded components minimum 6 mm.
1) Arcing space
2) Lockable in OFF position with padlock diameter 5 mm.
3) When a front mount auxiliary is installed on the contactor, add 49 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.

### *3RV204 with 3RT204*




Lateral clearance to grounded components minimum 6 mm.
1) Arcing space
2) Lockable in OFF position with padlock diameter 5 mm.
3) When a front mount auxiliary is installed on the contactor, add 49 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.

## Notes

SIRIUS 3RM1

ET 200SP

ET 200pro

SIRIUS M200D

## contents

**SIRIUS 3RM1 motor starters**

| | |
|---|---|
| General data | 6/2 – 6/7 |
| Selection and ordering | 6/8 – 6/9 |
| Accessories | 6/10 – 6/11 |

**ET 200SP motor starters**

| | |
|---|---|
| General data | 6/12 – 6/18 |
| Selection and ordering | 6/19 |
| Base units and control module | 6/20 |
| Accessories | 6/21 |

**ET 200pro motor starters**

| | |
|---|---|
| General data | 6/22 – 6/27 |
| Standard motor starters | 6/28 |
| High Feature motor starters | 6/29 |
| ET 200pro isolator modules | 6/30 |
| ET 200pro safety motor starters | 6/31 |
| ***Solutions local/PROFIsafe*** | |
| - Safety modules local | 6/32 – 6/33 |
| - Safety modules PROFIsafe | 6/34 |
| Accessories for ET 200pro motor starters | 6/35 – 6/39 |
| ***Software*** | |
| Motor Starter ES | 6/40 |

**SIRIUS M200D motor starters**

| | |
|---|---|
| General data | 6/41 – 6/43 |
| ***M200D motor starters for AS-Interface*** | |
| General data | 6/44 – 6/46 |
| M200D Basic motor starters | 6/47 |
| M200D Standard motor starters | 6/48 |
| ***M200D motor starters for PROFIBUS/PROFINET*** | |
| General data | 6/49 – 6/54 |
| Communication modules, motor starter modules | 6/55 |
| ***Software*** | |
| Motor Starter ES | 6/56 |
| ***Accessories*** | |
| For all M200D motor starters | 6/57 – 6/61 |
| For M200D motor starters for AS-Interface | 6/62 – 6/63 |
| For M200D motor starters for PROFIBUS | 6/64 |
| For M200D motor starters for PROFINET | 6/65 |

**Hybrid fieldbus connections**

| | |
|---|---|
| General data | 6/66 |
| Selection and ordering | 6/67 |

# SIRIUS 3RM1 motor starters

## Introduction

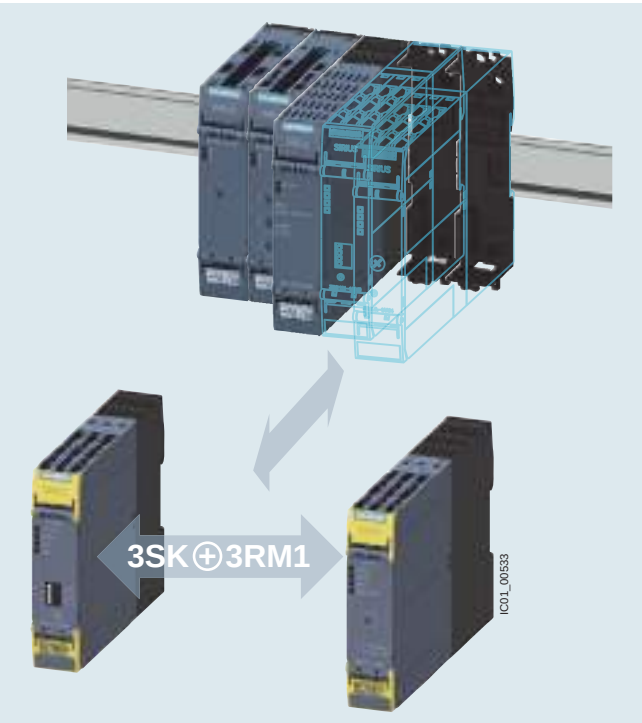
### Overview

3RM13 motor starter with reversing functionality, electronic overload protection and safety-related shutdown

SIRIUS 3RM1 motor starters are compact devices, 22.5 mm wide, combining a large number of functions in a single enclosure. They consist of combinations of relay contacts, power semiconductors (hybrid technology), and an electronic overload relay for operational switching of three-phase motors up to 3 HP (at 480V).

The 3RM1 motor starters with overload protection with wide setting range are available as direct-on-line starters and reversing starters and as versions with safety-related shutdown up to SIL 3/PL e.

***Seamlessly integrated safety right through to the main circuit***




Problem-free integration of functional safety into the main circuit through the simple combination of 3RM1 and 3SK devices

Functional safety in the main circuit needs to be both simple and flexible.

The unique compatibility of hybrid 3RM1 fail-safe motor starters and 3SK safety relays means that integrated functional safety right through to the main circuit is no longer a problem.

Their compact design allows the motor starters to be installed to the right of the safety relay in a simple manner, just like an output expansion. The wiring of the safety-related signals to the relay can be performed simply, quickly and in an error-free manner using the device connector.

The ergonomically designed enclosure with removable terminals and terminal labeling in the hinged cover allows for the cables to be conveniently diagonally mounted from the front. Either screw or spring-loaded terminals with push-in technology are available.

Highlights

- Fail-safe disconnection of motors up to 3 kW
- Problem-free combination of fail-safe motor starters and safety relays
- End-to-end system, simple setup using device connectors
- Ergonomic enclosure

Note:

For SIRIUS 3SK safety relays, see page 13/133.

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Product function | Direct-on-line starters | **3RM10** | **0** | **□** | **–** | **□** | **AA** | **□** | **4** | |
| | Failsafe direct-on-line starters | **3RM11** | **0** | **□** | **–** | **□** | **AA** | **□** | **4** | with ATEX certification and safety-related shutdown |
| | Reversing starters | **3RM12** | **0** | **□** | **–** | **□** | **AA** | **□** | **4** | |
| | Failsafe reversing starters | **3RM13** | **0** | **□** | **–** | **□** | **AA** | **□** | **4** | with ATEX certification and safety-related shutdown |
| Wide setting range for electronic overload release | 0.1 ... 0.5 A | | | **1** | | | | | | |
| | 0.4 ... 2.0 A | | | **2** | | | | | | For motor standard output up to 3/4 HP[1] |
| | 1.6 ... 7.0 A (UL=6.1A) | | | **7** | | | | | | For motor standard output up to 3 HP[1] |
| Connection method | Screw terminals | | | | | **1** | | | | |
| | Spring-loaded terminals (push-in) | | | | | **2** | | | | |
| | Mixed connection method | | | | | **3** | | | | Spring-loaded terminals (push-in) |
| Rated control supply voltage $U_s$ | 24 V DC | | | | | | | **0** | | |
| | 110 ... 230 V AC; 110 V DC | | | | | | | **1** | | |
| Example | | **3RM13** | **0** | **1** | **–** | **2** | **AA** | **0** | **4** | |

[1] Standard three-phase motor; the actual startup characteristics of the motor as well as its rated data are important factors here.

Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

### *Product advantages*

- Less space required in the control cabinet (20 to 80%) thanks to high functional density, which also means reduced wiring and testing
- Greater endurance and reduced heat losses thanks to hybrid technology
- Lower costs for stock keeping and configuration as a result of the wide setting range of the electronic overload release (up to 1:5)
- Fast wiring without tools for rigid conductors or conductors equipped with end sleeves thanks to spring-loaded terminals (push-in)
- Safety-related shutdown in accordance with SIL 3/PL e by shutting down the control supply voltage without additional devices in the main circuit
- The motor starters can be ideally combined with 3SK safety relays for safety-related shutdown (see page 13/133).
- Motor status feedback to the higher-level control system in the case of 3RM10 and 3RM12 motor starters in the 24 V DC version
- Virtually error-free wiring on the mains connection side and reduction in short-circuit protective devices by means of 3RM19 infeed system
- ATEX certification of the overload protection of the 3RM1 Failsafe motor starters: "Increased safety" type of protection EEx e according to ATEX directive 2014/34/EU
- The 3RM1 motor starters can be used with highly energy-efficient IE3/IE4 motors. In this regard, please observe the information on dimensioning and configuring, see Application Manual.
  For more information about IE3/IE4, see page 1/7.

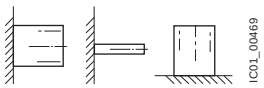
### *Standards and approvals*

- IEC/EN 60947-4-2
- UL 60947-4-2
- CSA
- ATEX
- IEC 61508-1: SIL 3
- ISO 13849: PL e
- CCC approval for China

## Technical specifications

| More information | |
|---|---|
| Industry Mall, see www.siemens.com/product?3RM1 | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16311/faq |
| Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/view/66295730 | |

| Article number | | 3RM10, 3RM12 | 3RM11, 3RM13 |
|---|---|---|---|
| **General technical specifications:** | | | |
| **Dimensions (W x H x D)** | mm | 22.5 x 100 x 141.6 | |
| **Ambient temperature** | | | |
| • During operation | °C | -25 … +60 | |
| • During storage | °C | -40 … +70 | |
| • During transport | °C | -40 … +70 | |
| **Installation altitude at height above sea level, maximum** | m | 4 000 | 2 000 |
| **Shock resistance** | | 6 *g* / 11 ms | |
| **Vibration resistance** | | 1 ... 6 Hz, 15 mm; 20 m/s², 500 Hz | |
| **Degree of protection** | | IP20 | |
| **Mounting position** | | Vertical, horizontal, standing (consider derating) | |




| Article number | | 3RM1.01 | 3RM1.02 | 3RM1.07 |
|---|---|---|---|---|
| **Main circuit:** | | | | |
| **Operational voltage, rated value, maximum** | V | 500 | | |
| **Operating frequency** | Hz | 50/60 | | |
| **Operational current at AC-53a at 400 V at an ambient temperature of 40 °C** | A | 0.5 | 2 | 7 |
| **Minimum load [% of IM]** | % | 20 | | |
| **Adjustable current response value of the inverse-time delayed overload release** | A | 0.1 ... 0.5 | 0.4 ... 2 | 1.6 ... 7 |

| Article number | | 3RM1.0.-.AA04 | 3RM1.0.-.AA14 |
|---|---|---|---|
| **Control circuit:** | | | |
| **Type of voltage of the control supply voltage** | | DC | AC/DC |
| **Control supply voltage** | | | |
| • At DC | V | 24 | 110 |
| • At AC at 50 Hz | V | -- | 110 … 230 |
| **Frequency of the control supply voltage** | Hz | -- | 50/60 |

| Type | | 3RM1.0.-1AA.4 | 3RM1.0.-3AA.4 | 3RM1.0.-2AA.4 |
|---|---|---|---|---|
| **Connections/terminals:** | | | | |
| **Type of electrical connection for main circuit** (1 or 2 conductors can be connected) | | Screw terminals | | Spring-loaded terminals (push-in) |
| **Connectable conductor cross-section for main contacts** | | | | |
| • Solid | mm² | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | | 1 x (0.5 ... 4) |
| • Finely stranded | | | | |
| - With end sleeve | mm² | 1 x (0.5 ... 4), 2 x (0.5 ... 1.5) | | 1 x (0.5 ... 2.5) |
| - Without end sleeve | mm² | -- | | 1 x (0.5 ... 4) |
| **Type of electrical connection for auxiliary and control circuit** (1 or 2 conductors can be connected) | | Screw terminals | Spring-loaded terminals (push-in) | |
| **Type of connectable conductor cross-sections for auxiliary contacts** | | | | |
| • Solid | mm² | 1 x (0.5 ... 2.5), 2 x (1.0 ... 1.5) | 1 x (0.5 ... 1.5), 2 x (0.5 ... 1.5) | |
| • Finely stranded | | | | |
| - With end sleeve | mm² | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1) | 1 x (0.5 ... 1.0), 2 x (0.5 ... 1.0) | |
| - Without end sleeve | mm² | -- | 1 x (0.5 ... 1.5), 2 x (0.5 ... 1.5) | |
| **Type of connectable conductor cross-sections for AWG cables** | | | | |
| • For main contacts | | 1 x (20 ... 12), 2 x (20 ... 14) | | 1 x (20 ... 12) |
| • For auxiliary contacts | | 1 x (20 ... 14), 2 x (18 ... 16) | 1x (20 ... 16), 2 x (20 ... 16) | |

## Accessories

**More information**

Equipment Manual, see
https://support.industry.siemens.com/cs/ww/en/view/66295730

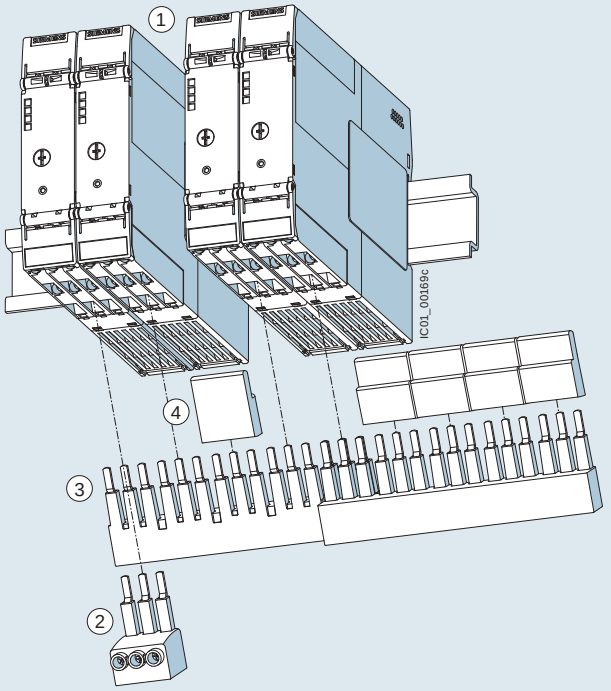
### *Three-phase infeed system (3RM19 three-phase busbar system)*

The system permits an easy, time-saving and safe means of feeding two or more 3RM1 motor starters. It can be used only with motor starters with screw terminals and in combination with 8US1716-0RK00 adapters for mounting rails in the main circuit.

The maximum summation current must not exceed 25 A. The primary infeed is connected via a three-phase infeed terminal.

The busbars are available in three lengths, for two, three or five motor starters. More than five devices can be connected by clamping the connection tags of a second busbar rotated by 180°.

The three-phase busbars are finger-safe but empty connection tags must be fitted with covers.




1 Four 3RM1 motor starters on standard mounting rail with one free slot
2 3RM1920-1AA three-phase infeed terminal
3 Two 3RM1910-1DA three-phase busbars rotated through 180° for the connection of up to nine motor starters
4 Covers for three 3RM1910-6AA connection tags respectively for unused slots

3RM19 infeed system with three-phase infeed terminal: In the above example, two three-phase busbars (5-pole busbars) rotated through 180° allow up to nine 3RM1 motor starters to be connected. Contact with the unused connection tags in unoccupied positions is prevented safely by the covers.

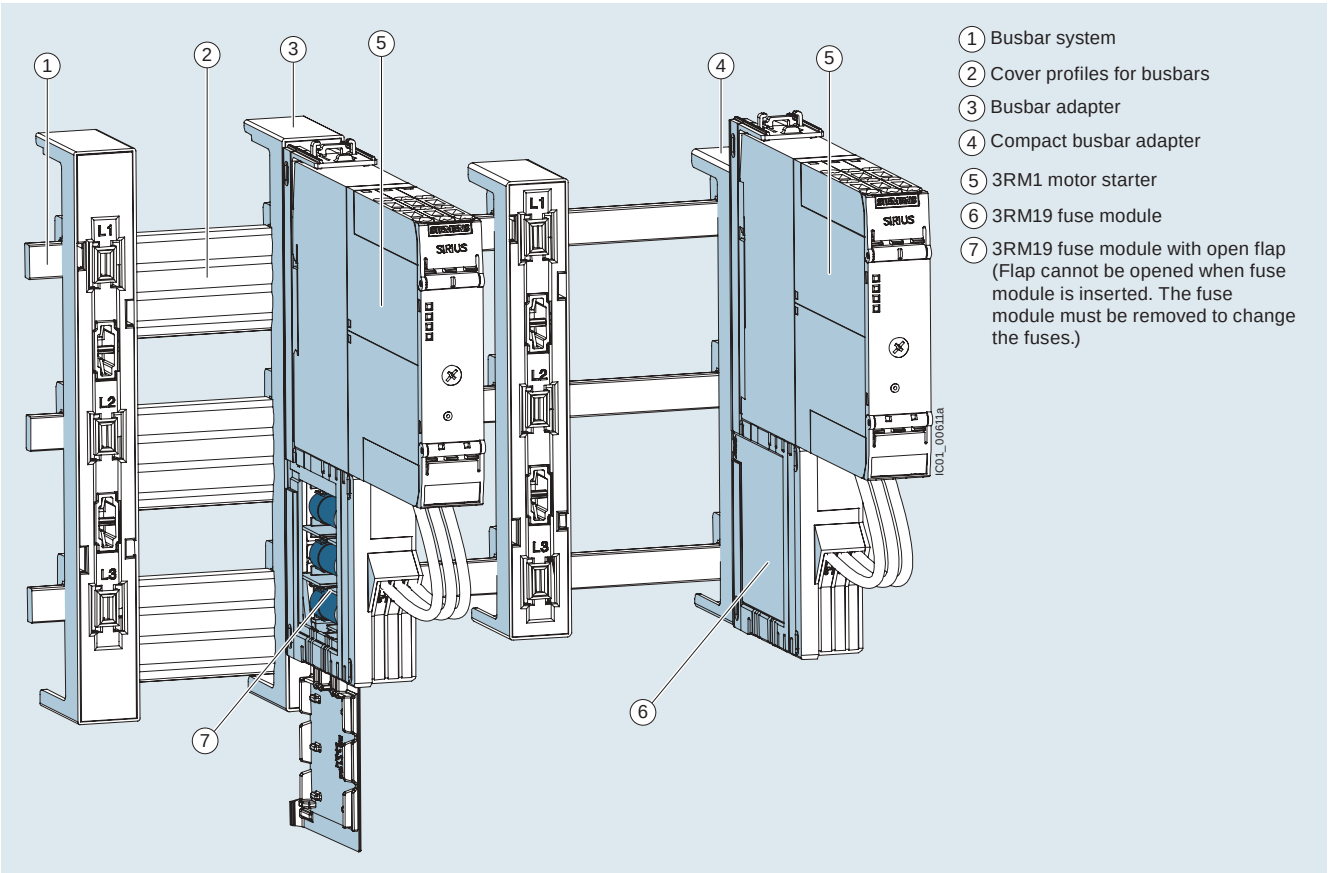
# SIRIUS 3RM1 motor starters

## General data

***Fuse module for the use of 3RM1 motor starters on 8US busbar systems and mounting rails***

The fuse module permits the very compact construction of a load feeder with a maximum width of 22.5 mm. The 3RM1 motor starter in combination with the integrated fuses for short-circuit protection can therefore be used on 8US busbar systems. Thanks to the range of different adapters, the fuse module can be used in all 60 mm busbar systems and also in compact busbar systems and on mounting rails. The interface to the adapter also permits a simple and secure replacement of the load feeder.

The fuse module can be combined with all 3RM1 motor starters. The easily replaceable fuses protect the connected motor and the cables.

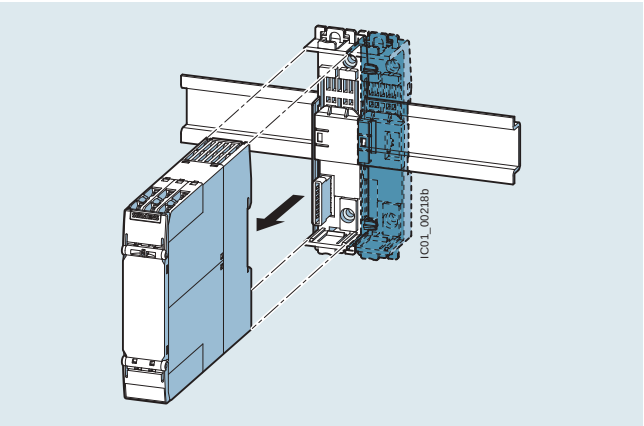



1. Busbar system
2. Cover profiles for busbars
3. Busbar adapter
4. Compact busbar adapter
5. 3RM1 motor starter
6. 3RM19 fuse module
7. 3RM19 fuse module with open flap (Flap cannot be opened when fuse module is inserted. The fuse module must be removed to change the fuses.)

By means of the fuse module, 3RM1 motor starters can be used in busbar systems and 8US compact busbar systems, as well as on mounting rails

### *Device connectors for the control circuit*

The device connectors for 3RM1 motor starters (24 V DC control supply voltage only) reduce the outlay for cabling by looping through the control supply voltage. The device connectors can be snapped onto a standard mounting rail or fixed to a level mounting panel using screws.




Device connector with 3RM1 motor starter

Using the device connectors exclusively for feeding in the control supply voltage

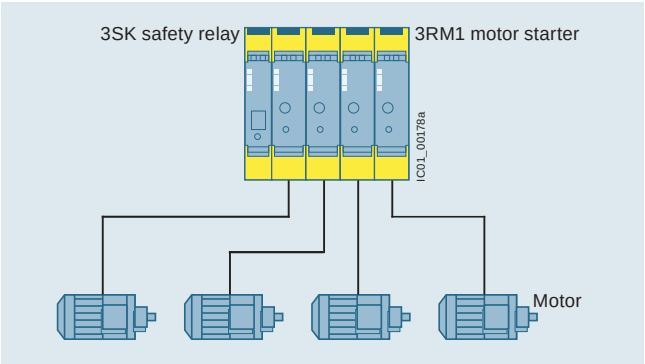
By using device connectors, a maximum of five motor starters can be supplied with 24 V DC control supply voltage. This requires the control supply voltage to be applied to the A1 and A2 terminals of only one motor starter.

Device daisy chain connectors can be used for gaps between two motor starters. Device termination connectors terminate a group.

Using the device connectors for safe group shutdown

In combination with the 3RM11 and 3RM13 fail-safe motor starters, the device connector can also be used for safety-related shutdown. For this application, groups of no more than five fail-safe motor starters can be connected using a device connector, and the group must be terminated with a termination connector. Removing the control voltage supply from the first motor starter will safely shut down the whole group.

Safe group shutdown can be implemented particularly easily in conjunction with 3SK safety relays. In this case, up to five motor starters can be directly connected to 3SK safety relays via the device connector and then safely shut down (see page 13/133).




Ideal connection: Combination of four SIRIUS 3RM1 Failsafe motor starters with SIRIUS 3SK safety relays

### *Electromechanical switching devices in series with hybrid motor starters*

Switching an inductive load - in particular of motors < 1 kW with high inductance - with an electromechanical switching device (e.g. contactor) can cause high and steep voltage edges.

The resulting faults/damage can be prevented by first disconnecting with the hybrid motor starter or by using EMC suppression modules:

- For 3RT2916-1P.. EMC suppression modules for direct mounting on the contactor, see page 2/78
- For motor suppression modules that are fitted in the main circuit, (see page 6/11).

Note:

For more information, see https://support.industry.siemens.com/cs/ww/en/view/109758696.

## Selection and ordering data

**More information**

Industry Mall, see www.siemens.com/product?3RM1

| | Operational power for three-phase motor at 460 V[1] | Adjustable current response value of the inverse-time delayed overload release | Control supply voltage | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | At DC | At AC at 50 Hz | | | | | |
| | HP | A | V | V | d | | | | |
| **Direct-on-line starters** | | | | | | | | | |
| 3RM1001-1AA04 | -- | 0.1 … 0.5 | 24 | -- | 2 | **3RM1001-□AA04** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 24 | -- | 2 | **3RM1002-□AA04** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 24 | -- | 2 | **3RM1007-□AA04** | | 1 | 1 unit |
| | -- | 0.1 … 0.5 | 110 | 110 … 230 | 2 | **3RM1001-□AA14** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 110 | 110 … 230 | 2 | **3RM1002-□AA14** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 110 | 110 … 230 | 2 | **3RM1007-□AA14** | | 1 | 1 unit |
| **Reversing starters** | | | | | | | | | |
| 3RM1201-1AA04 | -- | 0.1 … 0.5 | 24 | -- | 2 | **3RM1201-□AA04** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 24 | -- | 2 | **3RM1202-□AA04** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 24 | -- | 2 | **3RM1207-□AA04** | | 1 | 1 unit |
| | -- | 0.1 … 0.5 | 110 | 110 … 230 | 2 | **3RM1201-□AA14** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 110 | 110 … 230 | 2 | **3RM1202-□AA14** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 110 | 110 … 230 | 2 | **3RM1207-□AA14** | | 1 | 1 unit |
| **Failsafe direct-on-line starters** | | | | | | | | | |
| 3RM1101-1AA04 | -- | 0.1 … 0.5 | 24 | -- | 2 | **3RM1101-□AA04** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 24 | -- | 2 | **3RM1102-□AA04** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 24 | -- | 2 | **3RM1107-□AA04** | | 1 | 1 unit |
| | -- | 0.1 … 0.5 | 110 | 110 … 230 | 2 | **3RM1101-□AA14** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 110 | 110 … 230 | 2 | **3RM1102-□AA14** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 110 | 110 … 230 | 2 | **3RM1107-□AA14** | | 1 | 1 unit |
| **Failsafe reversing starters** | | | | | | | | | |
| 3RM1301-1AA04 | -- | 0.1 … 0.5 | 24 | -- | 2 | **3RM1301-□AA04** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 24 | -- | 2 | **3RM1302-□AA04** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 24 | -- | 2 | **3RM1307-□AA04** | | 1 | 1 unit |
| | -- | 0.1 … 0.5 | 110 | 110 … 230 | 2 | **3RM1301-□AA14** | | 1 | 1 unit |
| | 3/4 | 0.4 … 2 | 110 | 110 … 230 | 2 | **3RM1302-□AA14** | | 1 | 1 unit |
| | 3 | 1.6 … 6.1 | 110 | 110 … 230 | 2 | **3RM1307-□AA14** | | 1 | 1 unit |

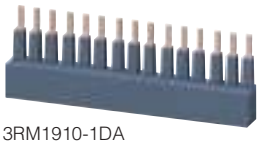
**Type of electrical connection**

- Screw terminals for main circuit, screw terminals for control circuit — **1**
- Spring-loaded terminals (push-in) for main circuit, spring-loaded terminals (push-in) for control circuit — **2**
- Screw terminals for main circuit, spring-loaded terminals (push-in) for control circuit — **3**

[1] The actual startup characteristics of the motor as well as its rated data are important factors here.

# SIRIUS 3RM1 motor starters

## Accessories

| | Product designation | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Three-phase infeed system for 3RM1 with screw terminals** | | | | | | |
| 3RM1920-1AA | **Three-phase infeed terminals**<br>• For three-phase busbars | ► | **3RM1920-1AA** | | 1 | 1 unit |
| 3RM1910-1AA | **Three-phase busbars**<br>• For 2 motor starters | ► | **3RM1910-1AA** | | 1 | 1 unit |
| 3RM1910-1BA | • For 3 motor starters | ► | **3RM1910-1BA** | | 1 | 1 unit |
|  3RM1910-1DA | • For 5 motor starters | ► | **3RM1910-1DA** | | 1 | 1 unit |
| 3RM1910-6AA | **Covers**<br>For 3 connection tags of the three-phase busbars | ► | **3RM1910-6AA** | | 1 | 10 units |
| **Fuse modules for 3RM1 for use on busbars or mounting rails** | | | | | | |
| 3RM1932-1AB | **Fuse module with 3NW6007-1 fuse** | 2 | **3RM1932-1AB** | | 1 | 1 unit |
| | **Fuse module without fuse**[1)] | 10 | **3RM1930-1AA** | | 1 | 1 unit |
| **Adapters** | | | | | | |
| 8US1216-0AS00 | **Adapters for 60 mm busbar systems**<br>22.5 mm x 200 mm x 41.5 mm<br>Note: The adapter can be used on busbars with a width of 12 mm and a thickness of 5 mm or 10 mm. | 5 | **8US1216-0AS00** | | 1 | 1 unit |
| 8US1616-0AK02 | **Adapters for 60 mm compact busbar systems**<br>22.5 mm x 160 mm x 41.5 mm<br>Note: The adapter can be used on busbars with a width of 12 mm, 15 mm, 20 mm, 25 mm or 30 mm and a thickness of 5 mm or 10 mm. | 5 | **8US1616-0AK02** | | 1 | 1 unit |

[1)] For details of alternative fuses, see Equipment Manual.

# SIRIUS 3RM1 motor starters

## Accessories

| | Product designation | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Adapters** | | | | | | |
| 8US1716-0RK00 | **Adapter for 35 mm DIN mounting rails**<br>22.5 mm x 185 mm x 23.5 mm | 5 | **8US1716-0RK00** | | 1 | 1 unit |
| **Cover profiles**[1)2)] | | | | | | |
| ***Cover profiles for busbars*** | | | | | | |
| 8US1922-2CA00 | 12 mm x 5 mm x 1 000 mm<br>40 mm or 60 mm center-to-center busbar clearance depending on busbar system | 2 | **8US1922-2CA00** | | 1 | 10 units |
| 8US1922-2AA00 | 15 mm x 5 mm x 1 000 mm<br>20 mm x 5 mm x 1 000 mm<br>25 mm x 5 mm x 1 000 mm<br>30 mm x 5 mm x 1 000 mm<br>40 mm or 60 mm center-to-center busbar clearance depending on busbar system | 2 | **8US1922-2AA00** | | 1 | 10 units |
| 8US1922-2BA00 | 12 mm x 10 mm x 1 000 mm<br>15 mm x 10 mm x 1 000 mm<br>20 mm x 10 mm x 1 000 mm<br>25 mm x 10 mm x 1 000 mm<br>30 mm x 10 mm x 1 000 mm<br>60 mm center-to-center busbar clearance | 2 | **8US1922-2BA00** | | 1 | 10 units |
| **Device connectors** | | | | | | |
| 3ZY1212-2EA00 | **Device connectors**<br>For 3RM1 motor starters, 24 V DC, 22.5 mm | 2 | **3ZY1212-2EA00** | | 1 | 1 unit |
| 3ZY1212-2AB00 | **Device daisy chain connectors**<br>For 3RM1 motor starters 24 V DC, 22.5 mm<br>For gaps without motor starters in assemblies | 2 | **3ZY1212-2AB00** | | 1 | 1 unit |
| 3ZY1212-2FA00 | **Device termination connectors**<br>For 3RM1 motor starters, 24 V DC, 22.5 mm | 2 | **3ZY1212-2FA00** | | 1 | 1 unit |

1) The cover profiles for busbars can be used for maintaining minimum spacing between the load feeders.

2) For further accessories for the configuration of a busbar system, see Catalog LV 10.

# SIRIUS 3RM1 motor starters

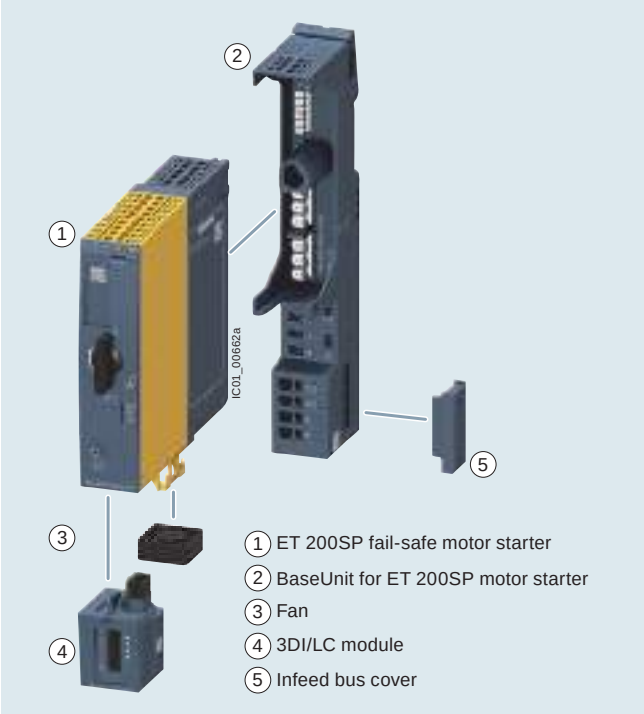
## Accessories

| | Product designation | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Removable terminals** | | | | | | |
| 3ZY1122-1BA00 | **Terminal for main circuit, 2-pole** | | | | | |
| | | | **Screw terminals** | | | |
| | • Screw terminals, 1 x 4 mm² | 2 | **3ZY1122-1BA00** | | 1 | 6 units |
| | | | **Spring-loaded terminals (push-in)** | | | |
| | • Spring-loaded terminals (push-in), 1 x 4 mm² | 2 | **3ZY1122-2BA00** | | 1 | 6 units |
| 3ZY1131-1BA00 | **Terminal for control circuit, 3-pole** | | | | | |
| | | | **Screw terminals** | | | |
| | • Screw terminals, 1 x 2.5 mm² | 2 | **3ZY1131-1BA00** | | 1 | 6 units |
| | | | **Spring-loaded terminals (push-in)** | | | |
| | • Spring-loaded terminals (push-in), 1 x 2.5 mm² | 2 | **3ZY1131-2BA00** | | 1 | 6 units |
| **Further accessories** | | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs for wall mounting**<br>2 lugs per device are required | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| 3ZY1321-2AA00 | **Sealable covers, 22.5 mm**<br>For simple protection against unauthorized access | 2 | **3ZY1321-2AA00** | | 1 | 5 units |
| 3ZY1440-1AA00 | **Coding pins for removable terminals**<br>For mechanical coding of the terminals | 2 | **3ZY1440-1AA00** | | 1 | 12 units |
| | **Hinged cover**<br>Replacement cover, without terminal labeling, 22.5 mm wide | | | | | |
| | • Titanium gray | 2 | **3ZY1450-1AB00** | | 1 | 5 units |
| | • Yellow | 2 | **3ZY1450-1BB00** | | 1 | 5 units |
| 3ZY1450-1AB00 | | | | | | |
| | **Motor suppression module** | | | | | |
| | • Square | 15 | **3RK1911-6EA00** | | 1 | 1 unit |
| | • Round | 15 | **3RK1911-6EB00** | | 1 | 1 unit |
| 3RK1911-6EA00 | | | | | | |
| | **Screwdrivers**<br>For all SIRIUS devices with spring-loaded terminals | | **Spring-loaded terminals** | | | |
| 3RA2908-1A | Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

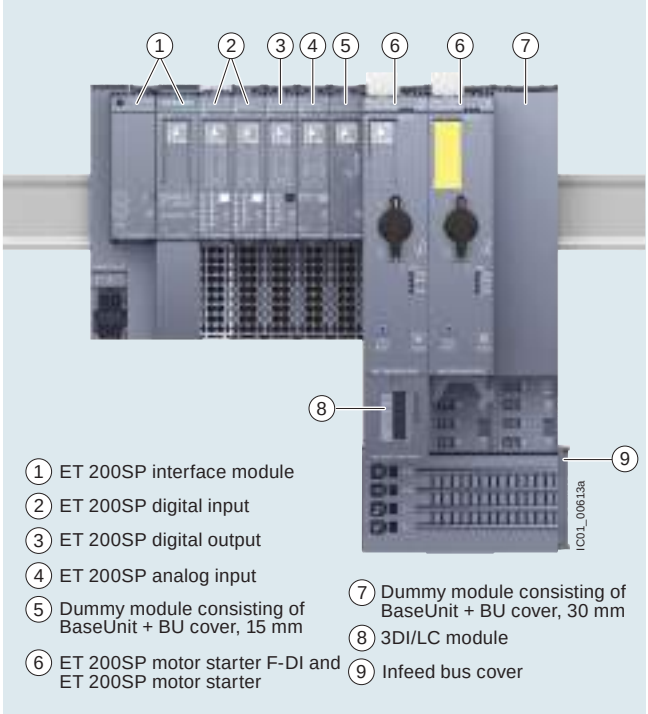
# ET 200SP motor starter

## Introduction

### Overview




Motor starter, BaseUnit, fan and 3DI/LC control module




3RK1308 motor starter in the ET 200SP I/O system

**More information**

Homepage, see www.siemens.com/ET200SP-motorstarter
Industry Mall, see www.siemens.com/product?3RK1308
TIA Selection Tool, see www.siemens.com/TST

Further components in the ET 200SP I/O system:
- Catalog ST 70
- Industry Mall, see www.siemens.de/product?ET200SP

### *ET 200SP motor starters*

ET 200SP is a scalable and extremely flexible modular I/O system.

As I/O modules, the ET 200SP motor starters are an integral part of this I/O system. They are switching and protection devices for single- and three-phase loads and are available as direct-on-line or reversing starters.

Basic functionality

All versions of the ET 200SP motor starter feature the following functionality:

- Fully pre-wired motor starters for switching and protecting any AC loads up to 5.5 kW from 48 V AC to 500 V AC
- Disconnection possible via fail-safe motor starters up to SIL 3 and PL e Cat. 4
- With self-assembling 32 A power bus, i.e. the load voltage is only fed in once for a group of motor starters
- All control supply voltages connected only once, i.e. when modules are added they are automatically connected to the next module
- Hot swapping is permissible
- Digital inputs can optionally be used via a 3DI/LC module
- Control of the motor starter from the control system and extensive diagnostics status via the cyclic process image
- Diagnostics capability for active monitoring of the switching and protection functions
- The signal states in the process image of the motor starter provide information about protective devices (short circuit or overload), the switching states of the motor starter, and system faults.

Starter Kit

The 3RK1908-1SK00 Starter Kit is a favorably priced complete package for switching and monitoring motors in the ET 200SP system, see page 6/21.

It contains:

- a 3RK1308-0BC00-0CP0 reversing starter (0.9 to 3 A)
- a 3RK1908-0AP00-0AP0 BaseUnit with 500 V and 24 V AC/DC infeed
- an EMC distance module (consisting of 6ES7193-6BP00-0BA0 BaseUnit plus 6ES7133-6CV15-1AM0 BU cover 15 mm)

Use of fan

For motor starters with a 12 A rated current, the 3RW4928-8VB00 fan is included in the scope of supply.

This fan can also be ordered as an option for motor starters with lower rated currents, if the boundary conditions demand this. For information on the ambient conditions for the use of motor starters, see chapter "Product overview" in the Equipment Manual.

Designing interference-free motor starters

For interference-free operation of the ET 200SP station in accordance with IEC 60947-4-2 standard, use a dummy module before the first motor starter. The dummy module consists of the 6ES7193-6BP00-0BA0 or 6ES7193-6BP00-0DA0 BaseUnit and the 6ES7133-6CV15-1AM0 BU cover 15 mm.

The 15 mm BU cover protects the plug contacts of the BaseUnit against dirt.

Electromechanical switching devices in series with hybrid motor starters

Switching an inductive load - in particular of motors <1 kW with high inductance - with an electromechanical switching device (e.g. contactor) can cause high and steep voltage edges.

The resulting faults/damage can be prevented by first disconnecting with the hybrid motor starter or by using EMC suppression modules:

- For 3RT2916-1P.. EMC suppression modules for direct mounting on the contactor, see page 13/133.
- For motor suppression modules that are fitted in the main circuit, see page 16/21.

Note:

For more information, see https://support.industry.siemens.com/cs/ww/en/view/109758696..

### *3DI/LC control module*

This is a digital input module with three inputs for local motor starter functions such as “manual local control”, “implementation of fast inputs” or “end position disconnection”. For a list of all the functions permitted by the 3DI/LC module, see chapter “Overview of functions” in the Equipment Manual.

The module is plugged into the front of the motor starter from which it is supplied with a 24 V DC operating voltage.

### *BaseUnits for motor starters*

1 24 V and 500 V DC
2 500 V AC
3 24 V DC
4 without infeed
5 3RK1908-0AP00-0EP0 (not shown here)
6 3RK1908-0AP00-0FP0 (not shown here)
7 500 V AC with F-DI infeed
8 500 V AC with F-DI loop-through
9 without infeed with F-DI infeed
10 without infeed with F-DI loop-through

View of the BaseUnit infeeds for the motor starters

BaseUnits are components for accommodating the ET 200SP I/O modules.

The self-assembling voltage buses integrated into the BaseUnits reduce wiring outlay to the single infeed (both of auxiliary and load voltage).

All modules following on the right are automatically supplied upon plugging the BaseUnits together, if BaseUnits are inserted with routing.

The rugged design and keyed connection technology enables use in harsh industrial conditions.

The BaseUnits are available with various infeeds for the motor starters.

# ET 200SP motor starter

## General data

Article No. scheme

| Product versions | | Article number | | |
|---|---|---|---|---|
| **Motor starters** | | **3RK1308 – 0 □ □ 0 0 – 0 C P 0** | | |
| Product function | Direct-on-line starters | **A** | | For motor standard output 0.09 ... 5.5 kW[1] |
| | Reversing starters | **B** | | For motor standard output 0.09 ... 5.5 kW[1] |
| | Fail-safe direct-on-line starters | **C** | | For motor standard output 0.09 ... 5.5 kW[1] |
| | Fail-safe reversing starters | **D** | | For motor standard output 0.09 ... 5.5 kW[1] |
| Current range | 0.1 ... 0.4 A | | **A** | Maximum current-carrying capacity when starting 4 A |
| | 0.3 ... 1 A | | **B** | Maximum current-carrying capacity when starting 10 A |
| | 0.9 ... 3 A | | **C** | Maximum current-carrying capacity when starting 30 A |
| | 2.8 ... 9 A | | **D** | Maximum current-carrying capacity when starting 90 A |
| | 4 ... 12 A | | **E** | Including fan (3RW4928-8VB00), maximum current-carrying capacity when starting 100 A |
| Example | | **3RK1308 – 0 A D 0 0 – 0 C P 0** | | |

[1] For standard motors: Single- or three-phase asynchronous motors, single-phase AC motors, single-phase asynchronous motors, at 400 V AC and 500 V AC; the actual startup characteristics of the motor as well as its rated data are important factors here.

| Product versions | | Article number | | |
|---|---|---|---|---|
| **BaseUnit** | | **3RK1908 – 0 A P 0 0 – 0 □ P 0** | | |
| BU infeed | 24 V and 500 V AC | | **A** | |
| | 24 V DC | | **B** | |
| | 500 V AC | | **C** | |
| | without infeed | | **D** | |
| | 500 V AC | | **G** | with F-DI infeed |
| | 500 V AC | | **H** | with F-DI loop-through |
| | without infeed | | **J** | with F-DI loop-through |
| | without infeed | | **K** | with F-DI infeed |
| Example | | **3RK1908 – 0 A P 0 0 – 0 A P 0** | | |

Note:

The article number schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

### Benefits

***Product advantages***

The ET 200SP motor starters offer a number of advantages:

- Fully integrated into the ET 200SP I/O system (including TIA Selection Tool and TIA Portal)
- High degree of flexibility when it comes to safety applications via SIMATIC F-CPU or SIRIUS 3SK safety relays up to SIL 3 and PL e Cat. 4.
- Simple, integrated current value transmission
- Extensive parameterization by means of TIA Portal
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Greater endurance and reduced heat losses thanks to hybrid technology
- Less space required in the control cabinet (20 to 80%) as a result of greater functional density (direct-on-line and reversing starters in same width)
- Extensive diagnostics and information for preventive maintenance
- Parameterizable inputs via 3DI/LC control module
- Less wiring and testing required as a result of integrating several functions into a single device
- Lower overheads for stock keeping and configuration as a result of the wide setting range of the electronic overload release (up to 1:3)
- The ET 200SP motor starters can be used with highly energy efficient IE3/IE4 motors, see Application Manual.
  Take the current characteristics of the connected motor and motor starter into account when dimensioning. In addition to the rated current, the maximum permissible current range of the motor starter and the ratio of the rated current to the starting current of the motor are relevant.
  For more information on IE3/IE4, see page 1/7.

***Standards and approvals***

- IEC/EN 60947-4-2
- UL 60947-4-2
- CSA
- ATEX
- IEC 61508-1: SIL 3
- ISO 13849: PL e
- CCC approval for China

# ET 200SP motor starter

## General data

### Application

The ET 200SP motor starters are suitable for the following applications:

- Switching and monitoring of
  - three-phase motors with overload and short-circuit protection (e.g. 400 V asynchronous motors for secondary drives in conveyor systems)
  - single-phase motors with overload and short-circuit protection (e.g. 230 V motors for pump applications)
  - Resistive loads by means of current value and diagnostics via the maintenance function (e.g. for heaters)
- Plant monitoring and energy management in conveyor systems:
  By means of the phase asymmetry and zero current detection during current measurement, for example, drive belt monitoring and blocking monitoring are possible.
- Track switching and lifting table control in conveyor systems:
  Track switches can be implemented using the quick stop function and lifting table controls by means of the "immediate end position disconnection" function without any laborious programming.
- Safe isolation of the drive from main power supply:
  The isolating functions according to IEC 60947-1 offer protection against inadvertent activation during plant maintenance.

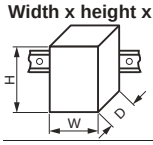
Motor starters in the process industry

For the ET 200SP motor starters, special BaseUnits are available that enable the device to be used in the ET 200SP HA I/O system, too. This is typically used in process engineering applications.

### Technical specifications

| More information | |
|---|---|
| Industry Mall, see www.siemens.com/product?3RK1308<br>Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/view/109479973 | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/21800/faq |

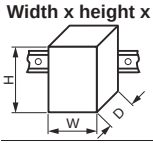
***ET 200SP motor starters***

| Article number | | 3RK1308-0AA00-0CP0<br>3RK1308-0BA00-0CP0 | 3RK1308-0AB00-0CP0<br>3RK1308-0BB00-0CP0 | 3RK1308-0AC00-0CP0<br>3RK1308-0BC00-0CP0 | 3RK1308-0AD00-0CP0<br>3RK1308-0BD00-0CP0 | 3RK1308-0AE00-0CP0<br>3RK1308-0BE00-0CP0 |
|---|---|---|---|---|---|---|
| **Product category** | | **Motor starters** | | | | |
| **General technical specifications:** | | | | | | |
| **Width x height x depth** | mm | 30 × 142 × 150 | | | | |
|  | | | | | | |
| **Design of the switching contact** | | Hybrid | | | | |
| **Design of the motor protection** | | Electronic | | | | |
| **Installation altitude at height above sea level, maximum** | m | 4 000 | | | | |
| **Mounting position** | | Vertical, horizontal, flat (observe derating) | | | | |
| **Type of mounting** | | Can be plugged into BaseUnit | | | | |
| **Ambient temperature** | | | | | | |
| • During operation | °C | -25 ... +60 | | | | |
| • During transport | °C | -40 ... +70 | | | | |
| • During storage | °C | -40 ... +70 | | | | |
| **Relative humidity during operation** | % | 10 ... 95 | | | | |
| **Vibration resistance** | | 15 mm up to 6 Hz; 2 *g* up to 500 Hz | | | | |
| **Shock resistance** | | 6 *g* / 11 ms | | | | |
| **Type of coordination** | | 1 | | | | |
| **Electrical data:** | | | | | | |
| **Supply voltage at DC rated value** | V | 24 | | | | |
| **Operational power for AC-53a at 400 V rated value** | kW | 0.12 | 0.25 | 1.1 | 4 | 5.5 |
| **Operating frequency, rated value** | Hz | 50 ... 60 | | | | |
| **Ultimate short-circuit current breaking capacity ($I_{cu}$)** | | | | | | |
| • at 400 V rated value | kA | 55 | | | | |
| • at 500 V rated value | kA | 55 | | | | |
| **Adjustable current response value of the inverse-time delayed overload release** | A | 0.1 ... 0.4 | 0.3 ... 1 | 0.9 ... 3 | 2.8 ... 9 | 4 ... 12 |
| **Max. current carrying capacity at startup** | A | 4 | 10 | 30 | 90 | 100 |
| **Max. permissible voltage for protective separation between main and auxiliary circuit** | V | 500 | | | | |
| **Insulation voltage, rated value** | V | 500 | | | | |
| **Trip class** | | CLASS 5 and 10 adjustable | | | | |

# ET 200SP motor starter

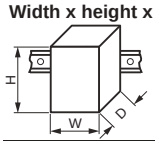
## General data

### *ET 200SP fail-safe motor starters*

| Article number | | 3RK1308-0CA00-0CP0<br>3RK1308-0DA00-0CP0 | 3RK1308-0CB00-0CP0<br>3RK1308-0DB00-0CP0 | 3RK1308-0CC00-0CP0<br>3RK1308-0DC00-0CP0 | 3RK1308-0CD00-0CP0<br>3RK1308-0DD00-0CP0 | 3RK1308-0CE00-0CP0<br>3RK1308-0DE00-0CP0 |
|---|---|---|---|---|---|---|
| **Product category** | | **Motor starters** | | | | |
| **General technical specifications:** | | | | | | |
| **Width x height x depth**   | mm | 30 × 142 × 150 | | | | |
| **Design of the switch contact** | | Hybrid | | | | |
| **Design of the motor protection** | | Electronic | | | | |
| **Installation altitude at height above sea level, maximum** | m | 2 000 | | | | |
| **Mounting position** | | Vertical, horizontal, flat (observe derating) | | | | |
| **Type of mounting** | | Can be plugged into BaseUnit | | | | |
| **Ambient temperature**<br>• During operation<br>• During transport<br>• During storage | <br>°C<br>°C<br>°C | <br>-25 ... +60<br>-40 ... +70<br>-40 ... +70 | | | | |
| **Relative humidity during operation** | % | 10 ... 95 | | | | |
| **Vibration resistance** | | 15 mm up to 6 Hz; 2 *g* up to 500 Hz | | | | |
| **Shock resistance** | | 6 *g* / 11 ms | | | | |
| **Type of coordination** | | 1 | | | | |
| **Electrical data:** | | | | | | |
| **Supply voltage at DC rated value** | V | 24 | | | | |
| **Operational power for AC-53a at 400 V, rated value** | kW | 0.12 | 0.25 | 1.1 | 4 | 5.5 |
| **Operating frequency, rated value** | Hz | 50 ... 60 | | | | |
| **Ultimate short-circuit current breaking capacity ($I_{cu}$)**<br>• at 400 V rated value<br>• at 500 V rated value | <br>kA<br>kA | <br>55<br>55 | | | | |
| **Adjustable current response value of the inverse-time delayed overload release** | A | 0.1 ... 0.4 | 0.3 ... 1 | 0.9 ... 3 | 2.8 ... 9 | 4 ... 12 |
| **Max. current carrying capacity at startup** | A | 4 | 10 | 30 | 90 | 100 |
| **Max. permissible voltage for protective separation between main and auxiliary circuit** | V | 500 | | | | |
| **Insulation voltage, rated value** | V | 500 | | | | |
| **Trip class** | | CLASS 5 and 10 adjustable | | | | |

## General data

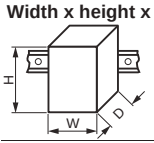
### *BaseUnits for motor starters*

| Article number | | 3RK1908-0AP00-0AP0 | 3RK1908-0AP00-0BP0 | 3RK1908-0AP00-0CP0 | 3RK1908-0AP00-0DP0 | 3RK1908-0AP00-0GP0 | 3RK1908-0AP00-0HP0 | 3RK1908-0AP00-0JP0 | 3RK1908-0AP00-0KP0 |
|---|---|---|---|---|---|---|---|---|---|
| **Product designation** | | **BaseUnit** | | | | | | | |
| **General technical specifications:** | | | | | | | | | |
| **Width x height x depth** | mm | 30 × 215 × 75 | | | | | | | |
|   | | | | | | | | | |
| **Ambient temperature** | | | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | | | | |
| • During transport | °C | -40 ... +70 | | | | | | | |
| • During storage | °C | -40 ... +70 | | | | | | | |
| **Touch protection against electric shock** | | Finger-safe | | | | | | | |
| **Connections/terminals:** | | | | | | | | | |
| **Type of connectable conductor cross-sections** | | | | | | | | | |
| • At the inputs for supply voltage | | | | | | | | | |
| - Solid | | 1 x 0.5 ... 2.5 $mm^2$ | | -- | | | | | |
| - Finely stranded with end sleeve | | 1 x 0.5 ... 2.5 $mm^2$ | | -- | | | | | |
| - Finely stranded without end sleeve | | 1 x 0.5 ... 2.5 $mm^2$ | | -- | | | | | |
| - Solid for AWG cables | | 1 x 20 ... 12 | | -- | | | | | |
| • For infeed | | | | | | | | | |
| - Solid | | 1 x 1 ... 6 $mm^2$ | -- | 1 x 1 ... 6 $mm^2$ | -- | 1 x 1 ... 6 $mm^2$ | -- | | |
| - Finely stranded with end sleeve | | 1 x 1 ... 6 $mm^2$ | -- | 1 x 1 ... 6 $mm^2$ | -- | 1 x 1 ... 6 $mm^2$ | -- | | |
| - Finely stranded without end sleeve | | 1 x 1 ... 6 $mm^2$ | -- | 1 x 1 ... 6 $mm^2$ | -- | 1 x 1 ... 6 $mm^2$ | -- | | |
| - Solid for AWG cables | | 1 x 18 ... 10 | -- | 1 x 18 ... 10 | -- | 1 x 18 ... 10 | -- | | |
| • For load-side outgoing feeder | | | | | | | | | |
| - Solid | | 1 x 0.5 ... 2.5 $mm^2$ | | | | | | | |
| - Finely stranded with end sleeve | | 1 x 0.5 ... 2.5 $mm^2$ | | | | | | | |
| - Finely stranded without end sleeve | | 1 x 0.5 ... 2.5 $mm^2$ | | | | | | | |
| - Solid for AWG cables | | 1 x 20 ... 12 | | | | | | | |
| **Type of electrical connection for auxiliary and control circuits** | | Spring-loaded terminals (push-in) | | | | | | | |
| **Miscellaneous:** | | | | | | | | | |
| **Type of screwdriver tip** | | Slotted | | | | | | | |
| **Size of screwdriver tip** | | Standard screwdriver 0.6 mm x 3.5 mm | | | | | | | |

# ET 200SP motor starter

## General data

### *3DI/LC control module*

| Article number | | 3RK1908-1AA00-0BP0 |
|---|---|---|
| **Product designation** | | **3DI/LC control module** |
| **General technical specifications:** | | |
| **Width x height x depth** | mm | 30 × 54.5 × 42.3 |
|  | | |
| **Type of product** | | Accessories |
| **Number of digital inputs** | | 4 |
| **Installation altitude at height above sea level, maximum** | m | 2 000 |
| **Mounting position** | | Vertical, horizontal, flat |
| **Type of mounting** | | Can be plugged onto motor starter |
| **Ambient temperature** | | |
| • During operation | °C | -25 ... +60 |
| • During transport | °C | -40 ... +70 |
| • During storage | °C | -40 ... +70 |
| **Connections/terminals:** | | |
| **Connectable conductor cross-section for auxiliary contacts** | | |
| • Solid or stranded | $mm^2$ | 0.2 ... 1.5 |
| • Finely stranded with end sleeve | $mm^2$ | 0.25 ... 1.5 |
| • Finely stranded without end sleeve | $mm^2$ | 0.2 ... 1.5 |
| **AWG number as coded connectable conductor cross-section** | | 24 ... 16 |
| **Type of electrical connection for auxiliary and control circuits** | | Spring-loaded terminals (push-in) |
| **Electrical data:** | | |
| **Type of voltage of the control supply voltage** | | DC |
| **Control supply voltage at DC rated value** | V | 20.4 ... 28.8 |
| **Miscellaneous:** | | |
| **Type of screwdriver tip** | | Slotted |
| **Size of screwdriver tip** | | Standard screwdriver 0.6 mm x 3.5 mm |

# ET 200SP motor starter

## Selection and ordering data *IE3/IE4* ready

### Selection and ordering data

| | Adjustable current response value of the inverse-time delayed overload release | Max. current carrying capacity at startup at 480V | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | A | A | d | | | | |
| **Motor starters** | | | | | | | |
| | ***Direct-on-line starters*** | | | | | | |
| 3RK1308-0AB00-0CP0 | 0.1 ... 0.4 | 3.2 | NEW 2 | **3RK1308-0AA00-0CP0** | | 1 | 1 unit |
| | 0.3 ... 1 | 8 | 2 | **3RK1308-0AB00-0CP0** | | 1 | 1 unit |
| | 0.9 ... 3 | 24 | 2 | **3RK1308-0AC00-0CP0** | | 1 | 1 unit |
| | 2.8 ... 9 | 72 | 2 | **3RK1308-0AD00-0CP0** | | 1 | 1 unit |
| | 4 ... 12 | 72 | 2 | **3RK1308-0AE00-0CP0** | | 1 | 1 unit |
| | ***Reversing starters*** | | | | | | |
| 3RK1308-0BB00-0CP0 | 0.1 ... 0.4 | 3.2 | NEW 2 | **3RK1308-0BA00-0CP0** | | 1 | 1 unit |
| | 0.3 ... 1 | 8 | 2 | **3RK1308-0BB00-0CP0** | | 1 | 1 unit |
| | 0.9 ... 3 | 24 | 2 | **3RK1308-0BC00-0CP0** | | 1 | 1 unit |
| | 2.8 ... 9 | 72 | 2 | **3RK1308-0BD00-0CP0** | | 1 | 1 unit |
| | 4 ... 12 | 72 | 2 | **3RK1308-0BE00-0CP0** | | 1 | 1 unit |
| | ***Fail-safe direct-on-line starters*** | | | | | | |
| 3RK1308-0CE00-0CP0 | 0.1 ... 0.4 | 3.2 | NEW 2 | **3RK1308-0CA00-0CP0** | | 1 | 1 unit |
| | 0.3 ... 1 | 8 | 2 | **3RK1308-0CB00-0CP0** | | 1 | 1 unit |
| | 0.9 ... 3 | 24 | 2 | **3RK1308-0CC00-0CP0** | | 1 | 1 unit |
| | 2.8 ... 9 | 72 | 2 | **3RK1308-0CD00-0CP0** | | 1 | 1 unit |
| | 4 ... 12 | 72 | 2 | **3RK1308-0CE00-0CP0** | | 1 | 1 unit |
| | ***Fail-safe reversing starters*** | | | | | | |
| 3RK1308-0DE00-0CP0 | 0.1 ... 0.4 | 3.2 | NEW 2 | **3RK1308-0DA00-0CP0** | | 1 | 1 unit |
| | 0.3 ... 1 | 8 | 2 | **3RK1308-0DB00-0CP0** | | 1 | 1 unit |
| | 0.9 ... 3 | 24 | 2 | **3RK1308-0DC00-0CP0** | | 1 | 1 unit |
| | 2.8 ... 9 | 72 | 2 | **3RK1308-0DD00-0CP0** | | 1 | 1 unit |
| | 4 ... 12 | 72 | 2 | **3RK1308-0DE00-0CP0** | | 1 | 1 unit |

# ET 200SP motor starter

## Base units and control module

### BaseUnits[1)]

3RK1908-0AP00-0AP0

| Type of product | Operational voltage of the AC infeed | Supply voltage of the DC infeed | SD | Push-in terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | V | V | d | | | | |
| ***For motor starters*** | | | | | | | |
| • with AC/DC infeed | 500 | 24 | 2 | **3RK1908-0AP00-0AP0** | | 1 | 1 unit |
| • with DC infeed | -- | 24 | 2 | **3RK1908-0AP00-0BP0** | | 1 | 1 unit |
| • with AC infeed | 500 | -- | 2 | **3RK1908-0AP00-0CP0** | | 1 | 1 unit |
| • without infeed | -- | -- | 2 | **3RK1908-0AP00-0DP0** | | 1 | 1 unit |
| ***For fail-safe motor starters*** NEW | | | | | | | |
| • with AC infeed, with F-DI infeed for fail-safe motor starters | 500 | -- | 2 | **3RK1908-0AP00-0GP0** | | 1 | 1 unit |
| • with AC infeed, with F-DI loop-through for fail-safe motor starters | 500 | -- | 2 | **3RK1908-0AP00-0HP0** | | 1 | 1 unit |
| • without AC/DC infeed, with F-DI loop-through for fail-safe motor starters | -- | -- | 2 | **3RK1908-0AP00-0JP0** | | 1 | 1 unit |
| • without AC/DC infeed, with F-DI infeed for fail-safe motor starters | -- | -- | 2 | **3RK1908-0AP00-0KP0** | | 1 | 1 unit |

1) The voltage is looped-through from BaseUnits with infeed to subsequent BaseUnits without infeed.

### BaseUnits

6ES7193-6BP00-0BA0

| Type of product | Supply voltage at DC rated value | Loop through the potential group from the left | SD | Push-in terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | V | | d | | | | |
| ***For dummy modules*** | | | | | | | |
| • dark, looping through the potential group | 24 | Yes | 1 | **6ES7193-6BP00-0BA0** | | 1 | 1 unit |
| • light, opening a new potential group | 24 | No | 1 | **6ES7193-6BP00-0DA0** | | 1 | 1 unit |

### 3DI/LC control module

3RK1908-1AA00-0BP0

| Control supply voltage at DC rated value | Product function: Local control | Product function: Digital inputs parameterizable | SD | Push-in terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| V | | | d | | | | |
| 20.4 ... 28.8 | Yes | Yes | 2 | **3RK1908-1AA00-0BP0** | | 1 | 1 unit |

# ET 200SP motor starter

## Accessories

| | Product designation | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Accessories** | | | | | | | |
| 6ES7133-6CV15-1AM0 | **BU cover 15 mm** | for BaseUnits Type A0 or A1 | 1 | **6ES7133-6CV15-1AM0** | | 1 | 5 units |
| 3RK1908-1CA00-0BP0 | **BU cover 30 mm** | For protection of empty slots, 30 mm | 2 | **3RK1908-1CA00-0BP0** | | 1 | 1 unit |
| 3RK1908-1DA00-2BP0 | **Infeed bus cover** (1 bag containing 10 covers) | For ET 200SP | 2 | **3RK1908-1DA00-2BP0** | | 1 | 1 unit |
| 3RK1908-1EA00-1BP0 | **Mechanical bracket** (1 bag containing 5 mechanical brackets) | Mechanical, for ET 200SP | 2 | **3RK1908-1EA00-1BP0** | | 1 | 1 unit |
| 3RW4928-8VB00 | **Fan** | Can be used for 3RK1308 | ► | **3RW4928-8VB00** | | 1 | 1 unit |
| 3RK1911-6EA00 | **Motor suppression module** | | | | | | |
| | • Square | | 15 | **3RK1911-6EA00** | | 1 | 1 unit |
| 3RK1911-6EB00 | • Round | | 15 | **3RK1911-6EB00** | | 1 | 1 unit |
| 3RK1908-1SK00 | **Starter Kit** NEW | consists of 3RK1308-0BC00-0CP0 reversing starter (0.9 ... 3 A), 3RK1908-0AP00-0AP0 BaseUnit with 500 V and 24 V AC/DC infeed, and EMC distance module (consisting of 6ES7193-6BP00-0BA0 BaseUnit plus 6ES7133-6CV15-1AM0 BU cover 15 mm) | 5 | **3RK1908-1SK00** | | 1 | 1 unit |

## Overview

***Flexible and cost-efficient distributed starter solutions***

Be it their high degree of protection, compact design or integrated multifunctionality – our motor starters and soft starters for use in the field are ideal for realizing distributed drive solutions. The modular concepts, distributed power supply and integrated safety technology of our portfolio for a high degree of protection consistently supports current trends in drive technology.

3RK1304

3RK1315

| | | Type | Page |
|---|---|---|---|
| **ET 200pro motor starters** | | | |
| **Motor starters in the SIMATIC ET 200pro I/O system up to 5.5 kW** | | | |
| Standard motor starters | | **3RK1304** | 6/28 |
| High Feature motor starters | | **3RK1304** | 6/29 |
| ET 200pro isolator modules | • With switch disconnector function for safe disconnection | **3RK1304** | 6/30 |
| Safety modules local | • Isolator module, 400 V disconnecting module | **3RK1304** | 6/31 |
| Safety modules PROFIsafe | • F-Switch PROFIsafe | **6ES7148** | 6/34 |
| Accessories for ET 200pro motor starters | • Incoming power supply, power loop-through connection on the field device, motor cable, power bus with power terminal connectors | **3RK19** | 6/35 |
| ET 200pro – interface modules | • For communication with PROFIBUS, PROFINET and IWLAN | **6ES71** | ST 70 |
| ET 200pro – CPUs | • Standard CPUs, fail-safe CPUs | **6ES71** | ST 70 |
| ET 200pro – I/O modules | • Digital/analog expansion modules, fail-safe expansion modules, power modules, ET 200pro pneumatic interfaces | **6ES71** | ST 70 |
| ET 200pro PS | • Stabilized power supplies | **6ES7148** | ST 70 |
| ET 200pro FC-2 frequency converters | | **6SL35** | D 31.2 |
| ET 200pro add-on products | • Modules for EtherNet/IP | **ZNX:EIP** | ST 70 |
| **SIRIUS M200D motor starters** | | | |
| **Distributed motor starters up to 5.5 kW** | | | |
| M200D AS-i Basic motor starters | | **3RK1315** | 6/47 |
| M200D AS-i Standard motor starters | | **3RK1325** | 6/48 |
| M200D communication modules for PROFIBUS | | **3RK1305** | 6/55 |
| M200D communication modules for PROFINET | | **3RK1335** | 6/55 |
| M200D motor starter modules | | **3RK1395** | 6/55 |
| Accessories | • Incoming power supply, motor cable, power bus with power terminal connectors | **3RK1911** | 6/59 |
| | • Motor control with I/O communication | **3RK1902** | 6/61 |
| | • Motor control with AS-i communication | **3RK1902** | 6/62 |
| | • Motor control with PROFIBUS | **3RK1902** | 6/64 |
| | • Motor control with PROFINET | **3RK1902** | 6/65 |
| **Hybrid fieldbus connections** | | | |
| | • Passive and active | **3RK1911** | 6/67 |

## Overview

### *ET 200pro motor starters in I/O system ET 200pro*

SIMATIC ET 200pro is the modular I/O system with high degree of protection IP65/66/67 for local, cabinet-free use. The ET 200pro motor starters with the high degree of protection IP65 are an integral part of ET 200pro.

ET 200pro motor starter: Isolator module, Standard starter and High Feature starter mounted on a wide module rack

### *ET 200pro motor starters* (see pages 6/28 and 6/29)

- Only two variants up to 5.5 kW
- All settings can be parameterized by bus
- Comprehensive diagnostic signals
- Support for PROFIenergy
- Overload can be acknowledged by remote RESET
- Current asymmetry monitoring
- Stall protection
- EMERGENCY START function on overload
- Current value transmission by bus
- Current limit monitoring
- Full support of acyclic services
- Direct-on-line or reversing starters
- Power bus connection can be plugged in using Han Q4/2 connectors
- Motor feeder with Han Q8/0 plug
- Conductor cross-section up to 6 x 4 $mm^2$
- 25 A per segment (power looped through using jumper plug)
- In the Standard and High Feature versions (with 4 DI on-board)
- Electromechanical switching and electronic switching
- Electronic starter for direct activation or with integrated soft starter function
- Supplied with 400 V AC brake contact as an option
- Temperature sensor can be connected (Thermoclick or PTC type A)
- Provision of the motor current in PROFIenergy format to higher-level systems, motor current shutdown in dead times using PROFIenergy

**More information**

Homepage, see www.siemens.com/ET200pro
Industry Mall, see www.siemens.com/product?ET200pro
Further components in the ET 200pro distributed I/O system:

- Interface modules, central units, I/O modules, ET 200pro PS, see Catalog ST 70
- ET 200pro FC-2 frequency converters, see Catalog D 31.2

### *ET 200pro isolator modules* (see page 6/30)

The isolator module with switch disconnector function is used for safe disconnection of the 400 V operational voltage during repair work in the plant and provides an integrated group fusing function (i.e. additional group short-circuit protection for all subsequently supplied motor starters).

Depending on the power distribution concept, all stations can be equipped with an isolator module as an option.

### *Safety applications*

Safety Solution local (see page 6/31)

With the Safety local modules
- Safety local isolator module and
- 400 V disconnecting module

with an appropriate connection, safety level PL e (according to ISO 13849-1) can be reached.

Safety Solution PROFIsafe (see page 6/34)

With the Safety PROFIsafe modules
- F-Switch and
- 400 V disconnecting module

with an appropriate connection, safety levels SIL 3 (according to IEC 62061) and PL e (according to ISO 13849-1) can also be reached.

### *Functionality*

With the ET 200pro motor starters, any three-phase loads can be protected and switched.

The ET 200pro motor starters are available with mechanical and also electronic contacts.

The ET 200pro electromechanical starters are offered as direct-on-line starters (DSe) and reversing starters (RSe) as Standard and High Feature versions. There are device versions with or without control for externally fed brakes with 400 V AC.

Compared with the Standard motor starters, the High Feature, mechanical motor starter also has:

- Four digital inputs
- Advanced parameterization options

The ET 200pro electronic starters are offered as direct-on-line starters (sDSSte/sDSte) and reversing starters (sRSSte/sRSte) in the High Feature version.

Compared with the High Feature mechanical motor starters, the High Feature electronic motor starter also has:

- Soft starting and smooth ramp-down function
- Deactivated soft start function as an electronic starter for applications with a high switching frequency
- Advanced parameterization options

# ET 200pro motor starter

## General data

As a result of the protection concept with solid-state overload evaluation and the use of SIRIUS switching devices, size S00, additional advantages are realized on the Standard and High Feature motor starters – advantages that soon make themselves positively felt particularly in manufacturing processes with high plant stoppage costs:

- Configuration is made easier and flexibility is increased by the fine modular structure with ET 200pro. When using ET 200pro motor starters, the parts list per load feeder is reduced to two main items: the bus module and the motor starter. This makes the ET 200pro ideal for modular machine concepts or solutions for conveying systems and in machine-tool building.
- Expansions are easily possible through the subsequent adding of modules. The innovative plug-in technology also does away with the wiring needed up to now. Through the hot swapping function (disconnection and connection during operation) a motor starter can be replaced within seconds if necessary, without having to shut down the ET 200pro station and with it the process in the plant. The motor starters are therefore recommendable in particular for applications with special demands on availability. Storage costs are also optimized by the low level of variance (two units up to 7.5 HP).
- With four locally acting inputs available on the High Feature motor starter it is possible to realize autonomous special functions that work independently of the bus and the higher level control system, e.g. as a quick stop on gate valve controls or limit position disconnectors. In parallel with this, the states of these inputs are signaled to the control system.

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor starters** | | **3RK1304** | **–** | **5** | **□** | **S** | **□** | **0** | **–** | **□** | **A** | **A** | **□** | |
| Setting range | 0.15 ... 2.0 A | | | | **K** | | | | | | | | | |
| | 1.5 ... 12 A | | | | **L** | | | | | | | | | |
| Product function | Direct-on-line starters DSe | | | | | | **4** | | | **4** | | | | Standard |
| | Reversing starters RSe | | | | | | **4** | | | **5** | | | | Standard |
| | Direct-on-line starters DSe | | | | | | **4** | | | **2** | | | | High Feature |
| | Reversing starters RSe | | | | | | **4** | | | **3** | | | | High Feature |
| | Direct-on-line starters sDSSte/sDSte | | | | | | **7** | | | **2** | | | | High Feature |
| | Reversing starters sDSSte/sDSte | | | | | | **7** | | | **3** | | | | High Feature |
| Inputs/outputs | Without brake output | | | | | | | | | | | | **0** | |
| | With brake output | | | | | | | | | | | | **3** | 400 V AC, with High Feature + 4 inputs |
| Example | | **3RK1304** | **–** | **5** | **K** | **S** | **4** | **0** | **–** | **4** | **A** | **A** | **0** | |

| Product versions | | Article number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Modules** | | **3RK1304** | **–** | **0** | **H** | **S** | **0** | **0** | **–** | **□** | **A** | **A** | **0** | |
| Product function | Isolator modules | | | | | | | | | **6** | | | | |
| | Isolator modules | | | | | | | | | **7** | | | | Safety modules local |
| | 400 V disconnecting modules | | | | | | | | | **8** | | | | Safety modules local/PROFIsafe |
| Example | | **3RK1304** | **–** | **0** | **H** | **S** | **0** | **0** | **–** | **6** | **A** | **A** | **0** | |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

# ET 200pro motor starter

## General data

| Type<br>Technology designation[1] | | Standard motor starters<br>DSe, RSe | High Feature motor starters<br>DSe, RSe | <br>sDSSte, sDSte, sRSSte, sRSte |
|---|---|---|---|---|
| **Device functions (firmware features)** | | | | |
| **Parameterizable rated operational current** | | ✓ | | |
| **Integrated short-circuit protection** | | ✓ | | |
| **Parameterizable current limit values** | | -- | ✓ 2 limit values | |
| **Parameterizable response in case of current limit violation** | | -- | ✓ | |
| **Zero current monitoring** | | ✓ | | |
| **Parameterizable response in case of zero current violation** | | ✓ | | |
| **Parameterizable current asymmetry limit** | % | -- Fixed limit value (30 x $I_e$) | ✓ 30 ... 60 x $I_e$ | |
| **Parameterizable response in case of asymmetry limit violation** | | ✓ | | |
| **Motor blocking monitoring** | | -- | ✓ | |
| **Parameterizable blocking current limit** | % | -- | ✓ 150 ... 1 000 x $I_e$ | |
| **Parameterizable blocking time limit** | s | -- | ✓ 1 ... 5 | |
| **Current value transmission** | | ✓ | | |
| **Group warning diagnostics** | | -- | ✓ Parameterizable | |
| **Group diagnostics** | | ✓ Parameterizable | | |
| **EMERGENCY START** | | ✓ | | |
| **Digital inputs** | | -- | ✓ 4 inputs | |
| • Parameterizable input signal | | -- | ✓ Latching/non-latching | |
| • Parameterizable input level | | -- | ✓ NC/NO contacts | |
| • Parameterizable input signal delay | ms | -- | ✓ 10 ... 80 | |
| • Parameterizable input signal extension | ms | -- | ✓ 0 ... 200 | |
| • Parameterizable input control actions | | -- | ✓ 12 different actions | |
| **Brake output (400 V AC)** | | ✓ Order option | | |
| **Parameterizable brake enabling delay** | s | ✓ -2.5 ... +2.5 | | |
| **Parameterizable holding time of the brake during stopping** | s | ✓ 0 ... 25 | | |
| **Parameterizable startup type** | | -- | | ✓ |
| **Parameterizable ramp-down time** | | -- | | ✓ |
| **Parameterizable starting voltage** | | -- | | ✓ |
| **Parameterizable stopping voltage** | | -- | | ✓ |
| **Local device interface** | | ✓ | | |
| **Firmware update** | | ✓ By specialists | | |
| **Thermal motor model** | | ✓ | | |
| **Parameterizable trip class** | | -- CLASS 10 fixed | ✓ CLASS 5, 10, 15, 20 | |
| **Parameterizable response in case of overload of thermal motor model** | | -- | ✓ 3 possible states | |
| **Advance warning limit for motor heating** | % | -- | ✓ Parameterizable 0 ... 95 | |
| **Advance warning limit time-related trip reserve** | s | -- | ✓ Parameterizable 0 ... 500 | |
| **Parameterizable recovery time** | min | -- | ✓ 1 ... 30 | |
| **Parameterizable protection against voltage failure** | | -- Permanently integrated | ✓ | |
| **Reversing start function** | | ✓ Order option | | |
| **Parameterizable interlock time for reversing starters** | | -- 150 ms fixed | ✓ 0 ... 60 s | |
| **Integrated logbook functions** | | ✓ 3 device logbooks | | |
| **Integrated statistics data memory** | | ✓ | | |
| **Parameterizable response in case of CPU/master stop** | | ✓ | | |
| **PROFIenergy profile support** | | | | |
| • Disconnection of the motor current during idle times | | ✓ | | |
| • Measured motor current values | | ✓ | | |
| **Device indications** | | | | |
| • Group fault | | SF LED (red) | | |
| • Switching state | | STATE LED (red, yellow, green) | | |
| • Device status | | DEVICE LED (red, yellow, green) | | |
| • Digital inputs | | -- | IN 1 ... IN 4, LED | |

✓ Function available

-- Function not available

[1] DS .... Direct-on-line starters
RS .... Reversing starters
DSS .. Direct-on-line soft starters
RSS .. Reversing soft starters
e ..... Electronic motor protection
te ..... Full motor protection (thermal + electronic)
s ..... Electronic switching with semiconductor.

# ET 200pro motor starter

## General data

### Benefits

ET 200pro motor starters provide the following advantages:

- High flexibility thanks to a modular and compact design
- Little variance among all motor starter versions (two units up to 5.5 kW)
- Extensive parameterization using STEP 7 HW Config
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Extensive diagnostics and information for preventive maintenance
- Parameterizable inputs for on-site control functions (High Feature)
- Cabinet-free design thanks to high degree of protection IP65

### Application

The SIMATIC ET 200pro motor starters are ideal for the use of several spatially concentrated distributed drive solutions in which several motors, or digital or analog sensors and actuators are addressed from a distributed station. They are perfectly suited for protecting and switching any AC loads.

#### *Application areas*

The SIMATIC ET 200pro motor starters are suitable for numerous sectors of industry, e.g. machinery and plant engineering or conveying applications.

#### *Use of ET 200pro motor starters in conjunction with IE3/IE4 motors*

Note:

For the use of ET 200pro motor starters in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring; see Application Manual.

## Technical specifications

| More information | |
|---|---|
| Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/view/22332388 | Notes on security: System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation. For more information on the subject of Industrial Security, see www.siemens.com/industrialsecurity. |

| Type | | Standard motor starters | High Feature motor starters | |
|---|---|---|---|---|
| | | Mechanical switching without inputs | Mechanical switching with inputs | Electronic switching with inputs and soft starter function |
| Technology designation[1] | | DSe, RSe | DSe, RSe | sDSSte, sDSte, sRSSte, sRSte |
| **Mechanics and environment** | | | | |
| **Motor starters or modules that can be connected to ET 200pro** With width of 110 mm | | max. 8 | | |
| **Mounting dimensions (W x H x D)** | | | | |
| • Direct-on-line starters and reversing starters | mm | 110 x 230 x 150 | | 110 x 230 x 160 |
| **Permissible ambient temperature** | | | | |
| • During operation | °C | -25 ... +55, from +40 with derating | | |
| • During storage | °C | -40 ... +70 | | |
| **Permissible mounting position** | | Vertical, horizontal | | |
| **Vibration resistance** acc. to IEC 60068, Part 2-6 | *g* | 2 | | |
| **Shock resistance** acc. to IEC 60068, Part 2-27 | *g*/ms | Half-sine 15/11 | | |
| **Degree of protection** | | IP65 | | |
| **Pollution degree** | | 3, IEC 60664 (IEC 61131) | | |
| **Electrical specifications** | | | | |
| **Power consumption at 24 V DC** | | | | |
| • From auxiliary circuit L+/M (U1) | mA | Approx. 40 | | |
| • From auxiliary circuit A1/A2 (U2) | mA | Approx. 200 | | |
| **Rated operational current $I_e$ for power bus** | A | 25 | | |
| **Rated operational voltage $U_e$** | V AC | 400 (50/60 Hz) | | |
| • Approval according to EN 60947-1, Appendix N | V AC | Up to 400 (50/60 Hz) | | Up to 400 (50/60 Hz) |
| • Approval according to CSA and UL | V AC | Up to 600 (50/60 Hz) | | Up to 480 (50/60 Hz) |
| **Approval** | | | | |
| • DIN VDE 0106, Part 101 | V | Up to 400 | | Up to 480 |
| • CSA and UL approval | V | Up to 600 | | Up to 480 |
| **Conductor cross-sections** | | | | |
| • Incoming power supply | $mm^2$ | Max. 6 x 4 | | |
| **Touch protection** | | Finger-safe | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | | |
| **Rated insulation voltage $U_i$** | V | 400 | | |
| **Rated operational current $I_e$ for starters** | | | | |
| • AC-1 / 2 / 3 at 40 °C - At 400 V | A | 0.15 ... 2.0/1.5 ... 12.0 | | 0.15 ... 2.0/1.5 ... 12.0[2] |
| - At 500 V | A | 0.15 ... 2.0/1.5 ... 9.0 | | |
| • AC-4 at 40 °C - At 400 V | A | 0.15 ... 2.0/1.5 ... 4.0 | | |
| **Rated short-circuit breaking capacity** | kA | 100 at 400 V | | |
| **Type of coordination** acc. to IEC 60947-4-1 | | 1 | | |
| **Power of three-phase motors at 400 V** | kW | Max. 5.5 | | Max. 5.5/4[3] |
| **Utilization categories** | | AC-1, AC-2, AC-3, AC-4 | | AC-53a[4] (max. 9 A with deactivated soft start function up to CLASS 10) |
| **Protective separation between main and auxiliary circuits** | V | 400, acc. to EN 60947-1, Appendix N | | |
| **Endurance of contactor** | | | | |
| • Mechanical | Operating cycles | 30 million | | -- |
| • Electrical | Operating cycles | Up to 10 million; depending on the current loading (see manual) | | -- |
| **Permissible switching frequency** | | Depending on the current loading, motor starting time, and relative ON period (see manual) | | |
| **Operating times** for 0.85 ... 1.1 x $U_e$ | | | | |
| • Closing delay | ms | 11 ... 50 | | -- |
| • Opening delay | ms | 5 ... 45 | | -- |

1) DS .... Direct-on-line starters
RS .... Reversing starters
DSS .. Direct-on-line soft starters
RSS .. Reversing soft starters
e ..... Electronic motor protection
te ..... Full motor protection (thermal + electronic)
s ..... Electronic switching with semiconductor.

2) If the soft starter control function is deactivated, the permissible rated operational current is reduced to 9 A up to CLASS 10.

3) With parameterization as electronic starter max. 4 kW.

4) 8-hour operation.

# ET 200pro motor starter

## Standard motor starter *IE3/IE4* ready

### Overview

The functionality, device functions, and technical specifications of the Standard motor starter are described in "ET 200pro Motor Starters, General data" see page 6/23 onwards.

### Selection and ordering data

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Standard motor starters, mechanical<br>Motor protection: thermal model** | | | | | |
| **DSe direct-on-line starters**[1] | | | | | |
| • Without brake output | 2 | **3RK1304-5□S40-4AA0** | | 1 | 1 unit |
| • With brake output 400 V AC | 2 | **3RK1304-5□S40-4AA3** | | 1 | 1 unit |
| **RSe reversing starters**[1] | | | | | |
| • Without brake output | 2 | **3RK1304-5□S40-5AA0** | | 1 | 1 unit |
| • With brake output 400 V AC | 2 | **3RK1304-5□S40-5AA3** | | 1 | 1 unit |
| Setting range<br>Rated operational current | | | Additional price | | |
| • 0.15 ... 2.0 A | | **K** | None | | |
| • 1.5 ... 12.0 A | | **L** | ✓ | | |

DSe Standard

✓ = Additional price

1) Only functions when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro motor starters", page 6/39).

# ET 200pro motor starter

## High Feature motor starter *IE3/IE4* ready

### Overview

The functionality, device functions, and technical specifications of the High Feature motor starter are described in "ET 200pro Motor Starters, General data" see page 6/23 onwards.

The High Feature motor starter differs from the Standard motor starter in having more parameters and four integrated, freely-parameterizable digital inputs.

### Selection and ordering data

| Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **High Feature motor starters, mechanical<br>Motor protection: thermal model** | | | | | |
| <br>RSe High Feature | | | | | |
| **DSe direct-on-line starters**[1] | | | | | |
| • Without brake output and with 4 inputs | 2 | **3RK1304-5□S40-2AA0** | | 1 | 1 unit |
| • With brake output 400 V AC and 4 inputs | 5 | **3RK1304-5□S40-2AA3** | | 1 | 1 unit |
| **RSe reversing starters**[1] | | | | | |
| • Without brake output and with 4 inputs | 2 | **3RK1304-5□S40-3AA0** | | 1 | 1 unit |
| • With brake output 400 V AC and 4 inputs | 2 | **3RK1304-5□S40-3AA3** | | 1 | 1 unit |
| Setting range<br>Rated operational current | | | Additional price | | |
| • 0.15 ... 2.0 A | | **K** | None | | |
| • 1.5 ... 12.0 A | | **L** | ✓ | | |
| **High Feature motor starters**[2], **electronic<br>Full motor protection, comprising thermal motor protection and thermistor motor protection** | | | | | |
| <br>sRSSte High Feature | | | | | |
| **sDSSte/sDSte direct-on-line starters**[1][2] | | | | | |
| • Without brake output and with 4 inputs | 2 | **3RK1304-5□S70-2AA0** | | 1 | 1 unit |
| • With brake output 400 V AC and 4 inputs | 5 | **3RK1304-5□S70-2AA3** | | 1 | 1 unit |
| **Reversing starters sRSSte/sRSte**[1][2] | | | | | |
| • Without brake output and with 4 inputs | 2 | **3RK1304-5□S70-3AA0** | | 1 | 1 unit |
| • With brake output 400 V AC and 4 inputs | 2 | **3RK1304-5□S70-3AA3** | | 1 | 1 unit |
| Setting range<br>Rated operational current | | | Additional price | | |
| • 0.15 ... 2.0 A | | **K** | None | | |
| • 1.5 ... 12.0 A | | **L** | ✓ | | |

✓ = Additional price

1) Only functions when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro motor starters", page 6/39).

2) The electronic motor starters can be used not only as electronic motor starters with a high level of switching frequency but also as fully fledged soft starters for soft starting and stopping. The changeover from motor starter to soft starter takes place through reparameterization in HW Config. Depending on the setting, this results in the following current ranges:
- Parameterization as electronic motor starter: 0.15 to 2 A and 1.5 to 9 A (4 kW)
- Parameterization as soft starter: 0.15 to 2 A and 1.5 to 12 A (5.5 kW).

## Isolator modules *IE3/IE4* ready

### Overview

The isolator module with integrated group fusing function (i.e. additional group short-circuit protection for all subsequently supplied motor starters) and switch disconnector function is used for safe disconnection of the 400 V operational voltage in the plant.

Depending on the power distribution concept, all stations can be equipped with an isolator module as an option.

The following properties apply to the isolator module:

- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Cabinet-free design thanks to high degree of protection IP65

The isolator module is available in addition in a safety version (see "Safety local isolator module" on page 6/31).

### Technical specifications

| Type | | Isolator modules |
|---|---|---|
| **General data** | | |
| **Mounting dimensions (W x H x D)** | | |
| • Direct-on-line starters and reversing starters | mm | 110 x 230 x 170 |
| **Permissible ambient temperature** | | |
| • During operation | °C | -25 ... +55 |
| • During storage | °C | -40 ... +70 |
| **Permissible mounting position** | | Any |
| **Vibration resistance acc. to IEC 60068 Part 2-6** | *g* | 2 |
| **Shock resistance acc. to IEC 60068 Part 2-27** | *g*/ms | Half-sine 15/11 |
| **Power consumption** | | |
| • From auxiliary circuit L+/M (U1) | mA | Approx. 20 |
| • From auxiliary circuit A1/A2 (U2) | | -- |
| **Rated operational current $I_e$ for power bus** | A | 25 |
| **Rated operational voltage $U_e$** | V | 400 |
| **Approvals according to** | | |
| • DIN VDE 0106, Part 101 | V | Up to 500 |
| • CSA and UL | V | Up to 600 |
| **Conductor cross-sections** | | |
| • Incoming power supply | $mm^2$ | Max. 6 x 4 |

| Type | | Isolator modules |
|---|---|---|
| **Degree of protection** | | IP65 |
| **Touch protection** | | Finger-safe |
| **Pollution degree** | | 3, IEC 60664 (IEC 61131) |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Rated insulation voltage $U_i$** | V | 400 |
| **Rated operational current $I_e$ for starters** | | |
| • AC-1/2/3 at 40 °C | | |
| - At 400 V | A | 25 |
| - At 500 V | A | 25 |
| **Rated short-circuit breaking capacity** | kA | 50 at 400 V |
| **Type of coordination acc. to IEC 60947-4-1** | | 2 |
| **Protective separation between main and auxiliary circuits** | V | 400, according to DIN VDE 0106, Part 101 |
| **Device functions** | | |
| • Group diagnostics | | Yes, parameterizable |
| **Device indications** | | |
| • Group fault | | SF LED (red) |

### Selection and ordering data

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **ET 200pro isolator modules, mechanical** | | | | | |
| **Isolator modules**[1] Rated operational current 25 A | 2 | **3RK1304-0HS00-6AA0** | | 1 | 1 unit |

3RK1304-0HS00-6AA0

[1] Only functions when used together with the related 110 mm backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see page 6/39).

## Overview

### *Safety Solution local*

With the Safety local modules
- Safety local isolator module and
- 400 V disconnecting module

with an appropriate connection, safety level PL e (according to ISO 13849-1) can be reached.

ET 200pro motor starter (Safety Solution local): Safety local isolator module, disconnecting module, Standard starter and High Feature starter mounted on a wide module rack

### *Safety local isolator module*

The Safety local isolator module is a repair switch with integrated safety evaluation functions that can be parameterized using DIP switches.

It is used for
- Connection of a one- or two-channel EMERGENCY STOP circuit up to PL e (protective door or EMERGENCY STOP pushbuttons) and parameterizable start behavior
- For controlling the 400 V disconnecting module by means of a safety rail signal

### *400 V disconnecting module*

The 400 V disconnecting module enables the safe disconnection of an operational voltage of 400 V up to PL e. For operation in a Safety Solution local application, it functions only in combination with the Safety local isolator module.

For operation in a Safety PROFIsafe application it functions only in combination with the F-Switch.

### *Functionality*

Safety local isolator module

The Safety local isolator module features the same functions as a standard isolator module with an additional local safety function.

The Safety local isolator module contains a 3TK2841 module and is equipped with M12 terminals for the connection of external safety components.

Terminals 1 and 2 can be used to connect either one- or two-channel EMERGENCY STOP circuits or protective door circuits (IN 1, IN 2).

For monitored starts, an external START switch can be connected to terminal 3.

The required safety functions can be set using two slide switches located under the left M12 opening.

In the event of an EMERGENCY STOP, the Safety local isolator module trips the downstream 400 V disconnecting module. This safely separates the 400 V circuit up to PL e.

In combination with the 400 V disconnecting module, the Safety local isolator module can be used for safety applications up to PL e.

400 V disconnecting module

The 400 V disconnecting module can be used together with the Safety local isolator module for local safety applications and together with the F-Switch for PROFIsafe safety applications.

It contains two contactors connected in series for safety-related disconnection of the main circuit.

The auxiliary circuit supply of the device is over a safety power rail in the backplane bus module.

The 400 V disconnecting module can be used in conjunction with the Safety local isolator module or with the F-Switch for safety applications up to PL e.

## Technical specifications

| Type | | Safety local isolator module | 400 V disconnecting module |
|---|---|---|---|
| **General data** | | | |
| **Mounting dimensions (W x H x D)** | | | |
| • Direct-on-line starters and reversing starters | mm | 110 x 230 x 170 | 110 x 230 x 150 |
| **Permissible ambient temperature** | | | |
| • During operation | °C | -25 ... +55 | |
| • During storage | °C | -40 ... +70 | |
| **Permissible mounting position** | | Any | |
| **Vibration resistance acc. to IEC 60068, Part 2-6** | | 2 *g* | |
| **Shock resistance acc. to IEC 60068, Part 2-27** | | Half-sine 15 *g*/11 ms | |
| **Power consumption** | | | |
| • From auxiliary circuit L+/M (U1) | mA | Approx. 20 | |
| • From auxiliary circuit A1/A2 (U2) | | -- | |
| **Rated operational current $I_e$ for power bus** | A | 25 | |
| **Rated operational voltage $U_e$** | V | 400 (50/60 Hz) | |
| **Approval DIN VDE 0106, Part 101** | V | Up to 500 | |
| **CSA and UL approval** | V | Up to 600 | |
| **Conductor cross-sections** | | | |
| Incoming power supply | $mm^2$ | Max. 6 x 4 | |
| **Degree of protection** | | IP65 | |
| **Touch protection** | | Finger-safe | |
| **Pollution degree** | | 3, IEC 60664 (IEC 61131) | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | |
| **Rated insulation voltage $U_i$** | V | 400 | |
| **Rated operational current $I_e$ for starters** | | | |
| • AC-1/2/3 at 40 °C | | | |
| - At 400 V | A | 16 | 25 |
| - At 500 V | A | 16 | 25 |
| **Rated short-circuit breaking capacity** | kA | 50 at 400 V | |
| **Type of coordination acc. to IEC 60947-4-1** | | 2 | |
| **Protective separation between main and auxiliary circuits** | V | 400, according to DIN VDE 0106, Part 101 | |
| **Operating times for 0.85 ... 1.1 x $U_e$** | | | |
| • Closing delay | ms | -- | 25 ... 100 |
| • Opening delay | ms | -- | 7 ... 10 |
| **Device functions** | | | |
| • Group diagnostics | | Yes, parameterizable | |
| **Device indications** | | | |
| • Group fault | | SF LED (red) | |

## Selection and ordering data

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Safety modules local** | | | | | | |
| <br>3RK1304-0HS00-7AA0 | **Safety local isolator module**[1)2)]<br>Rated operational current 16 A | 5 | **3RK1304-0HS00-7AA0** | | 1 | 1 unit |
| <br>3RK1304-0HS00-8AA0 | **400 V disconnecting modules**[3)4)]<br>Rated operational current 25 A | 2 | **3RK1304-0HS00-8AA0** | | 1 | 1 unit |

1) The Safety local isolator module only functions when used together with the 400 V disconnecting module.
2) Only in combination with the special backplane bus module for the Safety local isolator module (see "Accessories for ET 200pro motor starters", page 6/39).
3) The 400 V disconnecting module functions only when used together with the Safety local isolator module or with the F-Switch.
4) The 400 V disconnecting module functions only when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro motor starters", page 6/39).

## Safety modules PROFIsafe *IE3/IE4* ready

### Overview

***Safety Solution PROFIsafe***

With the Safety PROFIsafe modules
- F-Switch and
- 400 V disconnecting module

with an appropriate connection, safety levels SIL 3 (according to IEC 62061) and PL e (according to ISO 13849-1) can be reached.

***F-Switch PROFIsafe***

Fail-safe digital inputs/outputs in degrees of protection IP65 to IP67 for near-machine, cabinet-free use.

Fail-safe digital inputs

- For the fail-safe reading in of sensor information (one-/two-channel)
- Including integrated discrepancy evaluation for 2v2 signals
- Internal sensor supplies (incl. testing) available

Fail-safe digital outputs

- Three fail-safe PP-switching outputs for safe switching of the backplane busbars

The F-Switch is certified up to SIL 3/PL e and has detailed diagnostics.

It supports PROFIsafe in PROFIBUS configurations as well as in PROFINET configurations.

Functionality

The PROFIsafe F-Switch is a fail-safe solid-state module for PROFIsafe safety applications. It has two fail-safe inputs and outputs for safe switching of the 24 V supply over backplane busbars. In combination with the 400 V disconnecting module, fail-safe disconnection of ET 200pro motor starters is possible in PROFIsafe applications up to SIL 3/PL e.

***400 V disconnecting module***

See "Safety modules local", Overview, page 6/31 and Technical specifications, page 6/32.

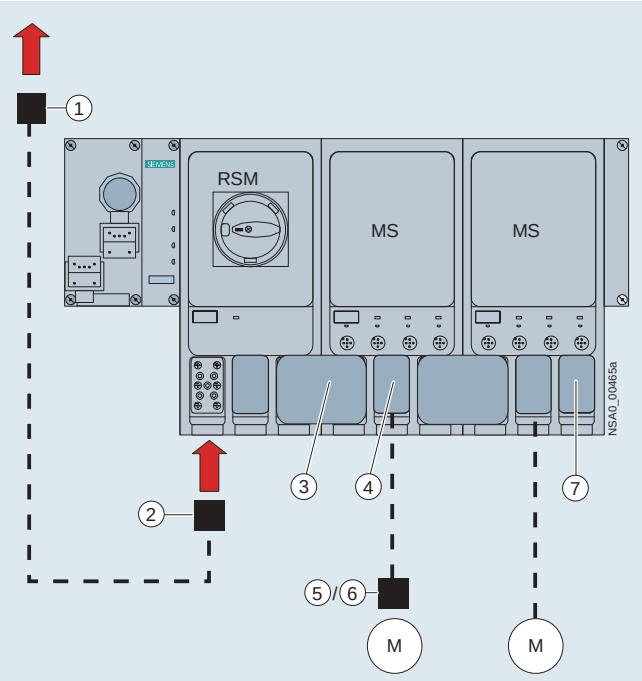
### Selection and ordering data

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Safety modules PROFIsafe** | | | | | | |
| 3RK1304-0HS00-8AA0 | **400 V disconnecting modules**[1)2)]<br>Rated operational current 25 A | 2 | **3RK1304-0HS00-8AA0** | | 1 | 1 unit |
| 6ES7148-1FS00-0AB0 | **F-Switch PROFIsafe**<br>24 V DC, including bus module<br>Note:<br>Connection module must be ordered separately | 1 | **6ES7148-4FS00-0AB0** | | 1 | 1 unit |
| | **Connection modules for F-Switch**<br>24 V DC | 1 | **6ES7194-4DA00-0AA0** | | 1 | 1 unit |

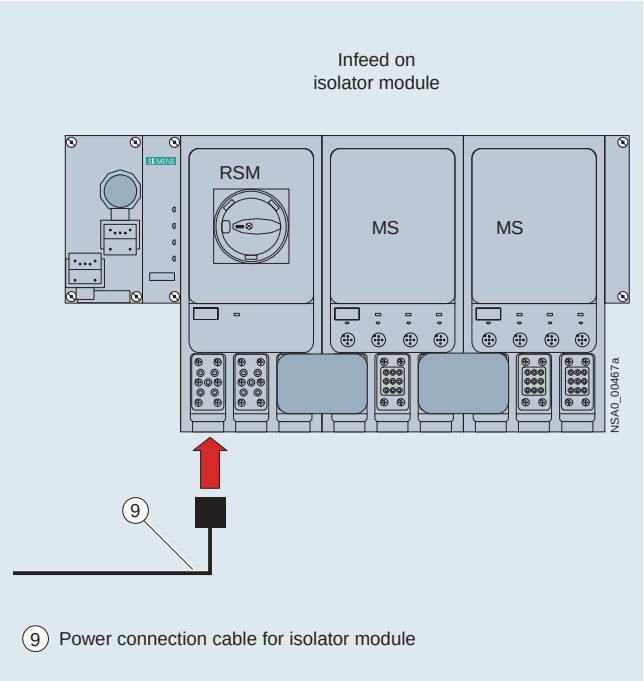
1) The 400 V disconnecting module functions only when used together with the Safety local isolator module or with the F-Switch.

2) The 400 V disconnecting module functions only when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro motor starters", page 6/39).

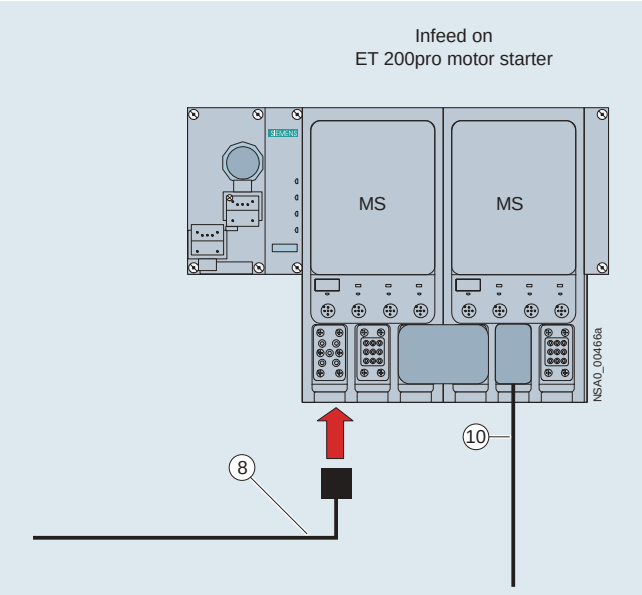
## Overview




Basic design of an ET 200pro version with (from the left) connection module for IM, interface module for communication (IM), RSM isolator module, two ET 200pro motor starters (MS), and connections for energy




Infeed on the RSM isolator module




Infeed on the ET 200pro motor starter

Legend:

① Power feeder plug (see page 6/37)
② Power connection plug (see page 6/37)
③ Power jumper plug (see page 6/37)
④ Motor connection plug (see page 6/37)
⑤ Motor plug (see page 6/37)
⑥ Motor plug with EMC suppressor circuit (see page 6/37)
⑦ Power loop-through plug (see page 6/37)
⑧ Power connection cable (see page 6/37)
⑨ Power connection cable for isolator module (see page 6/37)
⑩ Motor cable (see page 6/38)

### *Power bus*

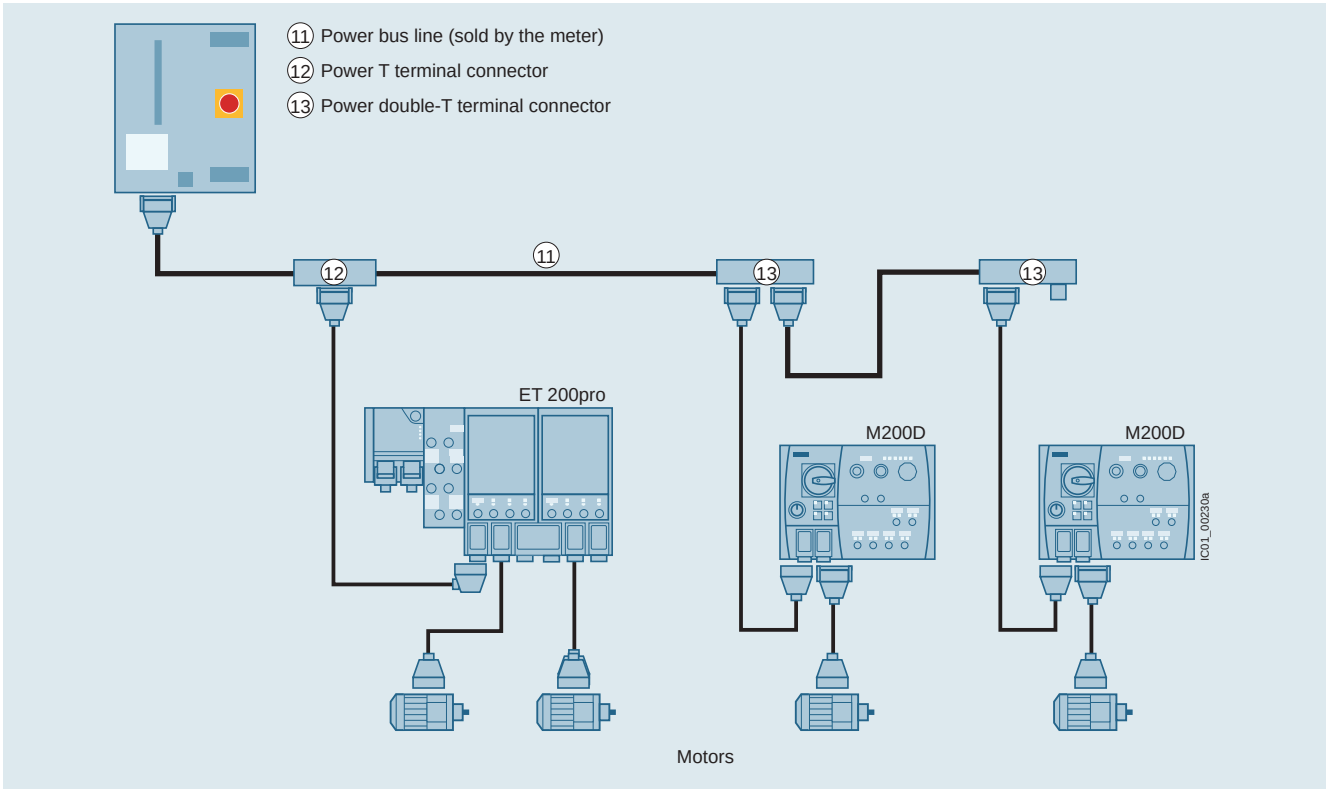
The power supply to the field devices (ET 200pro motor starters, M200D motor starters) is provided via the power bus, in which the power T terminal connectors or power double-T terminal connectors are connected by power bus cables.

### *Feeders*

From the terminal connectors, spur lines with Han Q4/2 plugs lead to the field devices, from which the motors are supplied with power via motor connection cables.

### *Interruption-free thanks to power terminal connectors*

In finger-safe connection technology the power T terminal connectors and power double-T terminal connectors connect the components of a feeder to the power bus. They ensure interruption-free operation, i.e. the power bus is not interrupted when the components are unplugged.




Power supply to the motors via the power bus with power T and double-T terminal connectors linked by power bus cables, spur lines to the field devices (motor starters), and power loop-through connections to the motors via motor connection cables

### *Motor control via PROFIBUS*

The interface modules (IM) for PROFIBUS can be combined with three different connection modules for connecting PROFIBUS DP and the power supply:

- Direct connection with cable gland
- ECOFAST connection with hybrid fieldbus cables (with two copper cores for data transmission with PROFIBUS DP, and four copper cores for the power supply), and ECOFAST plugs (HanBrid)[1)]
- M12, 7/8" connection
  - with M12 connecting cable and M12 plugs for data transmission with PROFIBUS DP
  - with 7/8" connecting cable and 7/8" plugs for the power supply[2)]

For connection modules with the relevant accessories, see "Accessories for ET 200pro interface modules" in Catalog ST 70 or the Industry Mall.

### *Motor control via PROFINET*

For connection modules with the relevant accessories, see "Accessories for ET 200pro interface modules" in Catalog ST 70 or the Industry Mall.

[1)] Hybrid fieldbus connections with HanBrid sockets designed as cabinet bushings transmit data and energy from the control cabinet (IP20) to the field (IP65). They are the interface for jointly routing PROFIBUS DP and the auxiliary voltages into the hybrid fieldbus cable (see page 6/66).

[2)] On the control cabinet bushings with two M12 sockets for the PROFIBUS M12 connecting cables (see page 6/66), the 24 V supply of the motor starters is implemented via separate 7/8" connecting cables.

## Selection and ordering data

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Incoming power supply** | | | | | |
| **① Power feeder plugs**<br>Connector set for incoming power supply, e.g. for connecting to T terminal connectors, comprising a coupling enclosure, straight outgoing feeder (with bracket), pin insert for HAN Q4/2, incl. gland | | | | | |
| • 5 male contacts, 2.5 mm² | 5 | **3RK1911-2BS60** | | 1 | 1 unit |
| • 5 male contacts, 4 mm² | 5 | **3RK1911-2BS20** | | 1 | 1 unit |
| • 5 male contacts, 6 mm² | 5 | **3RK1911-2BS40** | | 1 | 1 unit |
| **② Power connection plugs**<br>Connector set for incoming power supply for connection to ET 200pro motor starters/ET 200pro isolator modules, comprising a cable-end connector hood, angular outgoing feeder, female insert for HAN Q4/2, incl. gland | | | | | |
| • 5 female contacts, 2.5 mm² | 5 | **3RK1911-2BE50** | | 1 | 1 unit |
| • 5 female contacts, 4 mm² | 5 | **3RK1911-2BE10** | | 1 | 1 unit |
| • 5 female contacts, 6 mm² | 5 | **3RK1911-2BE30** | | 1 | 1 unit |
| **⑧ Power connection cables, assembled at one end**<br>Power connection cable for ET 200pro motor starters, open at one end, for HAN Q4/2, angular, 4 x 4 mm² | | | | | |
| • Length 1.5 m | 5 | **3RK1911-0DB13** | | 1 | 1 unit |
| • Length 5.0 m | 5 | **3RK1911-0DB33** | | 1 | 1 unit |
| **⑨ Power connection cables for isolator module, assembled at one end**<br>Power connection cable for ET 200pro isolator modules, open at one end, for HAN Q4/2, angular, insert turned at isolator module end, 4 x 4 mm² | | | | | |
| • Length 1.5 m | 30 | **3RK1911-0DF13** | | 1 | 1 unit |
| • Length 5.0 m | 30 | **3RK1911-0DF33** | | 1 | 1 unit |
| **Power loop-through on the field device** | | | | | |
| **③ Power jumper plugs** | 2 | **3RK1922-2BQ00** | | 1 | 1 unit |
| **⑦ Power loop-through plugs**<br>Connector set for power loop-through for connection to ET 200pro motor starters/ET 200pro isolator modules, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q4/2, incl. gland | | | | | |
| • 4 male contacts, 2.5 mm² | 5 | **3RK1911-2BF50** | | 1 | 1 unit |
| • 4 male contacts, 4 mm² | 5 | **3RK1911-2BF10** | | 1 | 1 unit |
| **Motor cables** | | | | | |
| **④ Motor connection plugs**<br>Connector set for motor cable for connection to ET 200pro motor starters, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q8/0, incl. gland | | | | | |
| • 8 male contacts, 1.5 mm² | 5 | **3RK1902-0CE00** | | 1 | 1 unit |
| • 6 male contacts, 2.5 mm² | 5 | **3RK1902-0CC00** | | 1 | 1 unit |
| **⑤ Motor plugs**<br>Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e, incl. star jumper, incl. gland | | | | | |
| • 7 female contacts, 1.5 mm² | 30 | **3RK1911-2BM21** | | 1 | 1 set |
| • 7 female contacts, 2.5 mm² | 30 | **3RK1911-2BM22** | | 1 | 1 set |
| **⑥ Motor plugs with EMC suppressor circuit**<br>Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e with EMC suppressor circuit, incl. star jumper, incl. gland | | | | | |
| • 7 female contacts, 1.5 mm² | 30 | **3RK1911-2BL21** | | 1 | 1 set |
| • 7 female contacts, 2.5 mm² | 30 | **3RK1911-2BL22** | | 1 | 1 set |

# ET 200pro motor starter

## Accessories

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Motor cables** (continued) | | | | | |
| ⑩ **Motor cables, assembled at one end**<br>Open at one end, HAN Q8, angular, length 5 m | | | | | |
| • For motor without brake, for ET 200pro, 4 x 1.5 $mm^2$ | 15 | **3RK1911-0EB31** | | 1 | 1 unit |
| • For motor with brake for ET 200pro, 6 x 1.5 $mm^2$ | 30 | **3RK1911-0ED31** | | 1 | 1 unit |
| • For motor without brake, with thermistor, for ET 200pro, 6 x 1.5 $mm^2$ | 30 | **3RK1911-0EF31** | | 1 | 1 unit |
| • For motor with brake and thermistor for ET 200pro, 8 x 1.5 $mm^2$ | 30 | **3RK1911-0EG31** | | 1 | 1 unit |
| **Power bus** | | | | | |
| ⑫ **Power T terminal connectors**<br>For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments | | | | | |
| • 2.5 $mm^2$/4 $mm^2$ | 5 | **3RK1911-2BF01** | | 1 | 1 unit |
| • 4 $mm^2$/6 $mm^2$ | 5 | **3RK1911-2BF02** | | 1 | 1 unit |
| ⑬ **Power double-T terminal connectors**<br>For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments, connection of two motor starters possible | | | | | |
| • 4 $mm^2$/6 $mm^2$ | 5 | **3RK1911-2BG02** | | 1 | 1 unit |
| **Sealing set (comprising 2 seals)**<br>For power T/power double-T terminal connectors | | | | | |
| • For power cables with Ø 10 ... 13 mm | 5 | **3RK1911-5BA00** | | 1 | 1 unit |
| • For power cables with Ø 13 ... 16 mm | 5 | **3RK1911-5BA10** | | 1 | 1 unit |
| • For power cables with Ø 16 ... 19 mm | 5 | **3RK1911-5BA20** | | 1 | 1 unit |
| • For power cables with Ø 19 ... 22 mm | X | **3RK1911-5BA30** | | 1 | 1 unit |
| • Blanking plugs | 5 | **3RK1911-5BA50** | | 1 | 1 unit |
| **Further accessories for power connections** | | | | | |
| <br>3RK1902-0CW00 | | | | | |
| **Crimping tool**<br>for pins/sockets, 4 $mm^2$ and 6 $mm^2$ | 15 | **3RK1902-0CW00** | | 1 | 1 unit |
| **Dismantling tools** | | | | | |
| • For male and female contacts for 9-pole HAN Q4/2 inserts | 15 | **3RK1902-0AB00** | | 1 | 1 unit |
| • For male and female contacts for 9-pole HAN Q8 inserts | 5 | **3RK1902-0AJ00** | | 1 | 1 unit |
| <br>3RK1902-0CK00 | | | | | |
| **Sealing caps**<br>For 9-pole power sockets | | | | | |
| • 1 unit per pack | 5 | **3RK1902-0CK00** | | 1 | 1 unit |
| • 10 units per pack | 5 | **3RK1902-0CJ00** | | 1 | 10 units |

# ET 200pro motor starter

## Accessories

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Further accessories** | | | | | | |
| | **Module racks, wide**[1] | | | | | |
| | • Length 500 mm | 1 | **6ES7194-4GB00-0AA0** | | 1 | 1 unit |
| | • Length 1 000 mm | 1 | **6ES7194-4GB60-0AA0** | | 1 | 1 unit |
| | • Length 2 000 mm | 1 | **6ES7194-4GB20-0AA0** | | 1 | 1 unit |
| | **Module racks, wide, compact**[1] | | | | | |
| | • Length 500 mm | 1 | **6ES7194-4GD00-0AA0** | | 1 | 1 unit |
| | • Length 1 000 mm | 1 | **6ES7194-4GD10-0AA0** | | 1 | 1 unit |
| | • Length 2 000 mm | 1 | **6ES7194-4GD20-0AA0** | | 1 | 1 unit |
| | **Backplane bus modules 110 mm**[2] | 2 | **3RK1922-2BA00** | | 1 | 1 unit |
| | **Backplane bus module for Safety local isolator modules** | 2 | **3RK1922-2BA01** | | 1 | 1 unit |
| 3RK1922-3BA00 | **Handheld devices**<br>For ET 200pro motor starters (or for ET 200S High Feature and M200D motor starters) for local operation.<br>Notes:<br>• The motor-starter-specific serial interface cables must be ordered separately.<br>• The RS 232 interface cable 3RK1922-2BP00 is used for the MS ET 200pro. | 5 | **3RK1922-3BA00** | | 1 | 1 unit |
| | **RS 232 interface cable**<br>Serial data connection between ET 200pro (or M200D) motor starters and the RS 232 interface of a PC/PG/laptop (with the Motor Starter ES software) or the handheld device 3RK1922-3BA00. | 5 | **3RK1922-2BP00** | | 1 | 1 unit |
| | **USB interface cable, 2.5 m**<br>Serial data connection between ET 200pro (or M200D) motor starters and the USB interface of a PC/PG/laptop (with the Motor Starter ES software). | 3 | **6SL3555-0PA00-2AA0** | | 1 | 1 unit |
| 3RK1901-1KA00 | **M12 sealing caps**<br>For sealing unused M12 input or output sockets (one set contains ten sealing caps) | ► | **3RK1901-1KA00** | | 100 | 10 units |
| | **Motor suppression module**<br>RC element for installation in motor terminal box | | | | | |
| 3RK1911-6EA00 | • Angular design | 15 | **3RK1911-6EA00** | | 1 | 1 unit |
| 3RK1911-6EB00 | • Round design | 15 | **3RK1911-6EB00** | | 1 | 1 unit |

[1] The wide module rack can accommodate all ET 200pro motor starters and any optional modules (isolator module, Safety local isolator module and 400 V disconnecting module).

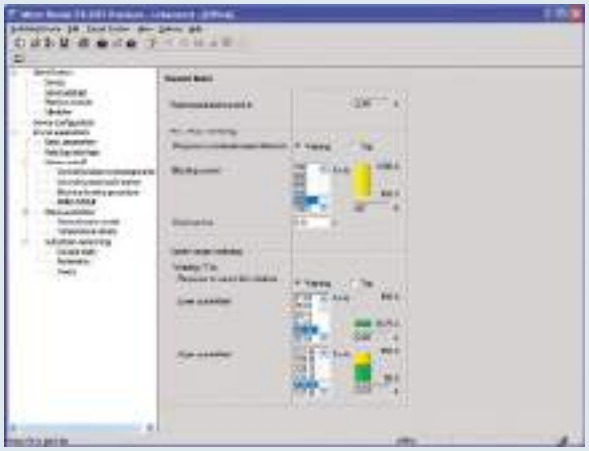
[2] The backplane bus module is a prerequisite for operation of the ET 200pro motor starter and the optional module.

For more connection technology products, see https://support.industry.siemens.com/cs/ww/en/view/65355810..

# Motor starter ES

## Software

### Overview



Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

**More information**

Industry Mall, see www.siemens.com/product?3ZS1

Technical specifications and system requirements, see https://support.industry.siemens.com/cs/ww/en/ps/16713/td

Motor Starter ES is used for the startup, parameterization, diagnostics, documentation and preventive maintenance of SIMATIC ET 200S, ET 200pro, ECOFAST and M200D motor starters.

The software program is available in three versions which differ in their user-friendliness, scope of functions and price.

## Overview

SIRIUS M200D AS-i Basic motor starter with manual local operation

The intelligent and highly flexible SIRIUS M200D motor starters for distributed installation start, monitor and protect motors and loads up to 7.5 HP.

The M200D motor starters are available in four versions:

| M200D AS-i Basic | M200D AS-i Standard | M200D PROFIBUS | M200D PROFINET |
|---|---|---|---|
| Motor control with AS-i communication | | PROFIBUS | PROFINET |
| Mechanical or electronic switching | | | |
| ✓ | ✓ | ✓ | ✓ |
| Electronic switching with soft starter functionality | | | |
| -- | ✓ | ✓ | ✓ |

✓ Function available
-- Function not available

**More information**

Homepage, see www.siemens.com/motorstarter
Industry Mall, see www.siemens.com/product?M200D
TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=MS_M200D

### *Basic functionality*

The versions of the M200D motor starter are equipped with the following properties and functions:

- Available as direct-on-line and reversing starters in a rugged design
- Electromechanical or electronic switching version
- Low variance – only two device versions up to 7.5 HP thanks to wide range setting
- All versions have the same enclosure size.
- Degree of protection IP65
- Quick and fail-safe wiring of system and motor cables using ISO 23570 plug-in connector technology (Q4/2 and Q8/0)
- Robust and widely used M12 connection method for digital inputs and outputs
- Integrated feeder connector monitoring
- Full motor protection through overload protection and a temperature sensor (PTC, TC)
- Short-circuit and overload protection integrated
- Integrated repair switch lockable with three locks (multi-level service)
- Uniform wiring to the SINAMICS G110D, SINAMICS G110M and SINAMICS G120D frequency inverters and to the ET 200pro distributed I/O system
- Extensive diagnostics concept using LEDs
- Optional integrated manual local control with key-operated switch (ordering option)
- Optionally available brake actuation with voltages from 180 V DC (no rectifier needed in motor) or 230/400 V AC (ordering options)

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Motor starters** | | **3RK13** | □ | **5** | **–** | **6** | □ | **S** | □ | **1** | **–** | □ | **A** | □ | □ | |
| Type | AS-i Basic | | **1** | | | | | | | | | | | **A** | | |
| | AS-i Standard | | **2** | | | | | | | | | | | **A** | | |
| | PROFIBUS/PROFINET | | **9** | | | | | | | | | | | **D** | | |
| Setting range for rated operational current $I_A$ | 0.15 ... 2 A | | | | | | **K** | | | | | | | | | |
| | 1.5 ... 9 A | | | | | | **N** | | | | | | | | | |
| | 1.5 ... 12 A | | | | | | **L** | | | | | | | | | |
| Starter version | Electromechanical starters | | | | | | | | **4** | | | | | | | with integrated contactor |
| | Electronic starters | | | | | | | | **7** | | | | | | | with thyristors |
| Product function | Direct-on-line starters | | | | | | | | | | | **0** | | | | |
| | Reversing starters | | | | | | | | | | | **1** | | | | |
| | Direct-on-line starters | | | | | | | | | | | **2** | | | | with manual local operation |
| | Reversing starters | | | | | | | | | | | **3** | | | | with manual local operation |
| Brake actuation | None | | | | | | | | | | | | | | **0** | |
| | 230/400 V AC | | | | | | | | | | | | | | **3** | |
| | 180 V DC | | | | | | | | | | | | | | **5** | |
| Example | | **3RK13** | **1** | **5** | **–** | **6** | **K** | **S** | **4** | **1** | **–** | **3** | **A** | **A** | **0** | |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

# SIRIUS M200D motor starters

## General data

### Benefits

M200D motor starters provide the following advantages for customers:

- High plant availability through plug-in capability of the main circuit, communication and I/Os – relevant for installing and replacing devices
- Cabinet-free construction and near-motor installation thanks to the high degree of protection IP65
- The motor starters record the actual current flow for the parameterizable electronic motor overload protection. Reliable messages concerning the overshooting or undershooting of setpoint values ensure comprehensive motor protection. All motor protection functions can be defined by simple parameterization
- Low stock levels and low order costs thanks to a wide setting range for the electronic motor protection of 1:10 (only two device versions up to 7.5 HP)
- The integrated wide range for the current enables a single device to cover numerous standard motors of different sizes.
- Comprehensive offering of accessories, including ready-assembled cables
- The M200D motor starters can be installed with a few manual steps. The integrated plug-in technology enables far lower wiring outlay:
  Preassembled cables can be plugged directly onto the motor starter module.
- Easy and user-friendly installation because all versions have the same enclosure dimensions.
- Fast and user-friendly commissioning using optional manual local operation
- Increase of process speed through integrated functions such as "Quick Stop" and "Disable Quick Stop", e.g. at points and crossings
- Optional manual local control with momentary-contact and latching operation for easier startup and easier servicing

### Application

The high degree of protection IP65 makes the M200D motor starters suitable in particular for use on extensive conveying systems such as are found in mail sorting centers, airports, automotive factories and the packing industry.

For simple drive tasks, particularly in conveyor applications, the new SINAMICS G110D frequency inverter series with a performance range from 0.75 kW to 7.5 kW and degree of protection IP65 is the ideal partner for the M200D motor starters.

SINAMICS G110D converters allow for stepless speed control of three-phase asynchronous motors and comply with the requirements for materials handling applications with frequency control.

For simple drive tasks in conveyor applications in which a frequency inverter integrated into the motor is required, the SINAMICS G110M frequency inverter with a performance range from 0.37 kW to 4 kW and degree of protection IP65/66 is the ideal partner. The SINAMICS G110M is available individually as a frequency converter for self-assembly and pre-mounted on SIMOGEAR geared motors, and with its conveyor-specific functions it satisfies the requirements of conveyor technology applications.

***Use of SIRIUS M200D motor starters in conjunction with IE3/IE4 motors***

Note:

For the use of SIRIUS M200D motor starters in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring, see Application Manual..

## Overview

For motor control using AS-Interface there are the following M200D motor starter versions: SIRIUS M200D AS-i Basic and SIRIUS M200D AS-i Standard (basic functionality, see page 16/41 "SIRIUS M200D Motor Starters" → "General data" → "Overview").

### *SIRIUS M200D AS-i Basic*

Functionality

- Easy and fast on-site startup through parameterization of local setting knobs (DIP switches) and rotary coding switches for adjusting the rated operational current. The rotary coding switch has an OFF position for deactivating the overload protection with the help of the thermal motor model when using a temperature sensor.

Communications

- AS-i communication with A/B addressing according to Spec V2.1
- The AS-i bus is connected cost-effectively using an M12 connection on the device. Of the four digital inputs, two are contained in the process image and can therefore be used in the PLC program. The other two inputs are locally effective and permanently assigned with functions.
- The LEDs can provide comprehensive diagnostics of the device on the spot. In addition to diagnostics using the PAE process image, the device can create up to 15 different diagnostic signals per slave. The message with the highest priority can be read out through the AS-i communication. This is yet another new development which distinguishes the M200D AS-i Basic motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

### *SIRIUS M200D AS-i Standard*

The intelligent and highly flexible M200D AS-i Standard motor starter in A/B technology starts and protects motors and loads up to 5.5 kW. They are available in direct-on-line or reversing starter versions, in a mechanical version and also an electronic version (the latter with soft start function).

The M200D AS-i Standard motor starter is the most functional member of the SIRIUS motor starter family in the high degree of protection IP65 for AS-i communication. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET 200pro I/O system is assured.

Functionality

- AS-i communication with A/B addressing according to Spec 3.0
- Electronic version also with soft start function
- AS-i slave profile 7AE/7A5 with process image 6E/4A
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through AS-i, providing maximum flexibility and best adaptability to the application.
- Additionally expanded diagnostics using data record through AS-i bus
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through AS-i bus with the help of data records or an expanded process image from the user program
- Control of the motor starter using a command data record from the user program
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Parameterization using Motor Starter ES at the local interface (ordering option for startup software)
- Diagnostics with the help of Motor Starter ES (ordering option for startup software)

### *Mounting and installation*

The M200D motor starters can be installed with a few manual steps. The integrated plug-in technology enables far lower wiring outlay. Connecting cables can be plugged directly onto the motor starter module. Swapping of the connecting wires and malfunctions within the plant are prevented by preassembled cables. The AS-i bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

The particularly robust M200D AS-i Standard motor starter is characterized by numerous functions which can be flexibly parameterized. It enables highly flexible parameterization through the AS-i bus using data records from the user program as well as user-friendly local parameterization using the Motor Starter ES startup software through the local point-to-point interface.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All motor protection functions, limit values and reactions can be defined by parameterization. The AS-i Standard is unique. In its 6E/4A process image the motor starter sends all four digital inputs and the digital output via the process image to the PLC in cyclic mode. System configuration and system documentation are facilitated not least by a number of CAX data.

Operation

The new generation of motor starters is characterized by its advanced functionality, maximum flexibility and extremely high degree of automation.

All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable messages concerning the overshooting or undershooting of setpoint values.

Diagnostics and maintenance

The M200D sets new standards for diagnostics. In addition to diagnostics using the PAE process image and diagnostics by "parameter echo" (up to 15 different diagnostic signals per slave can be read out via AS-i communication), the possibility of reading out diagnostic data records is unique on the market.

The AS-i Standard is recommended in particular for expansive and highly automated system components because the possibility of monitoring devices and systems with data records (statistical data, measured values and device diagnostics) provides an in-depth view of the plant from the control room, guaranteeing the monitoring process and increasing plant availability.

Preventive maintenance can be carried out with the integrated maintenance timer and plant downtimes prevented as a result in advance.

Local control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D AS-i Standard motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the plant.

# SIRIUS M200D motor starters for AS-Interface

## General data

| | SIRIUS M200D AS-i Basic | SIRIUS M200D AS-i Standard |
|---|---|---|
| **Device functions (firmware features)** | | |
| **Slave on the bus** | | |
| Fieldbus | ✓ AS-i | |
| Slave type | ✓ A/B acc. to Spec 2.1 | ✓ A/B acc. to Spec 3.0 |
| Profile | ✓ 7.A.E | ✓ 7.A.E & 7.A.5 |
| Number of assigned AS-i addresses on the bus | ✓ 1 | ✓ 2 |
| Number of stations per AS-i master | ✓ Max. 62 devices | ✓ Max. 31 devices |
| AS-i master profile | ✓ M3 and higher | ✓ M4 and higher |
| **Parameter assignment** | | |
| DIP switches | ✓ | -- |
| Potentiometer for rated operational current | ✓ | -- |
| Motor Starter ES | -- | ✓ |
| Data records through AS-i | -- | ✓ |
| **Diagnostics** | | |
| Diagnostics through parameter channel | ✓ | |
| Acyclic through data records | -- | ✓ |
| Expanded process image PAE 4 bytes | -- | ✓ |
| **Process image** | | |
| Process image | ✓ 4E/3A | ✓ 6E/4A |
| **Data channels** | | |
| Local optical interface (manual local) | ✓ | |
| AS-i bus | ✓ | |
| Motor Starter ES through local interface | -- | ✓ |
| Motor Starter ES through bus | -- | |
| **Data records[1] (acyclic)** | | |
| Parameter assignment | -- | ✓ |
| Diagnostics | -- | ✓ |
| Measured values | -- | ✓ |
| Statistics | -- | ✓ |
| Commands | -- | ✓ |
| **Inputs** | | |
| Number | ✓ 4 | |
| • Of these in the process image | ✓ 2 through AS-i | ✓ 4 through AS-i |
| Input action | ✓ For permanently assigned functions, see manual | ✓ Parameterizable: flexible |
| Quick stop | ✓ Permanent function: latching, edge-triggered | ✓ Parameterizable function: latching (edge-triggered), non-latching (level-triggered) |
| **Outputs** | | |
| Number | ✓ 1 | |
| Output action | ✓ Permanent function: assigned with group fault | ✓ Parameterizable: For function, see manual |
| **Brake output** | | |
| 180 V DC / 230/400 V AC / none | ✓ | |
| **Motor protection** | | |
| Overload protection | ✓ Electronic, wide range 1:10 | |
| Short-circuit protection | ✓ | |
| Full motor protection | ✓ | |
| Temperature sensor | ✓ Parameterizable using DIP switches: PTC or Thermoclick or deactivated | ✓ Parameterizable via Motor Starter ES, data record: PTC or Thermoclick or deactivated |

✓ Function available

-- Function not available

1) The data records are a reduced selection compared with PROFIBUS/PROFINET.

| | SIRIUS M200D AS-i Basic | SIRIUS M200D AS-i Standard |
|---|---|---|
| **Device functions (firmware features)** (continued) | | |
| **Device function** | | |
| Repair switch | ✓ | |
| Current limit monitoring bottom | -- | ✓ Parameterizable |
| Current limit monitoring top | -- | ✓ Parameterizable |
| Zero current detection | ✓ Permanent function: disconnection, less than 18.75% of the rated operational current $I_e$ | ✓ Parameterizable |
| Blocking current | ✓ Permanent function: starting up of the motor: Tripping limit up to 800% of the rated operational current $I_e$ for 10 s<br>Active operation: Threshold for tripping "blocking current" up to 400% of the rated operational current $I_e$ | ✓ Parameterizable |
| Asymmetry | ✓ Permanent function: up to 30% of the rated operational current $I_e$ (only mechanical MS) | ✓ Parameterizable |
| Load type | ✓ Permanent function: Three-phase | ✓ Parameterizable: single-phase and three-phase |
| Shutdown class | ✓ Parameterizable using DIP switches: CLASS 10/deactivated | Parameterizable via Motor Starter ES, data record: CLASS 5, 10, 15, 20 |
| Protection against voltage failure | ✓ | ✓ Parameterizable: activated/deactivated |
| **Soft starter control function** | | |
| Soft start function | -- | ✓ Only solid-state version |
| Bypass function | -- | ✓ Only solid-state version |

✓ Function available
-- Function not available

## Application

The M200D AS-i standard is particularly suitable for highly automated applications in conveyor systems requiring devices and systems to be monitored to prevent or limit plant downtime. The option of planning the functions of the motor starter or its interfaces also creates the prerequisite for fine-adjustment to the function of the motor starter in the application and hence provides for extreme flexibility.

### *Use of M200D motor starters in conjunction with IE3/IE4 motors*

Note:

For the use of SIRIUS M200D motor starters in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring,; see Application Manual.

## Technical specifications

**More information**

Manuals for SIRIUS M200D:
- AS-i Basic, see https://support.industry.siemens.com/cs/ww/en/view/35016496
- AS-i Standard, see https://support.industry.siemens.com/cs/ww/en/view/38722160

FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16324/faq

Notes on security:
In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information on the subject of Industrial Security, see www.siemens.com/industrialsecurity.

# SIRIUS M200D motor starters for AS-Interface

## General data

| Type | | M200D motor starters | | | |
|---|---|---|---|---|---|
| | | AS-i Basic electromechanical switching | AS-i Basic electronic switching | AS-i Standard electromechanical switching | AS-i Standard electronic switching |
| Technology designation[1] | | DSte/RSte | sDSte/sRSte | DSte/RSte | sDSSte/sRSSte |
| **Mechanics and environment** | | | | | |
| **Mounting dimensions (W x H x D)** | mm | 294 x 215 x 159 | | | |
| **Permissible ambient temperature** | | | | | |
| • During operation | °C | -25 ... +55 | | | |
| • During storage | °C | -40 ... +70 | | | |
| **Weight** | g | 2 880/3 130 | 3 220/3 420 | 2 880/3 130 | 3 220/3 420 |
| **Permissible mounting position** | | Vertical, horizontal, lying | | | |
| **Vibration resistance acc. to IEC 60068 Part 2-6** | *g* | 2 | | | |
| **Shock resistance** | | | | | |
| • Acc. to IEC 60068 Part 2-27 | *g*/ms | 12/11 half-sine | | | |
| • Without influencing the contact position | *g*/ms | 9.8/5 or 5.9/10 | | | |
| **Degree of protection acc. to IEC 529** | | IP65 | | | |
| **Installation altitude** | | | | | |
| • Up to 1 000 m | | No derating | | | |
| • Up to 2 000 m | | 1% per 100 m | | | |
| **Cooling** | | Convection | | | |
| **Protection class IEC 536 (VDE 0106-1)** | | 1 | | | |
| **Electrical specifications** | | | | | |
| ***Control circuit*** | | | | | |
| **Operating voltage $U_{As-i}$** | V DC | 26.5 ... 31.6 | | | |
| **Supply voltage $U_{aux}$** | V DC | 20.4 ... 28.8 | | | |
| **Power consumption from AS-i (incl. 200 mA sensor supply)** | mA | < 300 | | | |
| **Current consumption from $U_{aux}$ (without digital output)** | | | | | |
| • Max. | mA | 155 | 15 (direct-on-line)/ 175 (reversing) | 155 | 15 (direct-on-line)/ 175 (reversing) |
| • Typ. | mA | 75 | 10 (direct-on-line)/ 75 (reversing) | 75 | 10 (direct-on-line)/ 75 (reversing) |
| ***Main circuit*** | | | | | |
| **Maximum power of three-phase motors at 400 V AC** | kW | 5.5 | 4 | 5.5 | 5.5 |
| **Rated operational voltage $U_e$** | | | | | |
| • Approval acc. to EN 60947-1 | V AC | 400 (50/60 Hz) | | | |
| • Approval acc. to UL and CSA | V AC | 600 (50/60 Hz) | 480 (50/60 Hz) | 600 (50/60 Hz) | 480 (50/60 Hz) |
| • Rated operational current range | A | 0.15 ... 2/1.5 ... 12 | -- | 0.15 ... 2/1.5 ... 12 | -- |
| • Rated operational current range for soft starting | A | -- | | | 0.15 ... 2/1.5 ... 12 |
| • Rated operational current range for direct-on-line starting | A | -- | 0.15 ... 2/1.5 ... 9 | -- | 0.15 ... 2/1.5 ... 9 |
| **Rated operational current for starters $I_e$ at 400 V AC** | | | | | |
| • 400 V at AC-1/2/3 | A | 12 | -- | 12 | -- |
| • 500 V at AC-1/2/3 | A | 9 | -- | 9 | -- |
| • 400 V at AC-4 | A | 4 | -- | 4 | -- |
| • 400 V at AC-53a | A | -- | 9 | -- | 12 for soft starting 9 for direct-on-line starting |
| **Mechanical endurance of contactor** | Operating cycles | 30 million | -- | 30 million | -- |
| **Trip class** | | CLASS 10 | | CLASS 5, 10, 15, 20 | |
| **Type of coordination acc. to IEC 60947-4-1** | | 1 (2 for device version 2A) | 1 | 1 (2 for device version 2A) | 1 |
| **Permissible switching frequency** | | see manual | | see manual | |
| **Rated ultimate short-circuit breaking capacity $I_q$** | | | | | |
| • At 400 V AC | kA | 50 | | | |
| • At 500 V AC | kA | 50[2] | 20[2] | 50 | 20[2] |
| **Short-circuit protection** | | | | | |
| • At $I_{emax}$ = 2 A | | Integrated, 2 x13 $I_e$ = 26 A | | | |
| • At $I_{emax}$ = 9/12 A | | Integrated, 2 x13 $I_e$ = 208 A | | | |
| **Brake actuation (option)** | | | | | |
| **Operational voltage** | V | 230/400 AC or 180 DC | | | |
| **Uninterrupted current** | A | < 0.5 at 230/400 V AC<br>< 0.8 at 180 V DC | | | |
| **Short-circuit protection** | | Yes, 1 A melting fuse | | | |

[1] DS .... Direct-on-line starters
RS .... Reversing starters
DSS .. Direct-on-line soft starters
RSS .. Reversing soft starters
te ..... Full motor protection (thermal + electronic)
s ..... Electronic switching with semiconductor.

[2] Only systems with grounded neutral point permitted.

## Selection and ordering data

M200D AS-i Basic without manual local operation

M200D AS-i Basic with manual local operation

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Electromechanical starters (with integrated contactor)** | | | | | |
| | 15 | **3RK1315-6□S41-□AA□** | | 1 | 1 unit |
| **Rated operational current setting range/A** | | | Additional price | | |
| • 0.15 ... 2 | | **K** | None | | |
| • 1.5 ... 12 | | **L** | ✓ | | |
| **Direct-on-line starters/reversing starters** | | | | | |
| • Direct-on-line starters | | **0** | None | | |
| • Reversing starters | | **1** | ✓ | | |
| • Direct-on-line starters with manual local operation | | **2** | ✓ | | |
| • Reversing starters with manual local operation | | **3** | ✓ | | |
| **Brake actuation** | | | | | |
| • Without brake actuation | | **0** | None | | |
| • Brake actuation (230/400 V AC) | | **3** | ✓ | | |
| • Brake actuation (180 V DC) | | **5** | ✓ | | |
| **Electronic starters (with thyristors)** | | | | | |
| | 15 | **3RK1315-6□S71-□AA□** | | 1 | 1 unit |
| **Rated operational current setting range/A** | | | Additional price | | |
| • 0.15 ... 2 | | **K** | None | | |
| • 1.5 ... 9 | | **N** | ✓ | | |
| **Direct-on-line starters/reversing starters** | | | | | |
| • Direct-on-line starters | | **0** | None | | |
| • Reversing starters | | **1** | ✓ | | |
| • Direct-on-line starters with manual local operation | | **2** | ✓ | | |
| • Reversing starters with manual local operation | | **3** | ✓ | | |
| **Brake actuation** | | | | | |
| • Without brake actuation | | **0** | None | | |
| • Brake actuation (230/400 V AC) | | **3** | ✓ | | |
| • Brake actuation (180 V DC) | | **5** | ✓ | | |

✓ = Additional price

## Selection and ordering data

M200D AS-i Standard without manual local operation

M200D AS-i Standard with manual local operation

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Electromechanical starters (with integrated contactor)** | | | | | |
| | 15 | **3RK1325-6☐S41-☐AA☐** | | 1 | 1 unit |
| **Rated operational current setting range/A** | | | Additional price | | |
| • 0.15 ... 2 | | **K** | None | | |
| • 1.5 ... 12 | | **L** | ✓ | | |
| **Direct-on-line starters/reversing starters** | | | | | |
| • Direct-on-line starters | | **0** | None | | |
| • Reversing starters | | **1** | ✓ | | |
| • Direct-on-line starters with manual local operation | | **2** | ✓ | | |
| • Reversing starters with manual local operation | | **3** | ✓ | | |
| **Brake actuation** | | | | | |
| • Without brake actuation | | **0** | None | | |
| • Brake actuation (230/400 V AC) | | **3** | ✓ | | |
| • Brake actuation (180 V DC) | | **5** | ✓ | | |
| **Electronic starters (with thyristors)** | | | | | |
| | 15 | **3RK1325-6☐S71-☐AA☐** | | 1 | 1 unit |
| **Rated operational current setting range/A** | | | Additional price | | |
| • 0.15 ... 2 | | **K** | None | | |
| • 1.5 ... 12 | | **L** | ✓ | | |
| **Direct-on-line starters/reversing starters** | | | | | |
| • Direct-on-line starters | | **0** | None | | |
| • Reversing starters | | **1** | ✓ | | |
| • Direct-on-line starters with manual local operation | | **2** | ✓ | | |
| • Reversing starters with manual local operation | | **3** | ✓ | | |
| **Brake actuation** | | | | | |
| • Without brake actuation | | **0** | None | | |
| • Brake actuation (230/400 V AC) | | **3** | ✓ | | |
| • Brake actuation (180 V DC) | | **5** | ✓ | | |

✓ = Additional price

# SIRIUS M200D motor starters for PROFIBUS/PROFINET



## Overview

The intelligent, highly flexible M200D PROFIBUS/PROFINET motor starters are the most functional motor starters of the SIRIUS motor starter family in the high degree of protection IP65 for PROFIBUS/PROFINET communication.

They start and protect motors and loads up to 7.5 HP. Direct-on-line and reversing starter versions are available, in a mechanical version and also an electronic version (the latter with soft start function).

The particularly robust M200D PROFIBUS/PROFINET motor starters are characterized by numerous functions which can be flexibly parameterized. Their modular design comprises a motor starter module and a communication module.

The M200D PROFINET motor starters enable TIA-integrated parameterization through PROFINET from STEP 7 – in familiar, user-friendly manner with the look and feel of PROFIBUS.

Functionality

- For basic functionality, see page 16/41 "SIRIUS M200D Motor Starters" → "General data" → "Overview"
- Electronic version also with soft start function
- Robust and widely used M12 connection method for the digital inputs and outputs and the PROFIBUS/PROFINET bus connection
- All four digital inputs and two digital outputs exist in the cyclic process image. This provides complete transparency of the process on the control level
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through the bus, providing maximum flexibility and excellent adaptability to the application
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Extensive diagnostics concept using LEDs and through the bus with the TIA-compatible mechanisms
- Expanded diagnostics using data records
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through PROFIBUS/PROFINET bus with the help of data records from the user program
- Control of the motor starter using a command data record from the user program
- Removable modular control unit – quicker device replacement and therefore lower costs when device outages occur – since existing wiring is on the control unit and only one device needs to be replaced
- Parameterization in STEP 7 HW Config using Motor Starter ES (ordering option for startup software)
- Startup and diagnostics with the help of Motor Starter ES (ordering option for startup software)
- Trace function through Motor Starter ES for optimized startup and tracking of process and device values

Only with PROFINET:

- Just one bus system from the MES level to the devices – no routers
- More stations on the bus and possible configuration of flexible bus structures
- Automatic re-parameterization in case of device replacement thanks to proximity detection
- Wireless integration of plant segments in difficult environments using WLAN
- Easier expansion of the system thanks to a higher number of stations on the bus and elimination of terminating resistors

M200D motor starter module for PROFIBUS/PROFINET (without communication module)

M200D communication module for PROFIBUS

M200D communication module for PROFINET

# SIRIUS M200D motor starters for PROFIBUS/PROFINET

## General data

Mounting and installation

The M200D PROFIBUS/PROFINET motor starter is comprised of the communication module and the motor starter module. Only the motor starter module has to be replaced therefore when replacing devices. This saves time and money. The communication module remains as an active station on the bus and all other system components continue running. This prevents downtimes.

The integrated plug-in technology enables far lower wiring outlay: Connecting cables can be plugged directly onto the motor starter module. The PROFINET bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

All motor protection functions, limit values and reactions can be defined by parameterization.

The user has several user-friendly options for the parameterization. In addition to parameterization directly from STEP 7, which also permits automatic re-parameterization in case of device replacement, it is possible to use the user-friendly Motor Starter ES startup software. By connecting a programming device directly to PROFIBUS/PROFINET and the Motor Starter ES startup software, the devices can also be conveniently programmed from a central point through the bus. Also, parameters can be changed during operation from the user program using the data record mechanism so that the function of the motor starter is adapted to the process when required. With the help of a PC and the Motor Starter ES software it is also possible to perform the parameterization through the local point-to-point interface on-site.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET 200pro I/O system is assured.

***Only with M200D PROFINET motor starters***

Thanks to the integrated proximity detection, the device name does not need to be issued manually when a device is replaced. The name is issued automatically by the neighboring devices which note the "names" of the devices in their proximity. No additional startup measures are required therefore when replacing a device.

The new motor starter generation is characterized by high functionality, maximum flexibility and the highest level of automation. PROFINET is especially recommended for large-scale and highly automated system components, since the possibility of monitoring the devices or plants with data records (statistical data, measured values and device diagnostics) ensures a broader insight into the plant by the control room, and hence increases the availability of the plant sustainably.

Operation

The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable signals concerning the overshooting or undershooting of setpoint values.

Diagnostics and maintenance

Diagnostics is provided through numerous mechanisms – and can be used as the customer prefers.

The motor starter is TIA-diagnostics compatible, which means that when a fault is identified, a diagnostics alarm is distributed, which invokes the diagnostics OB in the case of a SIMATIC control. The fault can be evaluated as usual in the user program.

The M200D motor starter offers a large variety of diagnostics data through data records. Its functionality is without equal on the market. There are extensive options for reading out data from the motor starter for monitoring devices, systems or processes.

The motor starter is equipped internally with three logbooks for device faults, motor starter trips and events that are issued with a time stamp. These logbooks can be read out of the motor starter at any time in the form of data records and provide the plant operator with plenty of information about the state of his plant and process which he can use to carry out improvements.

With the slave pointer and statistical data functions it is possible to read out, for example, the maximum internal current values or the number of motor starter connection operations for plant monitoring purposes. This allows deviations in the process to be monitored, but also optimum initial commissioning to take place. The user can draw conclusions about the actual load conditions of the devices in his process and on this basis can optimize his plant maintenance intervals.

The device diagnostics data record contains details of all the states of the motor starter, the device configuration and the communication status as a basis for central device and plant monitoring.

With installation and maintenance functions (I&M), information on modules employed and data specified by the user during configuration, such as location designations, are stored in the motor starter. I&M functions are used for troubleshooting faults and localizing changes in hardware in a plant or checking the system configuration. Reordering a device is particularly easy as the result.

The integrated maintenance timer can be used to implement preventative maintenance and avoid plant downtimes through look-ahead servicing.

Another new addition is the TRACE integrated into the Motor Starter ES software. It can be used to record measured values as a function of time following a trigger event. This enables process flows to be recorded and their timing optimized.

Local control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D PROFIBUS/PROFINET motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

***M200D PROFINET motor starters with PROFIenergy***

Increasing energy prices, far-reaching ecological problems worldwide and the threat of climate change make it necessary for you to be more conscious about your use of energy.

Active and effective energy management is possible with PROFIenergy.

PROFIenergy is a manufacturer-independent profile on PROFINET, which can be used by all manufacturers, has been standardized by PNO[1)] and supports switching off electrical devices during dead times and measuring the energy flow.

[1)] In the PNO (PROFIBUS Nutzerorganisation e. V. – PROFIBUS User Organization), manufacturers and users have come together to agree on the PROFIBUS and PROFINET standardized communication technologies.

# SIRIUS M200D motor starters for PROFIBUS/PROFINET

## General data

Switching off during dead times

PROFIenergy supports the targeted switching-off of loads during dead time.

These can be planned short breaks of a few minutes (such as lunch breaks), longer dead times (such as nights) or unplanned dead times. Energy is always saved when no power is required.

Measuring and visualizing the energy flow as a basis of energy management

The objective of energy management is to optimize the use of energy in a company – from the purchasing of energy through to the consumption of energy – economically and ecologically.

Analyses of energy consumption over time can be used to control energy flows, avoid energy peaks, improve ratings and thus save costs.

PROFIenergy enables consumption data to be read off from the devices in a unified form. This is recorded during operation and can be displayed on a control panel, for example, or sent to overlying energy management software packages. This ensures that the measured variables are in a uniform manufacturer-independent form and structure that is available to the user for further processing. These PROFIenergy functions thus provide the basis for active load and energy management during operation.

PROFIenergy in the M200D PROFINET motor starter

The M200D PROFINET motor starter supports the "switching during dead times" and "current measurement values" functions of the motor current using PROFIenergy. These are called commands, because they trigger a reaction in the M200D motor starter.

| | SIRIUS M200D PROFIBUS | SIRIUS M200D PROFINET |
|---|---|---|
| **Device functions (firmware features)** | | |
| **Slave on the bus** | | |
| Fieldbus | ✓ PROFIBUS to M12 | ✓ PROFINET to M12 |
| Adjustable number of stations | ✓ 1 ... 125 | ✓ 1 ... 128 with CPU 315, CPU 317<br>1 ... 1 256 with CPU 319 |
| **Parameter assignment** | | |
| DIP switches | ✓ For address setting and terminating resistor | -- |
| Motor Starter ES | ✓ Through bus, optical interface | |
| PROFIBUS/PROFINET data records | ✓ | |
| From STEP 7/HW Config | ✓ | |
| **Diagnostics** | | |
| Acyclic through data records | ✓ | |
| Diagnostic interrupt support | ✓ | |
| **Process image** | | |
| Process image | ✓ 2 bytes PAE/2 bytes PAA | |
| **Data channels** | | |
| Local optical interface (manual local) | ✓ | |
| Motor Starter ES through local interface | ✓ | |
| Using Motor Starter ES through bus | ✓ | |
| **Data records (acyclic)** | | |
| Parameter assignment | ✓ Using DS 131 (DS = data record) | |
| Diagnostics | ✓ Device-specific DS 92 | |
| Measured values | ✓ Measured values DS 94 | |
| Statistics | ✓ Statistical data DS 95 | |
| Commands | ✓ Using DS 93 | |
| Slave pointer | ✓ Slave pointer DS 96 | |
| Logbook | ✓ Using Motor Starter ES and data records: device faults DS 72, tripping operation DS 73, events DS 75 | |
| Device identification | ✓ Using DS 100 | |
| I&M data | ✓ Using DS 231 ... 234 | ✓ Using data records 0xAFF0 ... 0xAFF3 |
| **Inputs** | | |
| Number | ✓ 4 | |
| • Of these in the process image | ✓ 4 | |
| Input action | ✓ Parameterizable: For flexibly assignable action, see manual | |
| Quick stop | ✓ Parameterizable: latching, non-latching | |

✓ Function available

-- Function not available

# SIRIUS M200D motor starters for PROFIBUS/PROFINET

## General data

| | SIRIUS M200D PROFIBUS | SIRIUS M200D PROFINET |
|---|---|---|
| **Device functions (firmware features)** (continued) | | |
| **Outputs** | | |
| Number | ✓ 2 | |
| • Of these in the process image | ✓ 2 | |
| Output action | ✓ Parameterizable: For flexibly assignable action, see manual | |
| **Brake output** | | |
| 180 V DC / 230/400 V AC / none | ✓ | |
| **Motor protection** | | |
| Overload protection | ✓ Electronic, wide range 1:10 | |
| Short-circuit protection | ✓ | |
| Full motor protection | ✓ | |
| Temperature sensor | ✓ Parameterizable via Motor Starter ES, data record: PTC or Thermoclick or deactivated | |
| **Device function** | | |
| Repair switch | ✓ | |
| Current limit monitoring bottom | ✓ Parameterizable | |
| Current limit monitoring top | ✓ Parameterizable | |
| Zero current detection | ✓ Parameterizable: tripping, warning | |
| Blocking current | ✓ Parameterizable | |
| Asymmetry | ✓ Parameterizable | |
| Load type | ✓ Parameterizable: single-phase and three-phase | |
| Shutdown class | ✓ Parameterizable via Motor Starter ES, data record: CLASS 5, 10, 15, 20 | |
| Protection against voltage failure | ✓ Parameterizable: activated/deactivated | |
| **Support for PROFIenergy profile** | | |
| Switching during dead times | -- | 3 |
| Measured motor current values | -- | 3 |
| **Soft starter control function** | | |
| Soft start function | ✓ | |
| Bypass function | ✓ Only solid-state version | |

✓ Function available
-- Function not available

## Benefits

***M200D PROFINET motor starters with PROFIenergy***

Both standards and laws are making environmental protection and energy management increasingly important, as is the desire to cut energy costs in production facilities and thus ensure a sustainable competitive advantage.

It is thus an objective within the industry to save energy and actively reduce $CO_2$ emissions. By the careful use of valuable resources, the manufacturer-independent PROFIenergy profile on PROFINET can make an active contribution to environmental protection.

## Application

M200D PROFIBUS/PROFINET motor starters are particularly suitable for fully TIA-integrated, highly automated conveyor applications that meet all needs with regard to the monitoring of devices and systems and preventive maintenance.

Adaptability of the motor starter functions and maximum flexibility of the device enable a broad range of application without any limits. The PROFINET-specific expansions are the best assurance of a future-proof investment.

## Technical specifications

**More information**

Equipment Manual for M200D PROFIBUS/PROFINET, see https://support.industry.siemens.com/cs/ww/en/view/38823402
FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16325/faq

Notes on security:
In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.
For more information on the subject of Industrial Security, see www.siemens.com/industrialsecurity.

| Type | | M200D PROFIBUS/PROFINET motor starter modules | |
|---|---|---|---|
| | | Electromechanical switching | Electronic switching |
| Technology designation[1] | | DSte/RSte | sDSSte/sRSSte |
| **Mechanics and environment** | | | |
| **Mounting dimensions (W x H x D)** | | | |
| • Without communication module | mm | 294 x 215 x 159 | |
| • With communication module | mm | 295 x 215 x 163 | |
| **Permissible ambient temperature** | | | |
| • During operation | °C | -25 ... +55 | |
| • During storage | °C | -40 ... +70 | |
| **Weight** | g | 2 820/3 080 | 3 160/3 360 |
| **Permissible mounting position** | | Vertical, horizontal, lying | |
| **Vibration resistance acc. to IEC 60068 Part 2-6** | *g* | 2 | |
| **Shock resistance** | | | |
| • Acc. to IEC 60068 Part 2-27 | *g*/ms | 12/11 half-sine | |
| • Without influencing the contact position | *g*/ms | 9.8/5 or 5.9/10 | |
| **Degree of protection acc. to IEC 529** | | IP65 | |
| **Installation altitude** | | | |
| • Up to 1 000 m | | No derating | |
| • Up to 2 000 m | | 1% per 100 m | |
| **Cooling** | | Convection | |
| **Protection class IEC 536 (VDE 0106-1)** | | 1 | |
| **Electrical specifications** | | | |
| ***Main circuit*** | | | |
| **Maximum power of three-phase motors at 400 V AC** | kW | 5.5 | |
| **Rated operational voltage $U_e$** | | | |
| • Approval acc. to EN 60947-1 | V AC | 400 (50/60 Hz) | |
| • Approval acc. to UL and CSA | V AC | 600 (50/60 Hz) | 480 (50/60 Hz) |
| • Rated operational current range | A | 0.15 ... 2/1.5 ... 12 | -- |
| • Rated operational current range for soft starting | A | -- | 0.15 ... 2/1.5 ... 12 |
| • Rated operational current range for direct-on-line starting | A | -- | 0.15 ... 2/1.5 ... 9 |
| **Rated operational current for starters $I_e$ at 400 V AC** | | | |
| • 400 V at AC-1/2/3 | A | 12 | -- |
| • 500 V at AC-1/2/3 | A | 9 | -- |
| • 400 V at AC-4 | A | 4 | -- |
| • 400 V at AC-53a | A | -- | 12 for soft starting, 9 for direct-on-line starting |
| **Mechanical endurance of contactor** | Operating cycles | 30 million | -- |
| **Trip class** | | CLASS 5, 10, 15, 20 | |
| **Permissible switching frequency** | | see manual | |
| **Rated ultimate short-circuit breaking capacity $I_q$** | | | |
| • At 400 V AC | kA | 50 | |
| • At 500 V AC | kA | 50 | 20[2] |
| **Short-circuit protection** | | | |
| • At $I_{emax}$ = 2 A | | Integrated, 2 x13 $I_e$ = 26 A | |
| • At $I_{emax}$ = 9 /12 A | | Integrated, 2 x13 $I_e$ = 208 A | |

1) DS .... Direct-on-line starters
RS .... Reversing starters
DSS .. Direct-on-line soft starters
RSS .. Reversing soft starters
te ..... Full motor protection (thermal + electronic)
s ..... Electronic switching with semiconductor.

2) Only systems with grounded neutral point permitted.

# SIRIUS M200D motor starters for PROFIBUS/PROFINET

## General data

| | | Line voltage | | | | |
|---|---|---|---|---|---|---|
| | | 380 V AC | 400 V AC | 440 V AC | 480 V AC | 500 V AC |
| **Brake voltage with brake actuation 180 V DC[1)]** | | | | | | |
| **Operational voltage** | V | 230/400 AC or 180 DC | | | | |
| **Uninterrupted current** | A | < 0.5 at 230/400 V AC, < 0.8 at 180 V DC | | | | |
| **Short-circuit protection** | | Yes, 1 A melting fuse | | | | |
| **Rectified brake voltage** | V DC | 171 | 180 | 198 | 216 | 225 |
| **Recommended brake coil voltage for Siemens motors** | V DC | 170 ... 200 | 170 ... 200 | 184 ... 218 | 184 ... 218 | -- |

1) Integrated brake actuation supplies DC power supply for the brake.

| Type | | M200D communication modules | |
|---|---|---|---|
| | | For PROFIBUS | For PROFINET |
| **Mechanics and environment** | | | |
| **Mounting dimensions (W x H x D)** | mm | 174 x 139 x 40 | |
| **Permissible ambient temperature** | | | |
| • During operation | °C | -25 ... +55 | |
| • During storage | °C | -40 ... +70 | |
| **Weight** | g | 300 | |
| **Permissible mounting position** | | Vertical, horizontal, lying | |
| **Vibration resistance acc. to IEC 60068 Part 2-6** | *g* | 2 | |
| **Shock resistance** | | | |
| • Acc. to IEC 60068 Part 2-27 | *g*/ms | 12/11 half-sine | |
| • Without influencing the contact position | *g*/ms | 9.8/5 or 5.9/10 | |
| **Degree of protection acc. to IEC 529** | | IP65 | |
| **Installation altitude** | | | |
| • Up to 1 000 m | | No derating | |
| • Up to 2 000 m | | 1% per 100 m | |
| **Cooling** | | Convection | |
| **Protection class IEC 536 (VDE 0106-1)** | | 1 | |
| **Electrical specifications** | | | |
| ***Control circuit*** | | | |
| **Operational voltage** | | | |
| • $U_{DC24V-NS}$ | V DC | 20.4 ... 28.8 | |
| • $U_{DC24V-S}$ | V DC | 20.4 ... 28.8 | |
| **Power consumption from** | | | |
| • $U_{DC24V-NS}$ | mA | < 300 | |
| • $U_{DC24V-S}$ | mA | < 100 | |

## Selection and ordering data

M200D motor starter module
PROFIBUS/PROFINET
(without communication module)

M200D motor starter
PROFIBUS

M200D motor starter
PROFINET

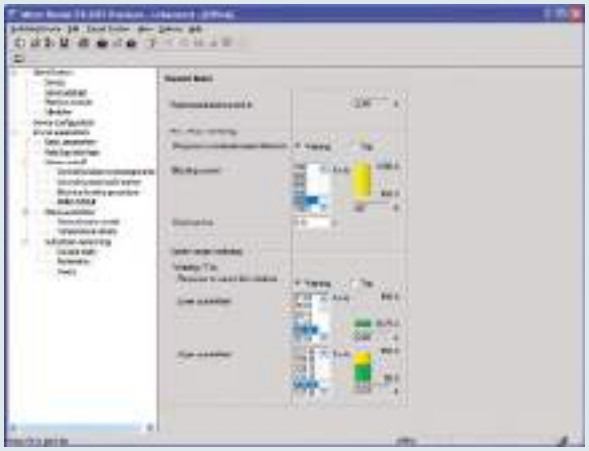
| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **M200D communication modules for PROFIBUS** | | | | | |
| **Communication module for PROFIBUS**<br>M12 connection for communication, 7/8" for 24 V power supply | 15 | **3RK1305-0AS01-0AA0** | | 1 | 1 unit |
| **M200D communication modules for PROFINET** | | | | | |
| **Communication module for PROFINET**<br>M12 connection for communication, 7/8" for 24 V power supply | 15 | **3RK1335-0AS01-0AA0** | | 1 | 1 unit |
| **M200D PROFIBUS/PROFINET motor starter modules** | | | | | |
| ***Electromechanical starters (with integrated contactor)*** | | | | | |
| | 15 | **3RK1395-6□S41-□AD□** | | 1 | 1 unit |
| **Rated operational current setting range/A** | | | Additional price | | |
| • 0.15 ... 2 | | **K** | None | | |
| • 1.5 ... 12 | | **L** | ✓ | | |
| **Direct-on-line starters/reversing starters** | | | | | |
| • Direct-on-line starters | | **0** | None | | |
| • Reversing starters | | **1** | ✓ | | |
| • Direct-on-line starters with manual local operation | | **2** | ✓ | | |
| • Reversing starters with manual local operation | | **3** | ✓ | | |
| **Brake actuation** | | | | | |
| • Without brake actuation | | **0** | None | | |
| • Brake actuation (230/400 V AC) | | **3** | ✓ | | |
| • Brake actuation (180 V DC) | | **5** | ✓ | | |
| ***Electronic starters (with thyristors)*** | | | | | |
| | 15 | **3RK1395-6□S71-□AD□** | | 1 | 1 unit |
| **Rated operational current setting range/A** | | | Additional price | | |
| • 0.15 ... 2 | | **K** | None | | |
| • 1.5 ... 12 | | **L** | ✓ | | |
| **Direct-on-line starters/reversing starters** | | | | | |
| • Direct-on-line starters | | **0** | None | | |
| • Reversing starters | | **1** | ✓ | | |
| • Direct-on-line starters with manual local operation | | **2** | ✓ | | |
| • Reversing starters with manual local operation | | **3** | ✓ | | |
| **Brake actuation** | | | | | |
| • Without brake actuation | | **0** | None | | |
| • Brake actuation (230/400 V AC) | | **3** | ✓ | | |
| • Brake actuation (180 V DC) | | **5** | ✓ | | |

✓ = Additional price

# Motor Starter ES

## Software

### Overview



Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

**More information**

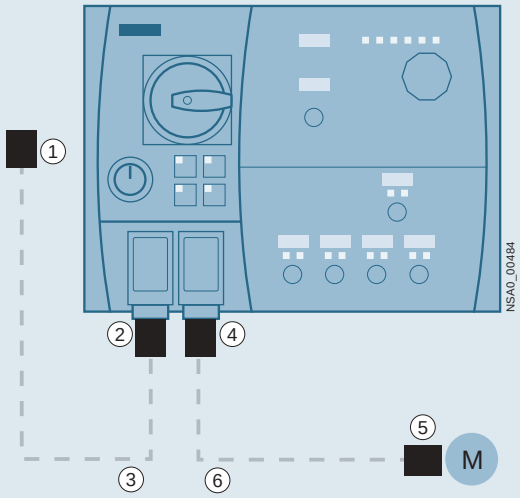
Industry Mall, see www.siemens.com/product?3ZS1

Technical specifications and system requirements, see https://support.industry.siemens.com/cs/ww/en/ps/16713/td

Motor Starter ES is used for the startup, parameterization, diagnostics, documentation and preventive maintenance of SIMATIC ET 200S, ET 200pro, ECOFAST and M200D motor starters.

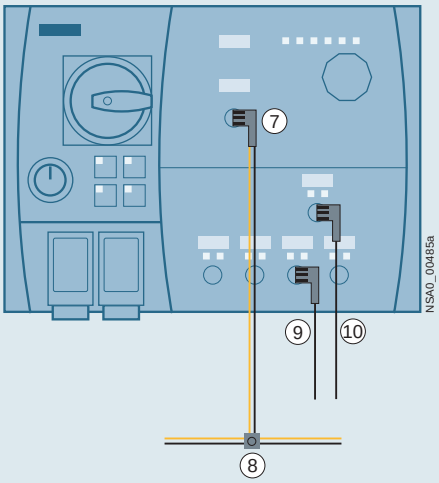
The software program is available in three versions which differ in their user-friendliness, scope of functions and price.

## Overview



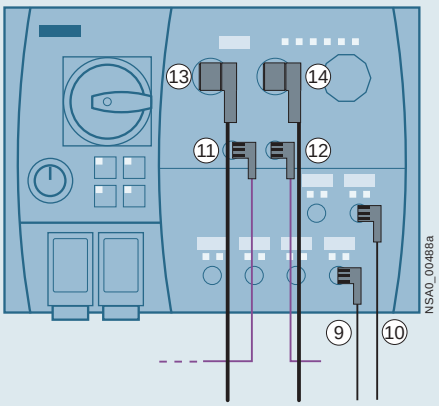

1 Power feeder plug
2 Power connection plug
3 Power connection cable
4 Motor connection plug
5 Motor plug
6 Motor cable

Power and motor connection on the M200D motor starter (in this example: M200D for AS-i)



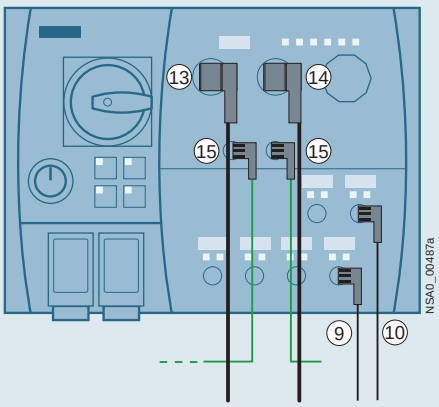

7 Connection for motor control with AS-i communication
8 AS-Interface M12 feeder
9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)

Communication connection using AS-Interface and digital inputs and outputs



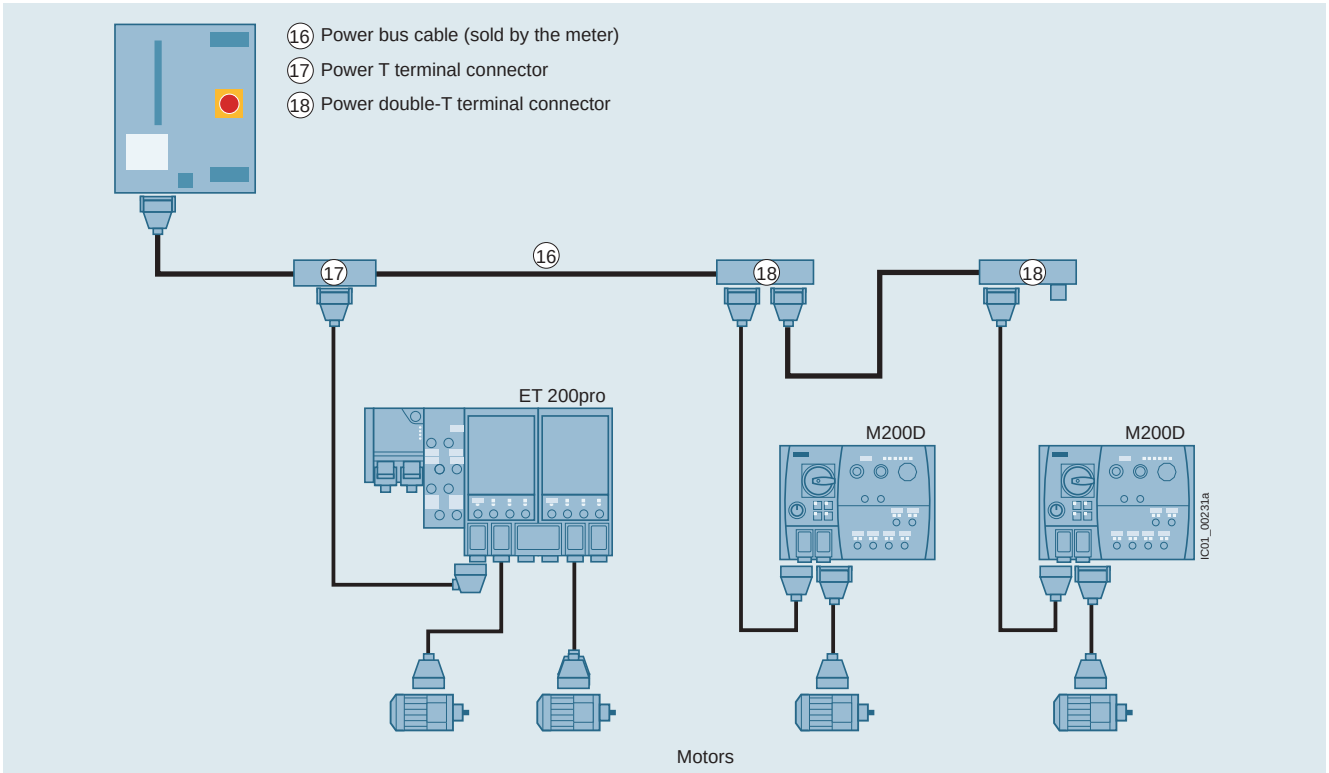

9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)
11 PROFIBUS connection (input)
12 PROFIBUS connection (loop)
13 Connection for 24 V supply (infeed)
14 Connection for 24 V supply (loop)

Communication connection using PROFIBUS and digital inputs and outputs




9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)
13 Connection for 24 V supply (infeed)
14 Connection for 24 V supply (loop)
15 Connection with PROFINET (input on the left, loop on the right)

Communication connection using PROFINET and digital inputs and outputs




Power supply to the motors via the power bus with power T and double-T terminal connectors linked by power bus cables, spur lines to the field devices (motor starters), and power loop-through connections to the motors via motor connection cables

***Power bus***

The power supply to the field devices (ET 200pro motor starters, M200D motor starters) is provided via the power bus, in which the power T terminal connectors or power double-T terminal connectors are connected by power bus cables.

***Feeders***

From the terminal connectors, spur lines with Han Q4/2 plugs lead to the field devices, from which the motors are supplied with power via motor connection cables.

***Interruption-free thanks to power terminal connectors***

In finger-safe connection technology the power T terminal connectors and power double-T terminal connectors connect the components of a feeder to the power bus. They ensure interruption-free operation, i.e. the power bus is not interrupted when the components are unplugged.

## Selection and ordering data

The accessories listed below represent a basic selection sorted by:

- Accessories for all M200D motor starters
- Accessories for M200D motor starters for AS-Interface
- Accessories for M200D motor starters for PROFIBUS
- Accessories for M200D motor starters for PROFINET

| Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Mountable accessories** | | | | | |
| **M200D protective brackets** | 5 | **3RK1911-3BA00** | | 1 | 1 unit |
| **Incoming power supply** | | | | | |
| ① **Power feeder plugs**<br>Connector set for incoming power supply, e.g. for connecting to T terminal connectors, comprising a coupling enclosure, straight outgoing feeder (with bracket), pin insert for HAN Q4/2, incl. gland | | | | | |
| • 5 male contacts, 2.5 $mm^2$ | 5 | **3RK1911-2BS60** | | 1 | 1 unit |
| • 5 male contacts, 4 $mm^2$ | 5 | **3RK1911-2BS20** | | 1 | 1 unit |
| • 5 male contacts, 6 $mm^2$ | 5 | **3RK1911-2BS40** | | 1 | 1 unit |
| ② **Power connection plugs**<br>Connector set for incoming power supply for connection to M200D motor starters, comprising a cable-end connector hood, angular outgoing feeder, female insert for HAN Q4/2, incl. gland | | | | | |
| • 5 female contacts, 2.5 $mm^2$, 2 female contacts, 0.5 $mm^2$ | 5 | **3RK1911-2BE50** | | 1 | 1 unit |
| • 5 female contacts, 4 $mm^2$, 2 female contacts, 0.5 $mm^2$ | 5 | **3RK1911-2BE10** | | 1 | 1 unit |
| • 5 female contacts, 6 $mm^2$, 2 female contacts, 0.5 $mm^2$ | 5 | **3RK1911-2BE30** | | 1 | 1 unit |
| ② + ③ **Power connection cables**<br>Assembled at one end with "N" and jumper pin 11 and 12 for plug monitoring, with HAN Q4/2, angular; open at one end; 5 x 4 $mm^2$ | | | | | |
| • Length 1.5 m | 10 | **3RK1911-0DC13** | | 1 | 1 unit |
| • Length 5.0 m | 10 | **3RK1911-0DC33** | | 1 | 1 unit |
| **Motor cables** | | | | | |
| ④ **Motor connection plugs**<br>Connector set for motor cable for connection to M200D motor starters, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q8/0, incl. gland | | | | | |
| • 8 male contacts, 1.5 $mm^2$ | 5 | **3RK1902-0CE00** | | 1 | 1 unit |
| • 6 male contacts, 2.5 $mm^2$ | 5 | **3RK1902-0CC00** | | 1 | 1 unit |
| ⑤ **Motor plugs**<br>Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e, incl. star jumper, incl. gland | | | | | |
| • 7 female contacts, 1.5 $mm^2$ | 30 | **3RK1911-2BM21** | | 1 | 1 set |
| • 7 female contacts, 2.5 $mm^2$ | 30 | **3RK1911-2BM22** | | 1 | 1 set |
| ④ + ⑥ **Motor cables, assembled at one end**<br>For connection to M200D motor starters, HAN Q8/0, angular, length 5 m | | | | | |
| • Motor cables for motor without brake, 4 x 1.5 $mm^2$ | 15 | **3RK1911-0EB31** | | 1 | 1 unit |
| • Motor cables for motor without brake with thermistor, 6 x 1.5 $mm^2$ | 30 | **3RK1911-0EF31** | | 1 | 1 unit |
| • Motor cables for motor with brake actuation, braking voltage 400 V AC or 180 V DC, 6 x 1.5 $mm^2$ | 30 | **3RK1911-0ED31** | | 1 | 1 unit |
| • Motor cables for motor with brake actuation, braking voltage 400 V AC or 180 V DC and thermistor, 8 x 1.5 $mm^2$ | 30 | **3RK1911-0EG31** | | 1 | 1 unit |
| • Motor cables for motor with brake actuation, braking voltage 230 V AC, 6 x 1.5 $mm^2$ | 30 | **3RK1911-0EH31** | | 1 | 1 unit |
| • Motor cables for motor with brake actuation, braking voltage 230 V AC and thermistor, 8 x 1.5 $mm^2$ | 30 | **3RK1911-0EE31** | | 1 | 1 unit |

# SIRIUS M200D Motor Starters

## Accessories for all M200D motor starters

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Power bus** | | | | | | |
| | ⑰ **Power T terminal connectors**<br>For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments | | | | | |
| | • 2.5 mm²/4 mm² | 5 | **3RK1911-2BF01** | | 1 | 1 unit |
| | • 4 mm²/6 mm² | 5 | **3RK1911-2BF02** | | 1 | 1 unit |
| | ⑱ **Power double-T terminal connectors**<br>For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments, connection of two motor starters possible | | | | | |
| | • 4 mm²/6 mm² | 5 | **3RK1911-2BG02** | | 1 | 1 unit |
| | **Sealing set (comprising 2 seals)**<br>For power T/power double-T terminal connectors | | | | | |
| | • For power cables with | | | | | |
| | - Ø 10 ... 13 mm | 5 | **3RK1911-5BA00** | | 1 | 1 unit |
| | - Ø 13 ... 16 mm | 5 | **3RK1911-5BA10** | | 1 | 1 unit |
| | - Ø 16 ... 19 mm | 5 | **3RK1911-5BA20** | | 1 | 1 unit |
| | - Ø 19 ... 22 mm | X | **3RK1911-5BA30** | | 1 | 1 unit |
| | • Blanking plugs | 5 | **3RK1911-5BA50** | | 1 | 1 unit |
| **Further accessories for power connections** | | | | | | |
| <br>3RK1902-0CW00 | **Crimping tools for pins/sockets 4 mm² and 6 mm²** | 15 | **3RK1902-0CW00** | | 1 | 1 unit |
| | **Dismantling tools** | | | | | |
| | • For male and female contacts for 9-pole HAN Q4/2 inserts | 15 | **3RK1902-0AB00** | | 1 | 1 unit |
| | • For male and female contacts for 9-pole HAN Q8 inserts | 5 | **3RK1902-0AJ00** | | 1 | 1 unit |
| <br>3RK1902-0CK00 | **Sealing caps**<br>For 9-pole power sockets | | | | | |
| | • 1 unit per pack | 5 | **3RK1902-0CK00** | | 1 | 1 unit |
| | • 10 units per pack | 5 | **3RK1902-0CJ00** | | 1 | 10 units |

# SIRIUS M200D Motor Starters

## Accessories for all M200D motor starters

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Motor control with I/O communication** | | | | | | |
| 3RK1902-4BA00-5AA0 | **M12 plugs, straight**<br>Screw fixing, 5-pole screw terminals, max. 0.75 mm$^2$, A-coded, max. 4 A | 5 | **3RK1902-4BA00-5AA0** | | 1 | 1 unit |
| 3RK1902-4DA00-5AA0 | ⑩ **M12 plugs, angular**<br>Screw fixing, 5-pole screw terminals, max. 0.75 mm$^2$, A-coded, max. 4 A | 5 | **3RK1902-4DA00-5AA0** | | 1 | 1 unit |
| 3RK1902-4H...-5AA0 | ⑨,⑩ **Control cables, assembled at one end**<br>M12 plugs, angular, screw fixing, 5-pole, 5 x 0.34 mm$^2$, A-coded, black PUR sheath, max. 4 A | | | | | |
| | • Cable length 1.5 m | 5 | **3RK1902-4HB15-5AA0** | | 1 | 1 unit |
| | • Cable length 5 m | 5 | **3RK1902-4HB50-5AA0** | | 1 | 1 unit |
| | • Cable length 10 m | 5 | **3RK1902-4HC01-5AA0** | | 1 | 1 unit |
| 3RK1902-4PB15-3AA0 | **Control cables, assembled at both ends**<br>Straight M12 plug, straight M12 socket, screw fixing, 3-pole, 3 x 0.34 mm$^2$, A-coded, black PUR sheath, max. 4 A | | | | | |
| | • Cable length 1.5 m | 5 | **3RK1902-4PB15-3AA0** | | 1 | 1 unit |
| **Further accessories** | | | | | | |
| 3RK1922-3BA00 | **Handheld devices**<br>For M200D motor starters (or for ET 200pro and ET 200S High Feature motor starters) for local operation. The motor starter-specific serial interface cables must be ordered separately. The RS 232 interface cable 3RK1922-2BP00 is used for the MS M200D. | 5 | **3RK1922-3BA00** | | 1 | 1 unit |
| | **RS 232 interface cable**<br>Serial data connection between M200D (or ET 200pro) motor starters and the RS 232 interface of a PC/PG/laptop (with the Motor Starter ES software) or the handheld device 3RK1922-3BA00 | 5 | **3RK1922-2BP00** | | 1 | 1 unit |
| | **USB interface cable, 2.5 m**<br>Serial data connection between M200D (or ET 200pro) motor starters and the USB interface of a PC/PG/laptop (with the Motor Starter ES software). | 3 | **6SL3555-0PA00-2AA0** | | 1 | 1 unit |
| 3RK1901-1KA00 | **M12 sealing caps**<br>For sealing unused M12 input or output sockets and M12 sockets for PROFIBUS and PROFINET communication modules (one set contains ten sealing caps) | ► | **3RK1901-1KA00** | | 100 | 10 units |
| 3SU1950-0FB80-0AA0 | **RONIS SB30 keys**<br>Replacement key for M200D for "manual local control" ordering option | ► | **3SU1950-0FB80-0AA0** | | 1 | 1 unit |

For more connection technology products, see https://support.industry.siemens.com/cs/ww/en/view/65355810..

## Selection and ordering data

| Version | | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Motor control with AS-i communication** | | | | | | | |
| 3RK1902-4GB50-4AA0 | ⑦ **Control cables, assembled at one end** M12 plug, angular, screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A | | | | | | |
| | • Cable length 5 m | | 5 | **3RK1902-4GB50-4AA0** | | 1 | 1 unit |
| 3RK1902-4CA00-4AA0 | ⑦ **M12 sockets, angled** For screw fixing, 4-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A | | 5 | **3RK1902-4CA00-4AA0** | | 1 | 1 unit |
| 3RK1901-2NR21 | ⑧ **AS-Interface M12 feeders** | | | | | | |
| | For flat cable | For | Cable length | Cable end in feeder | | | |
| | AS-i/$U_{aux}$ | M12 socket | -- | not available | 2 | **3RK1901-2NR20** | 1 | 1 unit |
| | | M12 cable box | 1 m | not available | 2 | **3RK1901-2NR21** | 1 | 1 unit |
| | | | 2 m | not available | 2 | **3RK1901-2NR22** | 1 | 1 unit |
| 3RK1901-1MN00 | **Cable terminating pieces** For sealing of open cable ends (shaped AS-Interface cable) in IP67 | | | | ► | **3RK1901-1MN00** | 1 | 10 units |
| 3RX90..-0AA00 | **AS-Interface shaped cable,** see also page 2/82 | | | | | | |
| | Material | Color | Quantity | | | | |
| | Rubber | Yellow (AS-Interface) | 100 m roll | | 2 | **3RX9010-0AA00** | 1 | 1 unit |
| | | | 1 km drum | | 5 | **3RX9012-0AA00** | 1 | 1 unit |
| | | Black (24 V DC) | 100 m roll | | 2 | **3RX9020-0AA00** | 1 | 1 unit |
| | | | 1 km drum | | 5 | **3RX9022-0AA00** | 1 | 1 unit |
| | TPE | Yellow (AS-Interface) | 100 m roll | | 2 | **3RX9013-0AA00** | 1 | 1 unit |
| | | | 1 km drum | | 5 | **3RX9014-0AA00** | 1 | 1 unit |
| | | Black (24 V DC) | 100 m roll | | 2 | **3RX9023-0AA00** | 1 | 1 unit |
| | | | 1 km drum | | 5 | **3RX9024-0AA00** | 1 | 1 unit |
| | TPE special version according to UL Class 2 | Yellow (AS-Interface) | 100 m roll | | 5 | **3RX9017-0AA00** | 1 | 1 unit |
| | | Black (24 V DC) | 100 m roll | | 5 | **3RX9027-0AA00** | 1 | 1 unit |
| | PUR | Yellow (AS-Interface) | 100 m roll | | 2 | **3RX9015-0AA00** | 1 | 1 unit |
| | | | 1 km drum | | 5 | **3RX9016-0AA00** | 1 | 1 unit |
| | | Black (24 V DC) | 100 m roll | | 2 | **3RX9025-0AA00** | 1 | 1 unit |
| | | | 1 km drum | | 5 | **3RX9026-0AA00** | 1 | 1 unit |

# SIRIUS M200D Motor Starters

## Accessories for M200D motor starters for AS-Interface

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Further accessories** | | | | | | |
| 3RK1904-2AB02 | **AS-Interface addressing unit V3.0**<br>• For AS-Interface modules and sensors and actuators with integrated AS-Interface according to AS-i Specification V3.0<br>• For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves)<br>• With input/output test function and many other commissioning functions<br>• Battery operation with four type AA batteries (IEC LR6, NEDA 15)<br>• Scope of supply:<br>- Addressing unit with four batteries<br>- Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m | 2 | **3RK1904-2AB02** | | 1 | 1 unit |
| 3RK1902-4PB15-3AA0 | **M12 addressing cables to M12**<br>• Standard M12 cable for addressing slaves with M12 connection, e.g. K60R modules<br>• When using the current version of the 3RK1904-2AB01 addressing unit<br>• 1.5 m | 5 | **3RK1902-4PB15-3AA0** | | 1 | 1 unit |
| **"SIRIUS M200D Motor Starter" manuals** | | | | | | |
| | **Equipment Manual - SIRIUS M200D AS-Interface Basic Motor Starter,** see https://support.industry.siemens.com/cs/ww/en/view/35016496 | | | | | |
| | **Equipment Manual - SIRIUS M200D AS-Interface Basic Motor Starter,** see https://support.industry.siemens.com/cs/ww/en/view/38722160 | | | | | |

## Accessories for M200D motor starters for PROFIBUS

### Selection and ordering data

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Motor control with PROFIBUS** | | | | | | |
| 3RK1902-1DA00 | **M12 plugs, angular**<br>For screw fixing, 5-pole screw terminal, max. 0.75 mm², B-coded, no terminating resistor | | | | | |
| | • ⑪ 5 female contacts | 5 | **3RK1902-1DA00** | | 1 | 1 unit |
| 3RK1902-1BA00 | • ⑫ 5 male contacts | 5 | **3RK1902-1BA00** | | 1 | 1 unit |
| 3RK1902-1G. | **Control cables, assembled at one end**<br>M12, screw fixing, angular, B-coded, no terminating resistor | | | | | |
| | • ⑪ 5 female contacts, 3 m | 15 | **3RK1902-1GB30** | | 1 | 1 unit |
| | • ⑪ 5 female contacts, 5 m | 15 | **3RK1902-1GB50** | | 1 | 1 unit |
| | • ⑪ 5 female contacts, 10 m | 15 | **3RK1902-1GC10** | | 1 | 1 unit |
| 3RK1902-1N. | ⑪ ⑫ **Control cables, assembled at both ends**<br>M12, screw fixing, angular, pin/socket 5-pole, B-coded, no terminating resistor | | | | | |
| | • 3.0 m | 15 | **3RK1902-1NB30** | | 1 | 1 unit |
| | • 5.0 m | 15 | **3RK1902-1NB50** | | 1 | 1 unit |
| | • 10.0 m | 15 | **3RK1902-1NC10** | | 1 | 1 unit |
| **Further accessories** | | | | | | |
| | **PROFIBUS trailing cables**<br>Max. acceleration 4 m/s², at least 3 000 000 bending cycles, bending radius at least 60 mm, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m | 1 | **6XV1830-3EH10** | | 1 | 1 M |
| | **PROFIBUS FC Food bus cables**<br>with PE outer sheath for operation in the food and beverage industry, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m | 1 | **6XV1830-0GH10** | | 1 | 1 M |
| | **PROFIBUS FC Robust bus cables**<br>with PUR outer sheath for operation in environments exposed to chemicals and mechanical loads, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m | 1 | **6XV1830-0JH10** | | 1 | 1 M |
| | **Power cables**<br>5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m | 1 | **6XV1830-8AH10** | | 1 | 1 M |
| **Connection for 24 V power supply of the M200D PROFIBUS/PROFINET** | | | | | | |
| | See page 6/65 | | | | | |
| **Equipment Manual "SIRIUS M200D PROFIBUS/PROFINET Motor Starters"** | | | | | | |
| | See https://support.industry.siemens.com/cs/ww/en/view/38823402 | | | | | |

## Accessories for M200D motor starters for PROFINET

### Selection and ordering data

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Motor control with PROFINET** | | | | | | |
| | ⑮ **M12 plugs, angular**<br>For screw fixing, 4-pole screw terminal, max. 0.75 mm², angular, D-coded | | | | | |
| | • 4 male contacts | 5 | **3RK1902-2DA00** | | 1 | 1 unit |
| <br>3RK1902-2H. | ⑮ **Control cables, assembled at one end**<br>M12 for screw fixing, angular, 4-pole, D-coded, | | | | | |
| | • 4 male contacts, 3 m | 15 | **3RK1902-2HB30** | | 1 | 1 unit |
| | • 4 male contacts, 5 m | 15 | **3RK1902-2HB50** | | 1 | 1 unit |
| | • 4 male contacts, 10 m | 15 | **3RK1902-2HC10** | | 1 | 1 unit |
| <br>3RK1902-2N. | ⑮ **Control cables, assembled at both ends**<br>M12 for screw fixing, angular at both ends, 4-pole, D-coded, male contacts at both ends | | | | | |
| | • 3 m | 15 | **3RK1902-2NB30** | | 1 | 1 unit |
| | • 5 m | 15 | **3RK1902-2NB50** | | 1 | 1 unit |
| | • 10 m | 15 | **3RK1902-2NC10** | | 1 | 1 unit |
| **Further accessories** | | | | | | |
| | **PROFINET IE FC TP standard cable GP 2 x 2**<br>Sold by the meter | 1 | **6XV1840-2AH10** | | 1 | 1 M |
| | **PROFINET IE FC TP trailing cable 2 x 2**<br>Sold by the meter | 1 | **6XV1840-3AH10** | | 1 | 1 M |
| | **PROFINET IE FC TP trailing cable GP 2 x 2**<br>Sold by the meter | 1 | **6XV1870-2D** | | 1 | 1 M |
| | **PROFINET IE FC TP torsion cable 2 x 2**<br>Sold by the meter | 1 | **6XV1870-2F** | | 1 | 1 M |
| | **PROFINET IE FC TP marine cable, 4-core**<br>Sold by the meter | 1 | **6XV1840-4AH10** | | 1 | 1 M |
| | **Power cables**<br>5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m | 1 | **6XV1830-8AH10** | | 1 | 1 M |
| **Connection for 24 V power supply of the M200D PROFIBUS/PROFINET** | | | | | | |
| <br>3RK1902-3DA00 | **Plugs**<br>On M200D, 7/8" for screw fixing, angular, screw terminal, 1.5 mm² | | | | | |
| | • ⑬ 5 female contacts | 5 | **3RK1902-3DA00** | | 1 | 1 unit |
| <br>3RK1902-3BA00 | • ⑭ 5 male contacts | 5 | **3RK1902-3BA00** | | 1 | 1 unit |
| <br>3RK1902-3G. | ⑬ **Supply lines, assembled at one end**<br>7/8" for screw fixing, angular, 1.5 mm² | | | | | |
| | • 5 female contacts, 3 m | 15 | **3RK1902-3GB30** | | 1 | 1 unit |
| | • 5 female contacts, 5 m | 15 | **3RK1902-3GB50** | | 1 | 1 unit |
| | • 5 female contacts, 10 m | 15 | **3RK1902-3GC10** | | 1 | 1 unit |
| <br>3RK1902-3N. | ⑬ ⑭ **Supply lines, assembled at both ends**<br>7/8", for screw fixing, angular at both ends, 5-pole pin/socket, 1.5 mm² | | | | | |
| | • 3 m | 15 | **3RK1902-3NB30** | | 1 | 1 unit |
| | • 5 m | 15 | **3RK1902-3NB50** | | 1 | 1 unit |
| | • 10 m | 15 | **3RK1902-3NC10** | | 1 | 1 unit |
| <br>6ES7194-3JA00-0AA0 | **7/8" sealing caps**<br>1 pack = 10 units | 1 | **6ES7194-3JA00-0AA0** | | 1 | 10 units |
| **Equipment Manual "SIRIUS M200D PROFIBUS/PROFINET Motor Starters"** | | | | | | |
| | See https://support.industry.siemens.com/cs/ww/en/view/38823402 | | | | | |

# Hybrid fieldbus connections

## General data

### Overview

Hybrid fieldbus connection with two HanBrid sockets

Control cabinet bushing with two M12 sockets

Hybrid fieldbus connections with HanBrid sockets designed as cabinet bushings transmit data and energy from the control cabinet (IP20) to the field (IP65). They are the interface for jointly routing PROFIBUS DP and the auxiliary voltages into the hybrid fieldbus cable.

On the cabinet bushings with two M12 sockets for the PROFIBUS M12 connecting cables, the 24 V supply of the motor starters is implemented via separate 7/8" connecting cables.

***Passive and active hybrid fieldbus connections***

The hybrid fieldbus connections are available in two versions which differ in their functionality:

- Passive version
- Active version with signal refresher function to considerably increase the maximum PROFIBUS cable length

Connection methods

The field side is connected using HanBrid or M12 plug-in connections.

In the case of HanBrid, the following versions are available:

- Socket/socket for feeding into the field
- Pin/socket for looping through in the field

The M12 version is generally configured with socket/socket.

Following connections are available at the rear (cabinet side) in the case of the passive bushings:

- Direct connection
- FastConnect connection

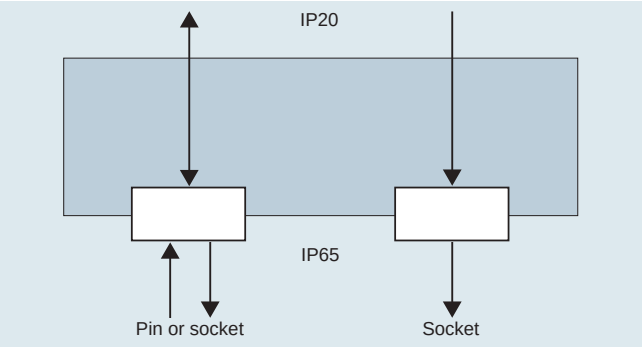
The active bushing with refresher function has 9-pole Sub D sockets for the rear connection.

Auxiliary power infeed

HanBrid plug-in connection technology offers the option of feeding in or looping through two separate auxiliary voltages of 24 V DC (switched/unswitched) into the field in addition to the PROFIBUS signal. The terminal block with spring-loaded terminals on the rear (cabinet side) of the hybrid fieldbus connection provides a variety of interconnecting options for these auxiliary voltages.

***Passive hybrid fieldbus connections***

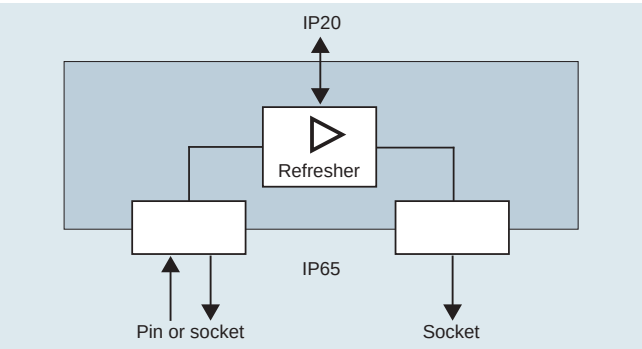
- Bushing from the control cabinet (IP20) into the field (IP65)
- HanBrid plug-in design socket/socket or pin/socket
- Direct connection or FastConnect connection for PROFIBUS at the rear
- Terminal block with spring-loaded terminals (0.25 to 2.5 $mm^2$) for infeeding or forwarding the auxiliary voltages




Hybrid fieldbus connection as passive cabinet bushing

***Active hybrid fieldbus connections with refresher function***

- Bushing from the control cabinet (IP20) into the field (IP65)
- Three independent, electrically separated PROFIBUS segments
- Signal refresher function from and to all segments
- Automatic continuous baud rate detection
- Status/diagnostics displays with LEDs
- Cascading depth of a maximum nine hybrid fieldbus connections
- HanBrid plug-in design socket/socket and pin/socket
- M12 plug-in design socket/socket
- 9-pole Sub D socket connection for PROFIBUS at the rear
- Terminal block with spring-loaded terminals (0.25 to 2.5 $mm^2$) for infeeding or forwarding the auxiliary voltages




Hybrid fieldbus connection as active control cabinet bushing with refresher function

# Hybrid fieldbus connections

## Selection and ordering

### Technical specifications

| Type | | Passive hybrid fieldbus connections | Active hybrid fieldbus connections |
|---|---|---|---|
| **Mechanics and environment** | | | |
| **Dimensions (W x H x D)** | mm | 93 x 103 x 65 | |
| **Cutout (W x H)** | mm | 80 x 90 | |
| **Temperature range** | °C | -25 ... +60 | |
| **Degree of protection** | | IP20 internal/IP65 on field side | |
| **Material/enclosure** | mm | Plastic (black PC), flame retardant | |
| **Electrical specifications** | | | |
| **Rated operational voltage** | | | |
| • 24 V DC not switched (NS) | V DC | 24, ± 25% | |
| • 24 V DC switched (S) | V DC | 24, ± 25% | |
| **Max. rated current** | A | 10 | |
| **Power supply** | | -- | From 24 V DC not switched (NS) |
| **Max. power consumption** | mA | -- | 130 |
| **Mains buffering** | ms | -- | > 20 |
| **Baud rate detection** | | -- | Automatic |
| **Maximum cascading depth** | | -- | 9 hybrid fieldbus connections |
| **Baud rates** | kbps | 9.6/19.2/45.45/93.75/187.5/500/1 500/3 000/6 000 /12 000 | |
| **Electrical separation** | V DC | 500 | |

### Selection and ordering data

Hybrid fieldbus connection on the field side:
With socket/socket (HanBrid)

With pin/socket (HanBrid)

Control cabinet bushing on the field side
With socket/socket (M12)

| Link type / function | Connection IP65 | Connection IP20 (PROFIBUS) | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Hybrid fieldbus connections** | | | | | | | |
| **Passive** | | | | | | | |
| • Cu/Cu, for feeding into the field | Socket/socket (2 x HanBrid) | Direct connection | 5 | **3RK1911-1AA22** | | 1 | 1 unit |
| • Cu/Cu, for looping through in the field | Pin/socket (2 x HanBrid) | Direct connection | 5 | **3RK1911-1AA32** | | 1 | 1 unit |
| • Cu/Cu, for feeding into the field | Socket/socket (2 x HanBrid) | PROFIBUS FastConnect bus connector | 5 | **3RK1911-1AF22** | | 1 | 1 unit |
| • Cu/Cu, for looping through in the field | Pin/socket (2 x HanBrid) | PROFIBUS FastConnect bus connector | 5 | **3RK1911-1AF32** | | 1 | 1 unit |
| **Active (refresher)** | | | | | | | |
| • Cu/Cu, for feeding into the field | Socket/socket (2 x HanBrid) | 9-pole Sub D socket | 5 | **3RK1911-1AJ22** | | 1 | 1 unit |
| • Cu/Cu, for looping through in the field | Pin/socket (2 x HanBrid) | 9-pole Sub D socket | 5 | **3RK1911-1AJ32** | | 1 | 1 unit |
| • Cu/Cu, for feeding into the field | Socket/socket (2 x M12) | 9-pole Sub D socket | 5 | **3RK1911-1AK22** | | 1 | 1 unit |

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Accessories** | | | | | |
| **Sealing caps for HanBrid**<br>Protective cover for bus and power supply connection (pack of 10) | 1 | **6ES7194-1JB10-0XA0** | | 1 | 10 units |

6ES7194-1JB10-0XA0

PROFIBUS ECOFAST hybrid cables, see Catalog ST 70 or Industry Mall.

## Notes

3RW55/55F

3RW52

3RW50

3RW30 3RW40

## contents


| | |
|---|---|
| Introduction | 7/2 – 7/3 |
| **SIRIUS 3RW soft starters** | |
| General data | 7/4 – 7/11 |
| **High Performance soft starters** | |
| 3RW55 soft starters | |
| - General Data | 7/12 – 7/25 |
| - Inline circuit and Inside-delta circuit | 7/26 – 7/33 |
| - Accessories | 7/34 – 7/35 |
| 3RW55 Failsafe soft starters | |
| - General Data | 7/36 – 7/48 |
| - Inline circuit and Inside-delta circuit | 7/49 – 7/50 |
| - Accessories | 7/51 – 7/52 |
| **General Performance soft starters** | |
| 3RW52 soft starters | |
| - General Data | 7/53 – 7/64 |
| - Inline circuit and Inside-delta circuit | 7/65 – 7/68 |
| - Accessories | 7/69 – 7/70 |
| **Basic Performance soft starters** | |
| 3RW50 soft starters | |
| - General Data | 7/71 – 7/79 |
| - Inline circuit | 7/80 |
| - Accessories | 7/81 – 7/82 |
| 3RW40 soft starters | |
| - General Data | 7/83 – 7/89 |
| - Inline circuit | 7/90 – 7/91 |
| - Accessories | 7/92 – 7/93 |
| 3RW30 soft starters | |
| - General Data | 7/94 – 7/101 |
| - Inline circuit | 7/102 |
| - Accessories | 7/103 – 7/104 |
| **Soft Starter Software** | 7/105 |
| **Spare parts** | |
| For 3RW55/3RW55 Failsafe | 7/105 – 7/107 |
| For 3RW52 | 7/108 – 7/109 |
| For 3RW50 | 7/110 |
| **3RE47 Enclosed Soft Starters** | |
| Introduction and General data | 7/111 - 7/116 |
| Nomenclature | 7/117 |
| 3RE470 Basic performance | 7/118 - 7/120 |
| 3RE471 General performance | 7/121 - 7/126 |
| 3RE472 High performance | 7/127 - 7/135 |
| Factory modifications and accessories | 7/136 - 7/137 |
| Technical data | 7/138 - 7/140 |
| Wiring diagrams | 7/141 - 7/143 |
| Dimension diagrams | 7/144 - 7/149 |
| **SINAMICS G120X Drives** | |
| Introduction, Technical and General data | 7/150 - 7/152 |
| Selection and ordering data | 7/153 - 7/155 |
| Kits, options, features | 7/156 |

## Introduction

### Overview

| More information | |
|---|---|
| Homepage, see www.usa.siemens.com/soft-starter | Industry Online Support (SIOS) topic page, see https://support.industry.siemens.com/cs/ww/en/view/109747404 |
| Industry Mall, see www.siemens.com/product?3RW | Simulation Tool for Soft Starters (STS), see page 6/8 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |
| TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=Sirius3rwFolder | |

3RW55

3RW55 Failsafe

3RW52

3RW50

3RW40

3RW30

| 3RW soft starters | | Page |
|---|---|---|
| ***High Performance soft starters*** | | |
| **3RW55 soft starters** | • TIA integration optional<br>• Plug-in communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus<br>• Removable HMI module with color display, local interface and slot for a micro SD memory card<br>• Extended protection functions<br>• Up to 1000HP @ 480V (600V and 690V ratings also available)<br>• Automatic parameterization for simple commissioning and reliability even under changing load conditions<br>• Hybrid switching devices for minimum power loss and three-phase motor control for optimum/symmetrical motor control<br>• Pump stop for reduced mechanical loading and optimum pump stop control<br>• ATEX/IECEx certification | 7/12 |
| **3RW55 Failsafe soft starters** | • TIA integration optional<br>• Plug-in communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus<br>• Removable HMI module with color display, local interface and slot for a micro SD memory card<br>• Extended protection functions<br>• Up to 400HP @ 480V<br>• SIL 1 - PL c / STO without additional components<br>• SIL 3 - PL e / STO with additional contactor and safety relay<br>• Hybrid switching devices for minimum power loss and three-phase motor control for optimum/symmetrical motor control<br>• Pump stop for reduced mechanical loading and optimum pump stop control<br>• ATEX/IECEx certification | 7/36 |
| ***General Performance soft starters*** | | |
| **3RW52 soft starters** | • TIA integration optional<br>• Plug-in communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus<br>• HMI modules optional<br>• Soft starting and stopping<br>• Current limiting<br>• Motor overload protection (optionally with thermistor motor protection)<br>• Analog output (optional)<br>• Up to 400HP @ 480V (600V ratings also available)<br>• Hybrid switching devices for minimum power loss and three-phase motor control for optimum/symmetrical motor control<br>• Soft Torque for reduced mechanical loading and optimum pump stop<br>• Parameterization using potentiometers | 7/53 |

## Introduction

3RW55

3RW55 Failsafe

3RW52

3RW50

3RW40

3RW30

| | | Page |
|---|---|---|
| **3RW soft starters** | | |
| ***Basic Performance soft starters*** | | |
| **3RW50 soft starters** | • TIA integration optional<br>• Communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus<br>• HMI modules optional<br>• Soft starting and stopping<br>• Current limiting<br>• Motor overload protection (optionally with thermistor motor protection)<br>• Analog output (optional)<br>• Up to 400HP @ 480V (600V ratings also available)<br>• Hybrid switching devices for minimum power loss and two-phase motor control<br>• Soft Torque for reduced mechanical loading and optimum pump stop<br>• Parameterization using potentiometers<br>• ATEX/IECEx certification | 7/71 |
| **3RW40 soft starters** | • Soft starting and stopping<br>• Current limiting<br>• Motor overload protection (optionally with thermistor motor protection)<br>• Up to 75HP @ 480V 600V ratings also available)<br>• Hybrid switching devices for minimum power loss and two-phase motor control<br>• ATEX certification | 7/83 |
| **3RW30 soft starters** | • Soft starting with voltage ramp<br>• Up to 75HP @ 480V | 7/94 |
| **For enclosed applications** | | |
| **Enclosures in NEMA 1, 3, 4, & 12 types UL/CSA listed** | • Complete starter includes 3RW40 or 3RW44 and CPT<br>• Performance Range of up to 600 Hp (at 460 V)<br>• Combination options include circuit breaker or fusible disconnect<br>• Application areas:<br>- Compressors<br>- Pumps<br>- Stamping presses<br>- Cooling towers<br>- Molding and extruding<br>- Chippers and debarkers<br>- Lumber processing<br>- Pulp & paper processing<br>- Conveyors<br>- Textiles<br>- HVAC | 7/111 |

### *Use of soft starters in conjunction with IE3/IE4 motors*

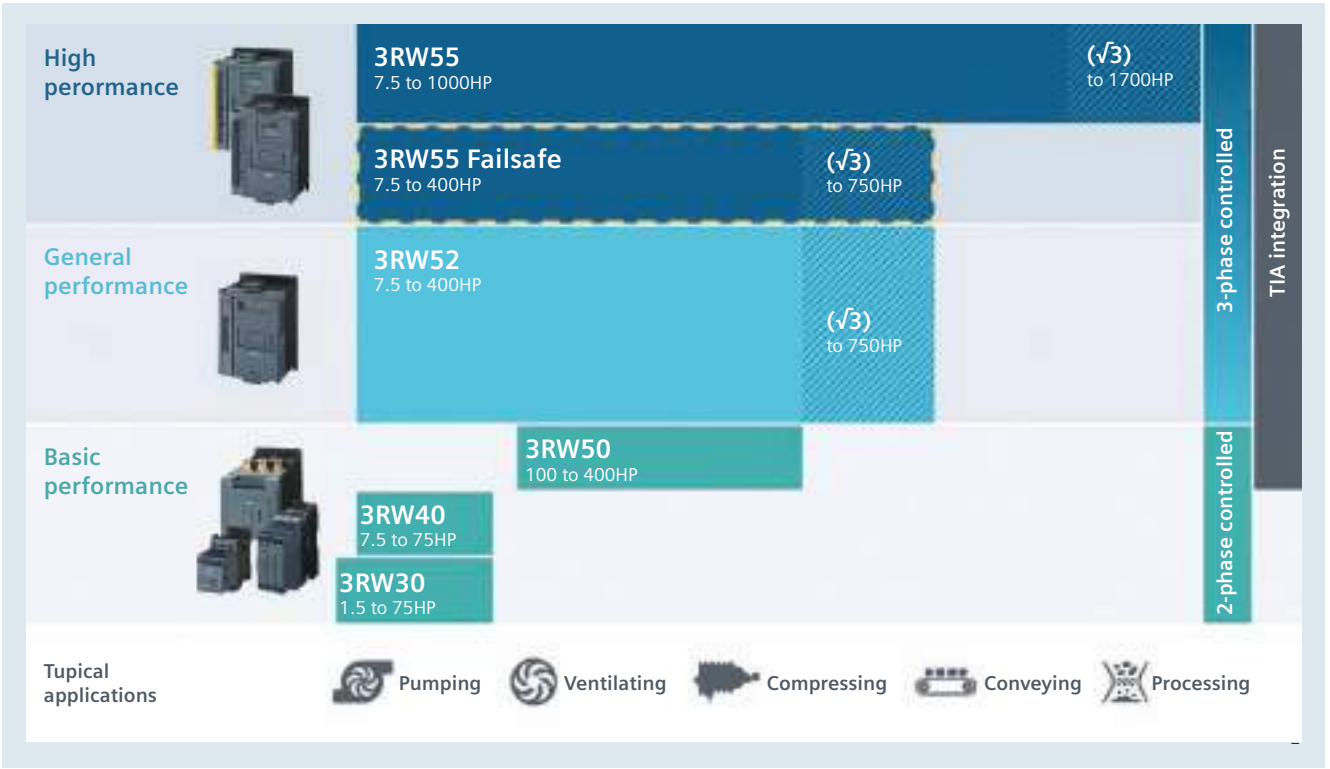
Note:

For the use of SIRIUS 3RW soft starters in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring, see Application Manual.

## Overview

| More information | |
|---|---|
| Homepage, see www.usa.siemens.com/soft-starter<br>Industry Mall, see www.siemens.com/product?3RW<br>TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=Sirius3rwFolder | Industry Online Support (SIOS) topic page, see https://support.industry.siemens.com/cs/ww/en/view/109747404<br>Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |

***SIRIUS 3RW soft starters – as versatile as your application***



# SIRIUS 3RW Soft Starters

## General data

| Applications | High Performance | General Performance | Basic Performance | | |
|---|---|---|---|---|---|
| SIRIUS soft starters | 3RW55/3RW55-F | 3RW52 | 3RW50 | 3RW40 | 3RW30 |
| **Selection aid for soft starters** | | | | | |
| ***Normal starting (CLASS 10)*** | | | | | |
| Pumps | ● | ● | ● | ● | ● |
| Pumps with special pump stop (to prevent water hammer) | ● | ❍ | ❍ | | |
| Heat pumps | ● | ● | ● | ● | ● |
| Hydraulic pumps | ● | ● | ● | ● | ❍ |
| Presses | ● | ● | ● | ● | ❍ |
| Conveyor belts | ● | ● | ● | ● | ❍ |
| Roller conveyors | ● | ● | ● | ● | ❍ |
| Screw conveyors | ● | ● | ● | ● | ❍ |
| Escalators | ● | ● | ● | ● | |
| Piston compressors | ● | ● | ● | ● | |
| Screw compressors | ● | ● | ● | ● | |
| Small fans[1)] | ● | ● | ● | ● | |
| Centrifugal blowers | ● | ● | ● | ● | |
| Bow thrusters | ● | ● | ● | ● | |
| ***Heavy starting (CLASS 20)*** | | | | | |
| Stirrers | ● | ❍ | ❍ | ❍ | |
| Extruders | ● | ❍ | ❍ | ❍ | |
| Lathes | ● | ❍ | ❍ | ❍ | |
| Milling machines | ● | ❍ | ❍ | ❍ | |
| ***Heavy starting (CLASS 30)*** | | | | | |
| Large fans[2)] | ● | | | | |
| Circular saws/bandsaws | ● | | | | |
| Centrifuges | ● | | | | |
| Mills | ● | | | | |
| Crushers | ● | | | | |

● Recommended soft starter
❍ Possible soft starter

[1)] The mass inertia of the fan is <10 times the mass inertia of the motor.
[2)] The mass inertia of the fan is ≥10 times the mass inertia of the motor.

# SIRIUS 3RW Soft Starters

## General data

| Applications | | | High Performance | | General Performance | Basic Performance | | |
|---|---|---|---|---|---|---|---|---|
| **SIRIUS soft starters** | | | **3RW55** | **3RW55-F** | **3RW52** | **3RW50** | **3RW40** | **3RW30** |
| **General technical specifications** | | | | | | | | |
| **Operational current at 40 °C** | | A | 13 ... 2 217 | 13 ... 987 | 13 ... 987 | 143 ... 570 | 12.5 ... 106 | 3 ... 106 |
| **Operational voltage** | | V | 200 ... 690[1] | 200 ... 480 | 200 ... 600 | 200 ... 600 | 200 ... 600 | 200 ... 480 |
| **Operating power for three-phase motors** | | | | | | | | |
| • At 400 V, at 40 °C | - Inline circuit | kW | 5.5 ... 710 | 5.5 ... 315 | 5.5 ... 315 | 75 ... 315 | 5.5 ... 55 | 1.5 ... 55 |
| | - Inside-delta circuit | kW | 11 ... 1 200 | 11 ... 560 | 11 ... 560 | -- | -- | -- |
| • At 460/480 V at 50 °C | - Inline circuit | hp | 7.5 ... 1 000 | 7.5 ... 400 | 7.5 ... 400 | 100 ... 400 | 7.5 ... 75 | 1.5 ... 75 |
| | - Inside-delta circuit | hp | 10 ... 1 700 | 10 ... 750 | 10 ... 750 | -- | -- | -- |
| **Ambient temperature[2]** | | °C | -25 ... +60 | -25 ... +60 | -25 ... +60 | -25 ... +60 | -25 ... +60 | -25 ... +60 |
| **Soft starting/ramp-down** | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓[3] |
| **Voltage ramp** | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Starting voltage** | | % | 20 ... 100 | 20 ... 100 | 30 ... 100 | 30 ... 100 | 40 ... 100 | 40 ... 100 |
| **Ramp-up and ramp-down time** | | s | 0 ... 360 | 0 ... 360 | 0 ... 20 | 0 ... 20 | 0 ... 20 | 0 ... 20[3] |
| **Pump stop (torque control)[4]** | | | ✓ | ✓ | -- | -- | -- | -- |
| • Starting torque | | % | 10 ... 100 | 10 ... 100 | -- | -- | -- | -- |
| • Torque limit | | % | 20 ... 200 | 20 ... 200 | -- | -- | -- | -- |
| **Soft Torque (torque limit)** | | | -- | -- | ✓ | ✓ | -- | -- |
| **Integral bypass contact system** | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Intrinsic device protection** | | | ✓ | ✓ | ✓ | ✓ | ✓ | -- |
| **Motor overload protection** | | | ✓[5] | ✓[5] | ✓ | ✓[5] | ✓[5] | -- |
| **Thermistor motor protection evaluation** | | | ✓ | ✓ | ✓[6] | ✓[6] | ✓[6] | -- |
| **Analog output** | | | ✓ | ✓ | ✓[6] | ✓[6] | -- | -- |
| **Remote RESET** | | | ✓ | ✓ | ✓ | ✓ | ✓ | -- |
| **Adjustable current limiting** | | | ✓ | ✓ | ✓ | ✓ | ✓ | -- |
| **Inside-delta circuit[1]** | | | ✓ | ✓ | ✓ | -- | -- | -- |
| **Breakaway pulse** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Automatic parameterization** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Pump cleaning** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Condition monitoring** | | | ✓ | ✓ | -- | -- | -- | -- |
| **User account administration[8]** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Creep speed in both directions of rotation** | | | ✓ | -- | -- | -- | -- | -- |
| **Reversing duty** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Reversing DC braking[4][7]** | | | ✓ | -- | -- | -- | -- | -- |
| **DC braking[4][7]** | | | ✓ | -- | -- | -- | -- | -- |
| **Dynamic DC braking[4][7]** | | | ✓ | -- | -- | -- | -- | -- |
| **Motor heating** | | | ✓ | -- | -- | -- | -- | -- |
| **Communication function[9]** | | | ✓ | ✓ | ✓ | ✓ | -- | -- |
| **HMI module installable in the cabinet door** | | | ✓ | ✓ | ✓[9] | ✓[9] | -- | -- |
| **Operating measured value display** | | | ✓ | ✓ | ✓[9] | ✓[9] | -- | -- |
| **Logbooks** | | | ✓ | ✓ | ✓[9] | ✓[9] | -- | -- |
| **Statistical data and slave pointer function** | | | ✓ | ✓ | ✓[9] | ✓[9] | -- | -- |
| **Trace function[8]** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Programmable control inputs and outputs** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Number of parameter sets** | | | 3 | 3 | 1 | 1 | 1 | 1 |
| **Parameterizable via software[8]** | | | ✓ | ✓ | -- | -- | -- | -- |
| **Number of controlled phases** | | | 3 | 3 | 3 | 2 | 2 | 2 |
| **Heavy starting CLASS 30[4]** | | | ✓ | ✓ | -- | -- | -- | -- |

✓ Function available
-- Function not available

1) Inside-delta circuit only up to operational voltage 600 V.
2) Note derating above 40 °C.
3) Only soft starting available for 3RW30.
4) Calculate soft starter and motor with size allowance where required.
5) When using the motor overload protection according to ATEX/IECEx, an upstream contactor may be required, see page 7/10.
6) Special device versions only.
7) Not possible in inside-delta circuit.
8) With software Soft Starter ES (TIA Portal).
9) Only in conjunction with special accessories.

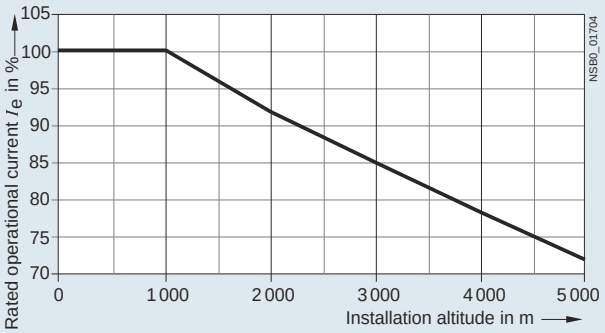
## General data

### *Constraints*

The 3RW soft starters should always be designed on the basis of the required rated operational current of the motor.
The motor ratings listed in the selection and ordering data are rough guide values and designed for basic starting conditions (CLASS 10). For other starting conditions we recommend the Simulation Tool for Soft Starters (STS).

Motor rating data in kW and hp is based on IEC 60947-4-1.

At an installation altitude above 2 000 m, max. permissible operational voltage is reduced to 480 V.




Installation altitude for SIRIUS 3RW soft starters

The selection and ordering data were determined for the following constraints (stand-alone installation without auxiliary fan)

| Applications | | High Performance | General Performance | Basic Performance | | |
|---|---|---|---|---|---|---|
| **SIRIUS soft starters** | | **3RW55/3RW55-F** | **3RW52** | **3RW50** | **3RW40** | **3RW30** |
| **Constraints** | | | | | | |
| **Maximum starting time** | s | 20 | 10 | | | 3 |
| **Maximum starting current in % of motor current** | $I_e$ | 300 | | | | |
| **Maximum number of starts per hour** | 1/h | 5 | | | | 20 |

Simulation Tool for Soft Starters (STS)

The Simulation Tool for Soft Starters (STS) provides a convenient means of designing soft starters using a simple, quick and easy-to-use interface.
Entering the motor and load data will simulate the application and prompt suggestions for suitable soft starters.

Link to the free download of the Simulation Tool for Soft Starters (STS).

- Simple, quick and user-friendly interface
- Detailed and up-to-date Siemens motor database, including IE3/IE4 motors.
- Simulation of heavy starting up to CLASS 30
- Update-capable (e.g. motors, load types, functions)
- Fast simulations with minimum input data
- Immediate, graphical curve charts of start operations with limit values
- Table view of suitable soft starters for the application

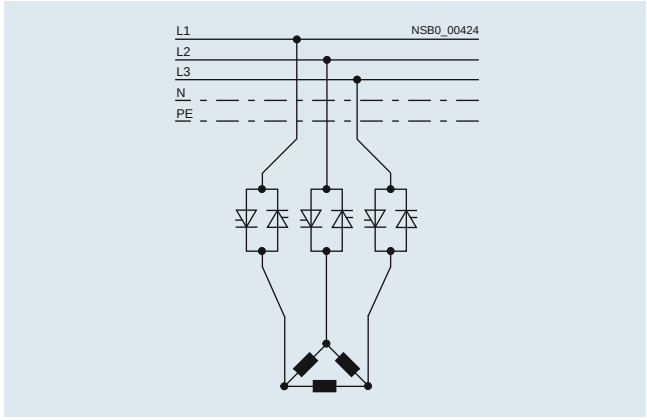
Everything at a glance: Simulation and results list

### *Circuit concept*

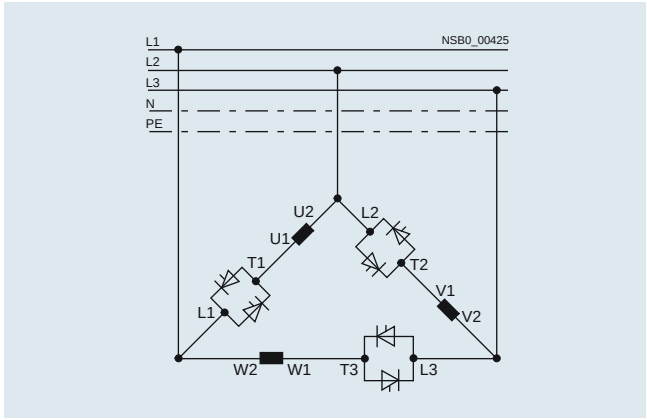
Three-phase controlled SIRIUS 3RW soft starters can be operated in two different types of circuit:

- Inline circuit
  The controls for isolating and protecting the motor are simply connected in series with the soft starter. The motor is connected to the soft starter with three leads.
- Inside-delta circuit
  The wiring is similar to that of wye-delta starters. The phases of the soft starter are connected in series with the individual motor windings. The soft starter then only has to carry the phase current, amounting to about 58% of the rated motor current (conductor current).

Comparison of the types of circuit




Inline circuit: Rated current $I_e$ corresponds to the rated motor current $I_n$, three cables to the motor




Inside-delta circuit: Rated current $I_e$ corresponds to approx. 58% of the rated motor current $I_n$, six cables to the motor (as for wye-delta starters)

Which circuit?

Using the inline circuit involves the lowest wiring outlay. If the soft starter to motor connections are long, this circuit is preferable.

The wiring complexity is twice as high when using the inside-delta circuit, but a smaller device can be used with the same rating. Thanks to the choice of operating mode between the inline circuit and inside-delta circuit, it is always possible to select the most favorable solution.

The braking function is possible only in the inline circuit.
The inside-delta circuit cannot be used in 690 V line supplies.

### *Configuration*

The solid-state 3RW soft starters are designed for normal starting. In case of heavy starting or increased starting frequency, a larger unit must be selected. The 3RW52 soft starters may be used in isolated supply networks (IT systems) up to 600 V AC and the 3RW55 soft starters even up to 690 V.

For long starting times it is recommended to have a PTC sensor or temperature switch in the motor. This also applies for the ramp-down modes torque control, pump stop and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down.

No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct-on-line starting, following the local short-circuit conditions. Fuses and switching devices must be ordered separately. The harmonic component load for starting currents must be taken into consideration for the selection of motor starter protectors (selection of release). Please observe the maximum switching frequencies specified in the technical specifications.

Notes:

When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

For dimensioning soft starters, we recommend our Simulation Tool for Soft Starters (STS), see page 7/7 or
our Technical Support:
https://support.industry.siemens.com/My/ww/en/requests.

Recommended parameters for the initial commissioning of our SIRIUS 3RW soft starters are listed in every report of our Simulation Tool for Soft Starters (STS). In addition, our High Performance soft starters provide support by means of their commissioning wizards.

### *Motor feeders with soft starters*

The type of coordination according to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, then semiconductor fuses must be fitted in the motor feeder.

| | |
|---|---|
| ToC 1 | Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident, the unit is defective and therefore unsuitable for further use (protection of persons and system guaranteed). |
| ToC 2 | Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed). |
| | The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder. |
| | The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds. |

### *Feeder tests and events*

To keep the scope of feeder tests with SIRIUS 3RW soft starters within economically reasonable limits, tests were conducted with feeder components (motor starter protectors/circuit breakers, fuses) that cover the greatest number of use cases (different soft starter versions depending on, for example, line voltage, type of circuit, or necessary overdimensioning). For the combined tests that were conducted, the values for the short-circuit breaking capacity $I_q$ in kA were determined and documented.

If the short-circuit breaking capacity is the same, of course, smaller circuit breakers or fuses can also be used for the selected soft starter provided the dimensioning of the short-circuit components is suitable for the connected three-phase motor and the line protection for the cables used. For type of coordination "2" (with semiconductor protection), it is also necessary to compare the characteristics because the protection function would no longer be completely ensured if too small a fuse were selected. If the soft starter does not have a motor protection function, the motor protection must also be dimensioned appropriately.

Setting the motor current

If circuit breakers with an overload release are used (e.g. SIRIUS 3RV20 motor starter protector), we recommend activating the motor protection function of the SIRIUS 3RW soft starter to protect the motor and setting the soft starter to the rated operational current $I_e$ of the motor. We recommend setting the circuit breaker in such a way that it provides line protection but does not usually trip before the soft starter when a motor overload occurs.

### *Line protection and motor protection*

Line protection and motor protection are not ensured in all operating cases, depending on:

- How the motor feeder is constructed (e.g. with fuses or motor starter protectors)
- Whether the SIRIUS 3RW soft starters are operated within the specification relevant for the tests (IEC 60947-4-2)
- Or whether the documented constraints (see page 7/7) have been observed.

There are operating states of the thyristors (caused, for example, by high starting frequencies or heavy starting) that do not permit an overload to be disconnected by the SIRIUS 3RW soft starter. These cases are very rare but can not be ruled out in all cases.

In accordance with IEC 60947-4-2, the SIRIUS 3RW soft starters are dimensioned and checked for operation with up to 8 times the rated operational current $I_e$. For currents larger than this, reliable disconnection of an overcurrent by the SIRIUS 3RW soft starter is not ensured. Such large overcurrents have to be disconnected by a switching device at a higher level (e.g. by a circuit breaker or a fuse in conjunction with an optional line contactor).

Motor protection by the SIRIUS 3RW soft starter is ensured for currents up to 8 times the rated operational current $I_e$ in any case. Line protection is covered by the line-side motor starter protector/circuit breaker or fuse. These motor feeder components must be dimensioned accordingly and the cable cross-sections must be chosen to match.

### *Line protection*

Line protection in motor feeders with soft starters is always covered by a fuse or a circuit breaker both in case of an overload and in case of a short circuit. The circuit breaker must have an overload release. That is the case for motor starter protectors (e.g. SIRIUS 3RV20).

Circuit breakers without an overload release (e.g. SIRIUS 3RV23 motor starter protectors) must not be used because they do not provide overload protection. The feeder tests for these were therefore not performed. If the motor feeder with SIRIUS 3RW soft starters is configured without a fuse, motor starter protectors must be used that ensure tripping on an overload.

### *Motor protection*

If fuses are used to provide protection against overload and short circuit of the cables, the motor is protected by the SIRIUS 3RW soft starter. If the constraints (simple starting conditions CLASS 10, listed maximum values for starting current, starting time and number of starts per hour) of page 7/7) are observed, the motor feeders can be configured according to IEC as described in the section about soft starters (an optional line contactor is not required). If these preconditions are met, the SIRIUS 3RW soft starters are able to trip on overloads to protect the motor in any case.

In other starting conditions and on heavy starting, the following must be considered:

Trip classes

Tested fuseless switchgear assemblies comprising SIRIUS 3RW soft starters and motor starter protectors only comply with CLASS 10.
To configure tested motor feeders, for example, for CLASS 20 or CLASS 30, fuses must be used together with SIRIUS 3RW soft starters.

Line contactor

In applications with high starting frequencies or heavy starting as of CLASS 20, we recommend combining fuses with the use of a line contactor on the line side so that a motor overload is disconnected by the fault signaling contact of the soft starter in any case (that is, even in rare cases in which disconnection by the SIRIUS 3RW soft starter is no longer possible due to the operating state of the thyristors).

### *ATEX/IECEx-certified motor overload protection*

Ambient temperature during operation

The SIRIUS 3RW soft starters are approved for operation in a temperature range of -25 to +60 °C.

Please take into account derating of the rated operational current for ambient temperatures above 40 °C.

For more information, see Equipment Manual and the technical data sheet of the selected soft starter.

Trip class (electronic overload protection)

The motor and cables must be dimensioned for the selected trip class.

The rated data of the soft starters refers to normal starting (CLASS 10). For heavy starting (> CLASS 10), the soft starter may need to be overdimensioned as only a rated motor current that is lower than the soft starter rated current can be set.

Short-circuit protection

The SIRIUS 3RW soft starter does not have short-circuit protection. Short-circuit protection must be ensured.

Line protection

Avoid impermissibly high cable surface temperatures by correctly dimensioning the cross-sections.

The cable cross-section must be adequately dimensioned.

Line contactor or additional undervoltage release on the motor starter protector

In many ATEX/IECEx applications no additional measures (e.g. the use of a line contactor) are necessary with regard to the motor feeder configuration.

The operation of the selected soft starter may, depending on the amplitude of the line voltage and the type of motor connection (inline circuit or inside-delta circuit), result in the loss of the certified motor overload protection according to ATEX/IECEx if one of the two remedial measures listed below is not implemented.

Remedial measures

- An additional line contactor in the main circuit
- An additional undervoltage release for a motor feeder configuration with a motor starter protector

The line contactor or the undervoltage release are connected to error outputs 95, 96 and 98 of the selected soft starter

Note:

For ATEX/IECEx applications, the accompanying information on parameterization and commissioning must be observed in the ATEX/IECEx chapters of the Equipment Manual for the selected soft starter.

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Device type | **High Performance soft starters** | **3RW55** | □ | □ | – | □ | □ | □ | □ | □ | |
| | **General Performance soft starters** | **3RW52** | □ | □ | – | □ | □ | □ | □ | □ | |
| | **Basic Performance soft starters** | **3RW50** | □ | □ | – | □ | □ | □ | □ | □ | |
| | | **3RW40** | □ | □ | – | □ | □ | □ | □ | □ | |
| | | **3RW30** | □ | □ | – | □ | □ | □ | □ | □ | |
| Size/rated operational current $I_e$ | e.g. 15 = 25 A in size S1 | | □ | □ | | | | | | | |
| Connection type | e.g. 1 = screw terminal | | | | | □ | | | | | |
| Soft starter functionality | e.g. AC = with bypass and analog output, three-phase controlled | | | | | | □ | □ | | | |
| Rated control supply voltage $U_s$ | e.g. 0 = 24 V AC/DC | | | | | | | | □ | | |
| Rated operational voltage $U_e$ | e.g. 4 = 200 ... 480 V AC | | | | | | | | | □ | |
| Example | | **3RW52** | **1** | **5** | **–** | **1** | **A** | **C** | **0** | **4** | |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders please use the article numbers quoted in the selection and ordering data.

## Benefits

***Can be flexibly deployed in many applications***

### Strong portfolio: comprehensive, coordinated soft starter portfolio

- The right hardware for all requirements, soft starters for tasks ranging from simple to demanding starting in Basic, General and High Performance versions
- Extensive portfolio for individual expansion: Optional HMIs for installation in the device or mounting on the control cabinet door
- Communication via PROFINET, PROFIBUS, EtherNet/IP and Modbus
- Design enclosure with removable terminals, space-saving thanks to compact design and rugged thanks to coated printed circuit boards
- Can be used worldwide thanks to numerous certificates and approvals: IEC, UL, CSA, CCC, ATEX/IECEx, shipbuilding

### Intelligent operation: concentrated, application-specific functionality

- Can be used in a wide variety of applications: Pumping, ventilating, compressing, moving and processing
- Integrated, self-learning automatic parameterization depending on motor starting conditions
- Application-specific functionality such as pump cleaning and pump stop
- Condition monitoring: Current and power monitoring with warning and alarm limits, starting time monitoring

### Efficient switching: hybrid switching technology on board

- Energy-efficient switching and mechanical protection of the drive train thanks to soft starters with hybrid switching technology
- Low-wear switching extends the service life of the devices
- Soft starting prevents current peaks, thereby increasing the network stability
- Protection against disturbances in the application. Mechanical protection for the drive train

### Ready for a digital future: data available whenever and wherever needed

- Support from tools and data during engineering
- Simulation Tool for Soft Starters for support during product selection
- Very simple, standardized commissioning and configuration via Soft Starter ES in TIA Portal
- Integration in the automation system via communication interfaces
- Data availability and analysis: large volumes of data at any time and anywhere, even into MindSphere

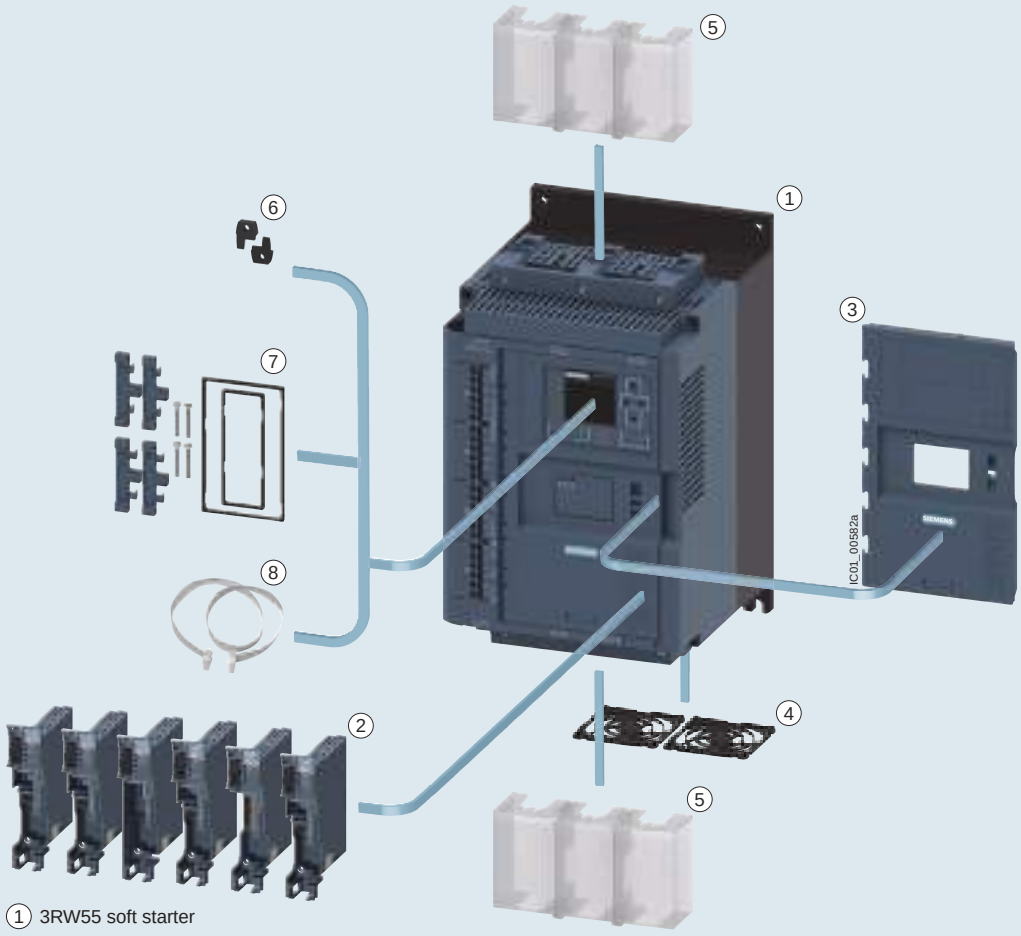
## Overview

**More information**

Homepage, see www.usa.siemens.com/soft-starter
Industry Mall, see www.siemens.com/product?3RW
TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=Sirius3rwFolder
Industry Online Support (SIOS) topic page, see https://support.industry.siemens.com/cs/ww/en/view/109747404
Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917
SIRIUS Soft Starter ES (TIA Portal), see page 14/2

Equipped with the utmost functionality, the SIRIUS 3RW55 High Performance soft starters confidently handle even difficult starting and stopping operations. Thanks to innovative torque control, the device can be used for drives with an output of between 7.5 to 1000HP @ 480V.

The functions have been specially designed to offer maximum user friendliness. The HMI (with color display, local interface and a slot for micro SD memory card) and plug-in communication modules (PROFINET, PROFIBUS, EtherNet/IP and Modbus) ensure maximum flexibility. With their modern hybrid switching technology, the SIRIUS 3RW55 soft starters offer efficient switching for long-term, energy-saving use.




1 3RW55 soft starter
2 Communication modules
3 Hinged cover
4 Fan covers
5 Terminal covers
6 HMI push-in lugs for wall mounting
7 HMI IP65 door mounting kit
8 HMI soft starter connection cable

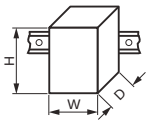
3RW55 High Performance soft starters with accessories, see page 7/35.

## Benefits

| Product characteristics / function | Performance features / benefits |
|---|---|
| Automatic parameterization | Extremely easy commissioning and reliability even under changing load conditions |
| Hybrid switching devices and three-phase motor control | Minimum power loss and optimum/symmetrical motor control |
| Integration into TIA Portal – communication modules optional | Efficient configuration and maximum flexibility in automation engineering |
| Removable HMI with color display, local interface, slot for micro SD memory card | Maximum flexibility with regard to user interface and intuitive menu guidance |
| Pump stop and torque control | Reduced mechanical loading and optimum pump stop control |
| Certified according to ATEX/IECEx directive | Suitable for the starting of explosion-proof motors |

## Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25099/td | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25099/faq |
| Equipment Manual "SIRIUS 3RW55 Soft Starter", see https://support.industry.siemens.com/cs/ww/en/view/109753752 | Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |

| Type | | 3RW551.-.HA.4<br>3RW551.-.HA.5 | 3RW552.-.HA.6<br>3RW553.-.HA.6 | 3RW552.-.HA.4<br>3RW553.-.HA.4 | 3RW554.-.HA.4 | 3RW554.-.HA.6 | 3RW555.-.HA.4 | 3RW555.-.HA.6 |
|---|---|---|---|---|---|---|---|---|
| **Installation/fixing/ dimensions** | | | | | | | | |
| **Width x height x depth** | mm | 170 × 275 × 152 | 185 × 306 × 203 | | 210 × 393 × 203 | | 478 x 764 x 241 | |
|  | | | | | | | | |
| **Type of mounting** | | Screw fixing | | | | | | |
| **Mounting position** | | Vertical (can be rotated +/- 90° and tilted +/- 22.5° forward or backward) | | | | | | |
| **Distance to be maintained with side-by-side mounting** | | | | | | | | |
| • Above | mm | 100 | | | | | | |
| • At the side | mm | 5 | | | | | | |
| • Below | mm | 75 | | | | | | |
| **Maximum installation altitude above sea level**[1] | m | 5 000 | 2 000 | 5 000 | | 2 000 | 5 000 | 2 000 |
| **Degree of protection** | | IP00 | | | | | | |
| **Ambient conditions** | | | | | | | | |
| **Ambient temperature** | | | | | | | | |
| • During operation[2] | °C | -25 ... +60 | | | | | | |
| • During storage and transport | °C | -40 ... +80 | | | | | | |
| **Environmental category according to IEC 60721** | | | | | | | | |
| • During operation | | 3K6 (no ice formation, no condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 | | | | | | |
| • During storage | | 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not enter the devices), 1M4 | | | | | | |
| • During transport | | 2K2, 2C1, 2S1, 2M2 (max. height of fall 0.3 m) | | | | | | |

1) Derating from 1 000 m, see characteristic curve on page 7/7.
2) Note derating above 40 °C.

| Type | | 3RW55..-.HA0. | 3RW55..-.HA1. |
|---|---|---|---|
| **Control circuit/control** | | | |
| **Control supply voltage** | | | |
| • At AC/DC, rated value | V | 24/24 | --/-- |
| • At AC | V | -- | 110 ... 250 |
| • Relative negative tolerance/relative positive tolerance with AC | % | -20/20 | -15/10 |
| • Relative negative tolerance/relative positive tolerance with DC | % | -20/20 | --/-- |
| **Frequency of the control supply voltage** | Hz | 50 ... 60 | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | |
| **Type of overvoltage protection** | | Varistors | |
| **Type of short-circuit protection for control circuit**[1] | | Fuse 4 A gG ($I_{cu}$ = 1 kA), fuse 6 A quick-response ($I_{cu}$ = 1 kA), MCB C1 ($I_{cu}$ = 600 A), MCB C6 ($I_{cu}$ = 300 A) | |

1) Not included in scope of supply

| Type | | 3RW55..-.HA.4 | 3RW55..-.HA.5 | 3RW55..-.HA.6 |
|---|---|---|---|---|
| **Power electronics** | | | | |
| **Operational voltage, rated value** | V | 200 ... 480 | 200 ... 600 | 200 ... 690 |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 | | |
| **Operational voltage for inside-delta circuit, rated value** | V | 200 ... 480 | 200 ... 600 | |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 | | |
| **Operating frequency, rated value** | Hz | 50 ... 60 | | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | | |
| **Minimum load [% of $I_M$]**[1] | % | 10 | | |
| **Maximum cable length between soft starter and motor** | m | 800 | | |

1) Relative to set $I_e$.

| Type | | 3RW5513 | 3RW5514 | 3RW5515 | 3RW5516 | 3RW5517 |
|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 13 | 18 | 25 | 32 | 38 |
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| ***Permissible rated motor current and starts/h*** | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 18 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 21 | 21 | 21 |
| - Start-up time 10 s | 1/h | 8 | 8 | 8 | 8 | 8 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 13 | 13 | 13 |
| - Start-up time 10 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 29.6/27.2/23.6 | 33.5/30.5/27.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 26/23.6/21.2 | 29/26/23 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | | |
| • Minimum/maximum | A | 2.5/13 | 3.5/18 | 5/25 | 6.5/32 | 7.5/38 |
| • Minimum/maximum in inside-delta circuits | A | 4.3/22.5 | 6.1/31.1 | 8.7/43.3 | 11.3/55.4 | 13/65.8 |

| Type | | 3RW5521 | 3RW5524 | 3RW5525 | 3RW5526 | 3RW5527 |
|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 25 | 47 | 63 | 77 | 93 |
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 25/22.3/19.6 | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| ***Permissible rated motor current and starts/h*** | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 25/22.3/19.6 | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 18 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 25/22.3/19.6 | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 21 | 21 | 21 |
| - Start-up time 10 s | 1/h | 8 | 8 | 8 | 8 | 8 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 13 | 13 | 13 |
| - Start-up time 10 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 25/22.3/19.6 | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 25/22.3/19.6 | 43.4/38/34.4 | 53/48/43 | 68/62/56 | 82.5/75.5/65 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | | |
| • Minimum/maximum | A | 5/25 | 10/47 | 13/63 | 16/77 | 19/93 |
| • Minimum/maximum in inside-delta circuits | A | 8.7/43.3 | 17.3/81.4 | 22.5/109 | 27.7/133 | 32.9/161 |

| Type | | 3RW5534 | 3RW5535 | 3RW5536 |
|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 113 | 143 | 171 |
| **Power electronics** | | | | |
| **Load rating with rated operational current $I_e$** | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 113/101/89 | 143/128/118 | 171/153/141 |
| ***Permissible rated motor current and starts/h*** | | | | |
| **Normal starting (CLASS 10A)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 113/101/89 | 143/128/118 | 171/153/141 |
| • 300% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 |
| • 350% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 113/101/89 | 143/128/118 | 171/153/141 |
| • 300% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 21 |
| - Start-up time 10 s | 1/h | 8 | 8 | 8 |
| • 350% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 13 |
| - Start-up time 10 s | 1/h | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 109/97/85 | 128/113/103 | 141/129/117 |
| • 300% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 |
| • 350% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 89/81/74 | 108/98/88 | 117/105/93 |
| • 300% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 |
| • 350% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | |
| • Minimum/maximum | A | 23/113 | 29/143 | 34/171 |
| • Minimum/maximum in inside-delta circuits | A | 39.8/195 | 50.2/247 | 58.9/296 |

| Type | | 3RW5543 | 3RW5544 | 3RW5545 | 3RW5546 | 3RW5547 | 3RW5548 |
|---|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 210 | 250 | 315 | 370 | 470 | 570 |
| **Power electronics** | | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| ***Permissible rated motor current and starts/h*** | | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 40 | 20 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 17 | 6 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 | 26 | 9 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 | 10 | 1 |
| **Normal starting (CLASS 10E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 551/490/445 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 21 | 21 | 17 | 8 |
| - Start-up time 10 s | 1/h | 8 | 8 | 8 | 8 | 6 | 1 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 13 | 13 | 10 | 2 |
| - Start-up time 10 s | 1/h | 4 | 4 | 4 | 4 | 2 | -- |
| **Heavy starting (CLASS 20E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 162/146/130 | 200/180/160 | 231/207/183 | 258/230/202 | 272/254/236 | 284/262/240 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 138/122/106 | 160/140/120 | 183/159/135 | 202/174/160 | 210/190/170 | 220/200/180 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | | | |
| • Minimum/maximum | A | 42/210 | 50/250 | 63/315 | 74/370 | 94/470 | 114/570 |
| • Minimum/maximum in inside-delta circuits | A | 72.7/363 | 86.6/433 | 109.1/545 | 128.2/640 | 162.8/814 | 197.5/987 |

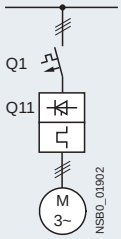
| Type | | 3RW5552 | 3RW5553 | 3RW5554 | 3RW5556 | 3RW5558 |
|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 630 | 720 | 840 | 1 100 | 1 280 |
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 630/561/510 | 720/641/580 | 840/748/670 | 1 100/979/890 | 1 280/1 139/1 030 |
| ***Permissible rated motor current and starts/h*** | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 630/561/510 | 720/641/580 | 840/748/670 | 1 100/979/890 | 1 280/1 139/1 030 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 42 | 43 | 32 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 12 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 25 | 27 | 17 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 9 | 4 |
| **Normal starting (CLASS 10E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 630/561/510 | 720/641/580 | 840/748/670 | 1 100/979/890 | 1 225/1 130/1 030 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 19 | 18 | 15 |
| - Start-up time 10 s | 1/h | 8 | 8 | 7 | 7 | 5 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 10 | 9 | 1 |
| - Start-up time 10 s | 1/h | 4 | 4 | 2 | 2 | 1 |
| **Heavy starting (CLASS 20E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 500/450/400 | 520/470/420 | 570/520/470 | 920/840/760 | 980/900/810 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 380/340/300 | 400/360/320 | 420/380/340 | 740/670/600 | 790/720/650 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | | |
| • Minimum/maximum | A | 114/630 | 144/720 | 168/840 | 220/1 100 | 258/1 280 |
| • Minimum/maximum in inside-delta circuits | A | 197.5/987 | 249.4/1 247 | 291/1 454 | 381.1/1 905 | 446.9/2 217 |

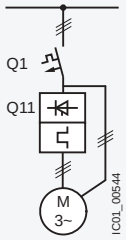
***Motor feeders according to IEC with 3RV2/3VA motor starter protectors/circuit breakers (without semiconductor protection)***

Type of coordination "1", CLASS 10,
short-circuit breaking capacity $I_q$ in kA, see table

Note:

For general recommendations for constructing motor feeders
with soft starters, see page 7/9.




| Soft starters | Motor starter protectors | | | | Motor starter protectors | | | |
|---|---|---|---|---|---|---|---|---|
| | for 400 V systems | | for 500 V systems | | for 400 V systems | | for 500 V systems | |
| Q11 | Q1 | $I_q$ | Q1 | $I_q$ | Q1 | $I_q$ | Q1 | $I_q$ |
| Type | Type | kA | Type | kA | Type | kA | Type | kA |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | | **Inside-delta circuit** | | | |
| **3RW5513** | 3RV2032-4TA10 | 65 | 3RV2032-4TA10 | 18 | 3RV2032-4DA10 | 65 | 3RV2032-4DA10 | 18 |
| **3RW5514** | 3RV2032-4DA10 | 65 | 3RV2032-4DA10 | 15 | 3RV2032-4EA10 | 65 | 3RV2032-4EA10 | 15 |
| **3RW5515** | 3RV2032-4EA10 | 65 | 3RV2032-4EA10 | 15 | 3RV2032-4VA10 | 65 | 3RV2032-4VA10 | 15 |
| **3RW5516** | 3RV2032-4VA10 | 65 | 3RV2032-4VA10 | 10 | 3RV2032-4JA10 | 65 | 3RV2032-4JA10 | 10 |
| **3RW5517** | 3RV2032-4WA10 | 65 | 3RV2032-4WA10 | 10 | 3RV2032-4RA10 | 65 | 3RV2032-4RA10 | 10 |
| **3RW5521** | -- | -- | -- | -- | -- | -- | -- | -- |
| **3RW5524** | 3RV2032-4JA10 | 65 | 3RV2032-4JA10 | 10 | 3RV2032-4RA10 | 65 | 3RV2032-4RA10 | 10 |
| **3RW5525** | 3VA2163-7MN32-0AA0 | 65 | 3VA2163-7MN32-0AA0 | 20 | 3VA2110-7MN32-0AA0 | 65 | 3VA2110-7MN32-0AA0 | 20 |
| **3RW5526** | 3VA2110-7MN32-0AA0 | 65 | 3VA2110-7MN32-0AA0 | 20 | 3VA2216-7MN32-0AA0 | 65 | 3VA2216-7MN32-0AA0 | 20 |
| **3RW5527** | 3VA2216-7MN32-0AA0 | 15 | 3VA2216-7MN32-0AA0 | 10 | 3VA2220-7MN32-0AA0 | 15 | 3VA2220-7MN32-0AA0 | 10 |
| **3RW5534** | 3VA2216-7MN32-0AA0 | 65 | -- | -- | 3VA2220-7MN32-0AA0 | 65 | -- | -- |
| **3RW5535** | 3VA2220-7MN32-0AA0 | 65 | -- | -- | 3VA2325-7MN32-0AA0 | 65 | -- | -- |
| **3RW5536** | 3VA2325-7MN32-0AA0 | 30 | 3VA2325-7MN32-0AA0 | 10 | 3VA2440-7MN32-0AA0 | 30 | 3VA2440-7MN32-0AA0 | 10 |
| **3RW5543** | 3VA2325-7MN32-0AA0 | 65 | 3VA2325-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 |
| **3RW5544** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 |
| **3RW5545** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5546** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5547** | 3VA2450-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 |
| **3RW5548** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 |
| **3RW5552** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 |
| **3RW5553** | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 |
| **3RW5554** | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 |
| **3RW5556** | 3VA2716-7AB05-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 | -- | -- | -- | -- |
| **3RW5558** | 3VA2716-7AB05-0AA0 | 65 | 3VA2716-7AB05-0AA0 | 65 | -- | -- | -- | -- |

Note:

The service factor or measurement inaccuracies have been taken into account, for example, for the selection of the specified motor starter protectors/circuit breakers; the specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

In 690 V systems, in motor feeder tests with soft starters demonstrable short-circuit breaking capacities can only be achieved with the use of fuses ($I_q$ > 5 to 10 kA).

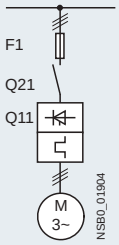
### *Motor feeders according to IEC with 3NA3 fuses*

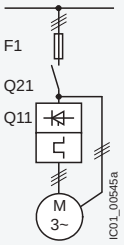
gG class full-range fuses for cable and line protection according to IEC 60269-2, without semiconductor protection

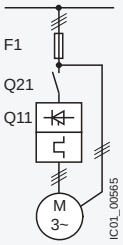
Type of coordination "1",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | | gG class fuse | Line contactor (optional) | | | |
|---|---|---|---|---|---|---|---|---|
| | for systems up to 690 V | for systems up to 480 V | for systems up to 690 V | for systems up to 600 V | for systems up to 480 V in the supply cable | for systems up to 600 V in the supply cable | for systems up to 480 V in the delta | for systems up to 600 V in the delta |
| Q11 | F1 | Q21 | Q21 | F1 | Q21 | Q21 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | **Inside-delta circuit** | | | | |
| **3RW5513** | 3NA3820-6 | 3RT2025 | 3RT2025 | 3NA3820-6 | 3RT2027 | 3RT2035 | 3RT2025 | 3RT2025 |
| **3RW5514** | 3NA3820-6 | 3RT2026 | 3RT2027 | 3NA3820-6 | 3RT2027 | 3RT2037 | 3RT2026 | 3RT2027 |
| **3RW5515** | 3NA3822-6 | 3RT2027 | 3RT2037 | 3NA3822-6 | 3RT2036 | 3RT2037 | 3RT2027 | 3RT2037 |
| **3RW5516** | 3NA3824-6 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3RT2037 | 3RT2038 | 3RT2035 | 3RT2037 |
| **3RW5517** | 3NA3824-6 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3RT2038 | 3RT2046 | 3RT2035 | 3RT2037 |
| **3RW5521** | 3NA3824-6 | 3RT2027 | 3RT2037 | 3NA3824-6 | 3RT2036 | 3RT2037 | 3RT2027 | 3RT2037 |
| **3RW5524** | 3NA3824-6 | 3RT2036 | 3RT2037 | 3NA3824-6 | 3RT2046 | 3RT2047 | 3RT2036 | 3RT2037 |
| **3RW5525** | 3NA3830-6 | 3RT2037 | 3RT2046 | 3NA3830-6 | 3RT2047 | 3RT1054 | 3RT2037 | 3RT2046 |
| **3RW5526** | 3NA3132-6 | 3RT2038 | 3RT2046 | 3NA3132-6 | 3RT1055 | 3RT1055 | 3RT2038 | 3RT2046 |
| **3RW5527** | 3NA3136-6 | 3RT2046 | 3RT2047 | 3NA3136-6 | 3RT1056 | 3RT1056 | 3RT2046 | 3RT2047 |
| **3RW5534** | 3NA3244-6 | 3RT1054 | 3RT1054 | 3NA3244-6 | 3RT1064 | 3RT1064 | 3RT1054 | 3RT1054 |
| **3RW5535** | 3NA3244-6 | 3RT1055 | 3RT1055 | 3NA3244-6 | 3RT1065 | 3RT1065 | 3RT1055 | 3RT1055 |
| **3RW5536** | 3NA3365-6 | 3RT1056 | 3RT1064 | 3NA3365-6 | 3RT1066 | 3RT1075 | 3RT1056 | 3RT1064 |
| **3RW5543** | 2 x 3NA3354-6 | 3RT1064 | 3RT1064 | 2 x 3NA3354-6 | 3RT1075 | 3RT1075 | 3RT1064 | 3RT1064 |
| **3RW5544** | 2 x 3NA3354-6 | 3RT1065 | 3RT1065 | 2 x 3NA3354-6 | 3RT1076 | 3RT1076 | 3RT1065 | 3RT1065 |
| **3RW5545** | 2 x 3NA3365-6 | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | 3TF68 | 3TF68 | 3RT1075 | 3RT1075 |
| **3RW5546** | 2 x 3NA3365-6 | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | 3TF69 | 3TF69 | 3RT1075 | 3RT1075 |
| **3RW5547** | 2 x 3NA3365-6 | 3RT1076 | 3RT1276 | 2 x 3NA3365-6 | 3TF69 | 3TF69 | 3RT1076 | 3RT1276 |
| **3RW5548** | 2 x 3NA3365-6 | 3TF68 | 3TF68 | 2 x 3NA3365-6 | -- | -- | 3TF68 | 3TF68 |
| **3RW5552** | 2 x 3NA3365-6 | 3TF68 | 3TF69 | -- | -- | -- | 3TF68 | 3TF69 |
| **3RW5553** | 2 x 3NA3365-6 | 3TF69 | 3TF69 | -- | -- | -- | 3TF69 | 3TF69 |
| **3RW5554** | 2 x 3NA3365-6 | -- | -- | -- | -- | -- | -- | -- |
| **3RW5556** | 3 x 3NA3365-6 | -- | -- | -- | -- | -- | -- | -- |
| **3RW5558** | 3 x 3NA3365-6 | -- | -- | -- | -- | -- | -- | -- |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

In inside-delta circuits, motor feeders with soft starters can only be operated in systems with up to 600 V.

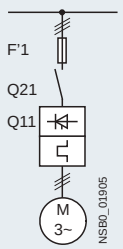
### *Motor feeders according to IEC with 3NE1/3NB3 SITOR fuses*

gR class full-range fuses for semiconductor protection, cable and line protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | |
|---|---|---|---|
| | for systems up to 690 V | for systems up to 480 V | for systems up to 690 V |
| Q11 | F'1 | Q21 | Q21 |
| Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | |
| **3RW5513** | 3NE1815-0 | 3RT2025 | 3RT2025 |
| **3RW5514** | 3NE1802-0 | 3RT2026 | 3RT2027 |
| **3RW5515** | 3NE1817-0 | 3RT2027 | 3RT2037 |
| **3RW5516** | 3NE1818-0 | 3RT2035 | 3RT2037 |
| **3RW5517** | 3NE1820-0 | 3RT2035 | 3RT2037 |
| **3RW5521** | 3NE1817-0 | 3RT2027 | 3RT2037 |
| **3RW5524** | 3NE1021-2 | 3RT2036 | 3RT2037 |
| **3RW5525** | 3NE1022-0 | 3RT2037 | 3RT2046 |
| **3RW5526** | 3NE1224-0 | 3RT2038 | 3RT2046 |
| **3RW5527** | 3NE1224-0 | 3RT2046 | 3RT2047 |
| **3RW5534** | 3NE1225-0 | 3RT1054 | 3RT1054 |
| **3RW5535** | 3NE1227-0 | 3RT1055 | 3RT1055 |
| **3RW5536** | 3NE1230-0 | 3RT1056 | 3RT1064 |
| **3RW5543** | 3NE1230-2[1)] | 3RT1064 | 3RT1064 |
| **3RW5544** | 3NE1331-0 | 3RT1065 | 3RT1065 |
| **3RW5545** | 3NE1334-2 | 3RT1075 | 3RT1075 |
| **3RW5546** | 3NE1334-2 | 3RT1075 | 3RT1075 |
| **3RW5547** | 3NE1436-2 | 3RT1076 | 3RT1276 |
| **3RW5548** | 3NE1437-2 | 3TF68 | 3TF68 |
| **3RW5552** | 3NB3350-1KK26 | 3TF68 | 3TF69 |
| **3RW5553** | 3NB3351-1KK26 | 3TF69 | 3TF69 |
| **3RW5554** | 3NB3351-1KK26 | -- | -- |
| **3RW5556** | 3NB3354-1KK26 | -- | -- |
| **3RW5558** | 3NB3357-1KK26 | -- | -- |

[1)] For systems up to 500 V.

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

In inside-delta circuits, a gR class full-range fuse could not provide the semiconductor protection of the delta-connected soft starter with a short-circuit breaking capacity that is adequate for practical use. In this case, we recommend using aR class partial-range fuses for semiconductor protection for type of coordination “2” (see page 7/24).

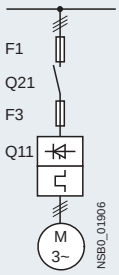
### *Motor feeders according to IEC with 3NE8 / 3NE3 / 3NC3 fuses*

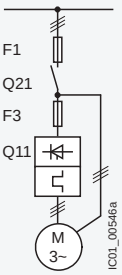
aR class partial-range fuses for semiconductor protection

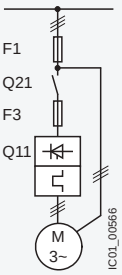
Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | aR class fuse | Line contactor (optional) | | gG class fuse | aR class fuse | Line contactor (optional) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | for systems up to 690 V | for systems up to 690 V | for systems up to 480 V | for systems up to 690 V | for systems up to 600 V | for systems up to 600 V | for systems up to 480 V in the supply cable | for systems up to 600 V in the supply cable | for systems up to 480 V in the delta | for systems up to 600 V in the delta |
| Q11 | F1 | F3 | Q21 | Q21 | F1 | F3 | Q21 | Q21 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | | **Inside-delta circuit** | | | | | |
| **3RW5513** | 3NA3820-6 | 3NE8017-1 | 3RT2025 | 3RT2025 | 3NA3820-6 | 3NE8017-1 | 3RT2027 | 3RT2035 | 3RT2025 | 3RT2025 |
| **3RW5514** | 3NA3820-6 | 3NE8020-1 | 3RT2026 | 3RT2027 | 3NA3820-6 | 3NE8020-1 | 3RT2027 | 3RT2037 | 3RT2026 | 3RT2027 |
| **3RW5515** | 3NA3822-6 | 3NE8021-1 | 3RT2027 | 3RT2037 | 3NA3822-6 | 3NE8021-1 | 3RT2036 | 3RT2037 | 3RT2027 | 3RT2037 |
| **3RW5516** | 3NA3824-6 | 3NE8022-1 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3NE8022-1 | 3RT2037 | 3RT2038 | 3RT2035 | 3RT2037 |
| **3RW5517** | 3NA3824-6 | 3NE8024-1 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3NE8024-1 | 3RT2038 | 3RT2046 | 3RT2035 | 3RT2037 |
| **3RW5521** | 3NA3824-6 | 3NE8021-1 | 3RT2027 | 3RT2037 | 3NA3824-6 | 3NE8021-1 | 3RT2036 | 3RT2037 | 3RT2027 | 3RT2037 |
| **3RW5524** | 3NA3824-6 | 3NE8024-1 | 3RT2036 | 3RT2037 | 3NA3824-6 | 3NE8024-1 | 3RT2046 | 3RT2047 | 3RT2036 | 3RT2037 |
| **3RW5525** | 3NA3830-6 | 3NE3227 | 3RT2037 | 3RT2046 | 3NA3830-6 | 3NE3227 | 3RT2047 | 3RT1054 | 3RT2037 | 3RT2046 |
| **3RW5526** | 3NA3132-6 | 3NE3227 | 3RT2038 | 3RT2046 | 3NA3132-6 | 3NE3227 | 3RT1055 | 3RT1055 | 3RT2038 | 3RT2046 |
| **3RW5527** | 3NA3136-6 | 3NE3227 | 3RT2046 | 3RT2047 | 3NA3136-6 | 3NE3227 | 3RT1056 | 3RT1056 | 3RT2046 | 3RT2047 |
| **3RW5534** | 3NA3244-6 | 3NE3231 | 3RT1054 | 3RT1054 | 3NA3244-6 | 3NE3231 | 3RT1064 | 3RT1064 | 3RT1054 | 3RT1054 |
| **3RW5535** | 3NA3244-6 | 3NE3233 | 3RT1055 | 3RT1055 | 3NA3244-6 | 3NE3233 | 3RT1065 | 3RT1065 | 3RT1055 | 3RT1055 |
| **3RW5536** | 3NA3365-6 | 3NE3334-0B | 3RT1056 | 3RT1064 | 3NA3365-6 | 3NE3334-0B | 3RT1066 | 3RT1075 | 3RT1056 | 3RT1064 |
| **3RW5543** | 2 x 3NA3354-6 | 3NE3333 | 3RT1064 | 3RT1064 | 2 x 3NA3354-6 | 3NE3333 | 3RT1075 | 3RT1075 | 3RT1064 | 3RT1064 |
| **3RW5544** | 2 x 3NA3354-6 | 3NE3335 | 3RT1065 | 3RT1065 | 2 x 3NA3354-6 | 3NE3335 | 3RT1076 | 3RT1076 | 3RT1065 | 3RT1065 |
| **3RW5545** | 2 x 3NA3365-6 | -- | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | -- | 3TF68 | 3TF68 | 3RT1075 | 3RT1075 |
| **3RW5546** | 2 x 3NA3365-6 | -- | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | -- | 3TF69 | 3TF69 | 3RT1075 | 3RT1075 |
| **3RW5547** | 2 x 3NA3365-6 | 3NE3340-8 | 3RT1076 | 3RT1276 | 2 x 3NA3365-6 | 3NE3340-8 | 3TF69 | 3TF69 | 3RT1076 | 3RT1276 |
| **3RW5548** | 2 x 3NA3365-6 | 3NC3342-1U | 3TF68 | 3TF68 | 2 x 3NA3365-6 | 3NC3342-1U | -- | -- | 3TF68 | 3TF68 |
| **3RW5552** | 2 x 3NA3365-6 | 3NC3343-1U | 3TF68 | 3TF69 | -- | 3NC3343-1U | -- | -- | 3TF68 | 3TF69 |
| **3RW5553** | 2 x 3NA3365-6 | 3NC3343-1U | 3TF69 | 3TF69 | -- | 3NC3343-1U | -- | -- | 3TF69 | 3TF69 |
| **3RW5554** | 2 x 3NA3365-6 | 3NC3343-1U | -- | -- | -- | 3NC3343-1U | -- | -- | -- | -- |
| **3RW5556** | 3 x 3NA3365-6 | 3 x 3NE3340-8 | -- | -- | -- | 3 x 3NE3340-8 | -- | -- | -- | -- |
| **3RW5558** | 3 x 3NA3365-6 | 3 x 3NE3340-8 | -- | -- | -- | 3 x 3NE3340-8 | -- | -- | -- | -- |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For CLASS 10 applications, as an alternative to the gG class full-range fuses for cable and line protection 3NA3 (F1), 3RV2/3VA motor starter protectors/circuit breakers can also be used, possibly with reduced short-circuit breaking capacity (see page 7/21). In these cases, optional line contactors can be dispensed with.

In inside-delta circuits, motor feeders with soft starters can only be operated in systems with up to 600 V.

### *Reversing operation with reversing contactors*

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.

(For an example circuit, see 3RW55 Equipment Manual, Appendix A.3)

| Soft starters | Reversing contactor assembly | | For reversing contactor | |
|---|---|---|---|---|
| | for systems up to 480 V | for systems up to 690 V | for systems up to 480 V | for systems up to 690 V |
| Q11 | Q21 / Q22 | Q21 / Q22 | Q21 / Q22 | Q21 / Q22 |
| Type | Type | Type | Type | Type |
| **3RW5513** | 3RA2325 | 3RA2325 | 3RT2025 | 3RT2025 |
| **3RW5514** | 3RA2326 | 3RA2327 | 3RT2026 | 3RT2027 |
| **3RW5515** | 3RA2327 | 3RA2337 | 3RT2027 | 3RT2037 |
| **3RW5516** | 3RA2335 | 3RA2337 | 3RT2035 | 3RT2037 |
| **3RW5517** | 3RA2335 | 3RA2337 | 3RT2035 | 3RT2037 |
| **3RW5521** | 3RA2327 | 3RA2337 | 3RT2027 | 3RT2037 |
| **3RW5524** | 3RA2336 | 3RA2337 | 3RT2036 | 3RT2037 |
| **3RW5525** | 3RA2337 | 3RA2346 | 3RT2037 | 3RT2046 |
| **3RW5526** | 3RA2338 | 3RA2346 | 3RT2038 | 3RT2046 |
| **3RW5527** | 3RA2346 | 3RA2347 | 3RT2046 | 3RT2047 |
| **3RW5534** | -- | -- | 3RT1054 | 3RT1054 |
| **3RW5535** | -- | -- | 3RT1055 | 3RT1055 |
| **3RW5536** | -- | -- | 3RT1056 | 3RT1064 |
| **3RW5543** | -- | -- | 3RT1064 | 3RT1064 |
| **3RW5544** | -- | -- | 3RT1065 | 3RT1065 |
| **3RW5545** | -- | -- | 3RT1075 | 3RT1075 |
| **3RW5546** | -- | -- | 3RT1075 | 3RT1075 |
| **3RW5547** | -- | -- | 3RT1076 | 3RT1276 |
| **3RW5548** | -- | -- | 3TF68 | 3TF68 |
| **3RW5552** | -- | -- | 3TF68 | 3TF69 |
| **3RW5553** | -- | -- | 3TF69 | 3TF69 |
| **3RW5554** | -- | -- | -- | -- |
| **3RW5556** | -- | -- | -- | -- |
| **3RW5558** | -- | -- | -- | -- |

### *DC braking with braking contactors*

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.

(For an example circuit, see 3RW55 Equipment Manual, Appendix A.3)

| Soft starters | DC braking contactor | DC braking contactor assembly | | | |
|---|---|---|---|---|---|
| | for systems up to 400 V | for systems up to 480 V | | for systems up to 690 V | |
| | with 2 NC contacts + 2 NO contacts parallel | with 3 NO contacts parallel | with 3 NO contacts parallel | with 3 NO contacts parallel | with 3 NO contacts parallel |
| Q11 | Q93 | Q91 | Q92 | Q91 | Q92 |
| Type | Type | Type | Type | Type | Type |
| **3RW5513** | 3RT2517 | 3RT2015 | 3RT2016 | 3RT2015 | 3RT2016 |
| **3RW5514** | 3RT2518 | 3RT2015 | 3RT2017 | 3RT2015 | 3RT2023 |
| **3RW5515** | 3RT2526 | 3RT2015 | 3RT2025 | 3RT2015 | 3RT2025 |
| **3RW5516** | 3RT2526 | 3RT2015 | 3RT2025 | 3RT2015 | 3RT2027 |
| **3RW5517** | 3RT2535 | 3RT2015 | 3RT2027 | 3RT2015 | 3RT2027 |
| **3RW5521** | 3RT2526 | 3RT2015 | 3RT2025 | 3RT2015 | 3RT2025 |
| **3RW5524** | 3RT2535 | 3RT2016 | 3RT2027 | 3RT2016 | 3RT2035 |
| **3RW5525** | -- | 3RT2024 | 3RT2027 | 3RT2024 | 3RT2037 |
| **3RW5526** | -- | 3RT2025 | 3RT2035 | 3RT2025 | 3RT2037 |
| **3RW5527** | -- | 3RT2027 | 3RT2036 | 3RT2027 | 3RT2037 |
| **3RW5534** | -- | 3RT2035 | 3RT2037 | 3RT2035 | 3RT2038 |
| **3RW5535** | -- | 3RT2036 | 3RT2038 | 3RT2036 | 3RT2046 |
| **3RW5536** | -- | 3RT2037 | 3RT2046 | 3RT2037 | 3RT2047 |
| **3RW5543** | -- | 3RT2045 | 3RT2047 | 3RT2045 | 3RT1054 |
| **3RW5544** | -- | 3RT2045 | 3RT1055 | 3RT2045 | 3RT1055 |
| **3RW5545** | -- | 3RT2446 | 3RT1056 | 3RT2446 | 3RT1056 |
| **3RW5546** | -- | 3RT1055 | 3RT1056 | 3RT1055 | 3RT1064 |
| **3RW5547** | -- | 3RT1456 | 3RT1065 | 3RT1456 | 3RT1065 |
| **3RW5548** | -- | 3RT1456 | 3RT1066 | 3RT1456 | 3RT1075 |
| **3RW5552** | -- | 3RT1065 | 3RT1075 | 3RT1065 | 3RT1075 |
| **3RW5553** | -- | 3RT1065 | 3RT1075 | 3RT1065 | 3RT1075 |
| **3RW5554** | -- | 3RT1466 | 3RT1076 | 3RT1466 | 3RT1076 |
| **3RW5556** | -- | 3RT1476 | 3TF68 | 3RT1476 | 3TF68 |
| **3RW5558** | -- | 3RT1476 | 3TF69 | 3RT1476 | 3TF69 |

## Selection and ordering data

***For normal starting (CLASS 10E)***

3RW551.

3RW552.

| At 40 °C | | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | At 690 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | | |
| 13 | 3 | **5.5** | -- | -- | 11.5 | 2 | 3 | **7.5** | -- | 5 | **3RW5513-☐HA☐4** | | 1 | 1 unit |
| 18 | 4 | **7.5** | -- | -- | 15.9 | 3 | 5 | **10** | -- | 5 | **3RW5514-☐HA☐4** | | 1 | 1 unit |
| 25 | 5.5 | **11** | -- | -- | 22.3 | 5 | 7.5 | **15** | -- | 5 | **3RW5515-☐HA☐4** | | 1 | 1 unit |
| 32 | 7.5 | **15** | -- | -- | 28.4 | 7.5 | 10 | **20** | -- | 5 | **3RW5516-☐HA☐4** | | 1 | 1 unit |
| 38 | 11 | **18.5** | -- | -- | 33.5 | 10 | 10 | **20** | -- | 5 | **3RW5517-☐HA☐4** | | 1 | 1 unit |
| 47 | 11 | **22** | -- | -- | 41.6 | 10 | 10 | **30** | -- | 5 | **3RW5524-☐HA☐4** | | 1 | 1 unit |
| 63 | 18.5 | **30** | -- | -- | 55.5 | 15 | 20 | **40** | -- | 5 | **3RW5525-☐HA☐4** | | 1 | 1 unit |
| 77 | 22 | **37** | -- | -- | 68 | 20 | 25 | **50** | -- | 5 | **3RW5526-☐HA☐4** | | 1 | 1 unit |
| 93 | 22 | **45** | -- | -- | 82.5 | 25 | 30 | **60** | -- | 5 | **3RW5527-☐HA☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**1**
**3**

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**0**
**1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

# High Performance Soft Starters

## 3RW55 soft starters > Inline circuit *IE3/IE4* ready

### *For normal starting (CLASS 10E)*

3RW553.

3RW554.

3RW555.

| At 40 °C | | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | At 690 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | | |
| 113 | 30 | **55** | -- | -- | 101 | 30 | 30 | **75** | -- | 5 | **3RW5534-☐HA☐4** | | 1 | 1 unit |
| 143 | 37 | **75** | -- | -- | 128 | 40 | 40 | **100** | -- | 5 | **3RW5535-☐HA☐4** | | 1 | 1 unit |
| 171 | 45 | **90** | -- | -- | 153 | 50 | 50 | **100** | -- | 5 | **3RW5536-☐HA☐4** | | 1 | 1 unit |
| 210 | 55 | **110** | -- | -- | 186 | 50 | 60 | **150** | -- | 5 | **3RW5543-☐HA☐4** | | 1 | 1 unit |
| 250 | 75 | **132** | -- | -- | 220 | 60 | 75 | **150** | -- | 5 | **3RW5544-☐HA☐4** | | 1 | 1 unit |
| 315 | 90 | **160** | -- | -- | 279 | 75 | 100 | **200** | -- | 5 | **3RW5545-☐HA☐4** | | 1 | 1 unit |
| 370 | 110 | **200** | -- | -- | 328 | 100 | 125 | **250** | -- | 5 | **3RW5546-☐HA☐4** | | 1 | 1 unit |
| 470 | 132 | **250** | -- | -- | 416 | 150 | 150 | **350** | -- | 5 | **3RW5547-☐HA☐4** | | 1 | 1 unit |
| 570 | 160 | **315** | -- | -- | 504 | 150 | 200 | **400** | -- | 5 | **3RW5548-☐HA☐4** | | 1 | 1 unit |
| 630 | 200 | **355** | -- | -- | 561 | 200 | 200 | **450** | -- | 15 | **3RW5552-☐HA☐4** | | 1 | 1 unit |
| 720 | 200 | **400** | -- | -- | 641 | 200 | 250 | **500** | -- | 15 | **3RW5553-☐HA☐4** | | 1 | 1 unit |
| 840 | 250 | **450** | -- | -- | 748 | 250 | 300 | **600** | -- | 15 | **3RW5554-☐HA☐4** | | 1 | 1 unit |
| 1 100 | 315 | **560** | -- | -- | 979 | 350 | 400 | **850** | -- | 15 | **3RW5556-☐HA☐4** | | 1 | 1 unit |
| 1 280 | 400 | **710** | -- | -- | 1 139 | 400 | 450 | **1 000** | -- | 15 | **3RW5558-☐HA☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5534-☐HA**2**4
3RW5534-☐HA**6**4
3RW5534-☐HA☐**0**4
3RW5534-☐HA☐**1**4

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

# High Performance Soft Starters

## 3RW55 soft starters > Inline circuit *IE3/IE4* ready

***For normal starting (CLASS 10E)***

3RW551.

3RW552.

| At 40 °C | | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | At 690 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | | |
| 13 | 3 | **5.5** | 7.5 | -- | 11.5 | 2 | 3 | **7.5** | 10 | 5 | **3RW5513-□HA□5** | | 1 | 1 unit |
| 18 | 4 | **7.5** | 11 | -- | 15.9 | 3 | 5 | **10** | 10 | 5 | **3RW5514-□HA□5** | | 1 | 1 unit |
| 25 | 5.5 | **11** | 15 | -- | 22.3 | 5 | 7.5 | **15** | 20 | 5 | **3RW5515-□HA□5** | | 1 | 1 unit |
| 32 | 7.5 | **15** | 18.5 | -- | 28.4 | 7.5 | 10 | **20** | 25 | 5 | **3RW5516-□HA□5** | | 1 | 1 unit |
| 38 | 11 | **18.5** | 22 | -- | 33.5 | 10 | 10 | **20** | 30 | 5 | **3RW5517-□HA□5** | | 1 | 1 unit |
| **Operational voltage 200 ... 690 V** | | | | | | | | | | | | | | |
| 25 | 5.5 | **11** | 15 | 22 | 22.3 | 5 | 7.5 | **15** | 20 | 5 | **3RW5521-□HA□6** | | 1 | 1 unit |
| 47 | 11 | **22** | 30 | 45 | 41.6 | 10 | 10 | **30** | 40 | 5 | **3RW5524-□HA□6** | | 1 | 1 unit |
| 63 | 18.5 | **30** | 37 | 55 | 55.5 | 15 | 20 | **40** | 50 | 5 | **3RW5525-□HA□6** | | 1 | 1 unit |
| 77 | 22 | **37** | 45 | 75 | 68 | 20 | 25 | **50** | 60 | 5 | **3RW5526-□HA□6** | | 1 | 1 unit |
| 93 | 22 | **45** | 55 | 90 | 82.5 | 25 | 30 | **60** | 75 | 5 | **3RW5527-□HA□6** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

1 3

0 1

[1] 3RW55 soft starter with screw terminals for operational voltage up to 690 V: Standard delivery time SD = 2 days (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

# High Performance Soft Starters

## 3RW55 soft starters > Inline circuit *IE3/IE4* ready

### *For normal starting (CLASS 10E)*

3RW553.

3RW554.

3RW555.

| At 40 °C | | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | At 690 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 690 V** | | | | | | | | | | | | | | |
| 113 | 30 | **55** | 75 | 110 | 101 | 30 | 30 | **75** | 100 | 5 | **3RW5534-☐HA☐6** | | 1 | 1 unit |
| 143 | 37 | **75** | 90 | 132 | 128 | 40 | 40 | **100** | 125 | 5 | **3RW5535-☐HA☐6** | | 1 | 1 unit |
| 171 | 45 | **90** | 110 | 160 | 153 | 50 | 50 | **100** | 150 | 5 | **3RW5536-☐HA☐6** | | 1 | 1 unit |
| 210 | 55 | **110** | 132 | 200 | 186 | 60 | 60 | **150** | 150 | 5 | **3RW5543-☐HA☐6** | | 1 | 1 unit |
| 250 | 75 | **132** | 160 | 250 | 220 | 60 | 75 | **150** | 200 | 5 | **3RW5544-☐HA☐6** | | 1 | 1 unit |
| 315 | 90 | **160** | 200 | 315 | 279 | 75 | 100 | **200** | 250 | 5 | **3RW5545-☐HA☐6** | | 1 | 1 unit |
| 370 | 110 | **200** | 250 | 355 | 328 | 100 | 125 | **250** | 300 | 5 | **3RW5546-☐HA☐6** | | 1 | 1 unit |
| 470 | 132 | **250** | 315 | 400 | 416 | 150 | 150 | **350** | 450 | 5 | **3RW5547-☐HA☐6** | | 1 | 1 unit |
| 570 | 160 | **315** | 355 | 560 | 504 | 150 | 200 | **400** | 500 | 5 | **3RW5548-☐HA☐6** | | 1 | 1 unit |
| 630 | 200 | **355** | 400 | 630 | 561 | 200 | 200 | **450** | 600 | 15 | **3RW5552-☐HA☐6** | | 1 | 1 unit |
| 720 | 200 | **400** | 500 | 710 | 641 | 200 | 250 | **500** | 700 | 15 | **3RW5553-☐HA☐6** | | 1 | 1 unit |
| 840 | 250 | **450** | 560 | 800 | 748 | 250 | 300 | **600** | 800 | 15 | **3RW5554-☐HA☐6** | | 1 | 1 unit |
| 1 100 | 215 | **560** | 710 | 1 000 | 979 | 350 | 400 | **850** | 1 100 | 15 | **3RW5556-☐HA☐6** | | 1 | 1 unit |
| 1 280 | 400 | **710** | 900 | 1 200 | 1 139 | 400 | 450 | **1 000** | 1 250 | 15 | **3RW5558-☐HA☐6** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**2**
**6**

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**0**
**1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 690 V:
- Sizes 3 and 4: Standard delivery time SD = 2 days (d).
- Size 5: Standard delivery time SD = 5 days (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

## Selection and ordering data

***For normal starting (CLASS 10E)***

3RW551.

3RW552.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | |
| 22.5 | 5.5 | **11** | -- | 19.9 | 5 | 5 | **10** | -- | 5 | **3RW5513-☐HA☐4** | | 1 | 1 unit |
| 31.5 | 7.5 | **15** | -- | 28 | 7.5 | 7.5 | **20** | -- | 5 | **3RW5514-☐HA☐4** | | 1 | 1 unit |
| 43.3 | 11 | **18.5** | -- | 39 | 10 | 10 | **25** | -- | 5 | **3RW5515-☐HA☐4** | | 1 | 1 unit |
| 55.4 | 15 | **22** | -- | 49 | 15 | 15 | **30** | -- | 5 | **3RW5516-☐HA☐4** | | 1 | 1 unit |
| 65.8 | 18.5 | **30** | -- | 58 | 15 | 20 | **40** | -- | 5 | **3RW5517-☐HA☐4** | | 1 | 1 unit |
| 81.4 | 22 | **45** | -- | 72 | 20 | 25 | **50** | -- | 5 | **3RW5524-☐HA☐4** | | 1 | 1 unit |
| 109 | 30 | **55** | -- | 96 | 30 | 30 | **75** | -- | 5 | **3RW5525-☐HA☐4** | | 1 | 1 unit |
| 133 | 37 | **75** | -- | 118 | 30 | 40 | **75** | -- | 5 | **3RW5526-☐HA☐4** | | 1 | 1 unit |
| 161 | 45 | **90** | -- | 143 | 40 | 50 | **100** | -- | 5 | **3RW5527-☐HA☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**1**
**3**

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**0**
**1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

***For normal starting (CLASS 10E)***

3RW553.

3RW554.

3RW555.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | |
| 196 | 55 | **110** | -- | 175 | 50 | 60 | **125** | -- | 5 | **3RW5534-☐HA☐4** | | 1 | 1 unit |
| 248 | 75 | **132** | -- | 222 | 75 | 75 | **150** | -- | 5 | **3RW5535-☐HA☐4** | | 1 | 1 unit |
| 296 | 90 | **160** | -- | 265 | 75 | 100 | **200** | -- | 5 | **3RW5536-☐HA☐4** | | 1 | 1 unit |
| 364 | 110 | **200** | -- | 322 | 100 | 125 | **250** | -- | 5 | **3RW5543-☐HA☐4** | | 1 | 1 unit |
| 433 | 132 | **250** | -- | 381 | 125 | 150 | **300** | -- | 5 | **3RW5544-☐HA☐4** | | 1 | 1 unit |
| 546 | 160 | **315** | -- | 483 | 150 | 200 | **400** | -- | 5 | **3RW5545-☐HA☐4** | | 1 | 1 unit |
| 641 | 200 | **355** | -- | 568 | 200 | 200 | **450** | -- | 5 | **3RW5546-☐HA☐4** | | 1 | 1 unit |
| 814 | 250 | **400** | -- | 721 | 250 | 250 | **600** | -- | 5 | **3RW5547-☐HA☐4** | | 1 | 1 unit |
| 987 | 315 | **560** | -- | 873 | 300 | 350 | **750** | -- | 5 | **3RW5548-☐HA☐4** | | 1 | 1 unit |
| 1 091 | 355 | **630** | -- | 972 | 350 | 400 | **850** | -- | 15 | **3RW5552-☐HA☐4** | | 1 | 1 unit |
| 1 247 | 400 | **710** | -- | 1 110 | 400 | 450 | **950** | -- | 15 | **3RW5553-☐HA☐4** | | 1 | 1 unit |
| 1 454 | 450 | **800** | -- | 1 295 | 450 | 550 | **1 150** | -- | 15 | **3RW5554-☐HA☐4** | | 1 | 1 unit |
| 1 905 | 560 | **1 000** | -- | 1 695 | 600 | 700 | **1 500** | -- | 15 | **3RW5556-☐HA☐4** | | 1 | 1 unit |
| 2 217 | 710 | **1 200** | -- | 1 973 | 700 | 850 | **1 700** | -- | 15 | **3RW5558-☐HA☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**2**
**6**

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**0**
**1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

# High Performance Soft Starters

## 3RW55 soft starters > Inside-delta circuit *IE3/IE4* ready

***For normal starting (CLASS 10E)***

3RW551.

3RW552.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | |
| 22.5 | 5.5 | **11** | 15 | 19.9 | 5 | 5 | **10** | 15 | 5 | **3RW5513-☐HA☐5** | | 1 | 1 unit |
| 31.5 | 7.5 | **15** | 18.5 | 28 | 7.5 | 7.5 | **20** | 25 | 5 | **3RW5514-☐HA☐5** | | 1 | 1 unit |
| 43.3 | 11 | **18.5** | 22 | 39 | 10 | 10 | **25** | 30 | 5 | **3RW5515-☐HA☐5** | | 1 | 1 unit |
| 55.4 | 15 | **22** | 30 | 49 | 15 | 15 | **30** | 40 | 5 | **3RW5516-☐HA☐5** | | 1 | 1 unit |
| 65.8 | 18.5 | **30** | 37 | 58 | 15 | 20 | **40** | 50 | 5 | **3RW5517-☐HA☐5** | | 1 | 1 unit |
| 43.3 | 11 | **18.5** | 22 | 39 | 10 | 10 | **25** | 30 | 5 | **3RW5521-☐HA☐6** | | 1 | 1 unit |
| 81.4 | 22 | **45** | 45 | 72 | 20 | 25 | **50** | 60 | 5 | **3RW5524-☐HA☐6** | | 1 | 1 unit |
| 109 | 30 | **55** | 55 | 96 | 30 | 30 | **75** | 75 | 5 | **3RW5525-☐HA☐6** | | 1 | 1 unit |
| 133 | 37 | **75** | 90 | 118 | 30 | 40 | **75** | 100 | 5 | **3RW5526-☐HA☐6** | | 1 | 1 unit |
| 161 | 45 | **90** | 110 | 143 | 40 | 50 | **100** | 125 | 5 | **3RW5527-☐HA☐6** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**1**
**3**

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**0**
**1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 600 V: Standard delivery time SD = 2 days (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

# High Performance Soft Starters

## 3RW55 soft starters > Inside-delta circuit *IE3/IE4* ready

### *For normal starting (CLASS 10E)*

3RW553.

3RW554.

3RW555.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors | | | Operational current | Rating [hp] for three-phase motors | | | | | | | | |
| | At 230 V | At 400 V | At 500 V | | At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | |
| 196 | 55 | **110** | 132 | 175 | 50 | 60 | **125** | 150 | 5 | **3RW5534-☐HA☐6** | | 1 | 1 unit |
| 248 | 75 | **132** | 160 | 222 | 75 | 75 | **150** | 200 | 5 | **3RW5535-☐HA☐6** | | 1 | 1 unit |
| 296 | 90 | **160** | 200 | 265 | 75 | 100 | **200** | 250 | 5 | **3RW5536-☐HA☐6** | | 1 | 1 unit |
| 364 | 110 | **200** | 250 | 322 | 100 | 125 | **250** | 300 | 5 | **3RW5543-☐HA☐6** | | 1 | 1 unit |
| 433 | 132 | **250** | 315 | 381 | 125 | 150 | **300** | 350 | 5 | **3RW5544-☐HA☐6** | | 1 | 1 unit |
| 546 | 160 | **315** | 355 | 483 | 150 | 200 | **400** | 500 | 5 | **3RW5545-☐HA☐6** | | 1 | 1 unit |
| 641 | 200 | **355** | 450 | 568 | 200 | 200 | **450** | 600 | 5 | **3RW5546-☐HA☐6** | | 1 | 1 unit |
| 814 | 250 | **400** | 500 | 721 | 250 | 250 | **600** | 800 | 5 | **3RW5547-☐HA☐6** | | 1 | 1 unit |
| 987 | 315 | **560** | 630 | 873 | 300 | 350 | **750** | 950 | 5 | **3RW5548-☐HA☐6** | | 1 | 1 unit |
| 1 091 | 355 | **630** | 710 | 972 | 350 | 400 | **850** | 1 050 | 15 | **3RW5552-☐HA☐6** | | 1 | 1 unit |
| 1 247 | 400 | **710** | 800 | 1 110 | 400 | 450 | **950** | 1 250 | 15 | **3RW5553-☐HA☐6** | | 1 | 1 unit |
| 1 454 | 450 | **800** | 900 | 1 295 | 450 | 550 | **1 150** | 1 450 | 15 | **3RW5554-☐HA☐6** | | 1 | 1 unit |
| 1 905 | 560 | **1 000** | 1 200 | 1 695 | 600 | 700 | **1 500** | 1 900 | 15 | **3RW5556-☐HA☐6** | | 1 | 1 unit |
| 2 217 | 710 | **1 200** | 1 500 | 1 973 | 700 | 850 | **1 700** | 2 200 | 15 | **3RW5558-☐HA☐6** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**2**
**6**

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**0**
**1**

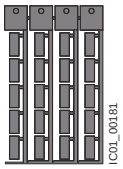
[1] 3RW55 soft starter with screw terminals for operational voltage up to 600 V:
- Sizes 3 and 4: Standard delivery time SD = 2 days (d).
- Size 5: Standard delivery time SD = 5 days (d).

Note:

For the constraints for the motor outputs specified here,
see page 7/7.

## Selection and ordering data

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **Fan covers** | | | | | | | | | |
| 3RW5983-0FC00 | **Fan cover** | 3RW551 (1x), 3RW552 (2x), 3RW553 (2x) | -- | -- | ▶ | **3RW5983-0FC00** | | 1 | 1 unit |
| | | 3RW554 (1x) | -- | -- | ▶ | **3RW5984-0FC00** | | 1 | 1 unit |
| | | 3RW555 (3x) | -- | -- | ▶ | **3RW5985-0FC00** | | 1 | 1 unit |
| **Terminal covers** | | | | | | | | | |
| 3RW5983-0TC20 | **Terminal cover** | 3RW552 (2x), 3RW553 (2x) | -- | -- | ▶ | **3RW5983-0TC20** | | 1 | 1 unit |
| 3RW5984-0TC20 | | 3RW554 (2x) | -- | -- | ▶ | **3RW5984-0TC20** | | 1 | 1 unit |
| **Enclosure components** | | | | | | | | | |
| 3RW5950-0GL20 | **Hinged cover** | 3RW55 | Without cutout | -- | ▶ | **3RW5950-0GL20** | | 1 | 1 unit |
| **Communication modules** | | | | | | | | | |
| 3RW5980-0CS00 | **Communication module** | 3RW55 | PROFINET High Feature with integral switch | -- | ▶ | **3RW5950-0CH00** | | 1 | 1 unit |
| | | | PROFINET Standard | -- | ▶ | **3RW5980-0CS00** | | 1 | 1 unit |
| | | | PROFIBUS | -- | ▶ | **3RW5980-0CP00** | | 1 | 1 unit |
| 3RW5980-0CE00 | | | EtherNet/IP | -- | ▶ | **3RW5980-0CE00** | | 1 | 1 unit |
| 3RW5980-0CR00 | | | Modbus RTU | -- | ▶ | **3RW5980-0CR00** | | 1 | 1 unit |
| | | | Modbus TCP | -- | ▶ | **3RW5980-0CT00** | | 1 | 1 unit |

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **HMI modules** | | | | | | | | | |
| 3RW5980-0HD00 | **IP65 door mounting kit for HMI modules** | 3RW55 | IP65 | For HMI modules | ► | **3RW5980-0HD00** | | 1 | 1 unit |
| **Connecting cables** | | | | | | | | | |
| 3UF793.-0BA00-0 | **HMI connection cable** | 3RW55 | 5 m, round | For door mounting | ► | **3RW5980-0HC60** | | 1 | 1 unit |
| | | | 2.5 m, round | | ► | **3UF7933-0BA00-0** | | 1 | 1 unit |
| | | | 1.0 m, round | | ► | **3UF7937-0BA00-0** | | 1 | 1 unit |
| | | | 0.5 m, round | | ► | **3UF7932-0BA00-0** | | 1 | 1 unit |
| **Further accessories** | | | | | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs for wall mounting** | -- | Two lugs are required per device | For HMI modules and communication modules | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| **Blank labels** | | | | | | | | | |
|  3RT2900-1SB20 | **Unit labeling plates**[1] | | 20 mm x 7 mm, titanium gray | For SIRIUS devices | 20 | **3RT2900-1SB20** | | 100 | 340 units |
| **3RW55 starter kit** | | | | | | | | | |
| 3RW5951-1ES04 | **SIRIUS 3RW55 starter kit** | -- | Including 3RW55 soft starter 13 A, 200 ... 480 V, 24 V AC/DC Soft Starter ES V15.1, 24 V power supply unit, connecting cable and RJ45 network cable | | 5 | **3RW5951-1ES04** | | 1 | 1 unit |

1) PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/15).

## Overview

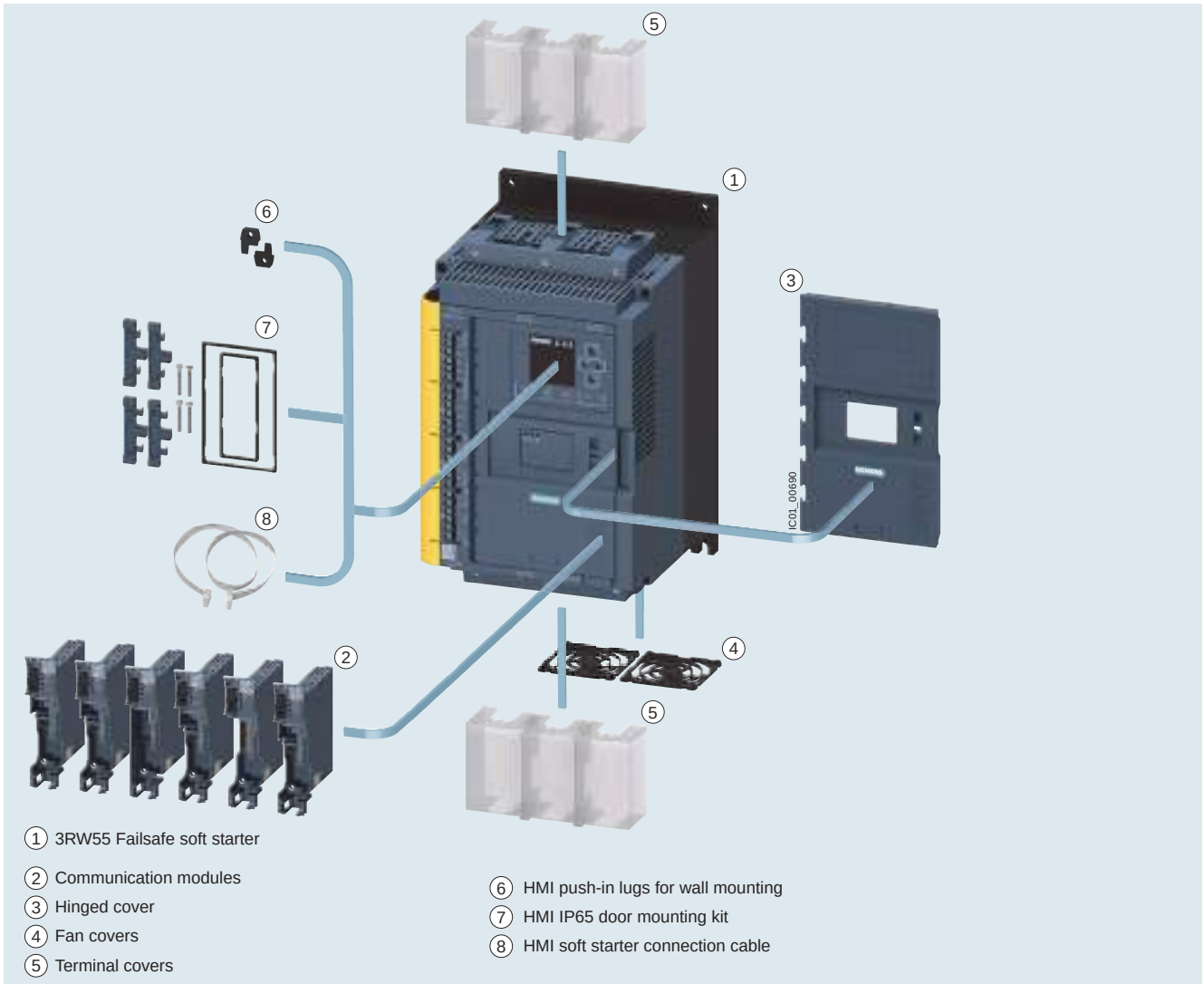
**More information**

Homepage, see www.usa.siemens.com/soft-starter
Industry Mall, see www.siemens.com/product?3RW
Industry Online Support (SIOS) topic page, see https://support.industry.siemens.com/cs/ww/en/view/109747404

Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917
SIRIUS Soft Starter ES (TIA Portal), see page 14/2

Equipped with the utmost functionality, the SIRIUS 3RW55 Failsafe High Performance soft starters confidently handle even difficult starting and stopping operations. Thanks to innovative torque control, the device can be used for drives with an output of between 7.5 to 400HP @ 480V.

The innovative 3RW55 Failsafe soft starter features an integrated fail-safe digital input for directly connecting the EMERGENCY STOP, and thus covers SIL 1 STO applications. The HMI (with color display, local interface and a slot for micro SD memory card) and plug-in communication modules (PROFINET, PROFIBUS, EtherNet/IP and Modbus) ensure maximum flexibility. With their modern hybrid switching technology, the 3RW55 Failsafe soft starters offer efficient switching for long-term, energy-saving use.




1 3RW55 Failsafe soft starter
2 Communication modules
3 Hinged cover
4 Fan covers
5 Terminal covers
6 HMI push-in lugs for wall mounting
7 HMI IP65 door mounting kit
8 HMI soft starter connection cable

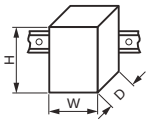
3RW55 Failsafe High Performance soft starters with accessories, see page 7/51.

## Benefits

| Product characteristics / function | Performance features / benefits |
|---|---|
| Automatic parameterization | Extremely easy commissioning and reliability even under changing load conditions |
| Hybrid switching devices and three-phase motor control | Minimum power loss and optimum/symmetrical motor control |
| Integration into TIA Portal – communication modules optional | Efficient configuration and maximum flexibility in automation engineering |
| Removable HMI with color display, local interface, slot for micro SD memory card | Maximum flexibility with regard to user interface and intuitive menu guidance |
| Pump stop and torque control | Reduced mechanical loading and optimum pump stop control |
| Certified according to ATEX/IECEx directive | Suitable for the starting of explosion-proof motors |
| Fail-safe disconnection up to SIL 3 - PL e / STO | Reduced costs and space requirements thanks to direct wiring of the EMERGENCY STOP mushroom pushbutton to the soft starter for SIL 1 |

## Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25776/td<br>Equipment Manual "SIRIUS 3RW55 Soft Starter", see https://support.industry.siemens.com/cs/ww/en/view/109753752 | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25776/faq<br>Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |

| Type | | 3RW551.-.HF.4 | 3RW552.-.HF.4<br>3RW553.-.HF.4 | 3RW554.-.HF.4 |
|---|---|---|---|---|
| **Installation/fixing/dimensions** | | | | |
| **Width x height x depth**   | mm | 170 × 275 × 152 | 185 × 306 × 203 | 210 × 393 × 203 |
| **Type of mounting** | | Screw fixing | | |
| **Mounting position** | | Vertical (can be rotated +/- 90° and tilted +/- 22.5° forward or backward) | | |
| **Distance to be maintained with side-by-side mounting** | | | | |
| • Above | mm | 100 | | |
| • At the side | mm | 5 | | |
| • Below | mm | 75 | | |
| **Maximum installation altitude above sea level**[1] | m | 2 000 | | |
| **Degree of protection** | | IP00 | | |
| **Ambient conditions** | | | | |
| **Ambient temperature** | | | | |
| • During operation[2] | °C | -25 ... +60 | | |
| • During storage and transport | °C | -40 ... +80 | | |
| **Environmental category according to IEC 60721** | | | | |
| • During operation | | 3K6 (no ice formation, no condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 | | |
| • During storage | | 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not enter the devices), 1M4 | | |
| • During transport | | 2K2, 2C1, 2S1, 2M2 (max. height of fall 0.3 m) | | |

1) Derating from 1 000 m, see characteristic curve on page 7/7.
2) Note derating above 40 °C.

| Type | | 3RW55..-.HF0. | 3RW55..-.HF1. |
|---|---|---|---|
| **Control circuit/control** | | | |
| **Control supply voltage** | | | |
| • At AC/DC, rated value | V | 24/24 | --/-- |
| • At AC | V | -- | 110 ... 250 |
| • Relative negative tolerance/relative positive tolerance with AC | % | -20/20 | -15/10 |
| • Relative negative tolerance/relative positive tolerance with DC | % | -20/20 | --/-- |
| **Frequency of the control supply voltage** | Hz | 50 ... 60 | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | |
| **Type of overvoltage protection** | | Varistors | |
| **Type of short-circuit protection for control circuit**[1] | | Fuse 4 A gG ($I_{cu}$ = 1 kA), fuse 6 A quick-response ($I_{cu}$ = 1 kA), MCB C1 ($I_{cu}$ = 600 A), MCB C6 ($I_{cu}$ = 300 A) | |

1) Not included in scope of supply

| Type | | 3RW55..-.HF.4 |
|---|---|---|
| **Power electronics** | | |
| **Operational voltage, rated value** | V | 200 ... 480 |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 |
| **Operational voltage for inside-delta circuit, rated value** | V | 200 ... 480 |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 |
| **Operating frequency, rated value** | Hz | 50 ... 60 |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 |
| **Minimum load [% of $I_M$]**[1] | % | 10 |
| **Maximum cable length between soft starter and motor** | m | 800 |

1) Relative to set $I_e$.

| Type | | 3RW5513 | 3RW5514 | 3RW5515 | 3RW5516 | 3RW5517 |
|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 13 | 18 | 25 | 32 | 38 |
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 25/22.3/19.6 | 38/33.5/30.5 |
| ***Permissible rated motor current and starts/h*** | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 18 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 21 | 21 | 21 |
| - Start-up time 10 s | 1/h | 8 | 8 | 8 | 8 | 8 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 13 | 13 | 13 |
| - Start-up time 10 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 29.6/27.2/23.6 | 33.5/30.5/27.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 26/23.6/21.2 | 29/26/23 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | | |
| • Minimum/maximum | A | 2.5/13 | 3.5/18 | 5/25 | 6.5/32 | 7.5/38 |
| • Minimum/maximum in inside-delta circuits | A | 4.3/22.5 | 6.1/31.1 | 8.7/43.3 | 11.3/55.4 | 13/65.8 |

| Type | | 3RW5524 | 3RW5525 | 3RW5526 | 3RW5527 |
|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 47 | 63 | 77 | 93 |
| **Power electronics** | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| ***Permissible rated motor current and starts/h*** | | | | | |
| **Normal starting (CLASS 10A)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 |
| • 350% $I_M$ | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 21 | 21 |
| - Start-up time 10 s | 1/h | 8 | 8 | 8 | 8 |
| • 350% $I_M$ | | | | | |
| - Start-up time 5 s | 1/h | 13 | 13 | 13 | 13 |
| - Start-up time 10 s | 1/h | 4 | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 0 | 0 | 0 |
| **Heavy starting (CLASS 30E)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 43.4/38/34.4 | 53/48/43 | 68/62/56 | 82.5/75.5/65 |
| • 300% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | |
| • Minimum/maximum | A | 10/47 | 13/63 | 16/77 | 19/93 |
| • Minimum/maximum in inside-delta circuits | A | 17.3/81.4 | 22.5/109 | 27.7/133 | 32.9/161 |

| Type | | 3RW5534 | 3RW5535 | 3RW5536 |
|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 113 | 143 | 171 |
| **Power electronics** | | | | |
| **Load rating with rated operational current $I_e$** | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 113/101/89 | 143/128/118 | 171/153/141 |
| ***Permissible rated motor current and starts/h*** | | | | |
| **Normal starting (CLASS 10A)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 113/101/89 | 143/128/118 | 171/153/141 |
| • 300% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 35 |
| - Start-up time 10 s | 1/h | 18 | 18 | 13 |
| • 350% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 28 | 17 | 10 |
| - Start-up time 10 s | 1/h | 10 | 4 | 0 |
| **Normal starting (CLASS 10E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 113/101/89 | 143/128/118 | 171/153/141 |
| • 300% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 21 | 21 | 14 |
| - Start-up time 10 s | 1/h | 8 | 7 | 4 |
| • 350% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 13 | 4 | 0 |
| - Start-up time 10 s | 1/h | 4 | 0 | 0 |
| **Heavy starting (CLASS 20E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 109/97/85 | 128/113/103 | 141/129/117 |
| • 300% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 |
| • 350% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 7 | 6 | 6 |
| - Start-up time 40 s | 1/h | 0 | 0 | 0 |
| **Heavy starting (CLASS 30E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 89/81/74 | 108/98/88 | 117/105/93 |
| • 300% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 |
| • 350% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | |
| • Minimum/maximum | A | 23/113 | 29/143 | 34/171 |
| • Minimum/maximum in inside-delta circuits | A | 39.8/195 | 50.2/247 | 58.9/296 |

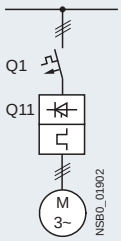
| Type | | 3RW5543 | 3RW5544 | 3RW5545 | 3RW5546 | 3RW5547 | 3RW5548 |
|---|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 210 | 250 | 315 | 370 | 470 | 570 |
| **Power electronics** | | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| ***Permissible rated motor current and starts/h*** | | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 38 | 43 | 32 | 13 |
| - Start-up time 10 s | 1/h | 13 | 18 | 14 | 18 | 13 | 3 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 14 | 28 | 19 | 28 | 19 | 4 |
| - Start-up time 10 s | 1/h | 0 | 10 | 5 | 10 | 6 | 0.4 |
| **Normal starting (CLASS 10E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 551/490/445 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 13 | 21 | 14 | 20 | 13 | 5 |
| - Start-up time 10 s | 1/h | 2 | 8 | 4 | 8 | 3 | -- |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 0 | 13 | 5 | 12 | 6 | 1 |
| - Start-up time 10 s | 1/h | 0 | 4 | 0 | 3 | 0.4 | -- |
| **Heavy starting (CLASS 20E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 162/146/130 | 200/180/160 | 231/207/183 | 258/230/202 | 272/254/236 | 284/262/240 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Heavy starting (CLASS 30E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 138/122/106 | 160/140/120 | 183/159/135 | 202/174/160 | 210/190/170 | 220/200/180 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 3 | 3 | 3 | 3 | 3 | 3 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 4 | 4 | 4 | 4 | 4 | 4 |
| - Start-up time 40 s | 1/h | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| **Adjustable rated motor current $I_M$** | | | | | | | |
| • Minimum/maximum | A | 42/210 | 50/250 | 63/315 | 74/370 | 94/470 | 114/570 |
| • Minimum/maximum in inside-delta circuits | A | 72.7/363 | 86.6/433 | 109.1/545 | 128.2/640 | 162.8/814 | 197.5/987 |

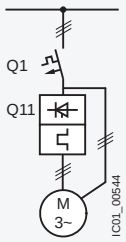
***Motor feeders according to IEC with 3RV2/3VA motor starter protectors/circuit breakers (without semiconductor protection)***

Type of coordination "1", CLASS 10,
short-circuit breaking capacity $I_q$ in kA, see table

Note:

For general recommendations for constructing motor feeders
with soft starters, see page 7/9.




| Soft starters | Motor starter protectors | | | | Motor starter protectors | | | |
|---|---|---|---|---|---|---|---|---|
| | for 400 V systems | | for 480 V systems | | for 400 V systems | | for 480 V systems | |
| Q11 | Q1 | $I_q$ | Q1 | $I_q$ | Q1 | $I_q$ | Q1 | $I_q$ |
| Type | Type | kA | Type | kA | Type | kA | Type | kA |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | | **Inside-delta circuit** | | | |
| **3RW5513** | 3RV2032-4TA10 | 65 | 3RV2032-4TA10 | 18 | 3RV2032-4DA10 | 65 | 3RV2032-4DA10 | 18 |
| **3RW5514** | 3RV2032-4DA10 | 65 | 3RV2032-4DA10 | 15 | 3RV2032-4EA10 | 65 | 3RV2032-4EA10 | 15 |
| **3RW5515** | 3RV2032-4EA10 | 65 | 3RV2032-4EA10 | 15 | 3RV2032-4VA10 | 65 | 3RV2032-4VA10 | 15 |
| **3RW5516** | 3RV2032-4VA10 | 65 | 3RV2032-4VA10 | 10 | 3RV2032-4JA10 | 65 | 3RV2032-4JA10 | 10 |
| **3RW5517** | 3RV2032-4WA10 | 65 | 3RV2032-4WA10 | 10 | 3RV2032-4RA10 | 65 | 3RV2032-4RA10 | 10 |
| **3RW5524** | 3RV2032-4JA10 | 65 | 3RV2032-4JA10 | 10 | 3RV2032-4RA10 | 65 | 3RV2032-4RA10 | 10 |
| **3RW5525** | 3VA2163-7MN32-0AA0 | 65 | 3VA2163-7MN32-0AA0 | 20 | 3VA2110-7MN32-0AA0 | 65 | 3VA2110-7MN32-0AA0 | 20 |
| **3RW5526** | 3VA2110-7MN32-0AA0 | 65 | 3VA2110-7MN32-0AA0 | 20 | 3VA2216-7MN32-0AA0 | 65 | 3VA2216-7MN32-0AA0 | 20 |
| **3RW5527** | 3VA2216-7MN32-0AA0 | 15 | 3VA2216-7MN32-0AA0 | 10 | 3VA2220-7MN32-0AA0 | 15 | 3VA2220-7MN32-0AA0 | 10 |
| **3RW5534** | 3VA2216-7MN32-0AA0 | 65 | -- | -- | 3VA2220-7MN32-0AA0 | 65 | -- | -- |
| **3RW5535** | 3VA2220-7MN32-0AA0 | 65 | -- | -- | 3VA2325-7MN32-0AA0 | 65 | -- | -- |
| **3RW5536** | 3VA2325-7MN32-0AA0 | 30 | 3VA2325-7MN32-0AA0 | 10 | 3VA2440-7MN32-0AA0 | 30 | 3VA2440-7MN32-0AA0 | 10 |
| **3RW5543** | 3VA2325-7MN32-0AA0 | 65 | 3VA2325-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 |
| **3RW5544** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 |
| **3RW5545** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5546** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5547** | 3VA2450-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 |
| **3RW5548** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 |

Note:

The service factor or measurement inaccuracies have been taken into account, for example, for the selection of the specified motor starter protectors/circuit breakers; the specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

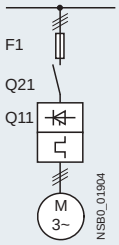
### *Motor feeders according to IEC with 3NA3 fuses*

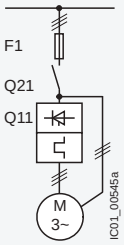
gG class full-range fuses for cable and line protection according to IEC 60269-2, without semiconductor protection

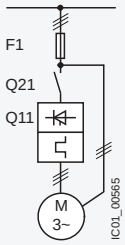
Type of coordination "1",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | gG class fuse | Line contactor (optional) | |
|---|---|---|---|---|---|
| | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V in the supply cable | for systems up to 480 V in the delta |
| Q11 | F1 | Q21 | F1 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | **Inside-delta circuit** | | |
| **3RW5513** | 3NA3820-6 | 3RT2025 | 3NA3820-6 | 3RT2027 | 3RT2025 |
| **3RW5514** | 3NA3820-6 | 3RT2026 | 3NA3820-6 | 3RT2027 | 3RT2026 |
| **3RW5515** | 3NA3822-6 | 3RT2027 | 3NA3822-6 | 3RT2036 | 3RT2027 |
| **3RW5516** | 3NA3824-6 | 3RT2035 | 3NA3824-6 | 3RT2037 | 3RT2035 |
| **3RW5517** | 3NA3824-6 | 3RT2035 | 3NA3824-6 | 3RT2038 | 3RT2035 |
| **3RW5524** | 3NA3824-6 | 3RT2036 | 3NA3824-6 | 3RT2046 | 3RT2036 |
| **3RW5525** | 3NA3830-6 | 3RT2037 | 3NA3830-6 | 3RT2047 | 3RT2037 |
| **3RW5526** | 3NA3132-6 | 3RT2038 | 3NA3132-6 | 3RT1055 | 3RT2038 |
| **3RW5527** | 3NA3136-6 | 3RT2046 | 3NA3136-6 | 3RT1056 | 3RT2046 |
| **3RW5534** | 3NA3244-6 | 3RT1054 | 3NA3244-6 | 3RT1064 | 3RT1054 |
| **3RW5535** | 3NA3244-6 | 3RT1055 | 3NA3244-6 | 3RT1065 | 3RT1055 |
| **3RW5536** | 3NA3365-6 | 3RT1056 | 3NA3365-6 | 3RT1066 | 3RT1056 |
| **3RW5543** | 2 x 3NA3354-6 | 3RT1064 | 2 x 3NA3354-6 | 3RT1075 | 3RT1064 |
| **3RW5544** | 2 x 3NA3354-6 | 3RT1065 | 2 x 3NA3354-6 | 3RT1076 | 3RT1065 |
| **3RW5545** | 2 x 3NA3365-6 | 3RT1075 | 2 x 3NA3365-6 | 3TF68 | 3RT1075 |
| **3RW5546** | 2 x 3NA3365-6 | 3RT1075 | 2 x 3NA3365-6 | 3TF69 | 3RT1075 |
| **3RW5547** | 2 x 3NA3365-6 | 3RT1076 | 2 x 3NA3365-6 | 3TF69 | 3RT1076 |
| **3RW5548** | 2 x 3NA3365-6 | 3TF68 | 2 x 3NA3365-6 | -- | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

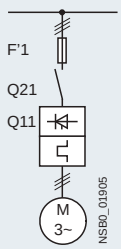
### *Motor feeders according to IEC with 3NE1 SITOR fuses*

gR class full-range fuses for semiconductor protection, cable and line protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) |
|---|---|---|
| | for systems up to 480 V | for systems up to 480 V |
| Q11 | F'1 | Q21 |
| Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | |
| **3RW5513** | 3NE1815-0 | 3RT2025 |
| **3RW5514** | 3NE1802-0 | 3RT2026 |
| **3RW5515** | 3NE1817-0 | 3RT2027 |
| **3RW5516** | 3NE1818-0 | 3RT2035 |
| **3RW5517** | 3NE1820-0 | 3RT2035 |
| **3RW5524** | 3NE1021-2 | 3RT2036 |
| **3RW5525** | 3NE1022-0 | 3RT2037 |
| **3RW5526** | 3NE1224-0 | 3RT2038 |
| **3RW5527** | 3NE1224-0 | 3RT2046 |
| **3RW5534** | 3NE1225-0 | 3RT1054 |
| **3RW5535** | 3NE1227-0 | 3RT1055 |
| **3RW5536** | 3NE1230-0 | 3RT1056 |
| **3RW5543** | 3NE1230-2 | 3RT1064 |
| **3RW5544** | 3NE1331-0 | 3RT1065 |
| **3RW5545** | 3NE1334-2 | 3RT1075 |
| **3RW5546** | 3NE1334-2 | 3RT1075 |
| **3RW5547** | 3NE1436-2 | 3RT1076 |
| **3RW5548** | 3NE1437-2 | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

In inside-delta circuits, a gR class full-range fuse could not provide the semiconductor protection of the delta-connected soft starter with a short-circuit breaking capacity that is adequate for practical use. In this case, we recommend using aR class partial-range fuses for semiconductor protection for type of coordination “2” (see page 7/47).

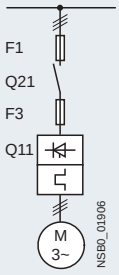
### *Motor feeders according to IEC with 3NE8 / 3NE3 / 3NC3 fuses*

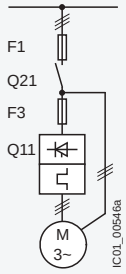
aR class partial-range fuses for semiconductor protection

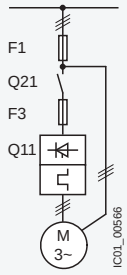
Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | aR class fuse | Line contactor (optional) | gG class fuse | aR class fuse | Line contactor (optional) | |
|---|---|---|---|---|---|---|---|
| | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V in the supply cable | for systems up to 480 V in the delta |
| Q11 | F1 | F3 | Q21 | F1 | F3 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | **Inside-delta circuit** | | | |
| **3RW5513** | 3NA3820-6 | 3NE8017-1 | 3RT2025 | 3NA3820-6 | 3NE8017-1 | 3RT2027 | 3RT2025 |
| **3RW5514** | 3NA3820-6 | 3NE8020-1 | 3RT2026 | 3NA3820-6 | 3NE8020-1 | 3RT2027 | 3RT2026 |
| **3RW5515** | 3NA3822-6 | 3NE8021-1 | 3RT2027 | 3NA3822-6 | 3NE8021-1 | 3RT2036 | 3RT2027 |
| **3RW5516** | 3NA3824-6 | 3NE8022-1 | 3RT2035 | 3NA3824-6 | 3NE8022-1 | 3RT2037 | 3RT2035 |
| **3RW5517** | 3NA3824-6 | 3NE8024-1 | 3RT2035 | 3NA3824-6 | 3NE8024-1 | 3RT2038 | 3RT2035 |
| **3RW5524** | 3NA3824-6 | 3NE8024-1 | 3RT2036 | 3NA3824-6 | 3NE8024-1 | 3RT2046 | 3RT2036 |
| **3RW5525** | 3NA3830-6 | 3NE3227 | 3RT2037 | 3NA3830-6 | 3NE3227 | 3RT2047 | 3RT2037 |
| **3RW5526** | 3NA3132-6 | 3NE3227 | 3RT2038 | 3NA3132-6 | 3NE3227 | 3RT1055 | 3RT2038 |
| **3RW5527** | 3NA3136-6 | 3NE3227 | 3RT2046 | 3NA3136-6 | 3NE3227 | 3RT1056 | 3RT2046 |
| **3RW5534** | 3NA3244-6 | 3NE3231 | 3RT1054 | 3NA3244-6 | 3NE3231 | 3RT1064 | 3RT1054 |
| **3RW5535** | 3NA3244-6 | 3NE3233 | 3RT1055 | 3NA3244-6 | 3NE3233 | 3RT1065 | 3RT1055 |
| **3RW5536** | 3NA3365-6 | 3NE3334-0B | 3RT1056 | 3NA3365-6 | 3NE3334-0B | 3RT1066 | 3RT1056 |
| **3RW5543** | 2 x 3NA3354-6 | 3NE3333 | 3RT1064 | 2 x 3NA3354-6 | 3NE3333 | 3RT1075 | 3RT1064 |
| **3RW5544** | 2 x 3NA3354-6 | 3NE3335 | 3RT1065 | 2 x 3NA3354-6 | 3NE3335 | 3RT1076 | 3RT1065 |
| **3RW5545** | 2 x 3NA3365-6 | -- | 3RT1075 | 2 x 3NA3365-6 | -- | 3TF68 | 3RT1075 |
| **3RW5546** | 2 x 3NA3365-6 | -- | 3RT1075 | 2 x 3NA3365-6 | -- | 3TF69 | 3RT1075 |
| **3RW5547** | 2 x 3NA3365-6 | 3NE3340-8 | 3RT1076 | 2 x 3NA3365-6 | 3NE3340-8 | 3TF69 | 3RT1076 |
| **3RW5548** | 2 x 3NA3365-6 | 3NC3342-1U | 3TF68 | 2 x 3NA3365-6 | 3NC3342-1U | -- | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For CLASS 10 applications, as an alternative to the gG class full-range fuses for cable and line protection 3NA3 (F1), 3RV2/3VA motor starter protectors/circuit breakers can also be used, possibly with reduced short-circuit breaking capacity (see page 7/44). In these cases, optional line contactors can be dispensed with.

### *Reversing operation with reversing contactors*

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.

(For an example circuit, see 3RW55 Equipment Manual, Appendix A.3)

| Soft starters | Reversing contactor assembly | For reversing contactor |
|---|---|---|
| | for systems up to 480 V | for systems up to 480 V |
| Q11 | Q21 / Q22 | Q21 / Q22 |
| Type | Type | Type |
| **3RW5513** | 3RA2325 | 3RT2025 |
| **3RW5514** | 3RA2326 | 3RT2026 |
| **3RW5515** | 3RA2327 | 3RT2027 |
| **3RW5516** | 3RA2335 | 3RT2035 |
| **3RW5517** | 3RA2335 | 3RT2035 |
| **3RW5524** | 3RA2336 | 3RT2036 |
| **3RW5525** | 3RA2337 | 3RT2037 |
| **3RW5526** | 3RA2338 | 3RT2038 |
| **3RW5527** | 3RA2346 | 3RT2046 |
| **3RW5534** | -- | 3RT1054 |
| **3RW5535** | -- | 3RT1055 |
| **3RW5536** | -- | 3RT1056 |
| **3RW5543** | -- | 3RT1064 |
| **3RW5544** | -- | 3RT1065 |
| **3RW5545** | -- | 3RT1075 |
| **3RW5546** | -- | 3RT1075 |
| **3RW5547** | -- | 3RT1076 |
| **3RW5548** | -- | 3TF68 |

## Selection and ordering data

### *For normal starting (CLASS 10E)*

3RW551.

3RW552.

3RW553.

3RW554.

| At 40 °C | | | At 50 °C | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | | | | | |
| A | kW | kW | A | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | |
| 13 | 3 | **5.5** | 11.5 | 2 | 3 | **7.5** | 5 | **3RW5513-☐HF☐4** | | 1 | 1 unit |
| 18 | 4 | **7.5** | 15.9 | 3 | 5 | **10** | 5 | **3RW5514-☐HF☐4** | | 1 | 1 unit |
| 25 | 5.5 | **11** | 22.3 | 5 | 7.5 | **15** | 5 | **3RW5515-☐HF☐4** | | 1 | 1 unit |
| 32 | 7.5 | **15** | 28.4 | 7.5 | 10 | **20** | 5 | **3RW5516-☐HF☐4** | | 1 | 1 unit |
| 38 | 11 | **18.5** | 33.5 | 10 | 10 | **20** | 5 | **3RW5517-☐HF☐4** | | 1 | 1 unit |
| 47 | 11 | **22** | 41.6 | 10 | 10 | **30** | 5 | **3RW5524-☐HF☐4** | | 1 | 1 unit |
| 63 | 18.5 | **30** | 55.5 | 15 | 20 | **40** | 5 | **3RW5525-☐HF☐4** | | 1 | 1 unit |
| 77 | 22 | **37** | 68 | 20 | 25 | **50** | 5 | **3RW5526-☐HF☐4** | | 1 | 1 unit |
| 93 | 22 | **45** | 82.5 | 25 | 30 | **60** | 5 | **3RW5527-☐HF☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals — **1**
Spring-loaded terminals — **3**

**Control supply voltage**
24 V AC/DC — **0**
110 ... 250 V AC — **1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C | | | At 50 °C | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | | | | | |
| A | kW | kW | A | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | |
| 113 | 30 | **55** | 101 | 30 | 30 | **75** | 5 | **3RW5534-☐HF☐4** | | 1 | 1 unit |
| 143 | 37 | **75** | 128 | 40 | 40 | **100** | 5 | **3RW5535-☐HF☐4** | | 1 | 1 unit |
| 171 | 45 | **90** | 153 | 50 | 50 | **100** | 5 | **3RW5536-☐HF☐4** | | 1 | 1 unit |
| 210 | 55 | **110** | 186 | 50 | 60 | **150** | 5 | **3RW5543-☐HF☐4** | | 1 | 1 unit |
| 250 | 75 | **132** | 220 | 60 | 75 | **150** | 5 | **3RW5544-☐HF☐4** | | 1 | 1 unit |
| 315 | 90 | **160** | 279 | 75 | 100 | **200** | 5 | **3RW5545-☐HF☐4** | | 1 | 1 unit |
| 370 | 110 | **200** | 328 | 100 | 125 | **250** | 5 | **3RW5546-☐HF☐4** | | 1 | 1 unit |
| 470 | 132 | **250** | 416 | 150 | 150 | **350** | 5 | **3RW5547-☐HF☐4** | | 1 | 1 unit |
| 570 | 160 | **315** | 504 | 150 | 200 | **400** | 5 | **3RW5548-☐HF☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals — **2**
Screw terminals — **6**

**Control supply voltage**
24 V AC/DC — **0**
110 ... 250 V AC — **1**

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

### *For normal starting (CLASS 10E)*

3RW551.

3RW552.

3RW553.

3RW554.

| At 40 °C for inside-delta circuit | | | At 50 °C for inside-delta circuit | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | | | | | |
| A | kW | kW | A | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | |
| 22.5 | 5.5 | **11** | 19.9 | 5 | 5 | **10** | 5 | **3RW5513-☐HF☐4** | | 1 | 1 unit |
| 31.5 | 7.5 | **15** | 28 | 7.5 | 7.5 | **20** | 5 | **3RW5514-☐HF☐4** | | 1 | 1 unit |
| 43.3 | 11 | **18.5** | 39 | 10 | 10 | **25** | 5 | **3RW5515-☐HF☐4** | | 1 | 1 unit |
| 55.4 | 15 | **22** | 49 | 15 | 15 | **30** | 5 | **3RW5516-☐HF☐4** | | 1 | 1 unit |
| 65.8 | 18.5 | **30** | 58 | 15 | 20 | **40** | 5 | **3RW5517-☐HF☐4** | | 1 | 1 unit |
| 81.4 | 22 | **45** | 72 | 20 | 25 | **50** | 5 | **3RW5524-☐HF☐4** | | 1 | 1 unit |
| 109 | 30 | **55** | 96 | 30 | 30 | **75** | 5 | **3RW5525-☐HF☐4** | | 1 | 1 unit |
| 133 | 37 | **75** | 118 | 30 | 40 | **75** | 5 | **3RW5526-☐HF☐4** | | 1 | 1 unit |
| 161 | 45 | **90** | 143 | 40 | 50 | **100** | 5 | **3RW5527-☐HF☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

1 3
0 1

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C for inside-delta circuit | | | At 50 °C for inside-delta circuit | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | | | | | |
| A | kW | kW | A | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | |
| 196 | 55 | **110** | 175 | 50 | 60 | **125** | 5 | **3RW5534-☐HF☐4** | | 1 | 1 unit |
| 248 | 75 | **132** | 222 | 75 | 75 | **150** | 5 | **3RW5535-☐HF☐4** | | 1 | 1 unit |
| 296 | 90 | **160** | 265 | 75 | 100 | **200** | 5 | **3RW5536-☐HF☐4** | | 1 | 1 unit |
| 364 | 110 | **200** | 322 | 100 | 125 | **250** | 5 | **3RW5543-☐HF☐4** | | 1 | 1 unit |
| 433 | 132 | **250** | 381 | 125 | 150 | **300** | 5 | **3RW5544-☐HF☐4** | | 1 | 1 unit |
| 546 | 160 | **315** | 483 | 150 | 200 | **400** | 5 | **3RW5545-☐HF☐4** | | 1 | 1 unit |
| 641 | 200 | **355** | 568 | 200 | 200 | **450** | 5 | **3RW5546-☐HF☐4** | | 1 | 1 unit |
| 814 | 250 | **400** | 721 | 250 | 250 | **600** | 5 | **3RW5547-☐HF☐4** | | 1 | 1 unit |
| 987 | 315 | **560** | 873 | 300 | 350 | **750** | 5 | **3RW5548-☐HF☐4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

2 6
0 1

[1] 3RW55 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

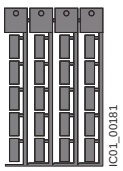
For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Fan covers** | | | | | | | | | |
| 3RW5983-0FC00 | **Fan cover** | 3RW551 (1x), 3RW552 (2x), 3RW553 (2x) | -- | -- | ▶ | **3RW5983-0FC00** | | 1 | 1 unit |
| | | 3RW554 (1x) | -- | -- | ▶ | **3RW5984-0FC00** | | 1 | 1 unit |
| **Terminal covers** | | | | | | | | | |
| 3RW5983-0TC20 | **Terminal cover** | 3RW552 (2x), 3RW553 (2x) | -- | -- | ▶ | **3RW5983-0TC20** | | 1 | 1 unit |
| 3RW5984-0TC20 | | 3RW554 (2x) | -- | -- | ▶ | **3RW5984-0TC20** | | 1 | 1 unit |
| **Enclosure components** | | | | | | | | | |
| 3RW5950-0GL20 | **Hinged cover** | 3RW55 | Without cutout | -- | ▶ | **3RW5950-0GL20** | | 1 | 1 unit |
| **Communication modules** | | | | | | | | | |
| 3RW5980-0CS00 | **Communication module** | 3RW55 | PROFINET High Feature with integral switch | -- | ▶ | **3RW5950-0CH00** | | 1 | 1 unit |
| | | | PROFINET Standard | -- | ▶ | **3RW5980-0CS00** | | 1 | 1 unit |
| | | | PROFIBUS | -- | ▶ | **3RW5980-0CP00** | | 1 | 1 unit |
| 3RW5980-0CE00 | | | EtherNet/IP | -- | ▶ | **3RW5980-0CE00** | | 1 | 1 unit |
| | | | Modbus RTU | -- | ▶ | **3RW5980-0CR00** | | 1 | 1 unit |
| 3RW5980-0CR00 | | | Modbus TCP | -- | ▶ | **3RW5980-0CT00** | | 1 | 1 unit |

# High Performance Soft Starters

## 3RW55 Failsafe soft starters > Accessories

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **HMI modules** | | | | | | | | | |
| <br>3RW5980-0HD00 | **IP65 door mounting kit for HMI modules** | 3RW55 | IP65 | For HMI modules | ▶ | **3RW5980-0HD00** | | 1 | 1 unit |
| **Connecting cables** | | | | | | | | | |
| <br>3UF793.-0BA00-0 | **HMI connection cable** | 3RW55 | 5 m, round | For door mounting | ▶ | **3RW5980-0HC60** | | 1 | 1 unit |
| | | | 2.5 m, round | | ▶ | **3UF7933-0BA00-0** | | 1 | 1 unit |
| | | | 1.0 m, round | | ▶ | **3UF7937-0BA00-0** | | 1 | 1 unit |
| | | | 0.5 m, round | | ▶ | **3UF7932-0BA00-0** | | 1 | 1 unit |
| **Further accessories** | | | | | | | | | |
| <br>3ZY1311-0AA00 | **Push-in lugs for wall mounting** | -- | Two lugs are required per device | For HMI modules and communication modules | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| **Blank labels** | | | | | | | | | |
|  <br>3RT2900-1SB20 | **Unit labeling plates[1)]** | -- | 20 mm x 7 mm, titanium gray | For SIRIUS devices | 20 | **3RT2900-1SB20** | | 100 | 340 units |

[1)] PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/15).

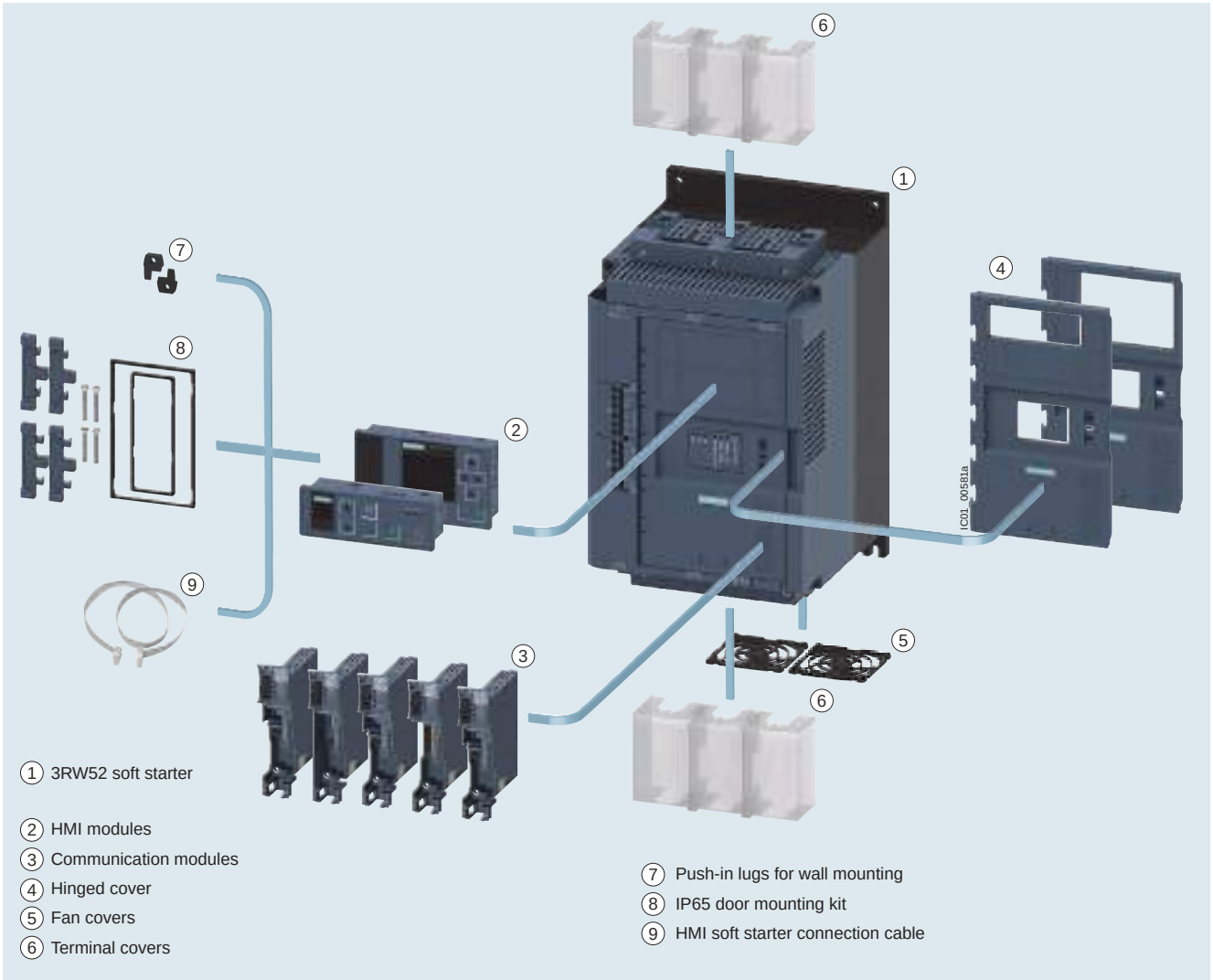
## Overview

**More information**

Homepage, see www.usa.siemens.com/soft-starter
Industry Mall, see www.siemens.com/product?3RW52
TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=3rw52
Industry Online Support (SIOS) topic page, see https://support.industry.siemens.com/cs/ww/en/view/109747404
Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917
SIRIUS Soft Starter ES (TIA Portal), see page 14/5

SIRIUS 3RW52 General Performance soft starters are the ideal solution for standard applications. With ideal three-phase motor control, they cover the performance range from 7.5 to 400HP @ 480V.

Optional HMI modules, plug-in communication modules (PROFINET, PROFIBUS, EtherNet/IP and Modbus) and either an analog output or thermistor motor protection ensure maximum flexibility. With their modern hybrid switching technology, the SIRIUS 3RW52 soft starters offer efficient switching for long-term, energy-saving use.



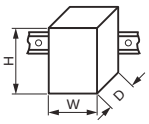

3RW52 General Performance soft starters with accessories (see page 7/69), for expansion with HMI module or communication module

## Benefits

| Product characteristics / function | Performance features / benefits |
|---|---|
| Hybrid switching devices and three-phase motor control | Minimum power loss and optimum/symmetrical motor control |
| TIA-Integration – communication modules and HMI modules optional | Efficient configuration and maximum flexibility in automation engineering |
| Soft Torque | Reduced mechanical loading and optimum pump stop |
| Parameterization using potentiometers | Simple and fast commissioning |
| Wide range for control supply and main voltage | Low variance, high system availability even with weak supply networks |

## Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25100/td | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25100/faq |
| Equipment Manual "SIRIUS 3RW52 Soft Starter", see https://support.industry.siemens.com/cs/ww/en/view/109753751 | Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |

| Type | | | 3RW5213 3RW5214 3RW5215 | 3RW5216 3RW5217 | 3RW5224 3RW5225 | 3RW5226 3RW5227 3RW5234 3RW5235 3RW5236 | 3RW5243 3RW5244 3RW5245 3RW5246 3RW5247 3RW5248 |
|---|---|---|---|---|---|---|---|
| **Installation/fixing/dimensions** | | | | | | | |
| **Width x height x depth** |   | mm | 170 × 275 × 152 | | 185 × 306 × 203 | | 210 × 393 × 203 |
| **Type of mounting** | | | Screw fixing | | | | |
| **Mounting position** | | | For vertical mounting surface can be rotated +/- 10° and tilted forward or backward | For vertical mounting surface can be rotated +/- 90°, for vertical mounting surface can be tilted +/- 22.5° forward or backward | For vertical mounting surface can be rotated +/- 10° and tilted forward or backward | For vertical mounting surface can be rotated +/- 90°, for vertical mounting surface can be tilted +/- 22.5° forward or backward | |
| **Distance to be maintained with side-by-side mounting** | | | | | | | |
| • Above | | mm | 100 | | | | |
| • At the side | | mm | 5 | | | | |
| • Below | | mm | 75 | | | | |
| **Maximum installation altitude above sea level**[1] | | m | 5 000 | | | | |
| **Degree of protection** | | | IP00 | | | | |
| **Ambient conditions** | | | | | | | |
| **Ambient temperature** | | | | | | | |
| • During operation[2] | | °C | -25 ... +60 | | | | |
| • During storage and transport | | °C | -40 ... +80 | | | | |
| **Environmental category according to IEC 60721** | | | | | | | |
| • During operation | | | 3K6 (no ice formation, no condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 | | | | |
| • During storage | | | 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not enter the devices), 1M4 | | | | |
| • During transport | | | 2K2, 2C1, 2S1, 2M2 (max. height of fall 0.3 m) | | | | |

1) Derating from 1 000 m, see characteristic curve on page 7/7.
2) Note derating above 40 °C.

| Type | | 3RW52..-..C0. | 3RW52..-..C1. |
|---|---|---|---|
| **Control circuit/control** | | | |
| **Control supply voltage** | | | |
| • At AC/DC, rated value | V | 24/24 | --/-- |
| • At AC | V | -- | 110 ... 250 |
| • Relative negative tolerance/relative positive tolerance with AC | % | -20/20 | -15/10 |
| • Relative negative tolerance/relative positive tolerance with DC | % | -20/20 | --/-- |
| **Frequency of the control supply voltage** | Hz | 50 ... 60 | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | |
| **Type of overvoltage protection** | | Varistors | |
| **Type of short-circuit protection for control circuit**[1] | | Fuse 4 A gG ($I_{cu}$ = 1 kA), fuse 6 A quick-response ($I_{cu}$ = 1 kA), MCB C1 ($I_{cu}$ = 600 A), MCB C6 ($I_{cu}$ = 300 A) | |

1) Not included in scope of supply

| Type | | 3RW52..-..C.4 | 3RW52..-..C.5 |
|---|---|---|---|
| **Power electronics** | | | |
| **Operational voltage, rated value** | V | 200 ... 480 | 200 ... 600 |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 | |
| **Operational voltage for inside-delta circuit, rated value** | V | 200 ... 480 | 200 ... 600 |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 | |
| **Operating frequency, rated value** | Hz | 50 ... 60 | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | |
| **Minimum load [% of $I_M$]**[1] | % | 15 | |
| **Maximum cable length between soft starter and motor** | m | 800 | |

1) Relative to the smallest adjustable $I_e$.

| Type | | 3RW5213 | 3RW5214 | 3RW5215 | 3RW5216 | 3RW5217 |
|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 13 | 18 | 25 | 32 | 38 |
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| ***Permissible rated motor current and starts/h*** | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 18 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 32/28.4/26 | 38/33.5/30.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 21 | 21 | 21 | 21 | 21 |
| - Start-up time 40 s | 1/h | 8 | 8 | 8 | 8 | 8 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 13 | 13 | 13 | 13 | 13 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 13/11.5/10.5 | 18/15.9/13.8 | 25/22.3/19.6 | 29.6/27.2/23.6 | 33.5/30.5/27.5 |
| • 300% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Adjustable rated motor current $I_M$** | | | | | | |
| • Minimum/maximum | A | 5.5/13 | 7.5/18 | 11.5/25 | 14/32 | 15.5/38 |
| • Minimum/maximum in inside-delta circuits | A | 9.5/22.5 | 13/31.2 | 19.9/43.3 | 24.2/55.4 | 26.8/65.8 |

# General Performance Soft Starters

## 3RW52 soft starters > General data

| Type | | 3RW5224 | 3RW5225 | 3RW5226 | 3RW5227 |
|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 47 | 63 | 77 | 93 |
| **Power electronics** | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| ***Permissible rated motor current and starts/h*** | | | | | |
| **Normal starting (CLASS 10A)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 |
| • 350% $I_M$ | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 10 | 10 | 10 |
| **Normal starting (CLASS 10E)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 47/41.6/36.2 | 63/55.5/50.5 | 77/68/62 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 21 | 21 | 21 | 21 |
| - Start-up time 40 s | 1/h | 8 | 8 | 8 | 8 |
| • 350% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 13 | 13 | 13 | 13 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C<br>ON period = 70%; motor protection activated | A | 47/41.6/36.2 | 63/55.5/50.5 | 65/59/53 | 93/82.5/75.5 |
| • 300% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 3 | 4 | 4 |
| • 350% $I_M$ | | | | | |
| - Start-up time 20 s | 1/h | 7 | 4 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2 | 0 | 2.5 | 2.5 |
| **Adjustable rated motor current $I_M$** | | | | | |
| • Minimum/maximum | A | 20/47 | 25.5/63 | 32/77 | 40.5/93 |
| • Minimum/maximum in inside-delta circuits | A | 34.6/81.4 | 44.2/109 | 55.4/133 | 70.1/161 |

| Type | | 3RW5234 | 3RW5235 | 3RW5236 |
|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 113 | 143 | 171 |
| **Power electronics** | | | | |
| **Load rating with rated operational current $I_e$** | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 113/101/89 | 143/128/118 | 171/153/141 |
| ***Permissible rated motor current and starts/h*** | | | | |
| **Normal starting (CLASS 10A)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 113/101/89 | 143/128/118 | 171/153/141 |
| • 300% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 |
| • 350% $I_M$ | | | | |
| - Start-up time 5 s | 1/h | 28 | 27 | 20 |
| - Start-up time 10 s | 1/h | 10 | 8 | 4 |
| **Normal starting (CLASS 10E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 113/101/89 | 139/127/116 | 158/146/129 |
| • 300% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 21 | 21 | 21 |
| - Start-up time 40 s | 1/h | 8 | 8 | 8 |
| • 350% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 13 | 12 | 12 |
| - Start-up time 40 s | 1/h | 4 | 1 | 1 |
| **Heavy starting (CLASS 20E)** | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 109/97/85 | 113/103/93 | 129/117/105 |
| • 300% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 |
| • 350% $I_M$ | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 |
| **Adjustable rated motor current $I_M$** | | | | |
| • Minimum/maximum | A | 53/113 | 68/143 | 81/171 |
| • Minimum/maximum in inside-delta circuits | A | 91.8/196 | 118/248 | 140/296 |

# General Performance Soft Starters

## 3RW52 soft starters > General data

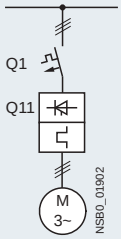
| Type | | 3RW5243 | 3RW5244 | 3RW5245 | 3RW5246 | 3RW5247 | 3RW5248 |
|---|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 210 | 250 | 315 | 370 | 470 | 570 |
| **Power electronics** | | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| ***Permissible rated motor current and starts/h*** | | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 30 | 20 |
| - Start-up time 10 s | 1/h | 18 | 18 | 14 | 18 | 11 | 6 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 16 | 28 | 17 | 9 |
| - Start-up time 10 s | 1/h | 5 | 10 | 4 | 10 | 5 | 1 |
| **Normal starting (CLASS 10E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 197/184/170 | 250/220/200 | 279/255/231 | 370/328/300 | 398/362/326 | 460/416/372 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 21 | 21 | 21 | 21 | 21 | 18 |
| - Start-up time 40 s | 1/h | 8 | 8 | 8 | 8 | 8 | 7 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 12 | 13 | 12 | 13 | 13 | 11 |
| - Start-up time 40 s | 1/h | 1 | 4 | 3 | 4 | 4 | 2 |
| **Heavy starting (CLASS 20E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 162/146/130 | 200/180/160 | 195/171/147 | 258/230/202 | 272/236/218 | 284/262/240 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Adjustable rated motor current $I_M$** | | | | | | | |
| • Minimum/maximum | A | 90/210 | 100/250 | 135/315 | 160/370 | 200/470 | 240/570 |
| • Minimum/maximum in inside-delta circuits | A | 156/364 | 173/433 | 234/546 | 277/641 | 346/814 | 416/987 |

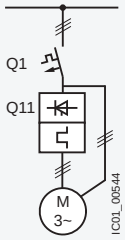
***Motor feeders according to IEC with 3RV2/3VA motor starter protectors/circuit breakers (without semiconductor protection)***

Type of coordination "1", CLASS 10,
short-circuit breaking capacity $I_q$ in kA, see table

Note:

For general recommendations for constructing motor feeders
with soft starters, see page 7/9.




| Soft starters | Motor starter protectors | | | | Motor starter protectors | | | |
|---|---|---|---|---|---|---|---|---|
| | for 400 V systems | | for 500 V systems | | for 400 V systems | | for 500 V systems | |
| Q11 | Q1 | $I_q$ | Q1 | $I_q$ | Q1 | $I_q$ | Q1 | $I_q$ |
| Type | Type | kA | Type | kA | Type | kA | Type | kA |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | | **Inside-delta circuit** | | | |
| **3RW5213** | 3RV2032-4TA10 | 65 | 3RV2032-4TA10 | 18 | 3RV2032-4DA10 | 65 | 3RV2032-4DA10 | 18 |
| **3RW5214** | 3RV2032-4DA10 | 65 | 3RV2032-4DA10 | 15 | 3RV2032-4EA10 | 65 | 3RV2032-4EA10 | 15 |
| **3RW5215** | 3RV2032-4EA10 | 65 | 3RV2032-4EA10 | 15 | 3RV2032-4VA10 | 65 | 3RV2032-4VA10 | 15 |
| **3RW5216** | 3RV2032-4VA10 | 65 | 3RV2032-4VA10 | 10 | 3RV2032-4JA10 | 65 | 3RV2032-4JA10 | 10 |
| **3RW5217** | 3RV2032-4WA10 | 65 | 3RV2032-4WA10 | 10 | 3RV2032-4RA10 | 65 | 3RV2032-4RA10 | 10 |
| **3RW5224** | 3RV2032-4JA10 | 65 | 3RV2032-4JA10 | 10 | 3RV2032-4RA10 | 65 | 3RV2032-4RA10 | 10 |
| **3RW5225** | 3VA2163-7MN32-0AA0 | 65 | 3VA2163-7MN32-0AA0 | 20 | 3VA2110-7MN32-0AA0 | 65 | 3VA2110-7MN32-0AA0 | 20 |
| **3RW5226** | 3VA2110-7MN32-0AA0 | 65 | 3VA2110-7MN32-0AA0 | 20 | 3VA2216-7MN32-0AA0 | 65 | 3VA2216-7MN32-0AA0 | 20 |
| **3RW5227** | 3VA2216-7MN32-0AA0 | 15 | 3VA2216-7MN32-0AA0 | 10 | 3VA2220-7MN32-0AA0 | 15 | 3VA2220-7MN32-0AA0 | 10 |
| **3RW5234** | 3VA2216-7MN32-0AA0 | 65 | -- | -- | 3VA2220-7MN32-0AA0 | 65 | -- | -- |
| **3RW5235** | 3VA2220-7MN32-0AA0 | 65 | -- | -- | 3VA2325-7MN32-0AA0 | 65 | -- | -- |
| **3RW5236** | 3VA2325-7MN32-0AA0 | 30 | 3VA2325-7MN32-0AA0 | 10 | 3VA2440-7MN32-0AA0 | 30 | 3VA2440-7MN32-0AA0 | 10 |
| **3RW5243** | 3VA2325-7MN32-0AA0 | 65 | 3VA2325-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 |
| **3RW5244** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 |
| **3RW5245** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5246** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5247** | 3VA2450-7MN32-0AA0 | 65 | 3VA2450-7MN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 |
| **3RW5248** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 | 3VA2510-6HN32-0AA0 | 65 |

Note:

The service factor or measurement inaccuracies have been taken into account, for example, for the selection of the specified motor starter protectors/circuit breakers; the specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

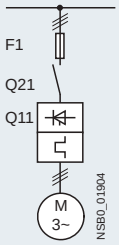
### *Motor feeders according to IEC with 3NA3 fuses*

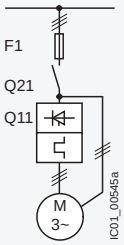
gG class full-range fuses for cable and line protection according to IEC 60269-2, without semiconductor protection

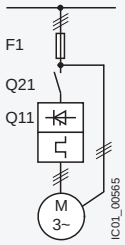
Type of coordination "1",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | | gG class fuse | Line contactor (optional) | | | |
|---|---|---|---|---|---|---|---|---|
| | for systems up to 600 V | for systems up to 480 V | for systems up to 600 V | for systems up to 600 V | for systems up to 480 V in the supply cable | for systems up to 600 V in the supply cable | for systems up to 480 V in the delta | for systems up to 600 V in the delta |
| Q11 | F1 | Q21 | Q21 | F1 | Q21 | Q21 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | **Inside-delta circuit** | | | | |
| **3RW5213** | 3NA3820-6 | 3RT2025 | 3RT2025 | 3NA3820-6 | 3RT2027 | 3RT2035 | 3RT2025 | 3RT2025 |
| **3RW5214** | 3NA3820-6 | 3RT2026 | 3RT2027 | 3NA3820-6 | 3RT2027 | 3RT2037 | 3RT2026 | 3RT2027 |
| **3RW5215** | 3NA3822-6 | 3RT2027 | 3RT2037 | 3NA3822-6 | 3RT2036 | 3RT2037 | 3RT2027 | 3RT2037 |
| **3RW5216** | 3NA3824-6 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3RT2037 | 3RT2038 | 3RT2035 | 3RT2037 |
| **3RW5217** | 3NA3824-6 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3RT2038 | 3RT2046 | 3RT2035 | 3RT2037 |
| **3RW5224** | 3NA3824-6 | 3RT2036 | 3RT2037 | 3NA3824-6 | 3RT2046 | 3RT2047 | 3RT2036 | 3RT2037 |
| **3RW5225** | 3NA3830-6 | 3RT2037 | 3RT2046 | 3NA3830-6 | 3RT2047 | 3RT1054 | 3RT2037 | 3RT2046 |
| **3RW5226** | 3NA3132-6 | 3RT2038 | 3RT2046 | 3NA3132-6 | 3RT1055 | 3RT1055 | 3RT2038 | 3RT2046 |
| **3RW5227** | 3NA3136-6 | 3RT2046 | 3RT2047 | 3NA3136-6 | 3RT1056 | 3RT1056 | 3RT2046 | 3RT2047 |
| **3RW5234** | 3NA3244-6 | 3RT1054 | 3RT1054 | 3NA3244-6 | 3RT1064 | 3RT1064 | 3RT1054 | 3RT1054 |
| **3RW5235** | 3NA3244-6 | 3RT1055 | 3RT1055 | 3NA3244-6 | 3RT1065 | 3RT1065 | 3RT1055 | 3RT1055 |
| **3RW5236** | 3NA3365-6 | 3RT1056 | 3RT1064 | 3NA3365-6 | 3RT1066 | 3RT1075 | 3RT1056 | 3RT1064 |
| **3RW5243** | 2 x 3NA3354-6 | 3RT1064 | 3RT1064 | 2 x 3NA3354-6 | 3RT1075 | 3RT1075 | 3RT1064 | 3RT1064 |
| **3RW5244** | 2 x 3NA3354-6 | 3RT1065 | 3RT1065 | 2 x 3NA3354-6 | 3RT1076 | 3RT1076 | 3RT1065 | 3RT1065 |
| **3RW5245** | 2 x 3NA3365-6 | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | 3TF68 | 3TF68 | 3RT1075 | 3RT1075 |
| **3RW5246** | 2 x 3NA3365-6 | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | 3TF69 | 3TF69 | 3RT1075 | 3RT1075 |
| **3RW5247** | 2 x 3NA3365-6 | 3RT1076 | 3RT1276 | 2 x 3NA3365-6 | 3TF69 | 3TF69 | 3RT1076 | 3RT1276 |
| **3RW5248** | 2 x 3NA3365-6 | 3TF68 | 3TF68 | 2 x 3NA3365-6 | -- | -- | 3TF68 | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

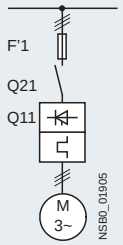
### *Motor feeders according to IEC with 3NE1 SITOR fuses*

gR class full-range fuses for semiconductor protection, cable and line protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | |
|---|---|---|---|
| | for systems up to 600 V | for systems up to 480 V | for systems up to 600 V |
| Q11 | F'1 | Q21 | Q21 |
| Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | |
| **3RW5213** | 3NE1815-0 | 3RT2025 | 3RT2025 |
| **3RW5214** | 3NE1802-0 | 3RT2026 | 3RT2027 |
| **3RW5215** | 3NE1817-0 | 3RT2027 | 3RT2037 |
| **3RW5216** | 3NE1818-0 | 3RT2035 | 3RT2037 |
| **3RW5217** | 3NE1820-0 | 3RT2035 | 3RT2037 |
| **3RW5224** | 3NE1021-2 | 3RT2036 | 3RT2037 |
| **3RW5225** | 3NE1022-0 | 3RT2037 | 3RT2046 |
| **3RW5226** | 3NE1224-0 | 3RT2038 | 3RT2046 |
| **3RW5227** | 3NE1224-0 | 3RT2046 | 3RT2047 |
| **3RW5234** | 3NE1225-0 | 3RT1054 | 3RT1054 |
| **3RW5235** | 3NE1227-0 | 3RT1055 | 3RT1055 |
| **3RW5236** | 3NE1230-0 | 3RT1056 | 3RT1064 |
| **3RW5243** | 3NE1230-2[1)] | 3RT1064 | 3RT1064 |
| **3RW5244** | 3NE1331-0 | 3RT1065 | 3RT1065 |
| **3RW5245** | 3NE1334-2 | 3RT1075 | 3RT1075 |
| **3RW5246** | 3NE1334-2 | 3RT1075 | 3RT1075 |
| **3RW5247** | 3NE1436-2 | 3RT1076 | 3RT1276 |
| **3RW5248** | 3NE1437-2 | 3TF68 | 3TF68 |

[1)] For systems up to 500 V.

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

In inside-delta circuits, a gR class full-range fuse could not provide the semiconductor protection of the delta-connected soft starter with a short-circuit breaking capacity that is adequate for practical use. In this case, we recommend using aR class partial-range fuses for semiconductor protection for type of coordination “2” (see page 7/64).

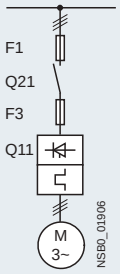
***Motor feeders according to IEC with fuses 3NE8 / 3NE4 / 3NE3***

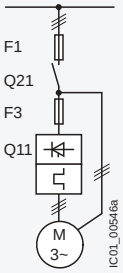
aR class partial-range fuses for semiconductor protection

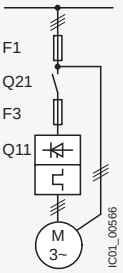
Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | aR class fuse | Line contactor (optional) | | gG class fuse | aR class fuse | Line contactor (optional) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | for systems up to 600 V | for systems up to 500 V | for systems up to 480 V | for systems up to 600 V | for systems up to 600 V | for systems up to 600 V | for systems up to 480 V in the supply cable | for systems up to 600 V in the supply cable | for systems up to 480 V in the delta | for systems up to 600 V in the delta |
| Q11 | F1 | F3 | Q21 | Q21 | F1 | F3 | Q21 | Q21 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | | **Inside-delta circuit** | | | | | |
| **3RW5213** | 3NA3820-6 | 3NE8017-1 | 3RT2025 | 3RT2025 | 3NA3820-6 | 3NE8017-1 | 3RT2027 | 3RT2035 | 3RT2025 | 3RT2025 |
| **3RW5214** | 3NA3820-6 | 3NE8020-1 | 3RT2026 | 3RT2027 | 3NA3820-6 | 3NE8020-1 | 3RT2027 | 3RT2037 | 3RT2026 | 3RT2027 |
| **3RW5215** | 3NA3822-6 | 3NE8021-1 | 3RT2027 | 3RT2037 | 3NA3822-6 | 3NE8021-1 | 3RT2036 | 3RT2037 | 3RT2027 | 3RT2037 |
| **3RW5216** | 3NA3824-6 | 3NE8022-1 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3NE8022-1 | 3RT2037 | 3RT2038 | 3RT2035 | 3RT2037 |
| **3RW5217** | 3NA3824-6 | 3NE8024-1 | 3RT2035 | 3RT2037 | 3NA3824-6 | 3NE8024-1 | 3RT2038 | 3RT2046 | 3RT2035 | 3RT2037 |
| **3RW5224** | 3NA3824-6 | 3NE8024-1 | 3RT2036 | 3RT2037 | 3NA3824-6 | 3NE8024-1 | 3RT2046 | 3RT2047 | 3RT2036 | 3RT2037 |
| **3RW5225** | 3NA3830-6 | 3NE8024-1 | 3RT2037 | 3RT2046 | 3NA3830-6 | 3NE8024-1 | 3RT2047 | 3RT1054 | 3RT2037 | 3RT2046 |
| **3RW5226** | 3NA3132-6 | 3NE8024-1 | 3RT2038 | 3RT2046 | 3NA3132-6 | 3NE8024-1 | 3RT1055 | 3RT1055 | 3RT2038 | 3RT2046 |
| **3RW5227** | 3NA3136-6 | 3NE4124 | 3RT2046 | 3RT2047 | 3NA3136-6 | 3NE4124 | 3RT1056 | 3RT1056 | 3RT2046 | 3RT2047 |
| **3RW5234** | 3NA3244-6 | 3NE3332-0B | 3RT1054 | 3RT1054 | 3NA3244-6 | 3NE3332-0B | 3RT1064 | 3RT1064 | 3RT1054 | 3RT1054 |
| **3RW5235** | 3NA3244-6 | 3NE3334-0B | 3RT1055 | 3RT1055 | 3NA3244-6 | 3NE3334-0B | 3RT1065 | 3RT1065 | 3RT1055 | 3RT1055 |
| **3RW5236** | 3NA3365-6 | 3NE3335 | 3RT1056 | 3RT1064 | 3NA3365-6 | 3NE3335 | 3RT1066 | 3RT1075 | 3RT1056 | 3RT1064 |
| **3RW5243** | 2 x 3NA3354-6 | 3NE3333 | 3RT1064 | 3RT1064 | 2 x 3NA3354-6 | 3NE3333 | 3RT1075 | 3RT1075 | 3RT1064 | 3RT1064 |
| **3RW5244** | 2 x 3NA3354-6 | 3NE3336 | 3RT1065 | 3RT1065 | 2 x 3NA3354-6 | 3NE3336 | 3RT1076 | 3RT1076 | 3RT1065 | 3RT1065 |
| **3RW5245** | 2 x 3NA3365-6 | 3NE3336 | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | 3NE3336 | 3TF68 | 3TF68 | 3RT1075 | 3RT1075 |
| **3RW5246** | 2 x 3NA3365-6 | 3NE3336 | 3RT1075 | 3RT1075 | 2 x 3NA3365-6 | 3NE3336 | 3TF69 | 3TF69 | 3RT1075 | 3RT1075 |
| **3RW5247** | 2 x 3NA3365-6 | 3NE3340-8 | 3RT1076 | 3RT1276 | 2 x 3NA3365-6 | 3NE3340-8 | 3TF69 | 3TF69 | 3RT1076 | 3RT1276 |
| **3RW5248** | 2 x 3NA3365-6 | 3NE3340-8 | 3TF68 | 3TF68 | 2 x 3NA3365-6 | 3NE3340-8 | -- | -- | 3TF68 | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For CLASS 10 applications, as an alternative to the gG class full-range fuses for cable and line protection 3NA3 (F1), 3RV2/3VA motor starter protectors/circuit breakers can also be used, possibly with reduced short-circuit breaking capacity (see page 7/61). In these cases, optional line contactors can be dispensed with.

## Selection and ordering data

### *For normal starting (CLASS 10A)*

3RW521.

3RW522.

3RW523.

3RW524.

| At 40 °C | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | |
| 13 | 3 | **5.5** | -- | 11.5 | 2 | 3 | **7.5** | -- | 5 | **3RW5213-□□C□4** | | 1 | 1 unit |
| 18 | 4 | **7.5** | -- | 15.9 | 3 | 5 | **10** | -- | 5 | **3RW5214-□□C□4** | | 1 | 1 unit |
| 25 | 5.5 | **11** | -- | 22.3 | 5 | 7.5 | **15** | -- | 5 | **3RW5215-□□C□4** | | 1 | 1 unit |
| 32 | 7.5 | **15** | -- | 28.4 | 7.5 | 10 | **20** | -- | 5 | **3RW5216-□□C□4** | | 1 | 1 unit |
| 38 | 11 | **18.5** | -- | 33.5 | 10 | 10 | **20** | -- | 5 | **3RW5217-□□C□4** | | 1 | 1 unit |
| 47 | 11 | **22** | -- | 41.6 | 10 | 10 | **30** | -- | 5 | **3RW5224-□□C□4** | | 1 | 1 unit |
| 63 | 18.5 | **30** | -- | 55.5 | 15 | 20 | **40** | -- | 5 | **3RW5225-□□C□4** | | 1 | 1 unit |
| 77 | 22 | **37** | -- | 68 | 20 | 25 | **50** | -- | 5 | **3RW5226-□□C□4** | | 1 | 1 unit |
| 93 | 22 | **45** | -- | 82.5 | 25 | 30 | **60** | -- | 5 | **3RW5227-□□C□4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**1 3 A T 0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | |
| 113 | 30 | **55** | -- | 101 | 30 | 30 | **75** | -- | 5 | **3RW5234-□□C□4** | | 1 | 1 unit |
| 143 | 37 | **75** | -- | 128 | 40 | 40 | **100** | -- | 5 | **3RW5235-□□C□4** | | 1 | 1 unit |
| 171 | 45 | **90** | -- | 153 | 50 | 50 | **100** | -- | 5 | **3RW5236-□□C□4** | | 1 | 1 unit |
| 210 | 55 | **110** | -- | 186 | 60 | 60 | **150** | -- | 5 | **3RW5243-□□C□4** | | 1 | 1 unit |
| 250 | 75 | **132** | -- | 220 | 60 | 75 | **150** | -- | 5 | **3RW5244-□□C□4** | | 1 | 1 unit |
| 315 | 90 | **160** | -- | 279 | 75 | 100 | **200** | -- | 5 | **3RW5245-□□C□4** | | 1 | 1 unit |
| 370 | 110 | **200** | -- | 328 | 100 | 125 | **250** | -- | 5 | **3RW5246-□□C□4** | | 1 | 1 unit |
| 470 | 132 | **250** | -- | 416 | 150 | 150 | **350** | -- | 5 | **3RW5247-□□C□4** | | 1 | 1 unit |
| 570 | 160 | **315** | -- | 504 | 150 | 200 | **400** | -- | 5 | **3RW5248-□□C□4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

**2 6 A T 0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

# General Performance Soft Starters

## 3RW52 soft starters > Inline circuit *IE3/IE4* ready

### *For normal starting (CLASS 10A)*

3RW521.

3RW522.

3RW523.

3RW524.

| At 40 °C | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | |
| 13 | 3 | **5.5** | 7.5 | 11.5 | 2 | 3 | **7.5** | 10 | 5 | **3RW5213-□□C□5** | | 1 | 1 unit |
| 18 | 4 | **7.5** | 11 | 15.9 | 3 | 5 | **10** | 10 | 5 | **3RW5214-□□C□5** | | 1 | 1 unit |
| 25 | 5.5 | **11** | 15 | 22.3 | 5 | 7.5 | **15** | 20 | 5 | **3RW5215-□□C□5** | | 1 | 1 unit |
| 32 | 7.5 | **15** | 18.5 | 28.4 | 7.5 | 10 | **20** | 25 | 5 | **3RW5216-□□C□5** | | 1 | 1 unit |
| 38 | 11 | **18.5** | 22 | 33.5 | 10 | 10 | **20** | 30 | 5 | **3RW5217-□□C□5** | | 1 | 1 unit |
| 47 | 11 | **22** | 30 | 41.6 | 10 | 10 | **30** | 40 | 5 | **3RW5224-□□C□5** | | 1 | 1 unit |
| 63 | 18.5 | **30** | 37 | 55.5 | 15 | 20 | **40** | 50 | 5 | **3RW5225-□□C□5** | | 1 | 1 unit |
| 77 | 22 | **37** | 45 | 68 | 20 | 25 | **50** | 60 | 5 | **3RW5226-□□C□5** | | 1 | 1 unit |
| 93 | 22 | **45** | 55 | 82.5 | 25 | 30 | **60** | 75 | 5 | **3RW5227-□□C□5** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5227-**1 3** C **A T** 5 **0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 600 V: Standard delivery time SD = 2 days (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C | | | | At 50 °C | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | |
| 113 | 30 | **55** | 75 | 101 | 30 | 30 | **75** | 100 | 5 | **3RW5234-□□C□5** | | 1 | 1 unit |
| 143 | 37 | **75** | 90 | 128 | 40 | 40 | **100** | 125 | 5 | **3RW5235-□□C□5** | | 1 | 1 unit |
| 171 | 45 | **90** | 110 | 153 | 50 | 50 | **100** | 150 | 5 | **3RW5236-□□C□5** | | 1 | 1 unit |
| 210 | 55 | **110** | 132 | 186 | 60 | 60 | **150** | 150 | 5 | **3RW5243-□□C□5** | | 1 | 1 unit |
| 250 | 75 | **132** | 160 | 220 | 60 | 75 | **150** | 200 | 5 | **3RW5244-□□C□5** | | 1 | 1 unit |
| 315 | 90 | **160** | 200 | 279 | 75 | 100 | **200** | 250 | 5 | **3RW5245-□□C□5** | | 1 | 1 unit |
| 370 | 110 | **200** | 250 | 328 | 100 | 125 | **250** | 300 | 5 | **3RW5246-□□C□5** | | 1 | 1 unit |
| 470 | 132 | **250** | 315 | 416 | 150 | 150 | **350** | 450 | 5 | **3RW5247-□□C□5** | | 1 | 1 unit |
| 570 | 160 | **315** | 355 | 504 | 150 | 200 | **400** | 500 | 5 | **3RW5248-□□C□5** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5248-**2 6** C **A T** 5 **0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 600 V: Standard delivery time SD = 2 days (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

### *For normal starting (CLASS 10A)*

3RW521.

3RW522.

3RW523.

3RW524.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | |
| 22.5 | 5.5 | **11** | -- | 19.9 | 5 | 5 | **10** | -- | 5 | **3RW5213-□□C□4** | | 1 | 1 unit |
| 31.5 | 7.5 | **15** | -- | 28 | 7.5 | 7.5 | **20** | -- | 5 | **3RW5214-□□C□4** | | 1 | 1 unit |
| 43.3 | 11 | **18.5** | -- | 39 | 10 | 10 | **25** | -- | 5 | **3RW5215-□□C□4** | | 1 | 1 unit |
| 55.4 | 15 | **22** | -- | 49 | 15 | 15 | **30** | -- | 5 | **3RW5216-□□C□4** | | 1 | 1 unit |
| 65.8 | 18.5 | **30** | -- | 58 | 15 | 20 | **40** | -- | 5 | **3RW5217-□□C□4** | | 1 | 1 unit |
| 81.4 | 22 | **45** | -- | 72 | 20 | 25 | **50** | -- | 5 | **3RW5224-□□C□4** | | 1 | 1 unit |
| 109 | 30 | **55** | -- | 96 | 30 | 30 | **75** | -- | 5 | **3RW5225-□□C□4** | | 1 | 1 unit |
| 133 | 37 | **75** | -- | 118 | 30 | 40 | **75** | -- | 5 | **3RW5226-□□C□4** | | 1 | 1 unit |
| 161 | 45 | **90** | -- | 143 | 40 | 50 | **100** | -- | 5 | **3RW5227-□□C□4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5227-**1 3** **A T** **0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | |
| 196 | 55 | **110** | -- | 175 | 50 | 60 | **125** | -- | 5 | **3RW5234-□□C□4** | | 1 | 1 unit |
| 248 | 75 | **132** | -- | 222 | 75 | 75 | **150** | -- | 5 | **3RW5235-□□C□4** | | 1 | 1 unit |
| 296 | 90 | **160** | -- | 265 | 75 | 100 | **200** | -- | 5 | **3RW5236-□□C□4** | | 1 | 1 unit |
| 364 | 110 | **200** | -- | 322 | 100 | 125 | **250** | -- | 5 | **3RW5243-□□C□4** | | 1 | 1 unit |
| 433 | 132 | **250** | -- | 381 | 125 | 150 | **300** | -- | 5 | **3RW5244-□□C□4** | | 1 | 1 unit |
| 546 | 160 | **315** | -- | 483 | 150 | 200 | **400** | -- | 5 | **3RW5245-□□C□4** | | 1 | 1 unit |
| 641 | 200 | **355** | -- | 568 | 200 | 200 | **450** | -- | 5 | **3RW5246-□□C□4** | | 1 | 1 unit |
| 814 | 250 | **400** | -- | 721 | 250 | 250 | **600** | -- | 5 | **3RW5247-□□C□4** | | 1 | 1 unit |
| 987 | 315 | **560** | -- | 873 | 300 | 350 | **750** | -- | 5 | **3RW5248-□□C□4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5248-**2 6** **A T** **0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

# General Performance Soft Starters

## 3RW52 soft starters > Inside-delta circuit *IE3/IE4* ready

***For normal starting (CLASS 10A)***

3RW521.

3RW522.

3RW523.

3RW524.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | |
| 22.5 | 5.5 | **11** | 15 | 19.9 | 5 | 5 | **10** | 15 | 5 | **3RW5213-□□C□5** | | 1 | 1 unit |
| 31.5 | 7.5 | **15** | 18.5 | 28 | 7.5 | 7.5 | **20** | 25 | 5 | **3RW5214-□□C□5** | | 1 | 1 unit |
| 43.3 | 11 | **18.5** | 22 | 39 | 10 | 10 | **25** | 30 | 5 | **3RW5215-□□C□5** | | 1 | 1 unit |
| 55.4 | 15 | **22** | 30 | 49 | 15 | 15 | **30** | 40 | 5 | **3RW5216-□□C□5** | | 1 | 1 unit |
| 65.8 | 18.5 | **30** | 37 | 58 | 15 | 20 | **40** | 50 | 5 | **3RW5217-□□C□5** | | 1 | 1 unit |
| 81.4 | 22 | **45** | 45 | 72 | 20 | 25 | **50** | 60 | 5 | **3RW5224-□□C□5** | | 1 | 1 unit |
| 109 | 30 | **55** | 55 | 96 | 30 | 30 | **75** | 75 | 5 | **3RW5225-□□C□5** | | 1 | 1 unit |
| 133 | 37 | **75** | 90 | 118 | 30 | 40 | **75** | 100 | 5 | **3RW5226-□□C□5** | | 1 | 1 unit |
| 161 | 45 | **90** | 110 | 143 | 40 | 50 | **100** | 125 | 5 | **3RW5227-□□C□5** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Screw terminals
Spring-loaded terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5227-**1 3** **A T** **0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 600 V: Standard delivery time SD = 2 days (d).

Note:

For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C for inside-delta circuit | | | | At 50 °C for inside-delta circuit | | | | | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | |
| 196 | 55 | **110** | 132 | 175 | 50 | 60 | **125** | 150 | 5 | **3RW5234-□□C□5** | | 1 | 1 unit |
| 248 | 75 | **132** | 160 | 222 | 75 | 75 | **150** | 200 | 5 | **3RW5235-□□C□5** | | 1 | 1 unit |
| 296 | 90 | **160** | 200 | 265 | 75 | 100 | **200** | 250 | 5 | **3RW5236-□□C□5** | | 1 | 1 unit |
| 364 | 110 | **200** | 250 | 322 | 100 | 125 | **250** | 300 | 5 | **3RW5243-□□C□5** | | 1 | 1 unit |
| 433 | 132 | **250** | 315 | 381 | 125 | 150 | **300** | 350 | 5 | **3RW5244-□□C□5** | | 1 | 1 unit |
| 546 | 160 | **315** | 355 | 483 | 150 | 200 | **400** | 500 | 5 | **3RW5245-□□C□5** | | 1 | 1 unit |
| 641 | 200 | **355** | 450 | 568 | 200 | 200 | **450** | 600 | 5 | **3RW5246-□□C□5** | | 1 | 1 unit |
| 814 | 250 | **400** | 500 | 721 | 250 | 250 | **600** | 800 | 5 | **3RW5247-□□C□5** | | 1 | 1 unit |
| 987 | 315 | **560** | 630 | 873 | 300 | 350 | **750** | 950 | 5 | **3RW5248-□□C□5** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5248-**2 6** **A T** **0 1**

[1] 3RW52 soft starter with screw terminals for operational voltage up to 600 V: Standard delivery time SD = 2 days (d).

Note:

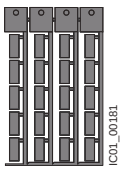
For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **Fan covers** | | | | | | | | | |
| 3RW5983-0FC00 | **Fan cover** | 3RW5216/17 (1x), 3RW5226/27 (2x), 3RW523 (2x) | -- | -- | ► | **3RW5983-0FC00** | | 1 | 1 unit |
| | | 3RW524 (1x) | -- | -- | ► | **3RW5984-0FC00** | | 1 | 1 unit |
| **Terminal covers** | | | | | | | | | |
| 3RW5983-0TC20 | **Terminal cover** | 3RW522 (2x), 3RW523 (2x) | -- | -- | ► | **3RW5983-0TC20** | | 1 | 1 unit |
| 3RW5984-0TC20 | | 3RW524 (2x) | -- | -- | ► | **3RW5984-0TC20** | | 1 | 1 unit |
| **Enclosure components** | | | | | | | | | |
| 3RW5950-0GL30 | **Hinged cover** | 3RW52 | With cutout for High Feature HMI module | -- | ► | **3RW5950-0GL30** | | 1 | 1 unit |
| 3RW5950-0GL40 | | | With cutout for Standard HMI module | -- | ► | **3RW5950-0GL40** | | 1 | 1 unit |
| **Communication modules** | | | | | | | | | |
| 3RW5980-0CS00 | **Communication module** | 3RW52 | PROFINET Standard | -- | ► | **3RW5980-0CS00** | | 1 | 1 unit |
| | | | PROFIBUS | -- | ► | **3RW5980-0CP00** | | 1 | 1 unit |
| | | | EtherNet/IP | -- | ► | **3RW5980-0CE00** | | 1 | 1 unit |
| 3RW5980-0CR00 | | | Modbus RTU | -- | ► | **3RW5980-0CR00** | | 1 | 1 unit |
| | | | Modbus TCP | -- | ► | **3RW5980-0CT00** | | 1 | 1 unit |

# General Performance Soft Starters

## 3RW52 soft starters > Accessories

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **HMI modules** | | | | | | | | | |
| 3RW5980-0HF00 | **HMI module** | 3RW52 | High Feature | -- | ▶ | **3RW5980-0HF00** | | 1 | 1 unit |
| 3RW5980-0HS00 | | | Standard | -- | ▶ | **3RW5980-0HS00** | | 1 | 1 unit |
| 3RW5980-0HD00 | **IP65 door mounting kit for HMI modules** | 3RW52 | IP65 | For HMI modules | ▶ | **3RW5980-0HD00** | | 1 | 1 unit |
| **Connecting cables** | | | | | | | | | |
| 3UF793.-0BA00-0 | **HMI connection cable** | 3RW52 | 5 m, round | For door mounting | ▶ | **3RW5980-0HC60** | | 1 | 1 unit |
| | | | 2.5 m, round | | ▶ | **3UF7933-0BA00-0** | | 1 | 1 unit |
| | | | 1.0 m, round | | ▶ | **3UF7937-0BA00-0** | | 1 | 1 unit |
| | | | 0.5 m, round | | ▶ | **3UF7932-0BA00-0** | | 1 | 1 unit |
| 3UF7931-0AA00-0 | | | 0.1 m, flat | for mounting in the device | ▶ | **3UF7931-0AA00-0** | | 1 | 1 unit |
| **Further accessories** | | | | | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs for wall mounting** | -- | Two lugs are required per device | For HMI modules and communication modules | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| **Blank labels** | | | | | | | | | |
|   3RT2900-1SB20 | **Unit labeling plates**[1] | -- | 20 mm x 7 mm, titanium gray | For SIRIUS devices | 20 | **3RT2900-1SB20** | | 100 | 340 units |

[1] PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/15).

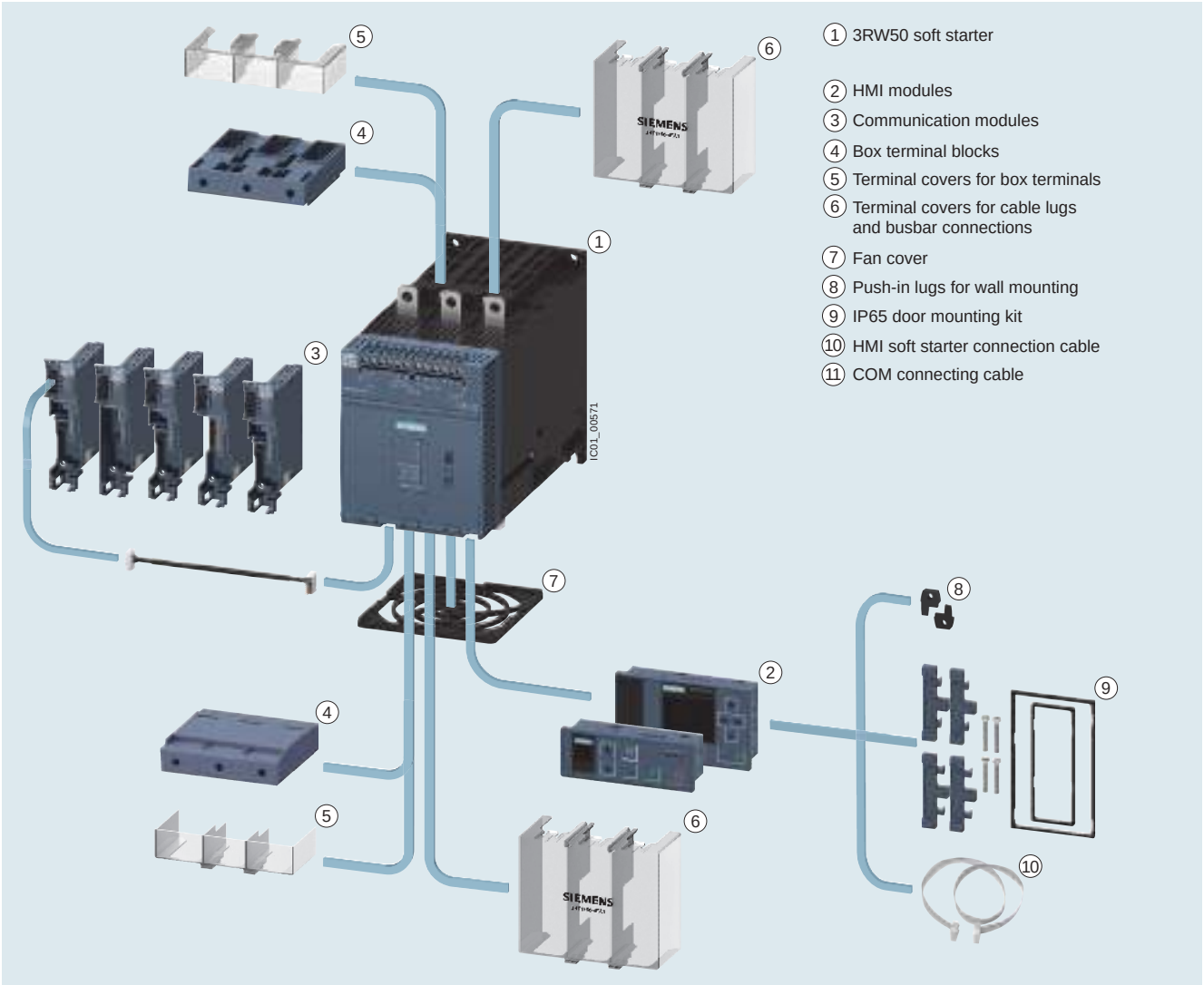
## Overview

**More information**

Homepage, see www.usa.siemens.com/soft-starter
Industry Mall, see www.siemens.com/product?3RW50
TIA Selection Tool Cloud (TST Cloud), see https://support.industry.siemens.com/cs/ww/en/view/109747404
Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917
SIRIUS Soft Starter ES (TIA Portal), see page 14/5

SIRIUS 3RW50 Basic Performance soft starters are the compact solution for standard applications. With two-phase motor control, they cover the performance range from 75 to 300HP @ 480V.

Optional HMI modules for installation in the control cabinet door, laterally mountable communication modules (PROFINET, PROFIBUS, EtherNet/IP and Modbus) and either an analog output or thermistor motor protection ensure maximum flexibility. With their modern hybrid switching technology, the SIRIUS 3RW50 soft starters offer efficient switching for long-term, energy-saving use.



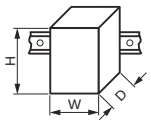

3RW50 Basic Performance soft starters with accessories (see page 7/81), for expansion with HMI module or communication module

## Benefits

| Product characteristics / function | Performance features / benefits |
|---|---|
| Hybrid switching devices and two-phase motor control | Minimum power loss and optimized motor control by avoiding DC components |
| Small and compact design | Space-saving, clearly arranged control panel layout |
| TIA-Integration – communication modules and HMI modules optional | Efficient configuration and maximum flexibility in automation engineering |
| Motor overload and intrinsic device protection without additional wiring | Adjustable trip classes, integrated diagnostics functions |
| Soft Torque | Reduced mechanical loading and optimum pump stop |
| Parameterization using potentiometers | Simple and fast commissioning |
| Wide range for control supply and main voltage | Low variance, high system availability even with weak supply networks |
| Certified according to ATEX/IECEx directive | Suitable for the starting of explosion-proof motors with "increased safety" type of protection |

## Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25252/td | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25252/faq |
| Equipment Manual "SIRIUS 3RW50 Soft Starter", see https://support.industry.siemens.com/cs/ww/en/view/109753750 | Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |

| Type | | | 3RW5055<br>3RW5056 | 3RW5072<br>3RW5073<br>3RW5074<br>3RW5075<br>3RW5076<br>3RW5077 |
|---|---|---|---|---|
| **Installation/fixing/dimensions** | | | | |
| **Width x height x depth** |  | mm | 120 × 198 × 249 | 160 × 230 × 282 |
| **Type of mounting** | | | Screw fixing | |
| **Mounting position** | | | For vertical mounting surface can be rotated +/- 90°,<br>for vertical mounting surface can be tilted +/- 22.5° forward or backward | |
| **Distance to be maintained with side-by-side mounting** | | | | |
| • Above | | mm | 100 | |
| • At the side | | mm | 5 | |
| • Below | | mm | 75 | |
| **Maximum installation altitude above sea level**[1] | | m | 5 000 | |
| **Degree of protection** | | | IP00 | |
| **Ambient conditions** | | | | |
| **Ambient temperature** | | | | |
| • During operation[2] | | °C | -25 ... +60 | |
| • During storage and transport | | °C | -40 ... +80 | |
| **Environmental category according to IEC 60721** | | | | |
| • During operation | | | 3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 | |
| • During storage | | | 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not enter the devices), 1M4 | |
| • During transport | | | 2K2, 2C1, 2S1, 2M2 (max. height of fall 0.3 m) | |

1) Derating from 1 000 m, see characteristic curve on page 7/7.
2) Note derating above 40 °C.

| Type | | 3RW50..-..B0. | 3RW50..-..B1. |
|---|---|---|---|
| **Control circuit/control** | | | |
| **Control supply voltage** | | | |
| • At AC/DC, rated value | V | 24/24 | --/-- |
| • At AC | V | -- | 110 ... 250 |
| • Relative negative tolerance/relative positive tolerance with AC | % | -20/20 | -15/10 |
| • Relative negative tolerance/relative positive tolerance with DC | % | -20/20 | --/-- |
| **Frequency of the control supply voltage** | Hz | 50 ... 60 | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | |
| **Type of overvoltage protection** | | Varistors | |
| **Type of short-circuit protection for control circuit**[1] | | Fuse 4 A gG ($I_{cu}$ = 1 kA), fuse 6 A quick-response ($I_{cu}$ = 1 kA), MCB C1 ($I_{cu}$ = 600 A), MCB C6 ($I_{cu}$ = 300 A) | |

1) Not included in scope of supply

| Type | | 3RW50..-..B.4 | 3RW50..-..B.5 |
|---|---|---|---|
| **Power electronics** | | | |
| **Operational voltage, rated value** | V | 200 ... 480 | 200 ... 600 |
| • Relative negative tolerance/relative positive tolerance | % | -15/10 | |
| **Operating frequency, rated value** | Hz | 50 ... 60 | |
| • Relative negative tolerance/relative positive tolerance | % | -10/10 | |
| **Minimum load [% of $I_M$]**[1] | % | 15 | |
| **Maximum cable length between soft starter and motor** | m | 800 | |

1) Relative to the smallest adjustable $I_e$.

| Type | | 3RW5055 | 3RW5056 |
|---|---|---|---|
| **Rated operational current $I_e$** | A | 143 | 171 |
| **Power electronics** | | | |
| **Load rating with rated operational current $I_e$** | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 143/128/118 | 171/153/141 |
| ***Permissible rated motor current and starts/h*** | | | |
| **Normal starting (CLASS 10A)** | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 143/128/118 | 171/153/141 |
| • 300% $I_M$ - Start-up time 5 s | 1/h | 43 | 43 |
| - Start-up time 10 s | 1/h | 18 | 18 |
| • 350% $I_M$ - Start-up time 5 s | 1/h | 28 | 28 |
| - Start-up time 10 s | 1/h | 10 | 9 |
| **Normal starting (CLASS 10E)** | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 143/128/118 | 171/153/141 |
| • 300% $I_M$ - Start-up time 20 s | 1/h | 21 | 21 |
| - Start-up time 40 s | 1/h | 8 | 8 |
| • 350% $I_M$ - Start-up time 20 s | 1/h | 12 | 9 |
| - Start-up time 40 s | 1/h | 4 | -- |
| **Heavy starting (CLASS 20E)** | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 108/98/88 | 135/123/111 |
| • 300% $I_M$ - Start-up time 20 s | 1/h | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 |
| • 350% $I_M$ - Start-up time 20 s | 1/h | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 |
| **Adjustable rated motor current $I_M$** | | | |
| • Minimum/maximum | A | 68/143 | 81/117 |

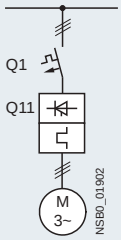
| Type | | 3RW5072 | 3RW5073 | 3RW5074 | 3RW5075 | 3RW5076 | 3RW5077 |
|---|---|---|---|---|---|---|---|
| **Rated operational current $I_e$** | A | 210 | 250 | 315 | 370 | 470 | 570 |
| **Power electronics** | | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | | |
| IEC + UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| ***Permissible rated motor current and starts/h*** | | | | | | | |
| **Normal starting (CLASS 10A)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 43 | 43 | 43 | 43 | 43 | 28 |
| - Start-up time 10 s | 1/h | 18 | 18 | 18 | 18 | 18 | 11 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 5 s | 1/h | 28 | 28 | 28 | 28 | 28 | 16 |
| - Start-up time 10 s | 1/h | 8 | 10 | 10 | 10 | 10 | 4 |
| **Normal starting (CLASS 10E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 210/186/170 | 250/220/200 | 315/279/255 | 370/328/300 | 470/416/380 | 570/504/460 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 21 | 21 | 21 | 21 | 20 | 21 |
| - Start-up time 40 s | 1/h | 8 | 8 | 8 | 8 | 7 | 8 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 8 | 13 | 12 | 13 | 12 | 13 |
| - Start-up time 40 s | 1/h | -- | 4 | 4 | 4 | 2 | 4 |
| **Heavy starting (CLASS 20E)** | | | | | | | |
| Rated motor current $I_M$, $T_u$ = 40/50/60 °C ON period = 70%; motor protection activated | A | 162/146/130 | 200/180/160 | 219/195/171 | 258/230/202 | 272/254/218 | 284/262/240 |
| • 300% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 10 | 10 | 10 | 10 | 10 | 10 |
| - Start-up time 40 s | 1/h | 4 | 4 | 4 | 4 | 4 | 4 |
| • 350% $I_M$ | | | | | | | |
| - Start-up time 20 s | 1/h | 7 | 7 | 7 | 7 | 7 | 7 |
| - Start-up time 40 s | 1/h | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| **Adjustable rated motor current $I_M$** | | | | | | | |
| • Minimum/maximum | A | 90/210 | 100/250 | 135/315 | 160/370 | 200/470 | 240/570 |

***Motor feeders according to IEC with 3VA motor starter protectors/circuit breakers (without semiconductor protection)***

Type of coordination "1", CLASS 10,
short-circuit breaking capacity $I_q$ in kA, see table

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | Motor starter protectors | | | |
|---|---|---|---|---|
| | for 400 V systems | | for 500 V systems | |
| Q11 | Q1 | $I_q$ | Q1 | $I_q$ |
| Type | Type | kA | Type | kA |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | |
| **3RW5055** | 3VA2220-7MN32-0AA0 | 20 | 3VA2220-7MN32-0AA0 | 20 |
| **3RW5056** | 3VA2220-7MN32-0AA0 | 20 | 3VA2220-7MN32-0AA0 | 20 |
| **3RW5072** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 |
| **3RW5073** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 |
| **3RW5074** | 3VA2440-7MN32-0AA0 | 65 | 3VA2440-7MN32-0AA0 | 65 |
| **3RW5075** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5076** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |
| **3RW5077** | 3VA2580-6HN32-0AA0 | 65 | 3VA2580-6HN32-0AA0 | 65 |

Note:

The service factor or measurement inaccuracies have been taken into account, for example, for the selection of the specified motor starter protectors/circuit breakers; the specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

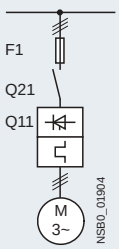
### *Motor feeders according to IEC with 3NA3 fuses*

gG class full-range fuses for cable and line protection according to IEC 60269-2, without semiconductor protection

Type of coordination "1",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | |
|---|---|---|---|
| | for systems up to 600 V | for systems up to 480 V | for systems up to 600 V |
| Q11 | F1 | Q21 | Q21 |
| Type | Type | Type | Type |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | |
| **3RW5055** | 3NA3244-6 | 3RT1055 | 3RT1055 |
| **3RW5056** | 3NA3244-6 | 3RT1056 | 3RT1064 |
| **3RW5072** | 2 x 3NA3354-6 | 3RT1064 | 3RT1064 |
| **3RW5073** | 2 x 3NA3354-6 | 3RT1065 | 3RT1065 |
| **3RW5074** | 2 x 3NA3365-6 | 3RT1075 | 3RT1075 |
| **3RW5075** | 2 x 3NA3365-6 | 3RT1075 | 3RT1075 |
| **3RW5076** | 2 x 3NA3365-6 | 3RT1076 | 3RT1076 |
| **3RW5077** | 2 x 3NA3365-6 | 3TF68 | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

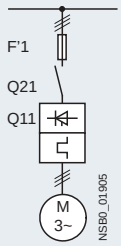
### *Motor feeders according to IEC with 3NE1 SITOR fuses*

gR class full-range fuses for semiconductor protection, cable and line protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | |
|---|---|---|---|
| | for systems up to 600 V | for systems up to 480 V | for systems up to 600 V |
| Q11 | F'1 | Q21 | Q21 |
| Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | |
| **3RW5055** | 3NE1227-0 | 3RT1055 | 3RT1055 |
| **3RW5056** | 3NE1230-0 | 3RT1056 | 3RT1064 |
| **3RW5072** | 3NE1230-2 | 3RT1064 | 3RT1064 |
| **3RW5073** | 3NE1331-0 | 3RT1065 | 3RT1065 |
| **3RW5074** | 3NE1333-2 | 3RT1075 | 3RT1075 |
| **3RW5075** | 3NE1334-2 | 3RT1075 | 3RT1075 |
| **3RW5076** | 3NE1436-2 | 3RT1076 | 3RT1076 |
| **3RW5077** | 3NE1437-2 | 3TF68 | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

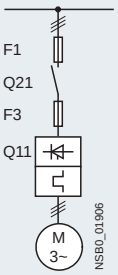
### *Motor feeders according to IEC with 3NE3 fuses*

aR class partial-range fuses for semiconductor protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | aR class fuse | Line contactor (optional) | |
|---|---|---|---|---|
| | for systems up to 600 V | for systems up to 600 V | for systems up to 480 V | for systems up to 600 V |
| Q11 | F1 | F3 | Q21 | Q21 |
| Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | |
| **3RW5055** | 3NA3244-6 | 3NE3334-0B | 3RT1055 | 3RT1055 |
| **3RW5056** | 3NA3244-6 | 3NE3335 | 3RT1056 | 3RT1064 |
| **3RW5072** | 2 x 3NA3354-6 | 3NE3333 | 3RT1064 | 3RT1064 |
| **3RW5073** | 2 x 3NA3354-6 | 3NE3335 | 3RT1065 | 3RT1065 |
| **3RW5074** | 2 x 3NA3365-6 | 3NE3335 | 3RT1075 | 3RT1075 |
| **3RW5075** | 2 x 3NA3365-6 | 3NE3336 | 3RT1075 | 3RT1075 |
| **3RW5076** | 2 x 3NA3365-6 | 3NE3340-8 | 3RT1076 | 3RT1076 |
| **3RW5077** | 2 x 3NA3365-6 | 3NE3340-8 | 3TF68 | 3TF68 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For CLASS 10 applications, as an alternative to the gG class full-range fuses for cable and line protection 3NA3 (F1), 3VA circuit breakers can also be used, possibly with reduced short-circuit breaking capacity (see page 7/76). In these cases optional line contactors can be dispensed with.

## Selection and ordering data

### *For normal starting (CLASS 10E)*

3RW5055

3RW5075

| At 40 °C | | | | At 50 °C | | | | | Size | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | | d | | | | |
| **Operational voltage 200 ... 480 V** | | | | | | | | | | | | | | |
| 143 | 37 | **75** | 90 | 128 | 30 | 30 | **100** | -- | S6 | 5 | **3RW5055-□□B□4** | | 1 | 1 unit |
| 171 | 45 | **90** | 110 | 153 | 30 | 40 | **100** | -- | S6 | 5 | **3RW5056-□□B□4** | | 1 | 1 unit |
| 210 | 55 | **110** | 132 | 186 | 40 | 50 | **150** | -- | S12 | 5 | **3RW5072-□□B□4** | | 1 | 1 unit |
| 250 | 75 | **132** | 160 | 220 | 50 | 60 | **150** | -- | S12 | 5 | **3RW5073-□□B□4** | | 1 | 1 unit |
| 315 | 90 | **160** | 200 | 279 | 60 | 75 | **200** | -- | S12 | 5 | **3RW5074-□□B□4** | | 1 | 1 unit |
| 370 | 110 | **200** | 250 | 328 | 75 | 100 | **250** | -- | S12 | 5 | **3RW5075-□□B□4** | | 1 | 1 unit |
| 470 | 132 | **250** | 315 | 416 | 100 | 125 | **350** | -- | S12 | 5 | **3RW5076-□□B□4** | | 1 | 1 unit |
| 570 | 160 | **315** | 355 | 504 | 125 | 150 | **400** | -- | S12 | 5 | **3RW5077-□□B□4** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5055-□□B□4 → **2 6** **A T** **0 1**

[1] 3RW50 soft starter with screw terminals for operational voltage up to 480 V: Standard delivery time SD = 1 day (d).

Note: For the constraints for the motor outputs specified here, see page 7/7.

| At 40 °C | | | | At 50 °C | | | | | Size | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current | Operating power for three-phase motors At 230 V | At 400 V | At 500 V | Operational current | Rating [hp] for three-phase motors At 200/208 V | At 220/230 V | At 460/480 V | At 575/600 V | | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | | d | | | | |
| **Operational voltage 200 ... 600 V** | | | | | | | | | | | | | | |
| 143 | 37 | **75** | 90 | 128 | 30 | 30 | **100** | 75 | S6 | 5 | **3RW5055-□□B□5** | | 1 | 1 unit |
| 171 | 45 | **90** | 110 | 153 | 30 | 40 | **100** | 100 | S6 | 5 | **3RW5056-□□B□5** | | 1 | 1 unit |
| 210 | 55 | **110** | 132 | 186 | 40 | 50 | **150** | 125 | S12 | 5 | **3RW5072-□□B□5** | | 1 | 1 unit |
| 250 | 75 | **132** | 160 | 220 | 50 | 60 | **150** | 150 | S12 | 5 | **3RW5073-□□B□5** | | 1 | 1 unit |
| 315 | 90 | **160** | 200 | 279 | 60 | 75 | **200** | 200 | S12 | 5 | **3RW5074-□□B□5** | | 1 | 1 unit |
| 370 | 110 | **200** | 250 | 328 | 75 | 100 | **250** | 250 | S12 | 5 | **3RW5075-□□B□5** | | 1 | 1 unit |
| 470 | 132 | **250** | 315 | 416 | 100 | 125 | **350** | 300 | S12 | 5 | **3RW5076-□□B□5** | | 1 | 1 unit |
| 570 | 160 | **315** | 355 | 504 | 125 | 150 | **400** | 400 | S12 | 5 | **3RW5077-□□B□5** | | 1 | 1 unit |

**Type of electrical connection for the control circuit**
Spring-loaded terminals
Screw terminals

**Product function**
Analog output
Thermistor motor protection

**Control supply voltage**
24 V AC/DC
110 ... 250 V AC

3RW5055-□□B□5 → **2 6** **A T** **0 1**

[1] 3RW50 soft starter with screw terminals for operational voltage up to 600 V: Standard delivery time SD = 2 days (d).

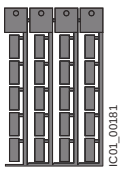
Note: For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | | |
| **Fan covers** | | | | | | | | | | |
| 3RW5985-0FC00 | **Fan cover** | 3RW50 (1x) | -- | -- | ▶ | **3RW5985-0FC00** | | 1 | 1 unit | 42S |
| **Box terminal block** | | | | | | | | | | |
| 3RT1956-4G | **Box terminal block for round and ribbon cables** | 3RW505 (2x) | Up to 70 mm² | -- | ▶ | **3RT1955-4G** | | 1 | 1 unit | 41B |
| | | | Up to 120 mm² | | ▶ | **3RT1956-4G** | | 1 | 1 unit | 41B |
| | | 3RW507 (2x) | Up to 240 mm² (with auxiliary conductor connection) | | ▶ | **3RT1966-4G** | | 1 | 1 unit | 41B |
| **Terminal covers** | | | | | | | | | | |
| 3RT1956-4EA2 | **Covers for box terminals** | 3RW505 (2x) | -- | -- | ▶ | **3RT1956-4EA2** | | 1 | 1 unit | 41B |
| | | 3RW507 (2x) | -- | -- | 2 | **3RT1966-4EA2** | | 1 | 1 unit | 41B |
| 3RT1956-4EA1 | **Covers for cable lugs and busbar connections** | 3RW505 (2x) | -- | -- | ▶ | **3RT1956-4EA1** | | 1 | 1 unit | 41B |
| | | 3RW507 (2x) | -- | -- | 2 | **3RT1966-4EA1** | | 1 | 1 unit | 41B |
| **Communication modules** | | | | | | | | | | |
| 3RW5980-0CS00 | **Communication module** | 3RW50 | PROFINET Standard | -- | ▶ | **3RW5980-0CS00** | | 1 | 1 unit | 42S |
| | | | PROFIBUS | | ▶ | **3RW5980-0CP00** | | 1 | 1 unit | 42S |
| | | | EtherNet/IP | | ▶ | **3RW5980-0CE00** | | 1 | 1 unit | 42S |
| | | | Modbus RTU | | ▶ | **3RW5980-0CR00** | | 1 | 1 unit | 42S |
| | | | Modbus TCP | | ▶ | **3RW5980-0CT00** | | 1 | 1 unit | 42S |
| 3RW5900-0CC00 | **COM connection cable** For mounting laterally on the device | 3RW50 | 0.3 m | -- | ▶ | **3RW5900-0CC00** | | 1 | 1 unit | 42S |

# Basic Performance Soft Starters

## 3RW50 soft starters > Accessories

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | Application | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|---|---|
| **HMI modules** | | | | | | | | | | |
| 3RW5980-0HF00 | **HMI module** | 3RW50 | High Feature | -- | ▶ | **3RW5980-0HF00** | | 1 | 1 unit | 42S |
| 3RW5980-0HS00 | | | Standard | -- | ▶ | **3RW5980-0HS00** | | 1 | 1 unit | 42S |
| 3RW5980-0HD00 | **IP65 door mounting kit for HMI modules** | 3RW50 | IP65 | For HMI modules | ▶ | **3RW5980-0HD00** | | 1 | 1 unit | 42S |
| **Connecting cables** | | | | | | | | | | |
| 3UF793.-0BA00-0 | **HMI connection cable** | 3RW50 | 5 m, round | For door mounting | ▶ | **3RW5980-0HC60** | | 1 | 1 unit | 42S |
| | | | 2.5 m, round | | ▶ | **3UF7933-0BA00-0** | | 1 | 1 unit | 42J |
| | | | 1.0 m, round | | ▶ | **3UF7937-0BA00-0** | | 1 | 1 unit | 42J |
| | | | 0.5 m, round | | ▶ | **3UF7932-0BA00-0** | | 1 | 1 unit | 42J |
| **Further accessories** | | | | | | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs for wall mounting** | -- | Two lugs are required per device | For HMI modules and communication modules | 2 | **3ZY1311-0AA00** | | 1 | 10 units | 41L |
| **Blank labels** | | | | | | | | | | |
|   3RT2900-1SB20 | **Unit labeling plates**[1] | -- | 20 mm x 7 mm, titanium gray | For SIRIUS devices | 20 | **3RT2900-1SB20** | | 100 | 340 units | 41B |

[1] PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/15).

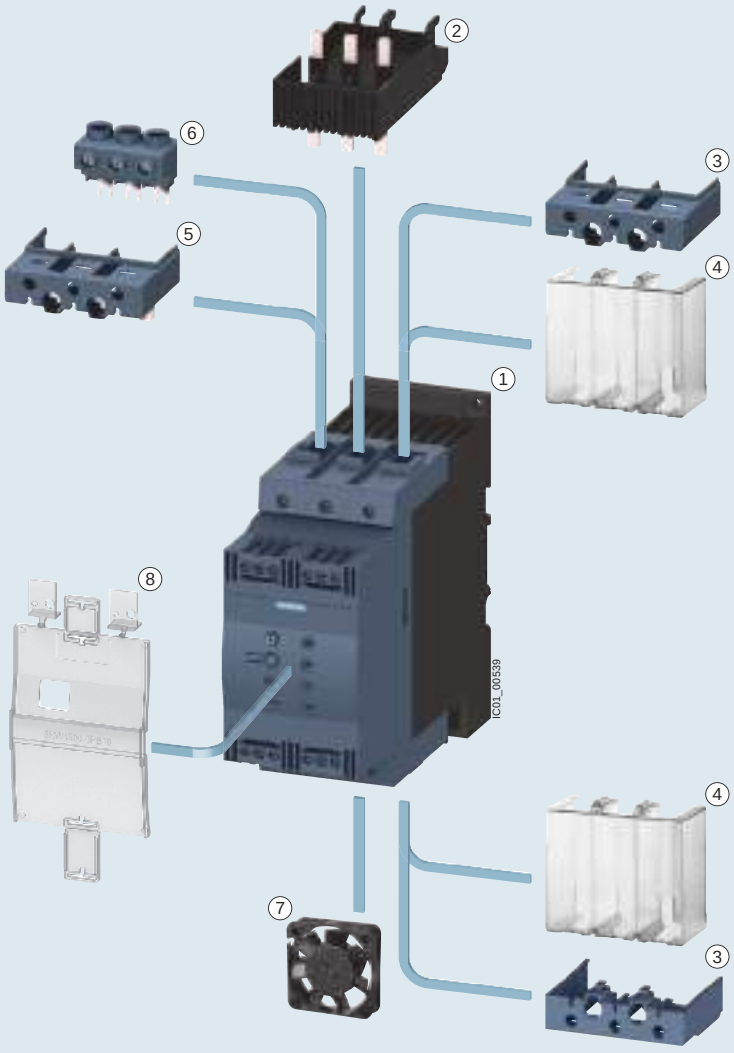
## Overview

| More information | |
|---|---|
| Homepage, see www.usa.siemens.com/soft-starter<br>Industry Mall, see www.siemens.com/product?3RW40 | TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=3rw40<br>Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917 |

The SIRIUS 3RW40 Basic Performance soft starters are suitable for soft starting and stopping of three-phase asynchronous motors.

Thanks to two-phase control, not only is the current kept at minimum values in all three phases throughout the entire starting time, but disturbing direct current components are also eliminated. This not only enables the two-phase starting of motors from 7.5 to 75HP @ 480V but also avoids the current and torque peaks which occur e.g. with wye-delta starters.

The SIRIUS 3RW40 soft starters are suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e according to ATEX Directive 94/9/EC.




1. 3RW40 soft starter
2. Link module to motor starter protector
3. Terminal cover for box terminals (S2, S3)
4. Terminal cover for cable lug and busbar connections (S3)
5. Auxiliary terminal (S3)
6. Infeed terminal (S0)
7. Fan
8. Sealing cover

3RW40 Basic Performance soft starters with accessories (see page 7/92)

## Benefits

3RW402.

3RW403.

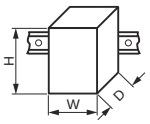
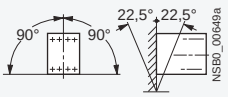
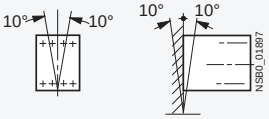
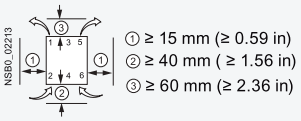
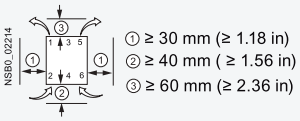
3RW404.

| Product characteristics / function | Performance features / benefits |
|---|---|
| Small and compact design | Space-saving, clearly arranged control panel layout |
| Motor overload and intrinsic device protection without additional wiring | Adjustable trip classes, integrated diagnostics functions |
| Integrated in the SIRIUS modular system | Link modules to motor starter protectors |
| Hybrid switching devices and two-phase motor control | Minimum power loss and optimized motor control by avoiding DC components |
| Certified according to ATEX Directive 94/9/EC | Suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e. |
| Optional thermistor motor protection | Full motor protection |

## Technical specifications

**More information**

Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25252/td
Equipment Manual "SIRIUS 3RW30/3RW40 Soft Starter", see https://support.industry.siemens.com/cs/ww/en/view/38752095
FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25251/faq
Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917

| Type | | | 3RW402. | 3RW403. | 3RW404. |
|---|---|---|---|---|---|
| **Mechanics and environment** | | | | | |
| **Mounting dimensions (W x H x D)** |  | | | | |
| • Screw terminals | | mm | 45 x 125 x 154 | 55 x 144 x 170 | 70 x 160 x 188 |
| • Spring-loaded terminals | | mm | 45 x 150 x 154 | 55 x 144 x 170 | 70 x 160 x 188 |
| **Permissible ambient temperature** | | | | | |
| During operation | | °C | -25 ... +60; (derating from +40) | | |
| During storage | | °C | -40 ... +80 | | |
| **Weight** | | kg | 0.77 | 1.35 | 1.9 |
| **Permissible mounting position**[1] | | | | | |
| • With auxiliary fan (for 3RW402. ... 3RW404.) |  | | | | |
| • Without auxiliary fan (for 3RW402. ... 3RW404.) |  | | | | |
| **Installation type**[1] | Stand-alone installation | |  ① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm ( ≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in) |  ① ≥ 30 mm (≥ 1.18 in) ② ≥ 40 mm ( ≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in) | |
| **Permissible installation altitude** | | m | 5 000 (Derating from 1 000, see characteristic curve on page 7/7) | | |
| **Degree of protection** | | | IP00 | | |

[1] In the case of deviations, please observe derating, see Equipment Manual in the chapter "Configuring".

| Type | Terminal | | 3RW402., 3RW403., 3RW404. | |
|---|---|---|---|---|
| **Control electronics** | | | | |
| **Rated values** | | | | |
| Rated control supply voltage | A1/A2 | V | 24 AC/DC | 110 ... 230 AC/DC |
| • Tolerance | | % | ± 20 | -15/+10 |
| Rated frequency | | Hz | 50/60 | |
| • Tolerance | | % | ± 10 | |

| Type | | 3RW402.-..B.4, 3RW403.-..B.4, 3RW404.-..B.4 | 3RW402.-..B.5, 3RW403.-..B.5, 3RW404.-..B.5 |
|---|---|---|---|
| **Power electronics** | | | |
| **Rated operational voltage** | V AC | 200 ... 480 | 400 ... 600 |
| Tolerance | % | -15/+10 | |
| **Maximum blocking voltage (thyristor)** | V AC | 1 600 | |
| **Rated frequency** | Hz | 50/60 | |
| Tolerance | % | ± 10 | |
| **Uninterrupted duty** at 40 °C (% of $I_e$) | % | 115 | |
| **Minimum load** (% of smallest adjustable rated motor current $I_M$) | % | 20 (at least 2 A) | |
| **Maximum cable length** between soft starter and motor | m | 300 | |

# Basic Performance Soft Starters

## 3RW40 soft starters > General data

| Type | | 3RW4024 | 3RW4026 | 3RW4027 | 3RW4028 |
|---|---|---|---|---|---|
| **Power electronics** | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | |
| • According to IEC and UL/CSA[1], individual mounting at 40/50/60 °C, AC-53a | A | 12.5/11/10 | 25.3/23/21 | 32.2/29/26 | 38/34/31 |
| **Smallest adjustable rated motor current $I_M$** | | | | | |
| For the motor overload protection | A | 5 | 10 | 17 | 23 |
| **Power loss** | | | | | |
| • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. | W | 2 | 8 | 13 | 19 |
| • During starting with current limiting set to 300% $I_M$ (40 °C) | W | 68 | 188 | 220 | 256 |
| **Permissible rated motor current and starts per hour** | | | | | |
| • For normal starting (CLASS 10) at 40/50 °C | | | | | |
| - Rated motor current $I_M$[2], start-up time 3 s | A | 12.5/11 | 25/23 | 32/29 | 38/34 |
| - Starts per hour[3] | 1/h | 50/50 | 23/23 | 23/23 | 19/19 |
| - Rated motor current $I_M$[2], start-up time 4 s | A | 12.5/11 | 25/23 | 32/29 | 38/34 |
| - Starts per hour[3] | 1/h | 36/36 | 15/15 | 16/16 | 12/12 |
| • For heavy starting (CLASS 20) at 40/50 °C | | | | | |
| - Rated motor current $I_M$[2], start-up time 6 s | A | 10/9 | 21/19 | 27/24 | 31/28 |
| - Starts per hour[3] | 1/h | 47/47 | 21/21 | 20/20 | 18/18 |
| - Rated motor current $I_M$[2], start-up time 8 s | A | 10/9 | 21/19 | 27/24 | 31/28 |
| - Starts per hour[3] | 1/h | 34/34 | 15/15 | 14/14 | 13/13 |

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limiting on soft starter set to 300% $I_M$, $T_u$ = 40/50 °C. Maximum adjustable rated motor current $I_M$ dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 30%, $T_u$ = 40/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency in other mounting position, direct mounting, side-by-side mounting, and implementation of optional auxiliary fan, see Equipment Manual in the chapter "Configuring".

| Type | | 3RW4036 | 3RW4037 | 3RW4038 | 3RW4046 | 3RW4047 |
|---|---|---|---|---|---|---|
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| • According to IEC and UL/CSA[1], individual mounting at 40/50/60 °C, AC-53a | A | 45/42/39 | 63/58/53 | 72/62.1/60 | 80/73/66 | 106/98/90 |
| **Smallest adjustable rated motor current $I_M$** | | | | | | |
| For the motor overload protection | A | 23 | 26 | 35 | 43 | 46 |
| **Power loss** | | | | | | |
| • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. | W | 6 | 12 | 15 | 12 | 21 |
| • During starting with current limiting set to 300% $I_M$ (40 °C) | W | 316 | 444 | 500 | 576 | 768 |
| **Permissible rated motor current and starts per hour** | | | | | | |
| • For normal starting (CLASS 10) at 40/50 °C | | | | | | |
| - Rated motor current $I_M$[2], start-up time 3 s | A | 45/42 | 63/58 | 72/62 | 80/73 | 106/98 |
| - Starts per hour[3] | 1/h | 38/38 | 23/23 | 22/22 | 22/22 | 15/15 |
| - Rated motor current $I_M$[2], start-up time 4 s | A | 45/42 | 63/58 | 72/62 | 80/73 | 106/98 |
| - Starts per hour[3] | 1/h | 26/26 | 15/15 | 15/15 | 15/15 | 10/10 |
| • For heavy starting (CLASS 20) at 40/50 °C | | | | | | |
| - Rated motor current $I_M$[2], start-up time 6 s | A | 38/34 | 46/42 | 50/46 | 64/58 | 77/70 |
| - Starts per hour[3] | 1/h | 30/30 | 31/31 | 34/34 | 23/23 | 23/23 |
| - Rated motor current $I_M$[2], start-up time 8 s | A | 38/34 | 46/42 | 50/46 | 64/58 | 77/70 |
| - Starts per hour[3] | 1/h | 21/21 | 22/22 | 24/24 | 16/16 | 16/16 |

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limiting on soft starter set to 300% $I_M$, $T_u$ = 40/50 °C. Maximum adjustable rated motor current $I_M$ dependent on CLASS setting.

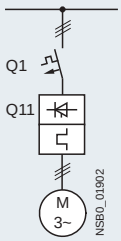
3) For intermittent duty S4 with ON period = 30%, $T_u$ = 40/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency in other mounting position, direct mounting, side-by-side mounting, and implementation of optional auxiliary fan, see Equipment Manual in the chapter "Configuring".

***Motor feeders according to IEC with 3RV2 motor starter protectors (without semiconductor protection)***

Type of coordination "1", CLASS 10,
short-circuit breaking capacity $I_q$ in kA, see table

Note:

For general recommendations for constructing motor feeders
with soft starters, see page 7/9.




| Soft starters | Motor starter protectors | | | |
|---|---|---|---|---|
| | for 400 V systems | | for 500 V systems | |
| Q11 | Q1 | $I_q$ | Q1 | $I_q$ |
| Type | Type | kA | Type | kA |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | | |
| **3RW4024** | 3RV2021-4AA10 | 55 | 3RV2021-4AA10 | 10 |
| **3RW4026** | 3RV2021-4DA10 | 55 | 3RV2021-4DA10 | 10 |
| **3RW4027** | 3RV2021-4EA10 | 55 | 3RV2021-4EA10 | 10 |
| **3RW4028** | 3RV2021-4FA10 | 55 | 3RV2021-4FA10 | 10 |
| **3RW4036** | 3RV2031-4WA10 | 10 | 3RV2031-4WA10 | 10 |
| **3RW4037** | 3RV2031-4JA10 | 10 | 3RV2031-4JA10 | 5 |
| **3RW4038** | 3RV2031-4KA10 | 10 | 3RV2031-4KA10 | 5 |
| **3RW4046** | 3RV2041-4RA10 | 11 | 3RV2041-4YA10 | 5 |
| **3RW4047** | 3RV2041-4MA10 | 11 | 3RV2041-4MA10 | 5 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

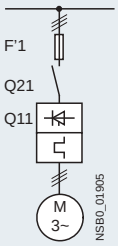
### *Motor feeders according to IEC with 3NE1 SITOR fuses*

gR class full-range fuses for semiconductor protection, cable and line protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | | |
|---|---|---|---|---|
| | for systems up to 600 V | for systems up to 400 V | for systems up to 480 V | for systems up to 600 V |
| Q11 | F'1 | Q21 | Q21 | Q21 |
| Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | |
| **3RW4024** | 3NE1814-0 | 3RT2025 | 3RT2025/ 3RT2018 (in size S00) | 3RT2025 |
| **3RW4026** | 3NE1803-0 | 3RT2026 | 3RT2027 | 3RT2037 |
| **3RW4027** | 3NE1020-2 | 3RT2027 | 3RT2028 | 3RT2037 |
| **3RW4028** | 3NE1020-2 | 3RT2028 | 3RT2035 | 3RT2037 |
| **3RW4036** | 3NE1020-2 | 3RT2036 | 3RT2036 | 3RT2038 |
| **3RW4037** | 3NE1820-0 | 3RT2037 | 3RT2037 | 3RT2046 |
| **3RW4038** | 3NE1820-0 | 3RT2038 | 3RT2038 | 3RT2046 |
| **3RW4046** | 3NE1021-0 | 3RT2045 | 3RT2045 | 3RT2047 |
| **3RW4047** | 3NE1022-0 | 3RT2047 | 3RT2047 | 3RT1054 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

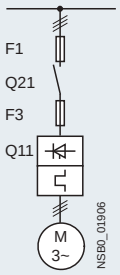
### *Motor feeders according to IEC with 3NE8 / 3NE4 / 3NE3 / 3NC fuses*

aR class partial-range fuses for semiconductor protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | aR class fuse | | | Cylindrical fuses | Line contactor (optional) | | |
|---|---|---|---|---|---|---|---|---|
| | for systems up to 600 V | for systems up to 600 V | for systems up to 600 V | for systems up to 600 V | for systems up to 480 V | for systems up to 400 V | for systems up to 480 V | for systems up to 600 V |
| Q11 | F1 | F3 | F3 | F3 | F3 | Q21 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | | | | | |
| **3RW4024** | 3NA3820-6 | -- | 3NE4101 | 3NE8015-1 | 3NC2240 | 3RT2025 | 3RT2025/ 3RT2018 (in size S00) | 3RT2025 |
| **3RW4026** | 3NA3822-6 | -- | 3NE4102 | 3NE8017-1 | 3NC2263 | 3RT2026 | 3RT2027 | 3RT2037 |
| **3RW4027** | 3NA3824-6 | -- | 3NE4118 | 3NE8018-1 | 3NC2280 | 3RT2027 | 3RT2028 | 3RT2037 |
| **3RW4028** | 3NA3824-6 | -- | 3NE4118 | 3NE8020-1 | 3NC2280 | 3RT2028 | 3RT2035 | 3RT2037 |
| **3RW4036** | 3NA3130-6 | -- | 3NE4120 | 3NE8020-1 | 3NC2280 | 3RT2036 | 3RT2036 | 3RT2038 |
| **3RW4037** | 3NA3132-6 | -- | 3NE4121 | 3NE8021-1 | -- | 3RT2037 | 3RT2037 | 3RT2046 |
| **3RW4038** | 3NA3132-6 | 3NE3221 | -- | 3NE8022-1 | -- | 3RT2038 | 3RT2038 | 3RT2046 |
| **3RW4046** | 3NA3136-6 | 3NE3222 | -- | 3NE8022-1 | -- | 3RT2045 | 3RT2045 | 3RT2047 |
| **3RW4047** | 3NA3136-6 | 3NE3224 | -- | 3NE8024-1 | -- | 3RT2047 | 3RT2047 | 3RT1054 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For CLASS 10 applications, as an alternative to the gG class full-range fuses for cable and line protection 3NA3 (F1), 3RV2 motor starter protectors can also be used, possibly with reduced short-circuit breaking capacity (see page 7/87). In these cases, optional line contactors can be dispensed with.

# Basic Performance Soft Starters

## 3RW40 soft starters > Inline circuit *IE3/IE4* ready

### Selection and ordering data

***For normal starting (CLASS 10)***

3RW402.

3RW403.

3RW404.

| 3RW ambient temperature 40 °C<br>Rated values of three-phase motors | | | | 3RW ambient temperature 50 °C<br>Rated values of three-phase motors | | | | | Size | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ | Rating at operational voltage $U_e$ 230 V | 400 V | 500 V | Operational current $I_e$ | Rating at operational voltage $U_e$ 200 V | 230 V | 460 V | 575 V | | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | | d | | | | |
| **Rated operational voltage $U_e$ 200 ... 480 V** | | | | | | | | | | | | | | |
| 12.5 | 3 | **5.5** | -- | 11 | 3 | 3 | **7.5** | -- | **S0** | 2 | **3RW4024-□BB□4** | | 1 | 1 unit |
| 25 | 5.5 | **11** | -- | 23 | 5 | 5 | **15** | -- | **S0** | 2 | **3RW4026-□BB□4** | | 1 | 1 unit |
| 32 | 7.5 | **15** | -- | 29 | 7.5 | 7.5 | **20** | -- | **S0** | 2 | **3RW4027-□BB□4** | | 1 | 1 unit |
| 38 | 11 | **18.5** | -- | 34 | 10 | 10 | **25** | -- | **S0** | 2 | **3RW4028-□BB□4** | | 1 | 1 unit |
| 45 | 11 | **22** | -- | 42 | 10 | 15 | **30** | -- | **S2** | 2 | **3RW4036-□BB□4** | | 1 | 1 unit |
| 63 | 18.5 | **30** | -- | 58 | 15 | 20 | **40** | -- | **S2** | 2 | **3RW4037-□BB□4** | | 1 | 1 unit |
| 72 | 22 | **37** | -- | 62 | 20 | 20 | **40** | -- | **S2** | 2 | **3RW4038-□BB□4** | | 1 | 1 unit |
| 80 | 22 | **45** | -- | 73 | 20 | 25 | **50** | -- | **S3** | 2 | **3RW4046-□BB□4** | | 1 | 1 unit |
| 106 | 30 | **55** | -- | 98 | 30 | 30 | **75** | -- | **S3** | 2 | **3RW4047-□BB□4** | | 1 | 1 unit |
| **Rated operational voltage $U_e$ 400 ... 600 V** | | | | | | | | | | | | | | |
| 12.5 | -- | 5.5 | **7.5** | 11 | -- | -- | 7.5 | **10** | **S0** | 5 | **3RW4024-□BB□5** | | 1 | 1 unit |
| 25 | -- | 11 | **15** | 23 | -- | -- | 15 | **20** | **S0** | 5 | **3RW4026-□BB□5** | | 1 | 1 unit |
| 32 | -- | 15 | **18.5** | 29 | -- | -- | 20 | **25** | **S0** | 5 | **3RW4027-□BB□5** | | 1 | 1 unit |
| 38 | -- | 18.5 | **22** | 34 | -- | -- | 25 | **30** | **S0** | 5 | **3RW4028-□BB□5** | | 1 | 1 unit |
| 45 | -- | 22 | **30** | 42 | -- | -- | 30 | **40** | **S2** | 5 | **3RW4036-□BB□5** | | 1 | 1 unit |
| 63 | -- | 30 | **37** | 58 | -- | -- | 40 | **50** | **S2** | 5 | **3RW4037-□BB□5** | | 1 | 1 unit |
| 72 | -- | 37 | **45** | 62 | -- | -- | 40 | **60** | **S2** | 5 | **3RW4038-□BB□5** | | 1 | 1 unit |
| 80 | -- | 45 | **55** | 73 | -- | -- | 50 | **60** | **S3** | 5 | **3RW4046-□BB□5** | | 1 | 1 unit |
| 106 | -- | 55 | **75** | 98 | -- | -- | 75 | **75** | **S3** | 5 | **3RW4047-□BB□5** | | 1 | 1 unit |

**Article No. supplement for connection types**

- Screw terminals **1 2**
- Spring-loaded terminals[2] **1 2**

**Control supply voltage**

- 24 V AC/DC **0 1**
- 110 ... 230 V AC/DC **0 1**

[1] Soft starter $U_e$ 200 to 480 V with screw terminals: Standard delivery time SD = 1 day (d).

[2] Main connection from size S2: screw terminals.

Note:

For the constraints for the motor outputs specified here, see page 7/7.

# Basic Performance Soft Starters

## 3RW40 soft starters > Inline circuit *IE3/IE4* ready

***For normal starting (CLASS 10)***

3RW402.

3RW403.

3RW404.

| 3RW ambient temperature 40 °C<br>Rated values of three-phase motors | | | | 3RW ambient temperature 50 °C<br>Rated values of three-phase motors | | | | | Size | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ | Rating at operational voltage $U_e$ 230 V | 400 V | 500 V | Operational current $I_e$ | Rating at operational voltage $U_e$ 200 V | 230 V | 460 V | 575 V | | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | | d | | | | |
| **Rated operational voltage $U_e$ 200 ... 480 V, with thermistor motor protection, rated control supply voltage $U_s$ 24 V AC/DC** | | | | | | | | | | | | | | |
| 12.5 | 3 | **5.5** | -- | 11 | 3 | 3 | **7.5** | -- | **S0** | 5 | **3RW4024-□TB04** | | 1 | 1 unit |
| 25 | 5.5 | **11** | -- | 23 | 5 | 5 | **15** | -- | **S0** | 5 | **3RW4026-□TB04** | | 1 | 1 unit |
| 32 | 7.5 | **15** | -- | 29 | 7.5 | 7.5 | **20** | -- | **S0** | 5 | **3RW4027-□TB04** | | 1 | 1 unit |
| 38 | 11 | **18.5** | -- | 34 | 10 | 10 | **25** | -- | **S0** | 5 | **3RW4028-□TB04** | | 1 | 1 unit |
| 45 | 11 | **22** | -- | 42 | 10 | 15 | **30** | -- | **S2** | 5 | **3RW4036-□TB04** | | 1 | 1 unit |
| 63 | 18.5 | **30** | -- | 58 | 15 | 20 | **40** | -- | **S2** | 5 | **3RW4037-□TB04** | | 1 | 1 unit |
| 72 | 22 | **37** | -- | 62 | 20 | 20 | **40** | -- | **S2** | 5 | **3RW4038-□TB04** | | 1 | 1 unit |
| 80 | 22 | **45** | -- | 73 | 20 | 25 | **50** | -- | **S3** | 5 | **3RW4046-□TB04** | | 1 | 1 unit |
| 106 | 30 | **55** | -- | 98 | 30 | 30 | **75** | -- | **S3** | 5 | **3RW4047-□TB04** | | 1 | 1 unit |
| **Rated operational voltage $U_e$ 400 ... 600 V, with thermistor motor protection, rated control supply voltage $U_s$ 24 V AC/DC** | | | | | | | | | | | | | | |
| 12.5 | -- | 5.5 | **7.5** | 11 | -- | -- | 7.5 | **10** | **S0** | 5 | **3RW4024-□TB05** | | 1 | 1 unit |
| 25 | -- | 11 | **15** | 23 | -- | -- | 15 | **20** | **S0** | 5 | **3RW4026-□TB05** | | 1 | 1 unit |
| 32 | -- | 15 | **18.5** | 29 | -- | -- | 20 | **25** | **S0** | 5 | **3RW4027-□TB05** | | 1 | 1 unit |
| 38 | -- | 18.5 | **22** | 34 | -- | -- | 25 | **30** | **S0** | 5 | **3RW4028-□TB05** | | 1 | 1 unit |
| 45 | -- | 22 | **30** | 42 | -- | -- | 30 | **40** | **S2** | 5 | **3RW4036-□TB05** | | 1 | 1 unit |
| 63 | -- | 30 | **37** | 58 | -- | -- | 40 | **50** | **S2** | 5 | **3RW4037-□TB05** | | 1 | 1 unit |
| 72 | -- | 37 | **45** | 62 | -- | -- | 40 | **60** | **S2** | 5 | **3RW4038-□TB05** | | 1 | 1 unit |
| 80 | -- | 45 | **55** | 73 | -- | -- | 50 | **60** | **S3** | 5 | **3RW4046-□TB05** | | 1 | 1 unit |
| 106 | -- | 55 | **75** | 98 | -- | -- | 75 | **75** | **S3** | 5 | **3RW4047-□TB05** | | 1 | 1 unit |

**Article No. supplement for connection types**

- Screw terminals
- Spring-loaded terminals[2)]

**1**
**2**

[1)] Soft starter $U_e$ 200 to 480 V with screw terminals: Standard delivery time SD = 1 day (d).

[2)] Main connection from size S2: screw terminals.

Note:

For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

| | Conductor cross-section | | | Tightening torque | For soft starters size | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solid or stranded | Finely stranded with end sleeve | AWG cables, solid or stranded | | | | | | | |
| | mm² | mm² | AWG | Nm | | d | | | | |
| **Three-phase infeed terminals** | | | | | | | | | | |
| 3RV2925-5AB | 2.5 … 25 | 2.5 … 16 | 10 ... 4 | 3 ... 4 | **S0** (3RW402.) | ► | **3RV2925-5AB** | | 1 | 1 unit |

| | For soft starters Type | Size | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Auxiliary terminals** | | | | | | | | |
| 3RT2946-4F | **Auxiliary terminals, 3-pole** | | | | | | | |
| | 3RW404. | **S3** | For connection of auxiliary and control cables (0.5 ... 2.5 mm²) to the main conductor terminals | 5 | **3RT2946-4F** | | 1 | 1 unit |
| **Covers for soft starters** | | | | | | | | |
| 3RT2936-4EA2 | **Terminal covers for box terminals** | | | | | | | |
| | 3RW403. | **S2** | Additional touch protection to be fitted at the box terminals (two units required per device) | ► | **3RT2936-4EA2** | | 1 | 1 unit |
| | 3RW404. | **S3** | | ► | **3RT2946-4EA2** | | 1 | 1 unit |
| 3RT1946-4EA1 | **Terminal covers for cable lugs and busbar connections** | | | | | | | |
| | 3RW404. | **S3** | For complying with the voltage clearances and as touch protection if box terminal is removed (two units required per device) | 5 | **3RT1946-4EA1** | | 1 | 1 unit |
| 3RW4900-0PB10 | **Sealing covers** | | | | | | | |
| | 3RW402. to 3RW404. | **S0, S2, S3** | -- | 5 | **3RW4900-0PB10** | | 1 | 1 unit |

## Standard mounting rail adapters

3RA2932-1CA00

| For motor starter protectors Size | For soft starters Size | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **S2** | **S2** | For mechanical fixing of motor starter protector and soft starter; for snapping onto standard mounting rail or for screw fixing<br>**Single-unit packaging** | 2 | **3RA2932-1CA00** | | 1 | 1 unit |

## Fans (to increase switching frequency and for device mounting in positions different to the standard position)

3RW49..-8VB00

| For soft starters Type | Size | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| 3RW402. | **S0** | ▶ | **3RW4928-8VB00** | | 1 | 1 unit |
| 3RW403., 3RW404. | **S2, S3** | ▶ | **3RW4947-8VB00** | | 1 | 1 unit |

## Link modules to motor starter protectors[1)]

3RA2921-1BA00

3RA2921-2GA00

| For soft starters Type | Size | Motor starter protectors Size | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | **Screw terminals** | | | |
| 3RW402. | **S0** | **S00/S0** | 2 | **3RA2921-1BA00** | | 1 | 1 unit |
| 3RW4036 | **S2** | **S2** | ▶ | **3RA2931-1AA00** | | 1 | 1 unit |
| 3RW404. | **S3** | **S3** | ▶ | **3RA1941-1AA00** | | 1 | 1 unit |
| | | | | **Spring-loaded terminals** | | | |
| 3RW402. | **S0** | **S0** | 2 | **3RA2921-2GA00** | | 1 | 1 unit |

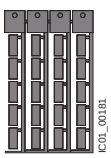
1) Can be used in size S0 up to 32 A.
Can be used in size S2 up to 65 A in combination with 3RA2932-1CA00 standard mounting rail adapter (specially for soft starters).
Can be used in size S3 only with mounting plate.

## Tools for opening spring-loaded terminals in sizes S00 and S0

3RA2908-1A

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Screwdrivers**<br>For all SIRIUS devices with spring-loaded terminals | | **Spring-loaded terminals** | | | |
| Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

## Blank labels



3RT2900-1SB20

| | | | | | | |
|---|---|---|---|---|---|---|
| **Unit labeling plates[1)]**<br>For SIRIUS devices<br>20 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB20** | | 100 | 340 units |

1) PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/14).

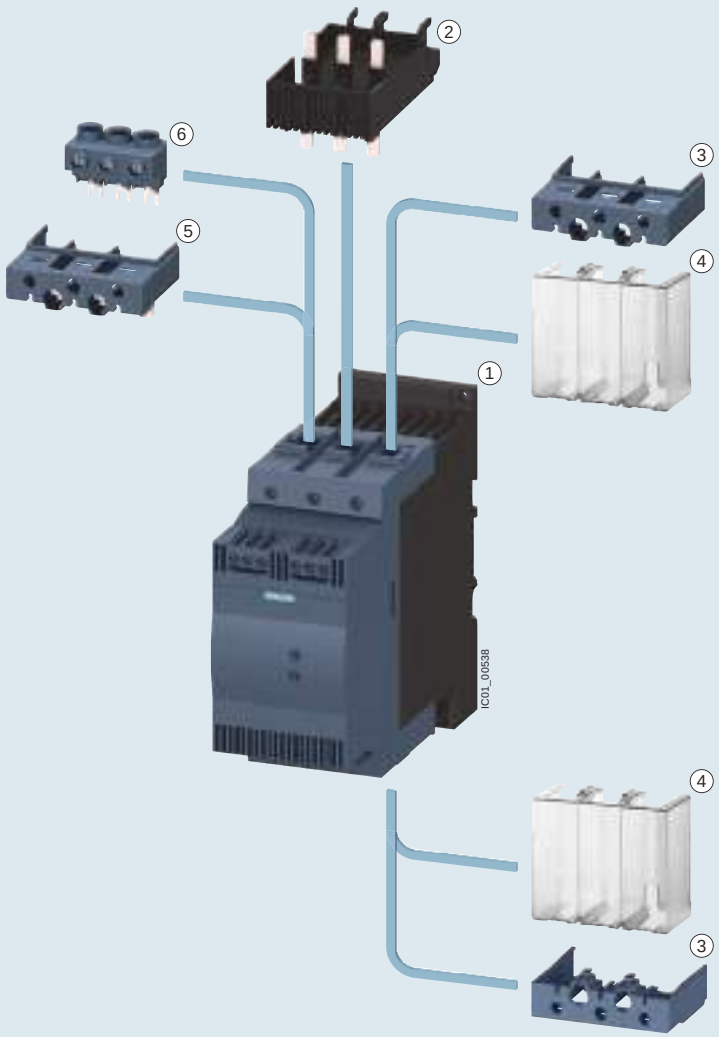
## Overview

**More information**

Homepage, see www.usa.siemens.com/soft-starter
Industry Mall, see www.siemens.com/product?3RW
TIA Selection Tool Cloud (TST Cloud), see https://www.siemens.com/tstcloud/?node=3rw30
Simulation Tool for Soft Starters (STS), see page 7/7 or https://support.industry.siemens.com/cs/ww/en/view/101494917
SIRIUS Soft Starter ES (TIA Portal), see page 14/5

The SIRIUS 3RW30 Basic Performance soft starters are suitable for soft starting of three-phase asynchronous motors.

Thanks to two-phase control, not only is the current kept at minimum values in all three phases throughout the entire starting time, but disturbing direct current components are also eliminated. This not only enables the two-phase starting of motors from 1.5 to 75HP @ 480V but also avoids the current and torque peaks which occur e.g. with wye-delta starters.




1 3RW30 soft starter
2 Link module to motor starter protector
3 Terminal cover for box terminals (S2, S3)
4 Terminal cover for cable lugs and busbar connections (S3)
5 Auxiliary terminal (S3)
6 Infeed terminal (S00, S0)

3RW30 Basic Performance soft starters with accessories (see page 7/103)

# Basic Performance Soft Starters



## Benefits

3RW301.

3RW302.

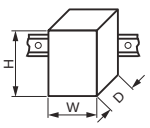
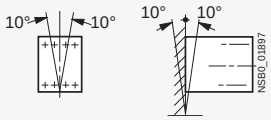
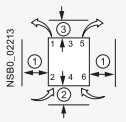
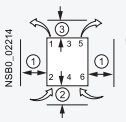
3RW303.

3RW304.

| Product characteristics / function | Performance features / benefits |
|---|---|
| Small and compact design | Space-saving, clearly arranged control panel layout |
| Parameterization using potentiometers | Simple and fast commissioning |
| Integrated in the SIRIUS modular system | Link modules to motor starter protectors |
| Hybrid switching devices and two-phase motor control | Minimum power loss and optimized motor control by avoiding DC components |

## Technical specifications

| More information | |
|---|---|
| Equipment Manual “SIRIUS 3RW30/3RW40 Soft Starters”, see https://support.industry.siemens.com/cs/ww/en/view/38752095<br>FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16213/faq | Catalog LV 10, see www.siemens.com/lowvoltage/lv10 |

| Type | | | 3RW301. | 3RW302. | 3RW303. | 3RW304. |
|---|---|---|---|---|---|---|
| **Mechanics and environment** | | | | | | |
| **Mounting dimensions (W x H x D)**<br>• Screw terminals<br>• Spring-loaded terminals |  | mm<br>mm | 45 x 95 x 151<br>45 x 117 x 151 | 45 x 125 x 151<br>45 x 150 x 151 | 55 x 144 x 168<br>55 x 144 x 168 | 70 x 160 x 186<br>70 x 160 x 186 |
| **Permissible ambient temperature**<br>During operation<br>During storage | | °C<br>°C | -25 ... +60; (derating from +40)<br>-40 ... +80 | | | |
| **Weight** | | kg | 0.58 | 0.69 | 1.20 | 1.71 |
| **Permissible mounting position**[1]<br>(auxiliary fan not possible) | | |  | | | |
| **Installation type**[1] | Stand-alone installation | |  ① ≥ 15 mm (≥ 0.59 in)<br>② ≥ 40 mm ( ≥ 1.56 in)<br>③ ≥ 60 mm (≥ 2.36 in) | |  ① ≥ 30 mm (≥ 1.18 in)<br>② ≥ 40 mm ( ≥ 1.56 in)<br>③ ≥ 60 mm (≥ 2.36 in) | |
| **Permissible installation altitude** | | m | 5 000<br>(Derating from 1 000, see characteristic curve on page 7/7) | | | |
| **Degree of protection** | | | IP00 | | | |

[1] In the case of deviations, please observe derating, see Equipment Manual in the chapter "Configuring".

# Basic Performance Soft Starters

## 3RW30 soft starters > General data

| Type | Terminal | | 3RW301., 3RW302. | | 3RW303., 3RW304. | |
|---|---|---|---|---|---|---|
| **Control electronics** | | | | | | |
| **Rated values** | | | | | | |
| Rated control supply voltage | A1/A2 | V | 24 | 110 ... 230 | 24 | 110 ... 230 |
| • Tolerance | | % | 20 | -15/+10 | 20 | -15/+10 |
| Rated frequency | | Hz | 50/60 | | | |
| • Tolerance | | % | ± 10 | | | |

| Type | | 3RW301. | 3RW302. | 3RW303. | 3RW304. |
|---|---|---|---|---|---|
| **Power electronics** | | | | | |
| **Rated operational voltage** | V AC | 200 ... 480 | | | |
| Tolerance | % | -15/+10 | | | |
| **Rated frequency** | Hz | 50/60 | | | |
| Tolerance | % | 10 | | | |
| **Uninterrupted duty** at 40 °C (% of $I_e$) | % | 115 | | | |
| **Minimum load** (% of $I_e$) | % | 10 (at least 1 A) | | | |
| **Maximum cable length** between soft starter and motor | m | 300 | | | |

| Type | | 3RW3013 | 3RW3014 | 3RW3016 | 3RW3017 | 3RW3018 |
|---|---|---|---|---|---|---|
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| • According to IEC and UL/CSA[1], individual mounting at 40/50/60 °C, AC-53a | A | 3.6/3.3/3 | 6.5/6/5.5 | 9/8/7 | 12.5/12/11 | 17.6/17/14 |
| **Power loss** | | | | | | |
| • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. | W | 0.25 | 0.5 | 1 | 2 | 4 |
| • During starting with 300% $I_M$ (40 °C) | W | 24 | 52 | 80 | 80 | 116 |
| **Permissible rated motor current and starts per hour** | | | | | | |
| • For normal starting (CLASS 10) at 40/50 °C | | | | | | |
| - Rated motor current $I_M$[2], start-up time 3 s | A | 3.6/3.3 | 6.5/6.0 | 9/8 | 12.5/12.0 | 17.6/17.0 |
| - Starts per hour[3] | 1/h | 200/150 | 87/60 | 50/50 | 85/70 | 62/46 |
| - Rated motor current $I_M$[2], start-up time 4 s | A | 3.6/3.3 | 6.5/6.0 | 9/8 | 12.5/12.0 | 17.6/17.0 |
| - Starts per hour[3] | 1/h | 150/100 | 64/46 | 35/35 | 62/47 | 45/32 |

1) Measurement at 60 °C according to UL/CSA not required.

2) At 300% $I_M$, $T_u$ = 40/50 °C.

3) For intermittent duty S4 with ON period = 30%, $T_u$ = 40/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

| Type | | 3RW3026 | 3RW3027 | 3RW3028 |
|---|---|---|---|---|
| **Power electronics** | | | | |
| **Load rating with rated operational current $I_e$** | | | | |
| • According to IEC and UL/CSA[1], individual mounting at 40/50/60 °C, AC-53a | A | 25.3/23/21 | 32.2/29/26 | 38/34/31 |
| **Power loss** | | | | |
| • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. | W | 8 | 13 | 19 |
| • During starting with 300% $I_M$ (40 °C) | W | 188 | 220 | 256 |
| **Permissible rated motor current and starts per hour** | | | | |
| • For normal starting (CLASS 10) at 40/50 °C | | | | |
| - Rated motor current $I_M$[2], start-up time 3 s | A | 25/23 | 32/29 | 38/34 |
| - Starts per hour[3] | 1/h | 23/23 | 23/23 | 19/19 |
| - Rated motor current $I_M$[2], start-up time 4 s | A | 25/23 | 32/29 | 38/34 |
| - Starts per hour[3] | 1/h | 15/15 | 16/16 | 12/12 |

1) Measurement at 60 °C according to UL/CSA not required.

2) At 300% $I_M$, $T_u$ = 40/50 °C.

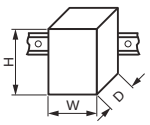
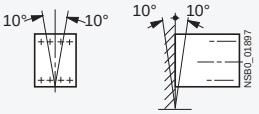
3) For intermittent duty S4 with ON period = 30%, $T_u$ = 40/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency with deviating mounting position, direct mounting, side-by-side mounting, see Equipment Manual in the chapter "Configuring".

| Type | | 3RW3036 | 3RW3037 | 3RW3038 | 3RW3046 | 3RW3047 |
|---|---|---|---|---|---|---|
| **Power electronics** | | | | | | |
| **Load rating with rated operational current $I_e$** | | | | | | |
| • According to IEC and UL/CSA[1], individual mounting at 40/50/60 °C, AC-53a | A | 45/42/39 | 65/58/53 | 72/62.1/60 | 80/73/66 | 106/98/90 |
| **Power loss** | | | | | | |
| • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. | W | 6 | 12 | 15 | 12 | 21 |
| • During starting with 300% $I_M$ (40 °C) | W | 316 | 444 | 500 | 576 | 768 |
| **Permissible rated motor current and starts per hour** | | | | | | |
| • For normal starting (CLASS 10) at 40/50 °C | | | | | | |
| - Rated motor current $I_M$[2], start-up time 3 s | A | 45/42 | 63/58 | 72/62 | 80/73 | 106/108 |
| - Starts per hour[3] | 1/h | 38/38 | 23/23 | 22/22 | 22/22 | 15/15 |
| - Rated motor current $I_M$[2], start-up time 4 s | A | 45/42 | 63/58 | 72/62 | 80/73 | 106/98 |
| - Starts per hour[3] | 1/h | 26/26 | 15/15 | 15/15 | 15/15 | 10/10 |

1) Measurement at 60 °C according to UL/CSA not required.

2) At 300% $I_M$, $T_u$ = 40/50 °C.

3) For intermittent duty S4 with ON period = 30%, $T_u$ = 40/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

| Type | | 3RW3003-1CB54 | 3RW3003-2CB54 |
|---|---|---|---|
| **Mechanics and environment** | | | |
| **Mounting dimensions (W x H x D)**  | | | |
| • Screw terminals | mm | 22.5 x 100 x 120 | -- |
| • Spring-loaded terminals | mm | -- | 22.5 x 101.6 x 120 |
| **Permissible ambient temperature** | | | |
| During operation | °C | -25 ... +60; (derating from +40) | |
| During storage | °C | -40 ... +80 | |
| **Weight** | kg | 0.207 | 0.188 |
| **Permissible mounting position** | |  | |
| **Permissible installation altitude** | m | 5 000 (Derating from 1 000, see characteristic curve on page 7/7) | |
| **Degree of protection** acc. to IEC 60529 | | IP00 | |
| **Control electronics** | | | |
| **Rated values** | | | |
| Rated control supply voltage | V | 24 ... 230 AC/DC | |
| • Tolerance | % | ± 10 | |
| Rated frequency at AC | Hz | 50/60 | |
| • Tolerance | % | ± 10 | |
| **Power electronics** | | | |
| **Rated operational voltage** | V AC | 200 ... 400 | |
| Tolerance | % | ± 10 | |
| **Rated frequency** | Hz | 50/60 | |
| Tolerance | % | ± 10 | |
| **Uninterrupted duty** (% of $I_e$) | % | 100 | |
| **Minimum load**[1] (% of $I_e$); at 40 °C | % | 9 | |
| **Maximum conductor length** between soft starter and motor | m | 100[2] | |
| **Load rating with rated operational current $I_e$** | | | |
| • According to IEC and UL/CSA, individual mounting at 40/50/60 °C, AC-53a | A | 3/2.6/2.2 | |
| • According to IEC and UL/CSA, side-by-side mounting at 40/50/60 °C, AC-53a | A | 2.6/2.2/1.8 | |
| **Power loss** | | | |
| • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. | W | 6.5 | |
| • With utilization of maximum switching frequency | W | 3 | |
| **Permissible starts per hour (cannot be increased by using a fan)** | | | |
| • For intermittent duty S4 $T_u$ = 40 °C, stand-alone installation vertical | 1/h | 1 500 | |
| • ON period = 70% for 300% $I_e$ | 1/s | 0.2 | |
| **Dead time after uninterrupted duty** with $I_e$ before restart | s | 0 | |

1) The rated motor current (specified on the motor's name plate) should at least amount to the specified percentage of the SIRIUS soft starter unit's rated operational current $I_e$.

2) If this value is exceeded, problems with line capacities may arise, which can result in false firing.

# Basic Performance Soft Starters

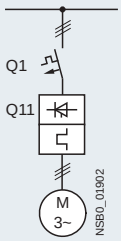


***Motor feeders according to IEC with 3RV2 motor starter protectors (without semiconductor protection)***

Type of coordination "1", CLASS 10,
short-circuit breaking capacity $I_q$ in kA, see table

Note:

For general recommendations for constructing motor feeders
with soft starters, see page 7/9.




| Soft starters | Motor starter protectors for 400 V systems | |
|---|---|---|
| Q11 | Q1 | $I_q$ |
| Type | Type | kA |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | |
| **3RW3003** | 3RV2011-1EA10 | 50 |
| **3RW3013** | 3RV2011-1FA10 | 5 |
| **3RW3014** | 3RV2011-1HA10 | 5 |
| **3RW3016** | 3RV2011-1JA10 | 5 |
| **3RW3017** | 3RV2011-1KA10 | 5 |
| **3RW3018** | 3RV2021-4BA10 | 5 |
| **3RW3026** | 3RV2021-4DA10 | 55 |
| **3RW3027** | 3RV2021-4EA10 | 55 |
| **3RW3028** | 3RV2021-4FA10 | 55 |
| **3RW3036** | 3RV2031-4WA10 | 10 |
| **3RW3037** | 3RV2031-4JA10 | 10 |
| **3RW3038** | 3RV2031-4KA10 | 10 |
| **3RW3046** | 3RV2041-4RA10 | 11 |
| **3RW3047** | 3RV2041-4MA10 | 11 |

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

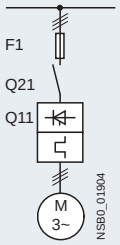
### *Motor feeders according to IEC with 3NA3 fuses*

gG class full-range fuses for cable and line protection according to IEC 60269-2, without semiconductor protection

Type of coordination "1",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | |
|---|---|---|---|
| | for systems up to 480 V | for systems up to 400 V | for systems up to 480 V |
| Q11<br>Type | F1<br>Type | Q21<br>Type | Q21<br>Type |
| **Type of coordination "1"** ToC 1 | **Inline circuit** | | |
| **3RW3003**[1] | 3NA3805[2] | 3RT2015 | 3RT2015 |
| **3RW3013** | 3NA3803-6 | 3RT2015 | 3RT2015 |
| **3RW3014** | 3NA3805-6 | 3RT2015 | 3RT2016 |
| **3RW3016** | 3NA3807-6 | 3RT2016 | 3RT2017 |
| **3RW3017** | 3NA3810-6 | 3RT2018 | 3RT2025 |
| **3RW3018** | 3NA3814-6 | 3RT2026 | 3RT2026 |
| **3RW3026** | 3NA3822-6 | 3RT2026 | 3RT2027 |
| **3RW3027** | 3NA3824-6 | 3RT2027 | 3RT2028 |
| **3RW3028** | 3NA3824-6 | 3RT2028 | 3RT2035 |
| **3RW3036** | 3NA3130-6 | 3RT2036 | 3RT2036 |
| **3RW3037** | 3NA3132-6 | 3RT2037 | 3RT2037 |
| **3RW3038** | 3NA3132-6 | 3RT2038 | 3RT2038 |
| **3RW3046** | 3NA3136-6 | 3RT2045 | 3RT2045 |
| **3RW3047** | 3NA3136-6 | 3RT2047 | 3RT2047 |

1) $I_q$ = 50 kA at 400 V.
2) 3NA3805-1 (NH00), 5SB261 (DIAZED), 5SE2201-6 (NEOZED).

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

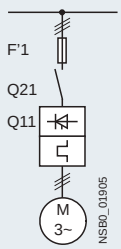
### *Motor feeders according to IEC with 3NE1 SITOR fuses*

gR class full-range fuses for semiconductor protection, cable and line protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | Line contactor (optional) | |
|---|---|---|---|
| | for systems up to 480 V | for systems up to 400 V | for systems up to 480 V |
| Q11 | F'1 | Q21 | Q21 |
| Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | |
| **3RW3003**[1] | 3NE1813-0[2] | 3RT2015 | 3RT2015 |
| **3RW3013** | 3NE1813-0 | 3RT2015 | 3RT2015 |
| **3RW3014** | 3NE1813-0 | 3RT2015 | 3RT2016 |
| **3RW3016** | 3NE1813-0 | 3RT2016 | 3RT2017 |
| **3RW3017** | 3NE1813-0 | 3RT2018 | 3RT2025 |
| **3RW3018** | 3NE1814-0 | 3RT2026 | 3RT2026 |
| **3RW3026** | 3NE1803-0 | 3RT2026 | 3RT2027 |
| **3RW3027** | 3NE1020-2 | 3RT2027 | 3RT2028 |
| **3RW3028** | 3NE1020-2 | 3RT2028 | 3RT2035 |
| **3RW3036** | 3NE1020-2 | 3RT2036 | 3RT2036 |
| **3RW3037** | 3NE1820-0 | 3RT2037 | 3RT2037 |
| **3RW3038** | 3NE1820-0 | 3RT2038 | 3RT2038 |
| **3RW3046** | 3NE1021-0 | 3RT2045 | 3RT2045 |
| **3RW3047** | 3NE1022-0 | 3RT2047 | 3RT2047 |

1) $I_q$ = 50 kA at 400 V.
2) No SITOR fuse required!
Alternatively: 3NA3803 (NH00), 5SB221 (DIAZED), 5SE2206 (NEOZED).

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

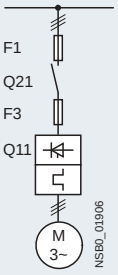
### *Motor feeders according to IEC with 3NE8 / 3NE4 / 3NE3 / 3NC fuses*

aR class partial-range fuses for semiconductor protection

Type of coordination "2",
short-circuit breaking capacity $I_q$ = 65 kA

Note:

For general recommendations for constructing motor feeders with soft starters, see page 7/9.




| Soft starters | gG class fuse | aR class fuse | | | Cylindrical fuses | Line contactor (optional) | |
|---|---|---|---|---|---|---|---|
| | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 480 V | for systems up to 400 V | for systems up to 480 V |
| Q11 | F1 | F3 | F3 | F3 | F3 | Q21 | Q21 |
| Type | Type | Type | Type | Type | Type | Type | Type |
| **Type of coordination "2"** ToC 2 | **Inline circuit** | | | | | | |
| **3RW3003**[1] | 3NA3805[2] | -- | -- | 3NE8015-1 | 3NC1010 | 3RT2015 | 3RT2015 |
| **3RW3013** | 3NA3803-6 | -- | 3NE4101 | 3NE8015-1 | 3NC2220 | 3RT2015 | 3RT2015 |
| **3RW3014** | 3NA3805-6 | -- | 3NE4101 | 3NE8015-1 | 3NC2220 | 3RT2015 | 3RT2016 |
| **3RW3016** | 3NA3807-6 | -- | 3NE4101 | 3NE8015-1 | 3NC2220 | 3RT2016 | 3RT2017 |
| **3RW3017** | 3NA3810-6 | -- | 3NE4101 | 3NE8015-1 | 3NC2250 | 3RT2018 | 3RT2025 |
| **3RW3018** | 3NA3814-6 | -- | 3NE4101 | 3NE8003-1 | 3NC2263 | 3RT2026 | 3RT2026 |
| **3RW3026** | 3NA3822-6 | -- | 3NE4102 | 3NE8017-1 | 3NC2263 | 3RT2026 | 3RT2027 |
| **3RW3027** | 3NA3824-6 | -- | 3NE4118 | 3NE8018-1 | 3NC2280 | 3RT2027 | 3RT2028 |
| **3RW3028** | 3NA3824-6 | -- | 3NE4118 | 3NE8020-1 | 3NC2280 | 3RT2028 | 3RT2035 |
| **3RW3036** | 3NA3130-6 | -- | 3NE4120 | 3NE8020-1 | 3NC2280 | 3RT2036 | 3RT2036 |
| **3RW3037** | 3NA3132-6 | -- | 3NE4121 | 3NE8021-1 | -- | 3RT2037 | 3RT2037 |
| **3RW3038** | 3NA3132-6 | 3NE3221 | -- | 3NE8022-1 | -- | 3RT2038 | 3RT2038 |
| **3RW3046** | 3NA3136-6 | 3NE3222 | -- | 3NE8022-1 | -- | 3RT2045 | 3RT2045 |
| **3RW3047** | 3NA3136-6 | 3NE3224 | -- | 3NE8024-1 | -- | 3RT2047 | 3RT2047 |

[1] $I_q$ = 50 kA at 400 V.
[2] 3NA3805-1 (NH00), 5SB261 (DIAZED).

Note:

The specified short-circuit breaking capacities $I_q$ in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For CLASS 10 applications, as an alternative to the gG class full-range fuses for cable and line protection 3NA3 (F1), 3RV2 motor starter protectors/circuit breakers can also be used, possibly with reduced short-circuit breaking capacity (see page 7/98). In these cases, optional line contactors can be dispensed with.

# Basic Performance Soft Starters

## 3RW30 soft starters > Inline circuit *IE3/IE4* ready

### Selection and ordering data

***For simple starting conditions***

3RW301.

3RW302.

3RW303.

3RW304.

| 3RW ambient temperature 40 °C<br>Rated values of three-phase motors | | | | 3RW ambient temperature 50 °C<br>Rated values of three-phase motors | | | | | Size | SD[1] | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operational current $I_e$ | Rating at operational voltage $U_e$ 230 V | 400 V | 500 V | Operational current $I_e$ | 200 V | 230 V | 460 V | 575 V | | | | | | |
| A | kW | kW | kW | A | hp | hp | hp | hp | | d | | | | |
| **Rated operational voltage $U_e$ 200 ... 480 V** | | | | | | | | | | | | | | |
| 3.6 | 0.75 | **1.5** | -- | 3 | 0.5 | 0.5 | **1.5** | -- | **S00** | 2 | **3RW3013-□BB□4** | | 1 | 1 unit |
| 6.5 | 1.5 | **3** | -- | 6 | 1 | 1 | **3** | -- | **S00** | 2 | **3RW3014-□BB□4** | | 1 | 1 unit |
| 9 | 2.2 | **4** | -- | 8 | 2 | 2 | **5** | -- | **S00** | 2 | **3RW3016-□BB□4** | | 1 | 1 unit |
| 12.5 | 3 | **5.5** | -- | 12 | 3 | 3 | **7.5** | -- | **S00** | 2 | **3RW3017-□BB□4** | | 1 | 1 unit |
| 17.6 | 4 | **7.5** | -- | 17 | 3 | 3 | **10** | -- | **S00** | 2 | **3RW3018-□BB□4** | | 1 | 1 unit |
| 25 | 5.5 | **11** | -- | 23 | 5 | 5 | **15** | -- | **S0** | 2 | **3RW3026-□BB□4** | | 1 | 1 unit |
| 32 | 7.5 | **15** | -- | 29 | 7.5 | 7.5 | **20** | -- | **S0** | 2 | **3RW3027-□BB□4** | | 1 | 1 unit |
| 38 | 11 | **18.5** | -- | 34 | 10 | 10 | **25** | -- | **S0** | 2 | **3RW3028-□BB□4** | | 1 | 1 unit |
| 45 | 11 | **22** | -- | 42 | 10 | 15 | **30** | -- | **S2** | 2 | **3RW3036-□BB□4** | | 1 | 1 unit |
| 63 | 18.5 | **30** | -- | 58 | 15 | 20 | **40** | -- | **S2** | 2 | **3RW3037-□BB□4** | | 1 | 1 unit |
| 72 | 22 | **37** | -- | 62 | 20 | 20 | **40** | -- | **S2** | 2 | **3RW3038-□BB□4** | | 1 | 1 unit |
| 80 | 22 | **45** | -- | 73 | 20 | 25 | **50** | -- | **S3** | 2 | **3RW3046-□BB□4** | | 1 | 1 unit |
| 106 | 30 | **55** | -- | 98 | 30 | 30 | **75** | -- | **S3** | 2 | **3RW3047-□BB□4** | | 1 | 1 unit |

**Article No. supplement for connection types**

- Screw terminals **1**
- Spring-loaded terminals[2] **2**

**Control supply voltage $U_S$**

- 24 V AC/DC **0**
- 110 ... 230 V AC/DC **1**

| **Soft starters for easy starting conditions and high switching frequency, rated operational voltage $U_e$ 200 ... 400 V, rated control supply voltage $U_S$ 24 ... 230 V AC/DC** | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 0.55 | **1.1** | -- | A | 0.5 | **0.5** | -- | -- | 22.5 mm | | | | | |
| • With screw terminals | | | | | | | | | | ► | **3RW3003-1CB54** | | 1 | 1 unit |
| • With spring-loaded terminals | | | | | | | | | | ► | **3RW3003-2CB54** | | 1 | 1 unit |

[1] Soft starter $U_e$ 200 to 480 V with screw terminals: Standard delivery time SD = 1 day (d).

[2] Main connection from size S2: screw terminals.

Note:

For the constraints for the motor outputs specified here, see page 7/7.

## Selection and ordering data

**More information**

Equipment Manual "SIRIUS 3RW30/3RW40 Soft Starters", see https://support.industry.siemens.com/cs/ww/en/view/38752095

### Three-phase infeed terminals

| Conductor cross-section: Solid or stranded | Conductor cross-section: Finely stranded with end sleeve | Conductor cross-section: AWG cables, solid or stranded | Tightening torque | For soft starters size | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| mm² | mm² | AWG | Nm | | d | | | | |
| 2.5 … 25 | 2.5 … 16 | 10 ... 4 | 3 ... 4 | S00 (3RW301.), S0 (3RW302.) | ▶ | **3RV2925-5AB** | | 1 | 1 unit |

3RV2925-5AB

### Auxiliary terminals

| For soft starters: Type | For soft starters: Size | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Auxiliary terminals, 3-pole** | | | | | | |
| 3RW304. | **S3** | 5 | **3RT2946-4F** | | 1 | 1 unit |

3RT2946-4F

### Covers for soft starters

**Terminal covers for box terminals**
Additional touch protection to be fitted at the box terminals (two units required per device)

| | | | | | | |
|---|---|---|---|---|---|---|
| 3RW303. | **S2** | ▶ | **3RT2936-4EA2** | | 1 | 1 unit |
| 3RW304. | **S3** | ▶ | **3RT2946-4EA2** | | 1 | 1 unit |

3RT2946-4EA2

**Terminal covers for cable lugs and busbar connections**
For complying with the voltage clearances and as touch protection if box terminal is removed (two units required per device)

| | | | | | | |
|---|---|---|---|---|---|---|
| 3RW304. | **S3** | 5 | **3RT1946-4EA1** | | 1 | 1 unit |

3RT1946-4EA1

### Mounting rails for mounting contactors for the customer assembly of 3RA21 load feeders with busbar adapters for 60 mm systems

| For motor starter protectors: Size | For soft starters: Size | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| | | For the discrete configuration of direct-on-line starters, an additional mounting rail is needed for the contactor in addition to the existing mounting rail on the busbar adapter for the motor starter protector. | | | | | |
| -- | **S0** | For pushing onto the device adapter, including fixing screws | 2 | **8US1998-7CB45** | | 1 | 10 units |

8US1998-7CB45

### Standard mounting rail adapters

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | For mechanical fixing of motor starter protector and soft starter; for snapping onto standard mounting rail or for screw fixing | | | | | |
| **S2** | **S2** | **Single-unit packaging** | 2 | **3RA2932-1CA00** | | 1 | 1 unit |

3RA2932-1CA00

# Basic Performance Soft Starters

## 3RW30 soft starters > Accessories

### Link modules to motor starter protectors[1)]

3RA2921-1BA00

3RA2921-2GA00

| For soft starters Type | Size | Motor starter protectors Size | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Screw terminals** | | | | | | | |
| 3RW301. | **S00** | **S00** | 2 | **3RA2921-1BA00** | | 1 | 1 unit |
| 3RW302. | **S0** | **S00/S0** | 2 | **3RA2921-1BA00** | | 1 | 1 unit |
| 3RW3036 | **S2** | **S2** | ▶ | **3RA2931-1AA00** | | 1 | 1 unit |
| 3RW304. | **S3** | **S3** | ▶ | **3RA1941-1AA00** | | 1 | 1 unit |
| **Spring-loaded terminals** | | | | | | | |
| 3RW301. | **S00** | **S00** | 2 | **3RA2911-2GA00** | | 1 | 1 unit |
| 3RW302. | **S0** | **S0** | 2 | **3RA2921-2GA00** | | 1 | 1 unit |

1) Can be used in size S0 up to 32 A.
Can be used in size S2 up to 65 A in combination with 3RA2932-1CA00 standard mounting rail adapter (specially for soft starters).
Can be used in size S3 only on mounting plate.

### Covers and push-in lugs (only for 3RW3003)

3RP1902

3RP1903

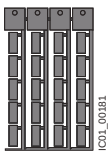
| Version | Functionality Functions | Use | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Sealable covers** | For securing against unauthorized adjustment of setting knobs | For devices with 1 or 2 CO contacts | 5 | **3RP1902** | | 1 | 5 units |
| **Push-in lugs** for screw fixing | -- | For devices with 1 or 2 CO contacts | 5 | **3RP1903** | | 1 | 10 units |

### Tools for opening spring-loaded terminals in sizes S00 and S0

3RA2908-1A

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Screwdrivers** For all SIRIUS devices with spring-loaded terminals | | **Spring-loaded terminals** | | | |
| Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

### Blank labels




3RT2900-1SB20

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Unit labeling plates[1)]** For SIRIUS devices | | | | | |
| 20 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB20** | | 100 | 340 units |

1) PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/15).

# High Performance Soft Starters

## For 3RW55/3RW55 Failsafe

| | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **SIRIUS Soft Starter ES V16 Basic** | | | | | | |
| | **Basic Function**<br>**Including Professional Trial License**<br>Engineering software,<br>Software download<br>6 languages (English, German, French, Italian, Spanish, Chinese)<br>Online functions via system interface<br>No cost to download:<br>https://support.industry.siemens.com/cs/document/109771657 | | | | | |
| **SIRIUS Soft Starter ES V16 Professional** | | | | | | |
| <br>3ZS1320-6CC12-0YA5 | **Floating License for one User**<br>Engineering software,<br>Software and documentation on DVD<br>6 languages (English, German, French, Italian, Spanish, Chinese)<br>Online functions via system interface or PROFIBUS/PROFINET | | | | | |
| | • License Key on USB flash drive, includes DVD | 5 | **3ZS1320-6CC12-0YA5** | | 1 | 1 unit |
| | • License Key download, without DVD | ▶ | **3ZS1320-6CE12-0YB5** | | 1 | 1 unit |
| | **Upgrade for Soft Starter ES 2007 Premium**<br>Floating License for one User<br>Engineering software,<br>Software and documentation on DVD<br>License Key on USB flash drive<br>6 languages (English, German, French, Italian, Spanish, Chinese)<br>Online functions via system interface or PROFIBUS/PROFINET | 5 | **3ZS1320-6CC12-0YE5** | | 1 | 1 unit |

Hints:
Licenses from Soft Starter ES Standard and Premium V14 to V15.1 can also be used for Soft Starter ES V16 Professional

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Fans** | | | | | | | | |
| <br>3RW5983-0FF00 | **Fan** | 3RW551 (1x),<br>3RW552 (2x),<br>3RW553 (2x) | -- | ▶ | **3RW5983-0FF00** | | 1 | 1 unit |
| | | 3RW554 (1x) | -- | ▶ | **3RW5984-0FF00** | | 1 | 1 unit |
| | | 3RW555 (3x) | -- | ▶ | **3RW5985-0FF00** | | 1 | 1 unit |
| **Terminals and terminal covers** | | | | | | | | |
| <br>3RW5982-0TB00 | **Box terminal block** | 3RW552 (2x) | -- | ▶ | **3RW5982-0TB00** | | 1 | 1 unit |
| | | | | | **Screw terminals** | | | |
| <br>3RW5980-1TR00 | **Removable control terminals** | 3RW551.-1H... (2x),<br>3RW552.-1H... (2x),<br>3RW553.-6H... (2x),<br>3RW554.-6H... (2x),<br>3RW555.-6H... (2x) | contains 2 blocks each with 6 terminals | ▶ | **3RW5980-1TR00** | | 1 | 1 unit |
| | | | | | **Spring-loaded terminals** | | | |
| | | 3RW551.-3H... (2x),<br>3RW552.-3H... (2x),<br>3RW553.-2H... (2x),<br>3RW554.-2H... (2x),<br>3RW555.-2H... (2x) | contains 2 blocks each with 6 terminals | ▶ | **3RW5980-2TR00** | | 1 | 1 unit |
| <br>3RW5955-0TC20 | **Terminal cover** | 3RW555 | -- | ▶ | **3RW5955-0TC20** | | 1 | 1 unit |

# High Performance Soft Starters

## For 3RW55/3RW55 Failsafe

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Enclosure components** | | | | | | | | |
| 3RW5950-0GD20 | **Cover for control cable duct** | 3RW55..-.HA.. | Titanium gray | ▶ | **3RW5950-0GD20** | | 1 | 1 unit |
|  3RW5950-0GD30 | | 3RW55..-.HF.. | Yellow NEW | ▶ | **3RW5950-0GD30** | | 1 | 1 unit |
| 3RW5950-0GL30 | **Hinged cover** | 3RW55 | With cutout for High Feature HMI module | ▶ | **3RW5950-0GL30** | | 1 | 1 unit |

# High Performance Soft Starters

## For 3RW55/3RW55 Failsafe

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **HMI modules** | | | | | | | | |
| 3RW5980-0HF00 | **HMI module** | 3RW55 | High Feature | ► | **3RW5980-0HF00** | | 1 | 1 unit |
| 3RW5980-0HL00 | **Interface cover** | 3RW55 | -- | ► | **3RW5980-0HL00** | | 1 | 1 unit |
| **Connection cable for installing the HMI module in the soft starter** | | | | | | | | |
| 3UF7931-0AA00-0 | **Connection cable** | -- | 0.1 m, flat | ► | **3UF7931-0AA00-0** | | 1 | 1 unit |
| **Transport packaging** | | | | | | | | |
| 3RW5953-0VY00 | **Transport packaging** | 3RW551 | -- | ► | **3RW5951-0VY00** | | 1 | 1 unit |
| | | 3RW552, 3RW553 | -- | ► | **3RW5953-0VY00** | | 1 | 1 unit |
| | | 3RW554 | -- | ► | **3RW5954-0VY00** | | 1 | 1 unit |
| | | 3RW555 | -- | ► | **3RW5955-0VY00** | | 1 | 1 unit |

# General Performance Soft Starters

## For 3RW52

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Fans** | | | | | | | | |
| 3RW5983-0FF00 | **Fans** | 3RW5216/17 (1x), 3RW5226/27 (2x), 3RW523 (2x) | -- | ▶ | **3RW5983-0FF00** | | 1 | 1 unit |
| | | 3RW524 (1x) | -- | ▶ | **3RW5984-0FF00** | | 1 | 1 unit |
| **Terminals** | | | | | | | | |
| 3RW5982-0TB00 | **Box terminal block** | 3RW522 (2x) | -- | ▶ | **3RW5982-0TB00** | | 1 | 1 unit |
| | | | | | **Screw terminals** | | | |
| 3RW5980-1TR00 | **Removable control terminals** | 3RW521.-1.C.., 3RW522.-1.C.., 3RW523.-6.C.., 3RW524.-6.C.. | contains 2 blocks each with 6 terminals | ▶ | **3RW5980-1TR00** | | 1 | 1 unit |
| | | | | | **Spring-loaded terminals** | | | |
| | | 3RW521.-3.C.., 3RW522.-3.C.., 3RW523.-2.C.., 3RW524.-2.C.. | contains 2 blocks each with 6 terminals | ▶ | **3RW5980-2TR00** | | 1 | 1 unit |
| **Enclosure components** | | | | | | | | |
| 3RW5953-0GB00 | **Enclosure base** | 3RW522, 3RW523 | -- | ▶ | **3RW5953-0GB00** | | 1 | 1 unit |
| | | 3RW524 | -- | ▶ | **3RW5954-0GB00** | | 1 | 1 unit |
| 3RW5950-0GD20 | **Cover for control cable duct** | 3RW52 | Titanium gray | ▶ | **3RW5950-0GD20** | | 1 | 1 unit |

# General Performance Soft Starters

## For 3RW52

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Enclosure components** | | | | | | | | |
| 3RW5950-0GL20 | **Hinged cover** | 3RW52 | Without cutout | ► | **3RW5950-0GL20** | | 1 | 1 unit |
| **Transport packaging** | | | | | | | | |
| 3RW5953-0VY00 | **Transport packaging** | 3RW521 | -- | ► | **3RW5951-0VY00** | | 1 | 1 unit |
| | | 3RW522, 3RW523 | -- | ► | **3RW5953-0VY00** | | 1 | 1 unit |
| | | 3RW524 | -- | ► | **3RW5954-0VY00** | | 1 | 1 unit |

# Basic Performance Soft Starters

## For 3RW50

| | Product designation | Manufacturer's Article No. of the soft starter | Type of product | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Fan** | | | | | | | | |
| 3RW5905-0FF00 | **Fan** | 3RW505 (1x) | -- | ▶ | **3RW5905-0FF00** | | 1 | 1 unit |
| | | 3RW507 (1x) | -- | ▶ | **3RW5907-0FF00** | | 1 | 1 unit |
| **Terminals** | | | | | | | | |
| | | | | | **Screw terminals** | | | |
| 3RW5980-1TR00 | **Removable control terminals** | 3RW50..-6.B.. | contains 2 blocks each with 6 terminals | ▶ | **3RW5980-1TR00** | | 1 | 1 unit |
| | | | | | **Spring-loaded terminals** | | | |
| | | 3RW50..-2.B.. | contains 2 blocks each with 6 terminals | ▶ | **3RW5980-2TR00** | | 1 | 1 unit |
| **Enclosure components** | | | | | | | | |
| 3RW5900-0GL00 | **Hinged cover** | 3RW50 | -- | ▶ | **3RW5900-0GL00** | | 1 | 1 unit |
| **Transport packaging** | | | | | | | | |
| 3RW5905-0VY00 | **Transport packaging** | 3RW505 | -- | ▶ | **3RW5905-0VY00** | | 1 | 1 unit |
| | | 3RW507 | -- | ▶ | **3RW5907-0VY00** | | 1 | 1 unit |

# Soft starting from basic to the most demanding applications

Since motors play a critical role in processes, their performance must be both optimal and dependable without failure. Siemens 3RE47 enclosed soft starters help to ensure that! They help limit the starting current and torque to best fit the application. The motor is adjusted to the load of the driven machine by means of stepless control of the voltage supply. Mechanical equipment is accelerated softly which improves process performance, reduces wear and tear and extends life of equipment. Furthermore, brownouts, current spikes and other disturbances to the electrical grid are minimized.

The comprehensive range of the 3RE47 enclosed soft starters offers the appropriate smart alternative for nearly every application, from basic to the most demanding motor requirements. They are shipped ready for installation, simple to commission, flexible to integrate and built to withstand harsh environments.

## 3RE47 Common features and general ratings

All three performance levels of the 3RE47 family of enclosed soft starters share the common features listed below.

- Pre-engineered package ready to install and run
- 200 - 600 V operational voltage
- 24 and 120 V AC control circuit with control power transformer included
- Internal bypass contactor for minimum power loss
- Motor overload protection
- Coated printed circuit boards
- Local and remote reset
- Terminal block for field connections of control circuit
- Enclosure NEMA types 1/12, 3R/4 and 4X 316 stainless steel
- Optional oversized enclosures for extra mounting panel space
- Circuit breaker, fusible disconnect and no disconnect
- Metal disconnect handle
- Factory installed options for convenience
- Field accessories for flexibility
- Listed as Service Entrance Equipment
- High short circuit current ratings up to 100k Amps
- 40o C (104o F) ambient operating temperature
- cULus Listed

## 3RE470 Basic performance enclosed soft starter

The 3RE470 Basic Performance enclosed soft starter powered with the SIRIUS 3RW40 open soft starter is suitable for soft starting and stopping of three-phase asynchronous motors. The device can be used for drives with an output of between 5 and 75HP @ 480V. Optional thermistor motor protection provides full motor protection. With its modern hybrid switching technology via its integral bypass contactor, the device offers efficient switching for long-term, energy-saving use.

- Powered with SIRIUS 3RW40 open soft starter
- Up to 75HP @ 480V (600V ratings also available)
- Operational current up to 98 A
- Soft starting and stopping
- Current limiting
- Refer to page 7/115 for a complete list of features

## 3RE471 General performance enclosed soft starter

The 3RE471 General Performance enclosed soft starter powered with the SIRIUS 3RW52 open soft starter is the ideal solution for standard applications. With ideal three-phase motor control, they cover the performance range from 7.5 to 400HP @ 480V. The standard feature HMI module, plug-in communication modules (PROFINET, PROFIBUS, EtherNet/IP and Modbus) and either an analog output (standard) or thermistor motor protection (optional) ensure maximum flexibility. With its modern hybrid switching technology via its integral bypass contactor, the device offers efficient switching for long-term, energy-saving use.

- Powered with SIRIUS 3RW52 open soft starter
- Operational current up to 416 A
- Up to 400HP @ 480V (600V ratings also available)
- TIA integration optional
- Plug-in communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus
- Standard feature HMI module (high feature HMI module optional)
- Current limiting
- Analog output
- Soft torque for reduced mechanical loading and optimum pump stop
- Parameterization using potentiometers
- Refer to page 7/115 for a complete list of features

## 3RE472 High performance enclosed soft starter

Equipped with the utmost functionality, the 3RE472 High Performance enclosed soft starter powered with the SIRIUS 3RW55 open soft starter confidently handles even difficult starting and stopping operations. Thanks to innovative torque control, the device can be used for drives with an output of between 7.5 to 1000HP @ 480V. The functions have been specially designed to offer maximum user friendliness. The high feature HMI (with color display, local interface and a slot for micro SD memory card) and plug-in communication modules (PROFINET, PROFIBUS, EtherNet/IP and Modbus) ensure maximum flexibility. With its modern hybrid switching technology via its integral bypass contactor, the device offers efficient switching for long-term, energy-saving use.

- Powered with SIRIUS 3RW55 open soft starter
- Operational current up to 1130 A
- Up to 1000HP @ 480V (600V ratings also available)
- TIA integration optional
- Plug-in communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus
- High feature HMI module with color display, local interface and slot for a micro SD memory card
- Extended protection functions
- Automatic parameterization for simple commissioning and reliability even under changing load conditions
- Pump stop for reduced mechanical loading and optimum pump stop control
- Refer to page 7/115 for a complete list of features

# The 3RE47 provides these additional values to the customer

## 1. Cost savings

Internal bypass contactor, as standard, for reduced components and minimum power loss. Direct wiring from utility power lines without an intermediate disconnect due to UL rating as Service Entrance Equipment.

## 2. Reliability and sustained life of product

100% of soft starters undergo strict testing at the factory to ensure proper function. Electronics safeguarded against extreme environments by a protective coating. Rated for severe starting at 350% rated motor amps for 30 seconds. Enclosures strictly sized for proper heat dissipation ensuring fewer run-time disruptions and maximum life of electronic components. Fully gasketed door to help keep damaging contaminants out. Heavy-duty disconnect switch with double break switch action to reduce arcing and extend lifespan of switch.

## 3. Safety

High fault interrupting ratings up to 100kA at 600V. Built-in Safe Torque Off without additional components. Heavy-duty disconnect switch with visible blades and line side shield to guard personnel from contact with live parts.\

## 4. Ease of installation and commissioning

Ideally sized enclosure to pull and terminate large power conductors and for field installing additional components. Terminal block for quick field connection minimizes installation cost and time. Streamlined installation with HMI digital display. Micro SD memory slot for quick downloading and uploading of parameter set for quick commissioning and to duplicate multiple starters. Automatic parameterization adapts to motor conditions optimizing performance and reliability.

## 5. Assurance and protection of equipment

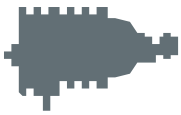
Pump control for reduced water hammer as well as cleaning / deragging. 24/7 remote monitoring and control via optional communication modules for PROFINET, PROFIBUS, EtherNet/IP and Modbus protocols.

Disclaimer – The aforementioned values may not necessarily apply to every model. Please review the literature to determine which specific values apply to each model.

## Your application in mind

Pumping

Ventilating


Compressing

Conveying

Processing

## You choose the model based on your application

| Applications | High Performance 3RE472 | General Performance 3RE471 | Basic Performance 3RE470 |
|---|---|---|---|
| **Normal starting (CLASS 10)** | | | |
| Pumps | ● | ● | ● |
| Pumps with special pump stop (to prevent water hammer) | ● | ○ | ● |
| Heat pumps | ● | ● | ● |
| Hydraulic pumps | ● | ● | ● |
| Presses | ● | ● | ● |
| Conveyor belts | ● | ● | ● |
| Roller conveyors | ● | ● | ● |
| Screw conveyors | ● | ● | ● |
| Escalators | ● | ● | ● |
| Piston compressors | ● | ● | ● |
| Screw compressors | ● | ● | ● |
| Small fans① | ● | ● | ● |
| Centrifugal blowers | ● | ● | ● |
| Bow thrusters | ● | ● | ● |
| **Heavy starting (CLASS 20)** | | | |
| Stirrers | ● | ○ | ○ |
| Extruders | ● | ○ | ○ |
| Lathes | ● | ○ | ○ |
| Milling machines | ● | ○ | ○ |
| **Heavy starting (CLASS 30)** | | | |
| Large fans② | ● | | |
| Circular saws/band saws | ● | | |
| Centrifuges | ● | | |
| Mills | ● | | |
| Crushers | ● | | |

① The mass inertia of the fan is <10 times the mass inertia of the motor.
② The mass inertia of the fan is >/=10 times the mass inertia of the motor.

● Recommended soft starters
○ Possible soft starter

## Features by model

| | High Performance 3RE472 | General Performance 3RE471 | Basic Performance 3RE470 |
|---|---|---|---|
| **Powered by SIRIUS open soft starter** | **3RW55** | **3RW52** | **3RW40** |
| Soft starting/ramp-down | ✓ | ✓ | ✓ |
| Voltage ramp | ✓ | ✓ | ✓ |
| Pump stop (torque control) | ✓ | — | — |
| Soft Torque (torque limit) | — | ✓ | — |
| Integral bypass contact system | ✓ | ✓ | ✓ |
| Intrinsic device protection | ✓ | ✓ | ✓ |
| Motor overload protection | ✓ | ✓ | ✓ |
| Thermistor motor protection evaluation | ✓ | ✓ | ✓ |
| Analog output | ✓ | ✓ | — |
| Remote RESET | ✓ | ✓ | ✓ |
| Adjustable current limiting | ✓ | ✓ | ✓ |
| Breakaway pulse | ✓ | — | — |
| Automatic parameterization | ✓ | — | — |
| Pump cleaning | ✓ | — | — |
| Condition monitoring | ✓ | — | — |
| User account administration with software | ✓ | — | — |
| Creep speed in both directions of rotation | ✓ | — | — |
| Reversing duty | ✓ | — | — |
| Reversing DC braking | ✓ | — | — |
| DC braking | ✓ | — | — |
| Dynamic DC braking | ✓ | — | — |
| Motor heating | ✓ | — | — |
| Communication function (optional) | ✓ | ✓ | — |
| Operating measured value display (optional) | ✓ | ✓ | — |
| Logbooks (optional) | ✓ | ✓ | — |
| Statistical data and slave pointer function (optional) | ✓ | ✓ | — |
| Trace function with software | ✓ | — | — |
| Programmable control inputs and outputs | ✓ | — | — |
| Number of parameter sets | 3 | 1 | 1 |
| Parameterizable with software | ✓ | — | — |
| Number of controlled phases | 3 | 3 | 2 |
| Heavy starting CLASS 30 | ✓ | — | — |

✓ Function available
— Function not available

For detailed explanation of each feature, refer to the open soft starter user's manual.

# 3RE47 Soft Starters

## Ordering information and Simulation Tool

### Choose a model (performance level)

Referring to the application and feature charts on the preceding pages, select the model (performance level) of the soft starter that best suits the required application.

Though not required to select an enclosed soft starter, it is recommended to first select the model and frame size of the open soft starter (i.e. 3RW5213) via the Simulation Tool for Soft Starters (STS). By inputting specific environmental, motor, and load data, the tool can recommend the open soft starter most suited for a specific application. Further details on the STS is given on this page.

### Select a product

Once the model (performance level) is chosen, select the 3RE47 enclosed starter catalog number from the selection tables associated with the performance level of the soft starter. The selection tables include reference to the open soft starter if the STS was used to determine the model (performance level).

As optional, select factory modifications from the Factory Modifications and Accessories selection tables starting on page 7/136.

### Configure a product

Instead of manually selecting a product, it may be configured with one of the configuration tools below. From the configurator, the product may also be added to your quote or order.

Compas go to https://www.compas.siemens-info.com/mCompas/Compas/ManageJob#!/

Industry Mall go to https://mall.industry.siemens.com/mall/en/us/Catalog/Configurators

### Order a product without configuring it

If a catalog number is known, it may be directly entered into the Industry Mall ordering system. Simply enter the catalog number into the product search.

A catalog number with optional modification codes may also be directly entered. The following format must be used: <catalog number><-Z > <mod code 1><+mod code 2><+mod code 3>.

For example, 3RE47113NB430AA0-Z A01+F00+N01

### Review technical data

Review the technical data starting on page 7/138 to check for constraints. Consult with the Siemens Application Engineering group componentsae.ic@siemens.com with any concerns.



**Simulation Tool for Soft Starters (STS)**

The Simulation Tool for Soft Starters (STS) provides a convenient means of designing soft starters using a simple, quick and easy-to-use interface.

Entering the motor and load data will simulate the application and prompts suggestions for suitable soft starters.

Link to the free download of the Simulation Tool for Soft Starters (STS)

- Simple, quick and user-friendly interface
- Detailed and up-to-date Siemens motor database, including IE3/IE4 motors
- Simulation of heavy starting up to Class 30
- Update-capable (e.g. motors, load types, functions)
- Fast simulations with minimum input data
- Immediate, graphical curve charts of start operations with limit values
- Table view of suitable soft starters for the application

Everything at a glance: Simulation and results list.

# Nomenclature

3RE47 0 2 – 4 N A 4 3 – 0 A A 0

**Performance level**
**0** = Basic performance (3RW40)
**1** = General performance (3RW52)
**2** = High performance (3RW55)

**Operational current for normal starting (Class 10E) at 40° C Ambient to enclosure**

| Basic performance | General performance | High performance |
|---|---|---|
| **24** = 11A | **13** = 11.5A | **13** - 11.5A |
| **26** = 23A | **14** = 15.9A | **14** = 15.9A |
| **27** = 29A | **15** = 22.3A | **15** = 22.3A |
| **28** = 34A | **16** = 28.4A | **16** = 28.4A |
| **36** = 42A | **17** = 33.5A | **17** = 33.5A |
| **37** = 58A | **24** = 41.6A | **24** = 41.6A |
| **38** = 62.1A | **25** = 55.5A | **25** = 55.5A |
| **46** = 73A | **26** = 68A | **26** = 68A |
| **47** = 98A | **27** = 82.5A | **27** = 82.5A |
| | **34** = 101A | **34** = 101A |
| | **35** = 127A | **35** = 127A |
| | **36** = 146A | **36** = 146A |
| | **43** = 184A | **43** = 184A |
| | **44** = 220A | **44** = 220A |
| | **45** = 255A | **45** = 279A |
| | **46** = 328A | **46** = 328A |
| | **47** = 362A | **47** = 416A |
| | **48** = 416A | **48** = 490A |
| | | **52** = 561A |
| | | **53** = 641A |
| | | **54** = 748A |
| | | **56** = 979A |
| | | **58** = 1130A |

**Enclosure type and size**
**N** = NEMA Type 1/12 – standard size
**P** = NEMA Type 1/12 – oversized
**Q** = NEMA Type 3R/4 – standard size
**R** = NEMA Type 3R/4 – oversized
**L** = NEMA Type 4X 316 SS – standard size
**M** = NEMA Type 4X 316 SS – oversized

**Disconnect type**
**A** = No disconnect
**B** = Circuit breaker with thermal and magnetic trip
**F** = Fusible disconnect switch

**Operational voltage (Volts)**
**1** = 200/208 V
**2** = 320/240 V
**4** = 460/480 V
**5** = 575/600 V

**Control voltage**
**1** = 24 VAC (internally supplied via CPT)
**3** = 120 VAC (internally supplied via CPT)

**Line/Load cable entry**
**0** = Unspecified cable entry
**1** = Top/Top
**2** = Top/Bottom
**3** = Bottom/Top
**4** = Bottom/Bottom

**Series / Generation**
**0** = 3RW40, 52 & 55

# 3RE470 Basic Performance

## Non-combination (no disconnect device)

*Ordering information*

### Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

### Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11 | 3 | 3 | 7.5 | 10 | **3RE4702-4NA□□-0AA0** | **3RE4702-4QA□□-0AA0** | **3RE4702-4LA□□-0AA0** | **3RW4024-1BB□□** |
| 23 | 5 | 5 | 15 | 20 | **3RE4702-6NA□□-0AA0** | **3RE4702-6QA□□-0AA0** | **3RE4702-6LA□□-0AA0** | **3RW4026-1BB□□** |
| 29 | 7.5 | 7.5 | 20 | 25 | **3RE4702-7NA□□-0AA0** | **3RE4702-7QA□□-0AA0** | **3RE4702-7LA□□-0AA0** | **3RW4027-1BB□□** |
| 34 | 10 | 10 | 25 | 30 | **3RE4702-8NA□□-0AA0** | **3RE4702-8QA□□-0AA0** | **3RE4702-8LA□□-0AA0** | **3RW4028-1BB□□** |
| 42 | 10 | 15 | 30 | 40 | **3RE4703-6NA□□-0AA0** | **3RE4703-6QA□□-0AA0** | **3RE4703-6LA□□-0AA0** | **3RW4036-1BB□□** |
| 58 | 15 | 20 | 40 | 50 | **3RE4703-7NA□□-0AA0** | **3RE4703-7QA□□-0AA0** | **3RE4703-7LA□□-0AA0** | **3RW4037-1BB□□** |
| 62 | 20 | 20 | 40 | 60 | **3RE4703-8NA□□-0AA0** | **3RE4703-8QA□□-0AA0** | **3RE4703-8LA□□-0AA0** | **3RW4038-1BB□□** |
| 73 | 20 | 25 | 50 | 60 | **3RE4704-6NA□□-0AA0** | **3RE4704-6QA□□-0AA0** | **3RE4704-6LA□□-0AA0** | **3RW4046-1BB□□** |
| 98 | 30 | 30 | 75 | 75 | **3RE4704-7NA□□-0AA0** | **3RE4704-7QA□□-0AA0** | **3RE4704-7LA□□-0AA0** | **3RW4047-1BB□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | 1 | 1 | 1 | 4 |
| | 230/240 V | 2 | 2 | 2 | 4 |
| | 460/480 V | 4 | 4 | 4 | 4 |
| | 575/600 V | 5 | 5 | 5 | 5 |
| **Control voltage** | 24 VAC② | 1 | 1 | 1 | 0 |
| | 120 VAC② | 3 | 3 | 3 | 1 |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 9 | 2 | 2 | 5 | 7.5 | **3RE4702-4NA□□-0AA0** | **3RE4702-4QA□□-0AA0** | **3RE4702-4LA□□-0AA0** | **3RW4024-1BB□□** |
| 19 | 5 | 5 | 10 | 15 | **3RE4702-6NA□□-0AA0** | **3RE4702-6QA□□-0AA0** | **3RE4702-6LA□□-0AA0** | **3RW4026-1BB□□** |
| 24 | 5 | 7.5 | 15 | 20 | **3RE4702-7NA□□--0AA0** | **3RE4702-7QA□□-0AA0** | **3RE4702-7LA□□-0AA0** | **3RW4027-1BB□□** |
| 28 | 7.5 | 10 | 20 | 25 | **3RE4702-8NA□□-0AA0** | **3RE4702-8QA□□-0AA0** | **3RE4702-8LA□□-0AA0** | **3RW4028-1BB□□** |
| 34 | 10 | 10 | 25 | 30 | **3RE4703-6NA□□-0AA0** | **3RE4703-6QA□□-0AA0** | **3RE4703-6LA□□-0AA0** | **3RW4036-1BB□□** |
| 42 | 10 | 15 | 30 | 40 | **3RE4703-7NA□□-0AA0** | **3RE4703-7QA□□-0AA0** | **3RE4703-7LA□□-0AA0** | **3RW4037-1BB□□** |
| 46 | 10 | 15 | 30 | 40 | **3RE4703-8NA□□-0AA0** | **3RE4703-8QA□□-0AA0** | **3RE4703-8LA□□-0AA0** | **3RW4038-1BB□□** |
| 58 | 15 | 20 | 40 | 50 | **3RE4704-6NA□□-0AA0** | **3RE4704-6QA□□-0AA0** | **3RE4704-6LA□□-0AA0** | **3RW4046-1BB□□** |
| 70 | 20 | 25 | 50 | 60 | **3RE4704-7NA□□-0AA0** | **3RE4704-7QA□□-0AA0** | **3RE4704-7LA□□-0AA0** | **3RW4047-1BB□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | 1 | 1 | 1 | 4 |
| | 230/240 V | 2 | 2 | 2 | 4 |
| | 460/480 V | 4 | 4 | 4 | 4 |
| | 575/600 V | 5 | 5 | 5 | 5 |
| **Control voltage** | 24 VAC② | 1 | 1 | 1 | 0 |
| | 120 VAC② | 3 | 3 | 3 | 1 |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

## Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure: Type 1/12 General purpose, dust-tight Indoor only — Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight — Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant — Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11 | 3 | 3 | 7.5 | 10 | **3RE4702-4NB□□-0AA0** | **3RE4702-4QB□□-0AA0** | **3RE4702-4LB□□-0AA0** | **3RW4024-1BB□□** |
| 23 | 5 | 5 | 15 | 20 | **3RE4702-6NB□□-0AA0** | **3RE4702-6QB□□-0AA0** | **3RE4702-6LB□□-0AA0** | **3RW4026-1BB□□** |
| 29 | 7.5 | 7.5 | 20 | 25 | **3RE4702-7NB□□-0AA0** | **3RE4702-7QB□□-0AA0** | **3RE4702-7LB□□-0AA0** | **3RW4027-1BB□□** |
| 34 | 10 | 10 | 25 | 30 | **3RE4702-8NB□□-0AA0** | **3RE4702-8QB□□-0AA0** | **3RE4702-8LB□□-0AA0** | **3RW4028-1BB□□** |
| 42 | 10 | 15 | 30 | 40 | **3RE4703-6NB□□-0AA0** | **3RE4703-6QB□□-0AA0** | **3RE4703-6LB□□-0AA0** | **3RW4036-1BB□□** |
| 58 | 15 | 20 | 40 | 50 | **3RE4703-7NB□□-0AA0** | **3RE4703-7QB□□-0AA0** | **3RE4703-7LB□□-0AA0** | **3RW4037-1BB□□** |
| 62 | 20 | 20 | 40 | 60 | **3RE4703-8NB□□-0AA0** | **3RE4703-8QB□□-0AA0** | **3RE4703-8LB□□-0AA0** | **3RW4038-1BB□□** |
| 73 | 20 | 25 | 50 | 60 | **3RE4704-6NB□□-0AA0** | **3RE4704-6QB□□-0AA0** | **3RE4704-6LB□□-0AA0** | **3RW4046-1BB□□** |
| 98 | 30 | 30 | 75 | 75 | **3RE4704-7NB□□-0AA0** | **3RE4704-7QB□□-0AA0** | **3RE4704-7LB□□-0AA0** | **3RW4047-1BB□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | 1 | 1 | 1 | 4 |
| 230/240 V | 2 | 2 | 2 | 4 |
| 460/480 V | 4 | 4 | 4 | 4 |
| 575/600 V | 5 | 5 | 5 | 5 |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | | | | 0 |
| 120 VAC② | 3 | 3 | 3 | 1 |

## Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure: Type 1/12 General purpose, dust-tight Indoor only — Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight — Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant — Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 9 | 2 | 2 | 5 | 7.5 | **3RE4702-4NB□□-0AA0** | **3RE4702-4QB□□-0AA0** | **3RE4702-4LB□□-0AA0** | **3RW4024-1BB□□** |
| 19 | 5 | 5 | 10 | 15 | **3RE4702-6NB□□-0AA0** | **3RE4702-6QB□□-0AA0** | **3RE4702-6LB□□-0AA0** | **3RW4026-1BB□□** |
| 24 | 5 | 7.5 | 15 | 20 | **3RE4702-7NB□□-0AA0** | **3RE4702-7QB□□-0AA0** | **3RE4702-7LB□□-0AA0** | **3RW4027-1BB□□** |
| 28 | 7.5 | 10 | 20 | 25 | **3RE4702-8NB□□-0AA0** | **3RE4702-8QB□□-0AA0** | **3RE4702-8LB□□-0AA0** | **3RW4028-1BB□□** |
| 34 | 10 | 10 | 25 | 30 | **3RE4703-6NB□□-0AA0** | **3RE4703-6QB□□-0AA0** | **3RE4703-6LB□□-0AA0** | **3RW4036-1BB□□** |
| 42 | 10 | 15 | 30 | 40 | **3RE4703-7NB□□-0AA0** | **3RE4703-7QB□□-0AA00** | **3RE4703-7LB□□-0AA0** | **3RW4037-1BB□□** |
| 46 | 10 | 15 | 30 | 40 | **3RE4703-8NB□□-0AA0** | **3RE4703-8QB□□-0AA0** | **3RE4703-8LB□□-0AA0** | **3RW4038-1BB□□** |
| 58 | 15 | 20 | 40 | 50 | **3RE4704-6NB□□-0AA0** | **3RE4704-6QB□□-0AA0** | **3RE4704-6LB□□-0AA0** | **3RW4046-1BB□□** |
| 70 | 20 | 25 | 50 | 60 | **3RE4704-7NB□□-0AA0** | **3RE4704-7QB□□-0AA0** | **3RE4704-7LB□□-0AA0** | **3RW4047-1BB□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | 1 | 1 | 1 | 4 |
| 230/240 V | 2 | 2 | 2 | 4 |
| 460/480 V | 4 | 4 | 4 | 4 |
| 575/600 V | 5 | 5 | 5 | 5 |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | | | | 0 |
| 120 VAC② | 3 | 3 | 3 | 1 |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11 | 3 | 3 | 7.5 | 10 | **3RE4702-4NF□□-0AA0** | **3RE4702-4QF□□-0AA0** | **3RE4702-4LF□□-0AA0** | **3RW4024-1BB□□** |
| 23 | 5 | 5 | 15 | 20 | **3RE4702-6NF□□-0AA0** | **3RE4702-6QF□□-0AA0** | **3RE4702-6LF□□-0AA0** | **3RW4026-1BB□□** |
| 29 | 7.5 | 7.5 | 20 | 25 | **3RE4702-7NF□□-0AA0** | **3RE4702-7QF□□-0AA0** | **3RE4702-7LF□□-0AA0** | **3RW4027-1BB□□** |
| 34 | 10 | 10 | 25 | 30 | **3RE4702-8NF□□-0AA0** | **3RE4702-8QF□□-0AA0** | **3RE4702-8LF□□-0AA0** | **3RW4028-1BB□□** |
| 42 | 10 | 15 | 30 | 40 | **3RE4703-6NF□□-0AA0** | **3RE4703-6QF□□-0AA0** | **3RE4703-6LF□□-0AA0** | **3RW4036-1BB□□** |
| 58 | 15 | 20 | 40 | 50 | **3RE4703-7NF□□-0AA0** | **3RE4703-7QF□□-0AA0** | **3RE4703-7LF□□-0AA0** | **3RW4037-1BB□□** |
| 62 | 20 | 20 | 40 | 60 | **3RE4703-8NF□□-0AA0** | **3RE4703-8QF□□-0AA0** | **3RE4703-8LF□□-0AA0** | **3RW4038-1BB□□** |
| 73 | 20 | 25 | 50 | 60 | **3RE4704-6NF□□-0AA0** | **3RE4704-6QF□□-0AA0** | **3RE4704-6LF□□-0AA0** | **3RW4046-1BB□□** |
| 98 | 30 | 30 | 75 | 75 | **3RE4704-7NF□□-0AA0** | **3RE4704-7QF□□-0AA0** | **3RE4704-7LF□□-0AA0** | **3RW4047-1BB□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **5** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | **1** | **1** | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 9 | 2 | 2 | 5 | 7.5 | **3RE4702-4NF□□-0AA0** | **3RE4702-4QF□□-0AA0** | **3RE4702-4LF□□-0AA0** | **3RW4024-1BB□□** |
| 19 | 5 | 5 | 10 | 15 | **3RE4702-6NF□□-0AA0** | **3RE4702-6QF□□-0AA0** | **3RE4702-6LF□□-0AA0** | **3RW4026-1BB□□** |
| 24 | 5 | 7.5 | 15 | 20 | **3RE4702-7NF□□-0AA0** | **3RE4702-7QF□□-0AA0** | **3RE4702-7LF□□-0AA0** | **3RW4027-1BB□□** |
| 28 | 7.5 | 10 | 20 | 25 | **3RE4702-8NF□□-0AA0** | **3RE4702-8QF□□-0AA0** | **3RE4702-8LF□□-0AA0** | **3RW4028-1BB□□** |
| 34 | 10 | 10 | 25 | 30 | **3RE4703-6NF□□-0AA0** | **3RE4703-6QF□□-0AA0** | **3RE4703-6LF□□-0AA0** | **3RW4036-1BB□□** |
| 42 | 10 | 15 | 30 | 40 | **3RE4703-7NF□□-0AA0** | **3RE4703-7QF□□-0AA0** | **3RE4703-7LF□□-0AA0** | **3RW4037-1BB□□** |
| 46 | 10 | 15 | 30 | 40 | **3RE4703-8NF□□-0AA0** | **3RE4703-8QF□□-0AA0** | **3RE4703-8LF□□-0AA0** | **3RW4038-1BB□□** |
| 58 | 15 | 20 | 40 | 50 | **3RE4704-6NF□□-0AA0** | **3RE4704-6QF□□-0AA0** | **3RE4704-6LF□□-0AA0** | **3RW4046-1BB□□** |
| 70 | 20 | 25 | 50 | 60 | **3RE4704-7NF□□-0AA0** | **3RE4704-7QF□□-0AA0** | **3RE4704-7LF□□-0AA0** | **3RW4047-1BB□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **5** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | **1** | **1** | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

# 3RE471 General Performance

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ① , change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4711-3NA□□-0AA0** | **3RE4711-3QA□□-0AA0** | **3RE4711-3LA□□-0AA0** | **3RW5213-1AC□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4711-4NA□□-0AA0** | **3RE4711-4QA□□-0AA0** | **3RE4711-4LA□□-0AA0** | **3RW5214-1AC□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4711-5NA□□-0AA0** | **3RE4711-5QA□□-0AA0** | **3RE4711-5LA□□-0AA0** | **3RW5215-1AC□□** |
| 28.4 | 7.5 | 10 | 20 | 25 | **3RE4711-6NA□□-0AA0** | **3RE4711-6QA□□-0AA0** | **3RE4711-6LA□□-0AA0** | **3RW5216-1AC□□** |
| 33.5 | 10 | 10 | 20 | 30 | **3RE4711-7NA□□-0AA0** | **3RE4711-7QA□□-0AA0** | **3RE4711-7LA□□-0AA0** | **3RW5217-1AC□□** |
| 41.6 | 10 | 10 | 30 | 40 | **3RE4712-4NA□□-0AA0** | **3RE4712-4QA□□-0AA0** | **3RE4712-4LA□□-0AA0** | **3RW5224-1AC□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4712-5NA□□-0AA0** | **3RE4712-5QA□□-0AA0** | **3RE4712-5LA□□-0AA0** | **3RW5225-1AC□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4712-6NA□□-0AA0** | **3RE4712-6QA□□-0AA0** | **3RE4712-6LA□□-0AA0** | **3RW5226-1AC□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4712-7NA□□-0AA0** | **3RE4712-7QA□□-0AA0** | **3RE4712-7LA□□-0AA0** | **3RW5227-1AC□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4713-4NA□□-0AA0** | **3RE4713-4QA□□-0AA0** | **3RE4713-4LA□□-0AA0** | **3RW5234-6AC□□** |
| 127 | 40 | 40 | 100 | 125 | **3RE4713-5NA□□-0AA0** | **3RE4713-5QA□□-0AA0** | **3RE4713-5LA□□-0AA0** | **3RW5235-6AC□□** |
| 146 | 50 | 50 | 100 | 150 | **3RE4713-6NA□□-0AA0** | **3RE4713-6QA□□-0AA0** | **3RE4713-6LA□□-0AA0** | **3RW5236-6AC□□** |
| 184 | 60 | 60 | 150 | 150 | **3RE4714-3NA□□-0AA0** | **3RE4714-3QA□□-0AA0** | **3RE4714-3LA□□-0AA0** | **3RW5243-6AC□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4714-4NA□□-0AA0** | **3RE4714-4QA□□-0AA0** | **3RE4714-4LA□□-0AA0** | **3RW5244-6AC□□** |
| 255 | 75 | 100 | 200 | 250 | **3RE4714-5NA□□-0AA0** | **3RE4714-5QA□□-0AA0** | **3RE4714-5LA□□-0AA0** | **3RW5245-6AC□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4714-6NA□□-0AA0** | **3RE4714-6QA□□-0AA0** | **3RE4714-6LA□□-0AA0** | **3RW5246-6AC□□** |
| 362 | 150 | 150 | 350 | 450 | **3RE4714-7NA□□-0AA0** | **3RE4714-7QA□□-0AA0** | **3RE4714-7LA□□-0AA0** | **3RW5247-6AC□□** |
| 416 | 150 | 200 | 400 | 500 | **3RE4714-8NA□□-0AA0** | **3RE4714-8QA□□-0AA0** | **3RE4714-8LA□□-0AA0** | **3RW5248-6AC□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **5** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

# 3RE471 General Performance

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4711-3NA□□-0AA0** | **3RE4711-3QA□□-0AA0** | **3RE4711-3LA□□-0AA0** | **3RW5213-1AC□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4711-4NA□□-0AA0** | **3RE4711-4QA□□-0AA0** | **3RE4711-4LA□□-0AA0** | **3RW5214-1AC□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4711-5NA□□-0AA0** | **3RE4711-5QA□□-0AA0** | **3RE4711-5LA□□-0AA0** | **3RW5215-1AC□□** |
| 27.2 | 7.5 | 7.5 | 20 | 25 | **3RE4711-6NA□□-0AA0** | **3RE4711-6QA□□-0AA0** | **3RE4711-6LA□□-0AA0** | **3RW5216-1AC□□** |
| 30.5 | 7.5 | 10 | 20 | 25 | **3RE4711-7NA□□-0AA0** | **3RE4711-7QA□□-0AA0** | **3RE4711-7LA□□-0AA0** | **3RW5217-1AC□□** |
| 41.6 | 10 | 10 | 30 | 40 | **3RE4712-4NA□□-0AA0** | **3RE4712-4QA□□-0AA0** | **3RE4712-4LA□□-0AA0** | **3RW5224-1AC□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4712-5NA□□-0AA0** | **3RE4712-5QA□□-0AA0** | **3RE4712-5LA□□-0AA0** | **3RW5225-1AC□□** |
| 59 | 15 | 20 | 40 | 50 | **3RE4712-6NA□□-0AA0** | **3RE4712-6QA□□-0AA0** | **3RE4712-6LA□□-0AA0** | **3RW5226-1AC□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4712-7NA□□-0AA0** | **3RE4712-7QA□□-0AA0** | **3RE4712-7LA□□-0AA0** | **3RW5227-1AC□□** |
| 97 | 30 | 30 | 75 | 75 | **3RE4713-4NA□□-0AA0** | **3RE4713-4QA□□-0AA0** | **3RE4713-4LA□□-0AA0** | **3RW5234-6AC□□** |
| 103 | 30 | 30 | 75 | 100 | **3RE4713-5NA□□-0AA0** | **3RE4713-5QA□□-0AA0** | **3RE4713-5LA□□-0AA0** | **3RW5235-6AC□□** |
| 117 | 30 | 40 | 75 | 100 | **3RE4713-6NA□□-0AA0** | **3RE4713-6QA□□-0AA0** | **3RE4713-6LA□□-0AA0** | **3RW5236-6AC□□** |
| 146 | 40 | 50 | 100 | 150 | **3RE4714-3NA□□-0AA0** | **3RE4714-3QA□□-0AA0** | **3RE4714-3LA□□-0AA0** | **3RW5243-6AC□□** |
| 180 | 60 | 60 | 150 | 175 | **3RE4714-4NA□□-0AA0** | **3RE4714-4QA□□-0AA0** | **3RE4714-4LA□□-0AA0** | **3RW5244-6AC□□** |
| 171 | 50 | 60 | 125 | 175 | **3RE4714-5NA□□-0AA0** | **3RE4714-5QA□□-0AA0** | **3RE4714-5LA□□-0AA0** | **3RW5245-6AC□□** |
| 230 | 75 | 75 | 175 | 200 | **3RE4714-6NA□□-0AA0** | **3RE4714-6QA□□-0AA0** | **3RE4714-6LA□□-0AA0** | **3RW5246-6AC□□** |
| 236 | 75 | 75 | 175 | 200 | **3RE4714-7NA□□-0AA0** | **3RE4714-7QA□□-0AA0** | **3RE4714-7LA□□-0AA0** | **3RW5247-6AC□□** |
| 262 | 75 | 100 | 200 | 250 | **3RE4714-8NA□□-0AA0** | **3RE4714-8QA□□-0AA0** | **3RE4714-8LA□□-0AA0** | **3RW5248-6AC□□** |

**Operational voltage**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 200/208 V | **1** | | **1** | | **1** | | **1** | | **1** | | **4** | |
| 230/240 V | **2** | | **2** | | **2** | | **2** | | **2** | | **4** | |
| 460/480 V | **4** | | **4** | | **4** | | **4** | | **4** | | **4** | |
| 575/600 V | **5** | | **5** | | **5** | | **5** | | **5** | | **5** | |
| **Control voltage** | | | | | | | | | | | | |
| 24 VAC② | | **1** | | **1** | | **1** | | **1** | | **1** | | **0** |
| 120 VAC② | | **3** | | **3** | | **3** | | **3** | | **3** | | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

# 3RE471 General Performance

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4711-3NB□□-0AA0** | **3RE4711-3QB□□-0AA0** | **3RE4711-3LB□□-0AA0** | **3RW5213-1AC□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4711-4NB□□-0AA0** | **3RE4711-4QB□□-0AA0** | **3RE4711-4LB□□-0AA0** | **3RW5214-1AC□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4711-5NB□□-0AA0** | **3RE4711-5QB□□-0AA0** | **3RE4711-5LB□□-0AA0** | **3RW5215-1AC□□** |
| 28.4 | 7.5 | 10 | 20 | 25 | **3RE4711-6NB□□-0AA0** | **3RE4711-6QB□□-0AA0** | **3RE4711-6LB□□-0AA0** | **3RW5216-1AC□□** |
| 33.5 | 10 | 10 | 20 | 30 | **3RE4711-7NB□□-0AA0** | **3RE4711-7QB□□-0AA0** | **3RE4711-7LB□□-0AA0** | **3RW5217-1AC□□** |
| 41.6 | 10 | 10 | 30 | 40 | **3RE4712-4NB□□-0AA0** | **3RE4712-4QB□□-0AA0** | **3RE4712-4LB□□-0AA0** | **3RW5224-1AC□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4712-5NB□□-0AA0** | **3RE4712-5QB□□-0AA0** | **3RE4712-5LB□□-0AA0** | **3RW5225-1AC□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4712-6NB□□-0AA0** | **3RE4712-6QB□□-0AA0** | **3RE4712-6LB□□-0AA0** | **3RW5226-1AC□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4712-7NB□□-0AA0** | **3RE4712-7QB□□-0AA0** | **3RE4712-7LB□□-0AA0** | **3RW5227-1AC□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4713-4NB□□-0AA0** | **3RE4713-4QB□□-0AA0** | **3RE4713-4LB□□-0AA0** | **3RW5234-6AC□□** |
| 127 | 40 | 40 | 100 | 125 | **3RE4713-5NB□□-0AA0** | **3RE4713-5QB□□-0AA0** | **3RE4713-5LB□□-0AA0** | **3RW5235-6AC□□** |
| 146 | 50 | 50 | 100 | 150 | **3RE4713-6NB□□-0AA0** | **3RE4713-6QB□□-0AA0** | **3RE4713-6LB□□-0AA0** | **3RW5236-6AC□□** |
| 184 | 60 | 60 | 150 | 150 | **3RE4714-3NB□□-0AA0** | **3RE4714-3QB□□-0AA0** | **3RE4714-3LB□□-0AA0** | **3RW5243-6AC□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4714-4NB□□-0AA0** | **3RE4714-4QB□□-0AA0** | **3RE4714-4LB□□-0AA0** | **3RW5244-6AC□□** |
| 255 | 75 | 100 | 200 | 250 | **3RE4714-5NB□□-0AA0** | **3RE4714-5QB□□-0AA0** | **3RE4714-5LB□□-0AA0** | **3RW5245-6AC□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4714-6NB□□-0AA0** | **3RE4714-6QB□□-0AA0** | **3RE4714-6LB□□-0AA0** | **3RW5246-6AC□□** |
| 362 | 150 | 150 | 350 | 450 | **3RE4714-7NB□□-0AA0** | **3RE4714-7QB□□-0AA0** | **3RE4714-7LB□□-0AA0** | **3RW5247-6AC□□** |
| 416 | 150 | 200 | 400 | 500 | **3RE4714-8NB□□-0AA0** | **3RE4714-8QB□□-0AA0** | **3RE4714-8LB□□-0AA0** | **3RW5248-6AC□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | 1 | 1 | 1 | 4 |
| | 230/240 V | 2 | 2 | 2 | 4 |
| | 460/480 V | 4 | 4 | 4 | 4 |
| | 575/600 V | 5 | 5 | 5 | 5 |
| **Control voltage** | 24 VAC ② | 1 | 1 | 1 | 0 |
| | 120 VAC ② | 3 | 3 | 3 | 1 |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

# 3RE471 General Performance

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure: Type 1/12 General purpose, dust-tight Indoor only — Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight — Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant — Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4711-3NB□□-0AA0** | **3RE4711-3QB□□-0AA0** | **3RE4711-3LB□□-0AA0** | **3RW5213-1AC□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4711-4NB□□-0AA0** | **3RE4711-4QB□□-0AA0** | **3RE4711-4LB□□-0AA0** | **3RW5214-1AC□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4711-5NB□□-0AA0** | **3RE4711-5QB□□-0AA0** | **3RE4711-5LB□□-0AA0** | **3RW5215-1AC□□** |
| 27.2 | 7.5 | 7.5 | 20 | 25 | **3RE4711-6NB□□-0AA0** | **3RE4711-6QB□□-0AA0** | **3RE4711-6LB□□-0AA0** | **3RW5216-1AC□□** |
| 30.5 | 7.5 | 10 | 20 | 25 | **3RE4711-7NB□□-0AA0** | **3RE4711-7QB□□-0AA0** | **3RE4711-7LB□□-0AA0** | **3RW5217-1AC□□** |
| 41.6 | 10 | 10 | 30 | 40 | **3RE4712-4NB□□-0AA0** | **3RE4712-4QB□□-0AA0** | **3RE4712-4LB□□-0AA0** | **3RW5224-1AC□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4712-5NB□□-0AA0** | **3RE4712-5QB□□-0AA0** | **3RE4712-5LB□□-0AA0** | **3RW5225-1AC□□** |
| 59 | 15 | 20 | 40 | 50 | **3RE4712-6NB□□-0AA0** | **3RE4712-6QB□□-0AA0** | **3RE4712-6LB□□-0AA0** | **3RW5226-1AC□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4712-7NB□□-0AA0** | **3RE4712-7QB□□-0AA0** | **3RE4712-7LB□□-0AA0** | **3RW5227-1AC□□** |
| 97 | 30 | 30 | 75 | 75 | **3RE4713-4NB□□-0AA0** | **3RE4713-4QB□□-0AA0** | **3RE4713-4LB□□-0AA0** | **3RW5234-6AC□□** |
| 103 | 30 | 30 | 75 | 100 | **3RE4713-5NB□□-0AA0** | **3RE4713-5QB□□-0AA0** | **3RE4713-5LB□□-0AA0** | **3RW5235-6AC□□** |
| 117 | 30 | 40 | 75 | 100 | **3RE4713-6NB□□-0AA0** | **3RE4713-6QB□□-0AA0** | **3RE4713-6LB□□-0AA0** | **3RW5236-6AC□□** |
| 146 | 40 | 50 | 100 | 150 | **3RE4714-3NB□□-0AA0** | **3RE4714-3QB□□-0AA0** | **3RE4714-3LB□□-0AA0** | **3RW5243-6AC□□** |
| 180 | 60 | 60 | 150 | 175 | **3RE4714-4NB□□-0AA0** | **3RE4714-4QB□□--0AA0** | **3RE4714-4LB□□-0AA0** | **3RW5244-6AC□□** |
| 171 | 50 | 60 | 125 | 175 | **3RE4714-5NB□□-0AA0** | **3RE4714-5QB□□-0AA0** | **3RE4714-5LB□□-0AA0** | **3RW5245-6AC□□** |
| 230 | 75 | 75 | 175 | 200 | **3RE4714-6NB□□-0AA0** | **3RE4714-6QB□□-0AA0** | **3RE4714-6LB□□-0AA0** | **3RW5246-6AC□□** |
| 236 | 75 | 75 | 175 | 200 | **3RE4714-7NB□□-0AA0** | **3RE4714-7QB□□-0AA0** | **3RE4714-7LB□□-0AA0** | **3RW5247-6AC□□** |
| 262 | 75 | 100 | 200 | 250 | **3RE4714-8NB□□-0AA0** | **3RE4714-8QB□□-0AA0** | **3RE4714-8LB□□-0AA0** | **3RW5248-6AC□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **5** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

# 3RE471 General Performance

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4711-3NF□□-0AA0** | **3RE4711-3QF□□-0AA0** | **3RE4711-3LF□□-0AA0** | **3RW5213-1AC□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4711-4NF□□-0AA0** | **3RE4711-4QF□□-0AA0** | **3RE4711-4LF□□-0AA0** | **3RW5214-1AC□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4711-5NF□□-0AA0** | **3RE4711-5QF□□-0AA0** | **3RE4711-5LF□□-0AA0** | **3RW5215-1AC□□** |
| 28.4 | 7.5 | 10 | 20 | 25 | **3RE4711-6NF□□-0AA0** | **3RE4711-6QF□□-0AA0** | **3RE4711-6LF□□-0AA0** | **3RW5216-1AC□□** |
| 33.5 | 10 | 10 | 20 | 30 | **3RE4711-7NF□□-0AA0** | **3RE4711-7QF□□-0AA0** | **3RE4711-7LF□□-0AA0** | **3RW5217-1AC□□** |
| 41.6 | 10 | 10 | 30 | 40 | **3RE4712-4NF□□-0AA0** | **3RE4712-4QF□□-0AA0** | **3RE4712-4LF□□-0AA0** | **3RW5224-1AC□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4712-5NF□□-0AA0** | **3RE4712-5QF□□-0AA0** | **3RE4712-5LF□□-0AA0** | **3RW5225-1AC□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4712-6NF□□-0AA0** | **3RE4712-6QF□□-0AA0** | **3RE4712-6LF□□-0AA0** | **3RW5226-1AC□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4712-7NF□□-0AA0** | **3RE4712-7QF□□-0AA0** | **3RE4712-7LF□□-0AA0** | **3RW5227-1AC□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4713-4NF□□-0AA0** | **3RE4713-4QF□□-0AA0** | **3RE4713-4LF□□-0AA0** | **3RW5234-6AC□□** |
| 127 | 40 | 40 | 100 | 125 | **3RE4713-5NF□□-0AA0** | **3RE4713-5QF□□-0AA0** | **3RE4713-5LF□□-0AA0** | **3RW5235-6AC□□** |
| 146 | 50 | 50 | 100 | 150 | **3RE4713-6NF□□-0AA0** | **3RE4713-6QF□□-0AA0** | **3RE4713-6LF□□-0AA0** | **3RW5236-6AC□□** |
| 184 | 60 | 60 | 150 | 150 | **3RE4714-3NF□□-0AA0** | **3RE4714-3QF□□-0AA0** | **3RE4714-3LF□□-0AA0** | **3RW5243-6AC□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4714-4NF□□-0AA0** | **3RE4714-4QF□□-0AA0** | **3RE4714-4LF□□-0AA0** | **3RW5244-6AC□□** |
| 255 | 75 | 100 | 200 | 250 | **3RE4714-5NF□□-0AA0** | **3RE4714-5QF□□-0AA0** | **3RE4714-5LF□□-0AA0** | **3RW5245-6AC□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4714-6NF□□-0AA0** | **3RE4714-6QF□□-0AA0** | **3RE4714-6LF□□-0AA0** | **3RW5246-6AC□□** |
| 362 | 150 | 150 | 350 | 450 | **3RE4714-7NF□□-0AA0** | **3RE4714-7QF□□-0AA0** | **3RE4714-7LF□□-0AA0** | **3RW5247-6AC□□** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | | |
| | 230/240 V | **2** | **2** | **2** | | |
| | 460/480 V | **4** | **4** | **4** | | **4** |
| | 575/600 V | **5** | **5** | **5** | | **5** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | | **0** |
| | 120 VAC② | **3** | **3** | **3** | | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

# 3RE471 General Performance

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4711-3NF□□-0AA0** | **3RE4711-3QF□□-0AA0** | **3RE4711-3LF□□-0AA0** | **3RW5213-1AC□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4711-4NF□□-0AA0** | **3RE4711-4QF□□-0AA0** | **3RE4711-4LF□□-0AA0** | **3RW5214-1AC□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4711-5NF□□-0AA0** | **3RE4711-5QF□□-0AA0** | **3RE4711-5LF□□-0AA0** | **3RW5215-1AC□□** |
| 27.2 | 7.5 | 7.5 | 20 | 25 | **3RE4711-6NF□□-0AA0** | **3RE4711-6QF□□-0AA0** | **3RE4711-6LF□□-0AA0** | **3RW5216-1AC□□** |
| 30.5 | 7.5 | 10 | 20 | 25 | **3RE4711-7NF□□-0AA0** | **3RE4711-7QF□□-0AA0** | **3RE4711-7LF□□-0AA0** | **3RW5217-1AC□□** |
| 41.6 | 10 | 10 | 30 | 40 | **3RE4712-4NF□□-0AA0** | **3RE4712-4QF□□-0AA0** | **3RE4712-4LF□□-0AA0** | **3RW5224-1AC□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4712-5NF□□-0AA0** | **3RE4712-5QF□□-0AA0** | **3RE4712-5LF□□-0AA0** | **3RW5225-1AC□□** |
| 59 | 15 | 20 | 40 | 50 | **3RE4712-6NF□□-0AA0** | **3RE4712-6QF□□-0AA0** | **3RE4712-6LF□□-0AA0** | **3RW5226-1AC□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4712-7NF□□-0AA0** | **3RE4712-7QF□□-0AA0** | **3RE4712-7LF□□-0AA0** | **3RW5227-1AC□□** |
| 97 | 30 | 30 | 75 | 75 | **3RE4713-4NF□□-0AA0** | **3RE4713-4QF□□-0AA0** | **3RE4713-4LF□□-0AA0** | **3RW5234-6AC□□** |
| 103 | 30 | 30 | 75 | 100 | **3RE4713-5NF□□-0AA0** | **3RE4713-5QF□□-0AA0** | **3RE4713-5LF□□-0AA0** | **3RW5235-6AC□□** |
| 117 | 30 | 40 | 75 | 100 | **3RE4713-6NF□□-0AA0** | **3RE4713-6QF□□-0AA0** | **3RE4713-6LF□□-0AA0** | **3RW5236-6AC□□** |
| 146 | 40 | 50 | 100 | 150 | **3RE4714-3NF□□-0AA0** | **3RE4714-3QF□□-0AA0** | **3RE4714-3LF□□-0AA0** | **3RW5243-6AC□□** |
| 180 | 60 | 60 | 150 | 175 | **3RE4714-4NF□□-0AA0** | **3RE4714-4QF□□-0AA0** | **3RE4714-4LF□□-0AA0** | **3RW5244-6AC□□** |
| 171 | 50 | 60 | 125 | 175 | **3RE4714-5NF□□-0AA0** | **3RE4714-5QF□□-0AA0** | **3RE4714-5LF□□-0AA0** | **3RW5245-6AC□□** |
| 230 | 75 | 75 | 175 | 200 | **3RE4714-6NF□□-0AA0** | **3RE4714-6QF□□-0AA0** | **3RE4714-6LF□□-0AA0** | **3RW5246-6AC□□** |
| 236 | 75 | 75 | 175 | 200 | **3RE4714-7NF□□-0AA0** | **3RE4714-7QF□□-0AA0** | **3RE4714-7LF□□-0AA0** | **3RW5247-6AC□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **5** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NA□□-0AA0** | **3RE4721-3QA□□-0AA0** | **3RE4721-3LA□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NA□□-0AA0** | **3RE4721-4QA□□-0AA0** | **3RE4721-4LA□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NA□□-0AA0** | **3RE4721-5QA□□-0AA0** | **3RE4721-5LA□□-0AA0** | **3RW5515-1HA□□** |
| 28.4 | 7.5 | 10 | 20 | 25 | **3RE4721-6NA□□-0AA0** | **3RE4721-6QA□□-0AA0** | **3RE4721-6LA□□-0AA0** | **3RW5516-1HA□□** |
| 33.5 | 10 | 10 | 20 | 30 | **3RE4721-7NA□□-0AA0** | **3RE4721-7QA□□-0AA0** | **3RE4721-7LA□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

200/208 V
230/240 V
460/480 V
575/600 V

**Control voltage**

24 VAC②
120 VAC②

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NA□□-0AA0** | **3RE4722-4QA□□-0AA0** | **3RE4722-4LA□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NA□□-0AA0** | **3RE4722-5QA□□-0AA0** | **3RE4722-5LA□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NA□□-0AA0** | **3RE4722-6QA□□-0AA0** | **3RE4722-6LA□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NA□□-0AA0** | **3RE4722-7QA□□-0AA0** | **3RE4722-7LA□□-0AA0** | **3RW5527-1HA□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4723-4NA□□-0AA0** | **3RE4723-4QA□□-0AA0** | **3RE4723-4LA□□-0AA0** | **3RW5534-6HA□□** |
| 128 | 40 | 40 | 100 | 125 | **3RE4723-5NA□□-0AA0** | **3RE4723-5QA□□-0AA0** | **3RE4723-5LA□□-0AA0** | **3RW5535-6HA□□** |
| 153 | 50 | 50 | 100 | 150 | **3RE4723-6NA□□-0AA0** | **3RE4723-6QA□□-0AA0** | **3RE4723-6LA□□-0AA0** | **3RW5536-6HA□□** |
| 186 | 60 | 60 | 150 | 150 | **3RE4724-3NA□□-0AA0** | **3RE4724-3QA□□-0AA0** | **3RE4724-3LA□□-0AA0** | **3RW5543-6HA□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4724-4NA□□-0AA0** | **3RE4724-4QA□□-0AA0** | **3RE4724-4LA□□-0AA0** | **3RW5544-6HA□□** |
| 279 | 75 | 100 | 200 | 250 | **3RE4724-5NA□□-0AA0** | **3RE4724-5QA□□-0AA0** | **3RE4724-5LA□□-0AA0** | **3RW5545-6HA□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4724-6NA□□-0AA0** | **3RE4724-6QA□□-0AA0** | **3RE4724-6LA□□-0AA0** | **3RW5546-6HA□□** |
| 416 | 150 | 150 | 350 | 450 | **3RE4724-7NA□□-0AA0** | **3RE4724-7QA□□-0AA0** | **3RE4724-7LA□□-0AA0** | **3RW5547-6HA□□** |
| 490 | 150 | 200 | 400 | 500 | **3RE4724-8NA□□-0AA0** | **3RE4724-8QA□□-0AA0** | **3RE4724-8LA□□-0AA0** | **3RW5548-6HA□□** |
| 561 | 200 | 200 | 450 | 600 | **3RE4725-2NA□□-□0AA0** | **3RE4725-2QA□□-□0AA0** | **3RE4725-2LA□□-□0AA0** | **3RW5552-6HA□□** |
| 641 | 200 | 250 | 500 | 700 | **3RE4725-3NA□□-□0AA0** | **3RE4725-3QA□□-□0AA0** | **3RE4725-3LA□□-□0AA0** | **3RW5553-6HA□□** |
| 748 | 250 | 300 | 600 | 800 | **3RE4725-4NA□□-□0AA0** | **3RE4725-4QA□□-□0AA0** | **3RE4725-4LA□□-□0AA0** | **3RW5554-6HA□□** |
| 979 | 350 | 400 | 850 | 1100 | **3RE4725-6NA□□-□0AA0** | **3RE4725-6QA□□-□0AA0** | **3RE4725-6LA□□-□0AA0** | **3RW5556-6HA□□** |
| 1130 | 400 | 450 | 1000 | 1250 | **3RE4725-8NA□□-□0AA0** | **3RE4725-8QA□□-□0AA0** | **3RE4725-8LA□□-□0AA0** | **3RW5558-6HA□□** |

**Operational voltage**

200/208 V
230/240 V
460/480 V
575/600 V

**Control voltage**

24 VAC②
120 VAC②

**Line/Load cable entry**

Top/Top
Top/Bottom
Bottom/Top
Bottom/Bottom

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NA□□-0AA0** | **3RE4721-3QA□□-0AA0** | **3RE4721-3LA□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NA□□-0AA0** | **3RE4721-4QA□□-0AA00** | **3RE4721-4LA□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NA□□-0AA0** | **3RE4721-5QA□□-0AA0** | **3RE4721-5LA□□-0AA0** | **3RW5515-1HA□□** |
| 27.2 | 7.5 | 7.5 | 20 | 25 | **3RE4721-6NA□□-0AA0** | **3RE4721-6QA□□-0AA0** | **3RE4721-6LA□□-0AA0** | **3RW5516-1HA□□** |
| 30.5 | 7.5 | 10 | 20 | 25 | **3RE4721-7NA□□-0AA0** | **3RE4721-7QA□□-0AA0** | **3RE4721-7LA□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **5** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | **1** | **1** | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NA□□-0AA0** | **3RE4722-4QA□□-0AA0** | **3RE4722-4LA□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NA□□-0AA0** | **3RE4722-5QA□□-0AA0** | **3RE4722-5LA□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NA□□-0AA0** | **3RE4722-6QA□□-0AA0** | **3RE4722-6LA□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NA□□-0AA0** | **3RE4722-7QA□□-0AA0** | **3RE4722-7LA□□-0AA0** | **3RW5527-1HA□□** |
| 97 | 30 | 30 | 75 | 75 | **3RE4723-4NA□□-0AA0** | **3RE4723-4QA□□-0AA0** | **3RE4723-4LA□□-0AA0** | **3RW5534-6HA□□** |
| 113 | 30 | 40 | 75 | 100 | **3RE4723-5NA□□-0AA0** | **3RE4723-5QA□□-0AA0** | **3RE4723-5LA□□-0AA0** | **3RW5535-6HA□□** |
| 129 | 40 | 40 | 100 | 125 | **3RE4723-6NA□□-0AA0** | **3RE4723-6QA□□-0AA0** | **3RE4723-6LA□□-0AA0** | **3RW5536-6HA□□** |
| 146 | 40 | 50 | 100 | 150 | **3RE4724-3NA□□-0AA0** | **3RE4724-3QA□□-0AA0** | **3RE4724-3LA□□-0AA0** | **3RW5543-6HA□□** |
| 180 | 60 | 60 | 150 | 175 | **3RE4724-4NA□□-0AA0** | **3RE4724-4QA□□-0AA0** | **3RE4724-4LA□□-0AA0** | **3RW5544-6HA□□** |
| 207 | 60 | 75 | 175 | 200 | **3RE4724-5NA□□-0AA0** | **3RE4724-5QA□□-0AA0** | **3RE4724-5LA□□-0AA0** | **3RW5545-6HA□□** |
| 230 | 75 | 75 | 175 | 200 | **3RE4724-6NA□□-0AA0** | **3RE4724-6QA□□-0AA0** | **3RE4724-6LA□□-0AA0** | **3RW5546-6HA□□** |
| 254 | 75 | 100 | 200 | 250 | **3RE4724-7NA□□-0AA0** | **3RE4724-7QA□□-0AA0** | **3RE4724-7LA□□-0AA0** | **3RW5547-6HA□□** |
| 262 | 75 | 100 | 200 | 250 | **3RE4724-8NA□□-0AA0** | **3RE4724-8QA□□-0AA0** | **3RE4724-8LA□□-0AA0** | **3RW5548-6HA□□** |
| 450 | 150 | 175 | 350 | 450 | **3RE4725-2NA□□-□AA0** | **3RE4725-2QA□□-□AA0** | **3RE4725-2LA□□-□AA0** | **3RW5552-6HA□□** |
| 470 | 150 | 175 | 350 | 450 | **3RE4725-3NA□□-□AA0** | **3RE4725-3QA□□-□AA0** | **3RE4725-3LA□□-□AA0** | **3RW5553-6HA□□** |
| 520 | 175 | 200 | 450 | 500 | **3RE4725-4NA□□-□AA0** | **3RE4725-4QA□□-□AA0** | **3RE4725-4LA□□-□AA0** | **3RW5554-6HA□□** |
| 840 | 300 | 350 | 700 | 800 | **3RE4725-6NA□□-□AA0** | **3RE4725-6QA□□-□AA0** | **3RE4725-6LA□□-□AA0** | **3RW5556-6HA□□** |
| 900 | 300 | 350 | 750 | 950 | **3RE4725-8NA□□-□AA0** | **3RE4725-8QA□□-□AA0** | **3RE4725-8LA□□-□AA0** | **3RW5558-6HA□□** |

**Operational voltage**

| | | | | | | |
|---|---|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **5** | **5** | **6** |

**Control voltage**

| | | | | | | |
|---|---|---|---|---|---|---|
| 24 VAC② | | | | | | **0** |
| 120 VAC② | **3** | **3** | **3** | **3** | **3** | **1** |

**Line/Load cable entry**

| | | | | | | |
|---|---|---|---|---|---|---|
| Top/Top | **1** | **1** | **1** | **1** | **1** | |
| Top/Bottom | **2** | **2** | **2** | **2** | **2** | |
| Bottom/Top | **3** | **3** | **3** | **3** | **3** | |
| Bottom/Bottom | **4** | **4** | **4** | **4** | **4** | |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 30 Severe Starting (350% rated motor full load amps for 30 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NA□□-0AA0** | **3RE4721-3QA□□-0AA0** | **3RE4721-3LA□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NA□□-0AA0** | **3RE4721-4QA□□-0AA0** | **3RE4721-4LA□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NA□□-0AA0** | **3RE4721-5QA□□-0AA0** | **3RE4721-5LA□□-0AA0** | **3RW5515-1HA□□** |
| 23.6 | 5 | 7.5 | 15 | 20 | **3RE4721-6NA□□-0AA0** | **3RE4721-6QA□□-0AA0** | **3RE4721-6LA□□-0AA0** | **3RW5516-1HA□□** |
| 26 | 7.5 | 7.5 | 15 | 20 | **3RE4721-7NA□□-0AA0** | **3RE4721-7QA□□-0AA0** | **3RE4721-7LA□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

200/208 V
230/240 V
460/480 V
575/600 V

**1 2 4 5**

**Control voltage**

24 VAC②
120 VAC②

**1 3**

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 38 | 10 | 10 | 25 | 30 | **3RE4722-4NA□□-0AA0** | **3RE4722-4QA□□-0AA0** | **3RE4722-4LA□□-0AA0** | **3RW5524-1HA□□** |
| 48 | 15 | 15 | 30 | 40 | **3RE4722-5NA□□-0AA0** | **3RE4722-5QA□□-0AA0** | **3RE4722-5LA□□-0AA0** | **3RW5525-1HA□□** |
| 62 | 20 | 20 | 40 | 60 | **3RE4722-6NA□□-0AA0** | **3RE4722-6QA□□-0AA0** | **3RE4722-6LA□□-0AA0** | **3RW5526-1HA□□** |
| 75.5 | 20 | 25 | 50 | 60 | **3RE4722-7NA□□-0AA0** | **3RE4722-7QA□□-0AA0** | **3RE4722-7LA□□-0AA0** | **3RW5527-1HA□□** |
| 81 | 25 | 30 | 60 | 75 | **3RE4723-4NA□□-0AA0** | **3RE4723-4QA□□-0AA0** | **3RE4723-4LA□□-0AA0** | **3RW5534-6HA□□** |
| 98 | 30 | 30 | 75 | 75 | **3RE4723-5NA□□-0AA0** | **3RE4723-5QA□□-0AA0** | **3RE4723-5LA□□-0AA0** | **3RW5535-6HA□□** |
| 105 | 30 | 40 | 75 | 100 | **3RE4723-6NA□□-0AA0** | **3RE4723-6QA□□-0AA0** | **3RE4723-6LA□□-0AA0** | **3RW5536-6HA□□** |
| 122 | 40 | 40 | 75 | 100 | **3RE4724-3NA□□-0AA0** | **3RE4724-3QA□□-0AA0** | **3RE4724-3LA□□-0AA0** | **3RW5543-6HA□□** |
| 140 | 40 | 50 | 100 | 125 | **3RE4724-4NA□□-0AA0** | **3RE4724-4QA□□-0AA0** | **3RE4724-4LA□□-0AA0** | **3RW5544-6HA□□** |
| 159 | 50 | 60 | 125 | 150 | **3RE4724-5NA□□-0AA0** | **3RE4724-5QA□□-0AA0** | **3RE4724-5LA□□-0AA0** | **3RW5545-6HHA □** |
| 174 | 50 | 60 | 125 | 150 | **3RE4724-6NA□□-0AA0** | **3RE4724-6QA□□-0AA0** | **3RE4724-6LA□□-0AA0** | **3RW5546-6HA□□** |
| 190 | 60 | 60 | 150 | 175 | **3RE4724-7NA□□-0AA0** | **3RE4724-7QA□□-0AA0** | **3RE4724-7LA□□-0AA0** | **3RW5547-6HA□□** |
| 200 | 60 | 75 | 150 | 200 | **3RE4724-8NA□□-0AA0** | **3RE4724-8QA□□-0AA0** | **3RE4724-8LA□□-0AA0** | **3RW5548-6HA□□** |
| 340 | 100 | 125 | 250 | 350 | **3RE4725-2NA□□-□AA0** | **3RE4725-2QA□□-□AA0** | **3RE4725-2LA□□-□AA0** | **3RW5552-6HA□□** |
| 360 | 125 | 150 | 250 | 350 | **3RE4725-3NA□□-□AA0** | **3RE4725-3QA□□-□AA0** | **3RE4725-3LA□□-□AA0** | **3RW5553-6HA□□** |
| 380 | 125 | 150 | 300 | 350 | **3RE4725-4NA□□-□AA0** | **3RE4725-4QA□□-□AA0** | **3RE4725-4LA□□-□AA0** | **3RW5554-6HA□□** |
| 670 | 200 | 250 | 550 | 700 | **3RE4725-6NA□□-□AA0** | **3RE4725-6QA□□-□AA0** | **3RE4725-6LA□□-□AA0** | **3RW5556-6HA□□** |
| 720 | 250 | 250 | 600 | 750 | **3RE4725-8NA□□-□AA0** | **3RE4725-8QA□□-□AA0** | **3RE4725-8LA□□-□AA0** | **3RW5558-6HA□□** |

**Operational voltage**

200/208 V
230/240 V
460/480 V
575/600 V

**1 2 4 5**

**Control voltage**

24 VAC②
120 VAC②

**1 3**

**Line/Load cable entry**

Top/Top
Top/Bottom
Bottom/Top
Bottom/Bottom

**1 2 3 4**

**0 1**

**4 4 4 6**

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

## Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NB□□-0AA0** | **3RE4721-3QB□□-0AA0** | **3RE4721-3LB□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NB□□-0AA0** | **3RE4721-4QB□□-0AA0** | **3RE4721-4LB□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NB□□-0AA0** | **3RE4721-5QB□□-0AA0** | **3RE4721-5LB□□-0AA0** | **3RW5515-1HA□□** |
| 28.4 | 7.5 | 10 | 20 | 25 | **3RE4721-6NB□□-0AA0** | **3RE4721-6QB□□-0AA0** | **3RE4721-6LB□□-0AA0** | **3RW5516-1HA□□** |
| 33.5 | 10 | 10 | 20 | 30 | **3RE4721-7NB□□-0AA0** | **3RE4721-7QB□□-0AA0** | **3RE4721-7LB□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **5** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | **1** | **1** | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NB□□-0AA0** | **3RE4722-4QB□□-0AA0** | **3RE4722-4LB□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NB□□-0AA0** | **3RE4722-5QB□□-0AA0** | **3RE4722-5LB□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NB□□-0AA0** | **3RE4722-6QB□□-0AA0** | **3RE4722-6LB□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NB□□-0AA0** | **3RE4722-7QB□□-0AA0** | **3RE4722-7LB□□-0AA0** | **3RW5527-1HA□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4723-4NB□□-0AA0** | **3RE4723-4QB□□-0AA0** | **3RE4723-4LB□□-0AA0** | **3RW5534-6HA□□** |
| 128 | 40 | 40 | 100 | 125 | **3RE4723-5NB□□-0AA0** | **3RE4723-5QB□□-0AA0** | **3RE4723-5LB□□-0AA0** | **3RW5535-6HA□□** |
| 153 | 50 | 50 | 100 | 150 | **3RE4723-6NB□□-0AA0** | **3RE4723-6QB□□-0AA0** | **3RE4723-6LB□□-0AA0** | **3RW5536-6HA□□** |
| 186 | 60 | 60 | 150 | 150 | **3RE4724-3NB□□-0AA0** | **3RE4724-3QB□□-0AA0** | **3RE4724-3LB□□-0AA0** | **3RW5543-6HA□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4724-4NB□□-0AA0** | **3RE4724-4QB□□-0AA0** | **3RE4724-4LB□□-0AA0** | **3RW5544-6HA□□** |
| 279 | 75 | 100 | 200 | 250 | **3RE4724-5NB□□-0AA0** | **3RE4724-5QB□□-0AA0** | **3RE4724-5LB□□-0AA0** | **3RW5545-6HA□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4724-6NB□□-0AA0** | **3RE4724-6QB□□-0AA0** | **3RE4724-6LB□□-0AA0** | **3RW5546-6HA□□** |
| 416 | 150 | 150 | 350 | 450 | **3RE4724-7NB□□-0AA0** | **3RE4724-7QB□□-0AA0** | **3RE4724-7LB□□-0AA0** | **3RW5547-6HA□□** |
| 490 | 150 | 200 | 400 | 500 | **3RE4724-8NB□□-0AA0** | **3RE4724-8QB□□-0AA0** | **3RE4724-8LB□□-0AA0** | **3RW5548-6HA□□** |
| 561 | 200 | 200 | 450 | 600 | **3RE4725-2NB□□-□AA0** | **3RE4725-2QB□□-□AA0** | **3RE4725-2LB□□-□AA0** | **3RW5552-6HA□□** |
| 641 | 200 | 250 | 500 | 700 | **3RE4725-3NB□□-□AA0** | **3RE4725-3QB□□-□AA0** | **3RE4725-3LB□□-□AA0** | **3RW5553-6HA□□** |
| 748 | 250 | 300 | 600 | 800 | **3RE4725-4NB□□-□AA0** | **3RE4725-4QB□□-□AA0** | **3RE4725-4LB□□-□AA0** | **3RW5554-6HA□□** |
| 979 | 350 | 400 | 850 | 1100 | **3RE4725-6NB□□-□AA0** | **3RE4725-6QB□□-□AA0** | **3RE4725-6LB□□-□AA0** | **3RW5556-6HA□□** |
| 1130 | 400 | 450 | 1000 | 1250 | **3RE4725-8NB□□-□AA0** | **3RE4725-8QB□□-□AA0** | **3RE4725-8LB□□-□AA0** | **3RW5558-6HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **6** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | **1** | **1** | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

**Line/Load cable entry**

| | | | | |
|---|---|---|---|---|
| Top/Top | **1** | **1** | **1** | |
| Top/Bottom | **2** | **2** | **2** | |
| Bottom/Top | **3** | **3** | **3** | |
| Bottom/Bottom | **4** | **4** | **4** | |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NB□□-0AA0** | **3RE4721-3QB□□-0AA0** | **3RE4721-3LB□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NB□□-0AA0** | **3RE4721-4QB□□-0AA0** | **3RE4721-4LB□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NB□□-0AA0** | **3RE4721-5QB□□-0AA0** | **3RE4721-5LB□□-0AA0** | **3RW5515-1HA□□** |
| 27.2 | 7.5 | 7.5 | 20 | 25 | **3RE4721-6NB□□-0AA0** | **3RE4721-6QB□□-0AA0** | **3RE4721-6LB□□-0AA0** | **3RW5516-1HA□□** |
| 30.5 | 7.5 | 10 | 20 | 25 | **3RE4721-7NB□□-0AA0** | **3RE4721-7QB□□-0AA0** | **3RE4721-7LB□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

| | | | |
|---|---|---|---|
| 200/208 V | 1 | 1 | 1 |
| 230/240 V | 2 | 2 | 2 |
| 460/480 V | 4 | 4 | 4 |
| 575/600 V | 5 | 5 | 5 |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | 1 | 1 | 1 | 0 |
| 120 VAC② | 3 | 3 | 3 | 1 |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NB□□-0AA0** | **3RE4722-4QB□□-0AA0** | **3RE4722-4LB□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NB□□-0AA0** | **3RE4722-5QB□□-0AA0** | **3RE4722-5LB□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NB□□-0AA0** | **3RE4722-6QB□□-0AA0** | **3RE4722-6LB□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NB□□-0AA0** | **3RE4722-7QB□□-0AA0** | **3RE4722-7LB□□-0AA0** | **3RW5527-1HA□□** |
| 97 | 30 | 30 | 75 | 75 | **3RE4723-4NB□□-0AA0** | **3RE4723-4QB□□-0AA0** | **3RE4723-4LB□□-0AA0** | **3RW5534-6HA□□** |
| 113 | 30 | 40 | 75 | 100 | **3RE4723-5NB□□-0AA0** | **3RE4723-5QB□□-0AA0** | **3RE4723-5LB□□-0AA0** | **3RW5535-6HA□□** |
| 129 | 40 | 40 | 100 | 125 | **3RE4723-6NB□□-0AA0** | **3RE4723-6QB□□-0AA0** | **3RE4723-6LB□□-0AA0** | **3RW5536-6HA□□** |
| 146 | 40 | 50 | 100 | 150 | **3RE4724-3NB□□-0AA0** | **3RE4724-3QB□□-0AA0** | **3RE4724-3LB□□-0AA0** | **3RW5543-6HA□□** |
| 180 | 60 | 60 | 150 | 175 | **3RE4724-4NB□□-0AA0** | **3RE4724-4QB□□-0AA0** | **3RE4724-4LB□□-0AA0** | **3RW5544-6HA□□** |
| 207 | 60 | 75 | 175 | 200 | **3RE4724-5NB□□-0AA0** | **3RE4724-5QB□□-0AA0** | **3RE4724-5LB□□-0AA0** | **3RW5545-6HA□□** |
| 230 | 75 | 75 | 175 | 200 | **3RE4724-6NB□□-0AA0** | **3RE4724-6QB□□-0AA0** | **3RE4724-6LB□□-0AA0** | **3RW5546-6HA□□** |
| 254 | 75 | 100 | 200 | 250 | **3RE4724-7NB□□-0AA0** | **3RE4724-7QB□□-0AA0** | **3RE4724-7LB□□-0AA0** | **3RW5547-6HA□□** |
| 262 | 75 | 100 | 200 | 250 | **3RE4724-8NB□□-0AA0** | **3RE4724-8QB□□-0AA0** | **3RE4724-8LB□□-0AA0** | **3RW5548-6HA□□** |
| 450 | 150 | 175 | 350 | 450 | **3RE4725-2NB□□-□AA0** | **3RE4725-2QB□□-□AA0** | **3RE4725-2LB□□-□AA0** | **3RW5552-6HA□□** |
| 470 | 150 | 175 | 350 | 450 | **3RE4725-3NB□□-□AA0** | **3RE4725-3QB□□-□AA0** | **3RE4725-3LB□□-□AA0** | **3RW5553-6HA□□** |
| 520 | 175 | 200 | 450 | 500 | **3RE4725-4NB□□-□AA0** | **3RE4725-4QB□□-□AA0** | **3RE4725-4LB□□-□AA0** | **3RW5554-6HA□□** |
| 840 | 300 | 350 | 700 | 800 | **3RE4725-6NB□□-□AA0** | **3RE4725-6QB□□-□AA0** | **3RE4725-6LB□□-□AA0** | **3RW5556-6HA□□** |
| 900 | 300 | 350 | 750 | 950 | **3RE4725-8NB□□-□AA0** | **3RE4725-8QB□□-□AA0** | **3RE4725-8LB□□-□AA0** | **3RW5558-6HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | 1 | 1 | 1 | 4 |
| 230/240 V | 2 | 2 | 2 | 4 |
| 460/480 V | 4 | 4 | 4 | 4 |
| 575/600 V | 5 | 5 | 5 | 6 |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | 1 | 1 | 1 | 0 |
| 120 VAC② | 3 | 3 | 3 | 1 |

**Line/Load cable entry**

| | | | |
|---|---|---|---|
| Top/Top | 1 | 1 | 1 |
| Top/Bottom | 2 | 2 | 2 |
| Bottom/Top | 3 | 3 | 3 |
| Bottom/Bottom | 4 | 4 | 4 |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.
- Highlighted catalog numbers indicate configurations with shortest lead time.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

## Class 30 Severe Starting (350% rated motor full load amps for 30 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NB□□-0AA0** | **3RE4721-3QB□□-0AA0** | **3RE4721-3LB□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NB□□-0AA0** | **3RE4721-4QB□□-0AA0** | **3RE4721-4LB□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NB□□-0AA0** | **3RE4721-5QB□□-0AA0** | **3RE4721-5LB□□-0AA0** | **3RW5515-1HA□□** |
| 23.6 | 5 | 7.5 | 15 | 20 | **3RE4721-6NB□□-0AA0** | **3RE4721-6QB□□-0AA0** | **3RE4721-6LB□□-0AA0** | **3RW5516-1HA□□** |
| 26 | 7.5 | 7.5 | 15 | 20 | **3RE4721-7NB□□-0AA0** | **3RE4721-7QB□□-0AA0** | **3RE4721-7LB□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | 1 | 1 | 1 | 4 |
| 230/240 V | 2 | 2 | 2 | 4 |
| 460/480 V | 4 | 4 | 4 | 4 |
| 575/600 V | 5 | 5 | 5 | 5 |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | 1 | 1 | 1 | 0 |
| 120 VAC② | 3 | 3 | 3 | 1 |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NB□□-0AA0** | **3RE4722-4QB□□-0AA0** | **3RE4722-4LB□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NB□□-0AA0** | **3RE4722-5QB□□-0AA0** | **3RE4722-5LB□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NB□□-0AA0** | **3RE4722-6QB□□-0AA0** | **3RE4722-6LB□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NB□□-0AA0** | **3RE4722-7QB□□-0AA0** | **3RE4722-7LB□□-0AA0** | **3RW5527-1HA□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4723-4NB□□-0AA0** | **3RE4723-4QB□□-0AA0** | **3RE4723-4LB□□-0AA0** | **3RW5534-6HA□□** |
| 128 | 40 | 40 | 100 | 125 | **3RE4723-5NB□□-0AA0** | **3RE4723-5QB□□-0AA0** | **3RE4723-5LB□□-0AA0** | **3RW5535-6HA□□** |
| 153 | 50 | 50 | 100 | 150 | **3RE4723-6NB□□-0AA0** | **3RE4723-6QB□□-0AA0** | **3RE4723-6LB□□-0AA0** | **3RW5536-6HA□□** |
| 186 | 60 | 60 | 150 | 150 | **3RE4724-3NB□□-0AA0** | **3RE4724-3QB□□-0AA0** | **3RE4724-3LB□□-0AA0** | **3RW5543-6HA□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4724-4NB□□-0AA0** | **3RE4724-4QB□□-0AA0** | **3RE4724-4LB□□-0AA0** | **3RW5544-6HA□□** |
| 279 | 75 | 100 | 200 | 250 | **3RE4724-5NB□□-0AA0** | **3RE4724-5QB□□-0AA0** | **3RE4724-5LB□□-0AA0** | **3RW5545-6HA□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4724-6NB□□-0AA0** | **3RE4724-6QB□□-0AA0** | **3RE4724-6LB□□-0AA0** | **3RW5546-6HA□□** |
| 416 | 150 | 150 | 350 | 450 | **3RE4724-7NB□□-0AA0** | **3RE4724-7QB□□-0AA0** | **3RE4724-7LB□□-0AA0** | **3RW5547-6HA□□** |
| 490 | 150 | 200 | 400 | 500 | **3RE4724-8NB□□-0AA0** | **3RE4724-8QB□□-0AA0** | **3RE4724-8LB□□-0AA0** | **3RW5548-6HA□□** |
| 561 | 200 | 200 | 450 | 600 | **3RE4725-2NB□□-□AA0** | **3RE4725-2QB□□-□AA0** | **3RE4725-2LB□□-□AA0** | **3RW5552-6HA□□** |
| 641 | 200 | 250 | 500 | 700 | **3RE4725-3NB□□-□AA0** | **3RE4725-3QB□□-□AA0** | **3RE4725-3LB□□-□AA0** | **3RW5553-6HA□□** |
| 748 | 250 | 300 | 600 | 800 | **3RE4725-4NB□□-□AA0** | **3RE4725-4QB□□-□AA0** | **3RE4725-4LB□□-□AA0** | **3RW5554-6HA□□** |
| 979 | 350 | 400 | 850 | 1100 | **3RE4725-6NB□□-□AA0** | **3RE4725-6QB□□-□AA0** | **3RE4725-6LB□□-□AA0** | **3RW5556-6HA□□** |
| 1130 | 400 | 450 | 1000 | 1250 | **3RE4725-8NB□□-□AA0** | **3RE4725-8QB□□-□AA0** | **3RE4725-8LB□□-□AA0** | **3RW5558-6HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | 1 | 1 | 1 | 4 |
| 230/240 V | 2 | 2 | 2 | 4 |
| 460/480 V | 4 | 4 | 4 | 4 |
| 575/600 V | 5 | 5 | 5 | 6 |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | 1 | 1 | 1 | 0 |
| 120 VAC② | 3 | 3 | 3 | 1 |

**Line/Load cable entry**

| | | | | |
|---|---|---|---|---|
| Top/Top | 1 | 1 | 1 | |
| Top/Bottom | 2 | 2 | 2 | |
| Bottom/Top | 3 | 3 | 3 | |
| Bottom/Bottom | 4 | 4 | 4 | |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 10 Normal Starting (350% rated motor full load amps for 10 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NF□□-0AA0** | **3RE4721-3QF□□-0AA0** | **3RE4721-3LF□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NF□□-0AA0** | **3RE4721-4QF□□-0AA0** | **3RE4721-4LF□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NF□□-0AA0** | **3RE4721-5QF□□-0AA0** | **3RE4721-5LF□□-0AA0** | **3RW5515-1HA□□** |
| 28.4 | 7.5 | 10 | 20 | 25 | **3RE4721-6NF□□-0AA0** | **3RE4721-6QF□□-0AA0** | **3RE4721-6LF□□-0AA0** | **3RW5516-1HA□□** |
| 33.5 | 10 | 10 | 20 | 30 | **3RE4721-7NF□□-0AA0** | **3RE4721-7QF□□-0AA0** | **3RE4721-7LF□□-0AA0** | **3RW5517-1HA□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **5** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NF□□-0AA0** | **3RE4722-4QF□□-0AA0** | **3RE4722-4LF□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NF□□-0AA0** | **3RE4722-5QF□□-0AA0** | **3RE4722-5LF□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NF□□-0AA0** | **3RE4722-6QF□□-0AA0** | **3RE4722-6LF□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NF□□-0AA0** | **3RE4722-7QF□□-0AA0** | **3RE4722-7LF□□-0AA0** | **3RW5527-1HA□□** |
| 101 | 30 | 30 | 75 | 100 | **3RE4723-4NF□□-0AA0** | **3RE4723-4QF□□-0AA0** | **3RE4723-4LF□□-0AA0** | **3RW5534-6HA□□** |
| 128 | 40 | 40 | 100 | 125 | **3RE4723-5NF□□-0AA0** | **3RE4723-5QF□□-0AA0** | **3RE4723-5LF□□-0AA0** | **3RW5535-6HA□□** |
| 153 | 50 | 50 | 100 | 150 | **3RE4723-6NF□□-0AA0** | **3RE4723-6QF□□-0AA0** | **3RE4723-6LF□□-0AA0** | **3RW5536-6HA□□** |
| 186 | 60 | 60 | 150 | 150 | **3RE4724-3NF□□-0AA0** | **3RE4724-3QF□□-0AA0** | **3RE4724-3LF□□-0AA0** | **3RW5543-6HA□□** |
| 220 | 60 | 75 | 150 | 200 | **3RE4724-4NF□□-0AA0** | **3RE4724-4QF□□-0AA0** | **3RE4724-4LF□□-0AA0** | **3RW5544-6HA□□** |
| 279 | 75 | 100 | 200 | 250 | **3RE4724-5NF□□-0AA0** | **3RE4724-5QF□□-0AA0** | **3RE4724-5LF□□-0AA0** | **3RW5545-6HA□□** |
| 328 | 100 | 125 | 250 | 300 | **3RE4724-6NF□□-0AA0** | **3RE4724-6QF□□-0AA0** | **3RE4724-6LF□□-0AA0** | **3RW5546-6HA□□** |
| 416 | 150 | 150 | 350 | 450 | **3RE4724-7NF□□-0AA0** | **3RE4724-7QF□□-0AA0** | **3RE4724-7LF□□-0AA0** | **3RW5547-6HA□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **6** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 20 Heavy Starting (350% rated motor full load amps for 20 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NF□□-0AA0** | **3RE4721-3QF□□-0AA0** | **3RE4721-3LF□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NF□□-0AA0** | **3RE4721-4QF□□-0AA0** | **3RE4721-4LF□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NF□□-0AA0** | **3RE4721-5QF□□-0AA0** | **3RE4721-5LF□□-0AA0** | **3RW5515-1HA□□** |
| 27.2 | 7.5 | 7.5 | 20 | 25 | **3RE4721-6NF□□-0AA0** | **3RE4721-6QF□□-0AA0** | **3RE4721-6LF□□-0AA0** | **3RW5516-1HA□□** |
| 30.5 | 7.5 | 10 | 20 | 25 | **3RE4721-7NF□□-0AA0** | **3RE4721-7QF□□-0AA0** | **3RE4721-7LF□□-0AA0** | **3RW5517-1HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **5** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | | | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 41.6 | 10 | 10 | 30 | 40 | **3RE4722-4NF□□-0AA0** | **3RE4722-4QF□□-0AA0** | **3RE4722-4LF□□-0AA0** | **3RW5524-1HA□□** |
| 55.5 | 15 | 20 | 40 | 50 | **3RE4722-5NF□□-0AA0** | **3RE4722-5QF□□-0AA0** | **3RE4722-5LF□□-0AA0** | **3RW5525-1HA□□** |
| 68 | 20 | 25 | 50 | 60 | **3RE4722-6NF□□-0AA0** | **3RE4722-6QF□□-0AA0** | **3RE4722-6LF□□-0AA0** | **3RW5526-1HA□□** |
| 82.5 | 25 | 30 | 60 | 75 | **3RE4722-7NF□□-0AA0** | **3RE4722-7QF□□-0AA0** | **3RE4722-7LF□□-0AA0** | **3RW5527-1HA□□** |
| 97 | 30 | 30 | 75 | 75 | **3RE4723-4NF□□-0AA0** | **3RE4723-4QF□□-0AA0** | **3RE4723-4LF□□-0AA0** | **3RW5534-6HA□□** |
| 113 | 30 | 40 | 75 | 100 | **3RE4723-5NF□□-0AA0** | **3RE4723-5QF□□-0AA0** | **3RE4723-5LF□□-0AA0** | **3RW5535-6HA□□** |
| 129 | 40 | 40 | 100 | 125 | **3RE4723-6NF□□-0AA0** | **3RE4723-6QF□□-0AA0** | **3RE4723-6LF□□-0AA0** | **3RW5536-6HA□□** |
| 146 | 40 | 50 | 100 | 150 | **3RE4724-3NF□□-0AA0** | **3RE4724-3QF□□-0AA0** | **3RE4724-3LF□□-0AA0** | **3RW5543-6HA□□** |
| 180 | 60 | 60 | 150 | 175 | **3RE4724-4NF□□-0AA0** | **3RE4724-4QF□□-0AA0** | **3RE4724-4LF□□-0AA0** | **3RW5544-6HA□□** |
| 207 | 60 | 75 | 175 | 200 | **3RE4724-5NF□□-0AA0** | **3RE4724-5QF□□-0AA0** | **3RE4724-5LF□□-0AA0** | **3RW5545-6HA□□** |
| 230 | 75 | 75 | 175 | 200 | **3RE4724-6NF□□-0AA0** | **3RE4724-6QF□□-0AA0** | **3RE4724-6LF□□-0AA0** | **3RW5546-6HA□□** |
| 254 | 75 | 100 | 200 | 250 | **3RE4724-7NF□□-0AA0** | **3RE4724-7QF□□-0AA0** | **3RE4724-7LF□□-0AA0** | **3RW5547-6HA□□** |

**Operational voltage**

| | | | | |
|---|---|---|---|---|
| 200/208 V | **1** | **1** | **1** | **4** |
| 230/240 V | **2** | **2** | **2** | **4** |
| 460/480 V | **4** | **4** | **4** | **4** |
| 575/600 V | **5** | **5** | **5** | **6** |

**Control voltage**

| | | | | |
|---|---|---|---|---|
| 24 VAC② | **1** | | | **0** |
| 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Ordering Information

- For factory modifications and accessories, see pages 7/136 - 7/137.
- For technical data, see pages 7/138 - 7/140.
- For wiring diagrams, see pages 7/141 - 7/143.
- For dimension diagrams, see pages 7/144 - 7/149.

## Oversized

For oversized enclosures ①, change the 9th character of the catalog number as follows:

| NEMA Type | From | To |
|---|---|---|
| 1/12 | N | P |
| 3R/4 | Q | R |
| 4X | L | M |

### Class 30 Severe Starting (350% rated motor full load amps for 30 seconds)

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 11.5 | 2 | 3 | 7.5 | 10 | **3RE4721-3NF□□-0AA0** | **3RE4721-3QF□□-0AA0** | **3RE4721-3LF□□-0AA0** | **3RW5513-1HA□□** |
| 15.9 | 3 | 5 | 10 | 10 | **3RE4721-4NF□□-0AA0** | **3RE4721-4QF□□-0AA0** | **3RE4721-4LF□□-0AA0** | **3RW5514-1HA□□** |
| 22.3 | 5 | 7.5 | 15 | 20 | **3RE4721-5NF□□-0AA0** | **3RE4721-5QF□□-0AA0** | **3RE4721-5F□□-0AA0** | **3RW5515-1HA□□** |
| 23.6 | 5 | 7.5 | 15 | 20 | **3RE4721-6NF□□-0AA0** | **3RE4721-6QF□□-0AA0** | **3RE4721-6LF□□-0AA0** | **3RW5516-1HA□□** |
| 26 | 7.5 | 7.5 | 15 | 20 | **3RE4721-7NF□□-0AA0** | **3RE4721-7QF□□-0AA0** | **3RE4721-7LF□□-0AA0** | **3RW5517-1HA□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **5** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

| Max. Motor Full Load Amps | 3-Phase Motor Hp Rating 200 V | 230 V | 460 V | 575 V | NEMA Type Enclosure Type 1/12 General purpose, dust-tight Indoor only Catalog Number | Type 3R/4 Weatherproof, watertight, dust-tight Catalog Number | Type 4X 316 Stainless Steel Watertight, dust-tight corrosion resistant Catalog Number | Open Soft Starter (reference only) |
|---|---|---|---|---|---|---|---|---|
| 38 | 10 | 10 | 25 | 30 | **3RE4722-4NF□□-0AA0** | **3RE4722-4QF□□-0AA0** | **3RE4722-4LF□□-0AA0** | **3RW5524-1HA□□** |
| 48 | 15 | 15 | 30 | 40 | **3RE4722-5NF□□-0AA0** | **3RE4722-5QF□□-0AA0** | **3RE4722-5LF□□-0AA0** | **3RW5525-1HA□□** |
| 62 | 20 | 20 | 40 | 60 | **3RE4722-6NF□□-0AA0** | **3RE4722-6QF□□-0AA0** | **3RE4722-6LF□□-0AA0** | **3RW5526-1HA□□** |
| 75.5 | 20 | 25 | 50 | 60 | **3RE4722-7NF□□-0AA0** | **3RE4722-7QF□□-0AA0** | **3RE4722-7LF□□-0AA0** | **3RW5527-1HA□□** |
| 81 | 25 | 30 | 60 | 75 | **3RE4723-4NF□□-0AA0** | **3RE4723-4QF□□-0AA0** | **3RE4723-4LF□□-0AA0** | **3RW5534-6HA□□** |
| 98 | 30 | 30 | 75 | 75 | **3RE4723-5NF□□-0AA0** | **3RE4723-5QF□□-0AA0** | **3RE4723-5LF□□-0AA0** | **3RW5535-6HA□□** |
| 105 | 30 | 40 | 75 | 100 | **3RE4723-6NF□□-0AA0** | **3RE4723-6QF□□-0AA0** | **3RE4723-6LF□□-0AA0** | **3RW5536-6HA□□** |
| 122 | 40 | 40 | 75 | 100 | **3RE4724-3NF□□-0AA0** | **3RE4724-3QF□□-0AA0** | **3RE4724-3LF□□-0AA0** | **3RW5543-6HA□□** |
| 140 | 40 | 50 | 100 | 125 | **3RE4724-4NF□□-0AA0** | **3RE4724-4QF□□-0AA0** | **3RE4724-4LF□□-0AA0** | **3RW5544-6HA□□** |
| 159 | 50 | 60 | 125 | 150 | **3RE4724-5NF□□-0AA0** | **3RE4724-5QF□□-0AA0** | **3RE4724-5LF□□-0AA0** | **3RW5545-6HA□□** |
| 174 | 50 | 60 | 125 | 150 | **3RE4724-6NF□□-0AA0** | **3RE4724-6QF□□-0AA0** | **3RE4724-6LF□□-0AA0** | **3RW5546-6HA□□** |
| 190 | 60 | 60 | 150 | 175 | **3RE4724-7NF□□-0AA0** | **3RE4724-7QF□□-0AA0** | **3RE4724-7LF□□-0AA0** | **3RW5547-6HA□□** |

| | | | | | |
|---|---|---|---|---|---|
| **Operational voltage** | 200/208 V | **1** | **1** | **1** | **4** |
| | 230/240 V | **2** | **2** | **2** | **4** |
| | 460/480 V | **4** | **4** | **4** | **4** |
| | 575/600 V | **5** | **5** | **5** | **6** |
| **Control voltage** | 24 VAC② | **1** | **1** | **1** | **0** |
| | 120 VAC② | **3** | **3** | **3** | **1** |

① Oversized enclosures are required for certain factory modifications as indicated starting on page 7/136.

Oversized enclosures may also be ordered for additional panel space to accommodate field installed components.

② Internally supplied with CPT.

## Pilot devices

49SAP05

E-Stop

49SAS01

49SAS04

| Device① | Factory installed Mod code | Field installed Catalog number |
|---|---|---|
| Start-Stop push buttons, momentary | **A01** | **49SAP05** |
| Emergency Stop push button | **A15** | NA |
| Hand-Off-Auto selector switch | **A03** | **49SAS01** |
| Off-On selector switch | **A04** | **49SAS04** |
| HOA switch and Start push button | **A16** | NA |

## Pilot lights

49SPL0BRF

49SPL0AGF

Fault

| Device① | Voltage | Factory installed Mod code | Field installed Catalog number |
|---|---|---|---|
| Red ON | 24 V AC | F00 | 49SPL0BRJ |
| | 120 V AC | | 49SPL0BRF |
| Green OFF | 24 V AC | F08 | 49SPL0AGJ |
| | 120 V AC | | 49SPL0AGF |
| Amber Fault | 24 V AC | F10 | N/A |
| | 120 V AC | | N/A |

## HMI modules

Std. Feature HMI
3RW5980-0HS00
(For reference only)

High Feature HMI
3RW5980-0HF00

| Device | Performance level | Factory installed Mod code | Field installed Catalog number |
|---|---|---|---|
| Standard featured HMI mounted on soft starter | Basic (3RE470) | NA | NA |
| | General (3RE471) | (Standard) | NA |
| | High (3RE472) | NA | NA |
| Standard featured HMI mounted on enclosure door | Basic (3RE470) | NA | NA |
| | General (3RE471) | **H00** | NA |
| | High (3RE472) | NA | NA |
| High featured HMI mounted on soft starter | Basic (3RE470) | NA | NA |
| | General (3RE471) | **H02** | NA |
| | High (3RE472) | (Standard) | NA |
| High featured HMI mounted on enclosure door | Basic (3RE470) | NA | NA |
| | General (3RE471) | **H01** | NA |
| | High (3RE472) | **H01** | NA |

## Control power transformer – 100 VA extra capacity

| Field installed Mod code |
|---|
| **C00** |

## Networking / Communication

3RW5980-0CS00

3RW5980-0CR00

| Device | Performance level | Factory installed Mod code | Field installed Catalog number |
|---|---|---|---|
| PROFIBUS communication | General (3RE471), High (3RE472) | **N01** | **3RW5980-0CP00** |
| Standard PROFINET communication | General (3RE471), High (3RE472) | **N02** | **3RW5980-0CS00** |
| High Feature PROFINET communication | High (3RE472) | **N03** | **3RW5950-0CH00** |
| Ethernet/IP communication | General (3RE471), High (3RE472) | **N04** | **3RW5980-0CE00** |
| Modbus RTU communication | General (3RE471), High (3RE472) | **N05** | **3RW5980-0CR00** |
| Modbus TCP communication | General (3RE471), High (3RE472) | **N06** | **3RW5980-0CT00** |

① 30 mm devices with brushed aluminum legend plates.
Pilot lights include LED bulbs.

### Control relay – 2 NO and 2 NC (contacts are customer wired)

| Control voltage | Factory installed Mod code | Field installed Catalog number |
|---|---|---|
| 24 V AC | **R22** | **3RH2122-1AB00** |
| 120 V AC | **R22** | **3RH2122-1AK60** |

### Isolation contactor

| Oversized enclosure required | Factory installed Mod code |
|---|---|
| Yes | **K03** |

### Emergency bypass starter with selector switch

| Oversized enclosure required | Factory installed Mod code |
|---|---|
| Yes | **K04** |

### Thermistor motor protection

| Performance level | Factory installed Mod code |
|---|---|
| Basic (3RE470) 24 V control only | V11 |
| General (3RE471)② | V11 |
| High (3RE472) | (Standard) |

### Lug kit

| Description | Performance level | Field installed Catalog number |
|---|---|---|
| For connecting field installed power conductors to soft starter line / load busbars. Each kit includes three (3) lug assemblies. | 3RE4713 and 3RE4723 | **3RE49030JAA** |
| | 3RE4714 and 3RE4724 | **3RE49030JAB** |
| | 3RE4725 | **3RE49030JAC** |

### Failsafe – Safe torque Off

| Description | Performance Level | Factory installed Mod code |
|---|---|---|
| Integrated fail-safe digital input for directly connecting the emergency stop, and thus covers SIL 1 STO applications | High (3RE472) | **X01** |

### Surge protective device – Type 2 100kA per phase

| Description | Oversized enclosure required | Factory installed Mod code |
|---|---|---|
| Provides protection for electronic loads | Yes | **S02** |

### Space heater with thermostat

| Description | Factory installed Mod code |
|---|---|
| Protects components within the enclosure from condensation when the unit is not running | **E01** |

### Special modification undefined

| Description | Factory installed Mod code |
|---|---|
| Specify special modification within the order notes | **Y00** |

More accessories for open soft starters:
3RW40, see page 7/92
3RW52, see page 7/69
3RW55, see page 7/34

② Thermistor motor protection with 3RE471 is optional in lieu of standard analog output. Both thermistor motor protection and analog output together is not available.

## The soft starters may be used in isolated supply networks (IT systems) up to 600 V AC. For long starting times it is recommended to have a PTC sensor or temperature switch in the motor.

This also applies for the ramp-down modes torque control, pump stop and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down. No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter. Please observe the maximum starts per hour specified in the technical specifications.

When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be sized such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is sized with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the

potential switching off of the soft starter. For sizing soft starters, we recommend our Simulation Tool for Soft Starters (STS), see page 8. Recommended parameters for the initial commissioning of our soft starters are listed in every report of our Simulation Tool for Soft Starters (STS). In addition, our High Performance soft starters provide support by means of their commissioning wizards.

The rated operating temperature of the enclosed starter is 40 degree C (104 degree F) ambient to the outside of the enclosure. Consult with the Siemens Application Engineering group componentsae.ic@siemens.com if the ambient temperature for an application exceeds the rated temperature.

**More Information**

3RW open soft starters web page, https://new.siemens.com/us/en/products/automation/industrial-controls/sirius/sirius-hybrid/3rw-soft-starter.html

3RE47 enclosed soft starters web page, usa.siemens.com/3re47

Simulation Tool for Open Soft Starters (STS), see page 8

3RE47 enclosed soft starter Industry Online Support (SIOS) topic page https://support.industry.siemens.com/cs/ww/en/view/109812963

## Non-combination starter maximum starts per hour

| 3RE47 Cat No | Starter Cat No | Standard enclosure | | | Oversized enclosure | | |
|---|---|---|---|---|---|---|---|
| | | Max starts per hour @300 full rated current | | | | | |
| | | 10 SEC (CLASS 10E) | 20 SEC (CLASS 20E) | 30 SEC (CLASS 30E) | 10 SEC (CLASS 10E) | 20 SEC (CLASS 20E) | 30 SEC (CLASS 30E) |
| 3RE47024 | 3RW4024 | 36 | 34 | NA | 36 | 34 | NA |
| 3RE47026 | 3RW4026 | 15 | 15 | NA | 15 | 15 | NA |
| 3RE47027 | 3RW4027 | 16 | 14 | NA | 16 | 14 | NA |
| 3RE47028 | 3RW4028 | 12 | 13 | NA | 12 | 13 | NA |
| 3RE47036 | 3RW4036 | 26 | 21 | NA | 26 | 21 | NA |
| 3RE47037 | 3RW4037 | 15 | 22 | NA | 15 | 22 | NA |
| 3RE47038 | 3RW4038 | 15 | 24 | NA | 15 | 24 | NA |
| 3RE47046 | 3RW4046 | 15 | 16 | NA | 15 | 16 | NA |
| 3RE47047 | 3RW4047 | 10 | 16 | NA | 10 | 16 | NA |
| | | Max starts per hour @350 full rated current | | | | | |
| 3RE47113 | 3RW5213 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47114 | 3RW5214 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47115 | 3RW5215 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47116 | 3RW5216 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47117 | 3RW5217 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47213 | 3RW5513 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47214 | 3RW5514 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47215 | 3RW5515 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47216 | 3RW5516 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47217 | 3RW5517 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47124 | 3RW5224 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47125 | 3RW5225 | 13 | 4 | NA | 13 | 4 | NA |
| 3RE47126 | 3RW5226 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47127 | 3RW5227 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47224 | 3RW5524 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47225 | 3RW5525 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47226 | 3RW5526 | 4 | 4 | 3 | 4 | 4 | 3 |
| 3RE47227 | 3RW5527 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47134 | 3RW5234 | 10 | 5 | NA | 13 | 7 | NA |
| 3RE47135 | 3RW5235 | 7 | 4 | NA | 12 | 6 | NA |
| 3RE47136 | 3RW5236 | 5 | 3 | NA | 10 | 5 | NA |
| 3RE47234 | 3RW5534 | 4 | 4 | 2 | 4 | 7 | 3 |
| 3RE47235 | 3RW5535 | 4 | 4 | 2 | 4 | 7 | 3 |
| 3RE47236 | 3RW5536 | 4 | 3 | 2 | 4 | 6 | 3 |
| 3RE47143 | 3RW5243 | 6 | 3 | NA | 11 | 5 | NA |
| 3RE47144 | 3RW5244 | 5 | 2 | NA | 10 | 5 | NA |
| 3RE47145 | 3RW5245 | 8 | 4 | NA | 11 | 5 | NA |
| 3RE47146 | 3RW5246 | 7 | 3 | NA | 10 | 5 | NA |
| 3RE47147 | 3RW5247 | 6 | 3 | NA | 13 | 7 | NA |
| 3RE47148 | 3RW5248 | 7 | 4 | NA | 13 | 7 | NA |
| 3RE47243 | 3RW5543 | 4 | 3 | 2 | 4 | 5 | 3 |
| 3RE47244 | 3RW5544 | 4 | 3 | 2 | 4 | 6 | 3 |
| 3RE47245 | 3RW5545 | 4 | 4 | 3 | 4 | 5 | 3 |
| 3RE47246 | 3RW5546 | 4 | 4 | 2 | 4 | 5 | 3 |
| 3RE47247 | 3RW5547 | 4 | 3 | 2 | 4 | 7 | 3 |
| 3RE47248 | 3RW5548 | 4 | 4 | 3 | 4 | 7 | 3 |
| 3RE47252 | 3RW5552 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47253 | 3RW5553 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47254 | 3RW5554 | 4 | 5 | 3 | 4 | 7 | 3 |
| 3RE47256 | 3RW5556 | 4 | 3 | 2 | 4 | 5 | 3 |
| 3RE47258 | 3RW5558 | 4 | 4 | 3 | 4 | 5 | 4 |

For enclosed soft starters, the maximum starts per hour indicated in this table takes precedence over what may be indicated for the corresponding open soft starter.

Consult with Siemens Application Engineering group @componentsae.ic@ siemens.com if the maximum starts per hour for an application exceeds that indicated in this table.

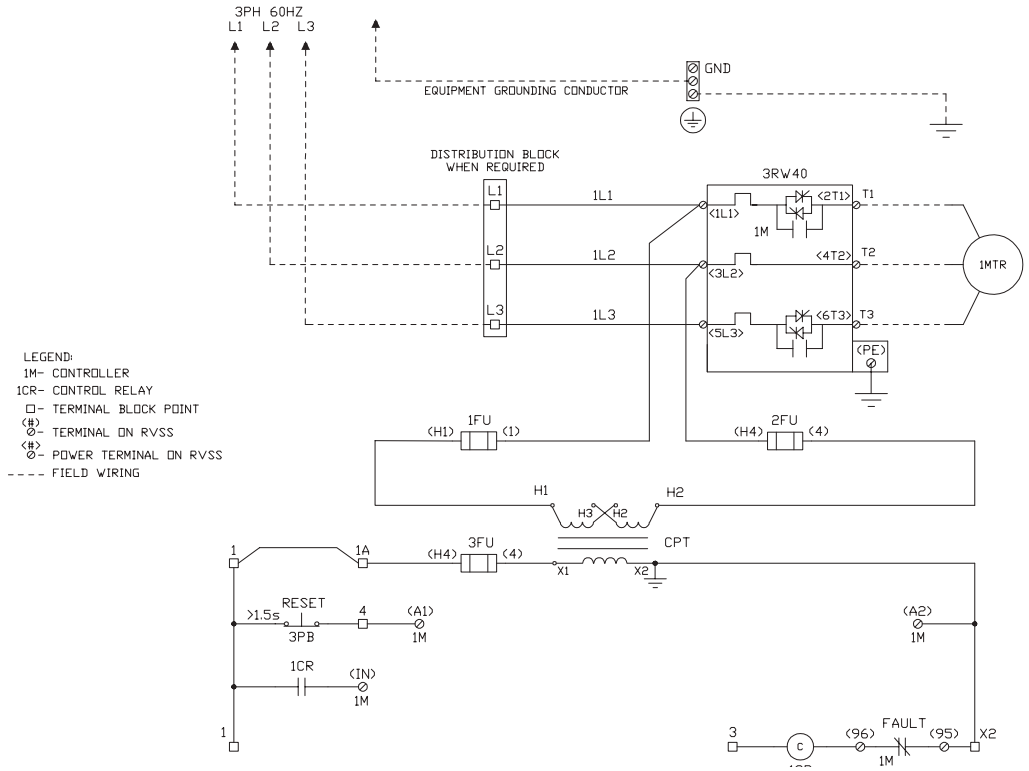
## Combination starter maximum starts per hour

| 3RE47 Cat No | Starter Cat No | Standard enclosure | | | Oversized enclosure | | |
|---|---|---|---|---|---|---|---|
| | | Max starts per hour @300 full rated current | | | | | |
| | | 10 SEC (CLASS 10E) | 20 SEC (CLASS 20E) | 30 SEC (CLASS 30E) | 10 SEC (CLASS 10E) | 20 SEC (CLASS 20E) | 30 SEC (CLASS 30E) |
| 3RE47024 | 3RW4024 | 34 | NA | NA | 34 | NA | NA |
| 3RE47026 | 3RW4026 | 15 | NA | NA | 15 | NA | NA |
| 3RE47027 | 3RW4027 | 14 | NA | NA | 14 | NA | NA |
| 3RE47028 | 3RW4028 | 13 | NA | NA | 13 | NA | NA |
| 3RE47036 | 3RW4036 | 21 | NA | NA | 21 | NA | NA |
| 3RE47037 | 3RW4037 | 22 | NA | NA | 22 | NA | NA |
| 3RE47038 | 3RW4038 | 24 | NA | NA | 24 | NA | NA |
| 3RE47046 | 3RW4046 | 16 | NA | NA | 16 | NA | NA |
| 3RE47047 | 3RW4047 | 16 | NA | NA | 16 | NA | NA |
| | | Max starts per hour @350 full rated current | | | | | |
| 3RE47113 | 3RW5213 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47114 | 3RW5214 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47115 | 3RW5215 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47116 | 3RW5216 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47117 | 3RW5217 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47213 | 3RW5513 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47214 | 3RW5514 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47215 | 3RW5515 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47216 | 3RW5516 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47217 | 3RW5517 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47124 | 3RW5224 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47125 | 3RW5225 | 13 | 4 | NA | 13 | 4 | NA |
| 3RE47126 | 3RW5226 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47127 | 3RW5227 | 13 | 7 | NA | 13 | 7 | NA |
| 3RE47224 | 3RW5524 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47225 | 3RW5525 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47226 | 3RW5526 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47227 | 3RW5527 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47134 | 3RW5234 | 13 | 6 | NA | 13 | 7 | NA |
| 3RE47135 | 3RW5235 | 9 | 4 | NA | 13 | 7 | NA |
| 3RE47136 | 3RW5236 | 6 | 3 | NA | 13 | 6 | NA |
| 3RE47234 | 3RW5534 | 4 | 7 | 3 | 4 | 7 | 3 |
| 3RE47235 | 3RW5535 | 4 | 5 | 3 | 4 | 7 | 3 |
| 3RE47236 | 3RW5536 | 4 | 4 | 2 | 4 | 7 | 3 |
| 3RE47143 | 3RW5243 | 10 | 5 | NA | 10 | 7 | NA |
| 3RE47144 | 3RW5244 | 10 | 5 | NA | 12 | 6 | NA |
| 3RE47145 | 3RW5245 | 8 | 4 | NA | 12 | 7 | NA |
| 3RE47146 | 3RW5246 | 8 | 4 | NA | 13 | 7 | NA |
| 3RE47147 | 3RW5247 | 7 | 3 | NA | 10 | 5 | NA |
| 3RE47148 | 3RW5248 | 7 | 3 | NA | 7 | 3 | NA |
| 3RE47243 | 3RW5543 | 4 | 5 | 3 | 4 | 7 | 3 |
| 3RE47244 | 3RW5544 | 4 | 5 | 3 | 4 | 7 | 3 |
| 3RE47245 | 3RW5545 | 4 | 4 | 2 | 4 | 7 | 3 |
| 3RE47246 | 3RW5546 | 4 | 4 | 3 | 4 | 7 | 3 |
| 3RE47247 | 3RW5547 | 4 | 3 | 3 | 4 | 5 | 3 |
| 3RE47248 | 3RW5548 | 4 | 3 | 3 | 4 | 3 | 2 |
| 3RE47252 | 3RW5552 | 4 | 6 | 3 | 4 | 7 | 3 |
| 3RE47253 | 3RW5553 | 4 | 6 | 3 | 4 | 7 | 3 |
| 3RE47254 | 3RW5554 | 4 | 4 | 3 | 4 | 7 | 3 |
| 3RE47256 | 3RW5556 | 4 | 4 | 3 | 4 | 5 | 3 |
| 3RE47258 | 3RW5558 | 4 | 4 | 3 | 4 | 3 | 2 |

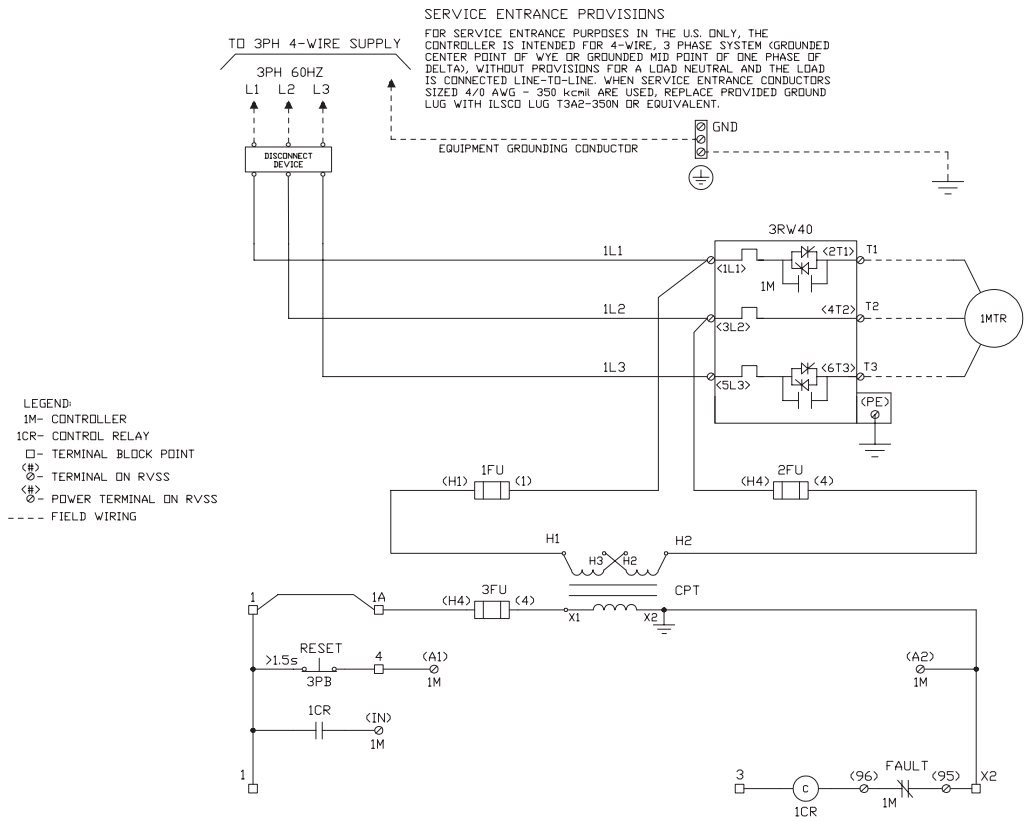
For enclosed soft starters, the maximum starts per hour indicated in this table takes precedence over what may be indicated for the corresponding open soft starter.

Consult with Siemens Application Engineering group @componentsae.ic@ siemens.com if the maximum starts per hour for an application exceeds that indicated in this table.

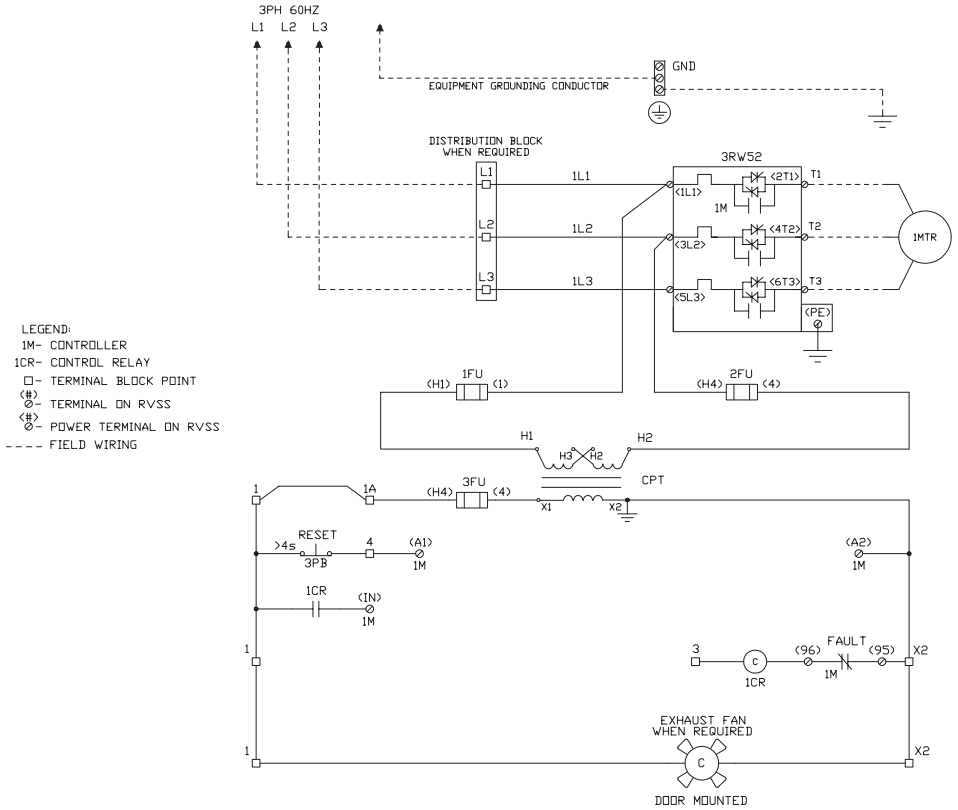
## 3RE470 Non-Combination (no disconnect device)



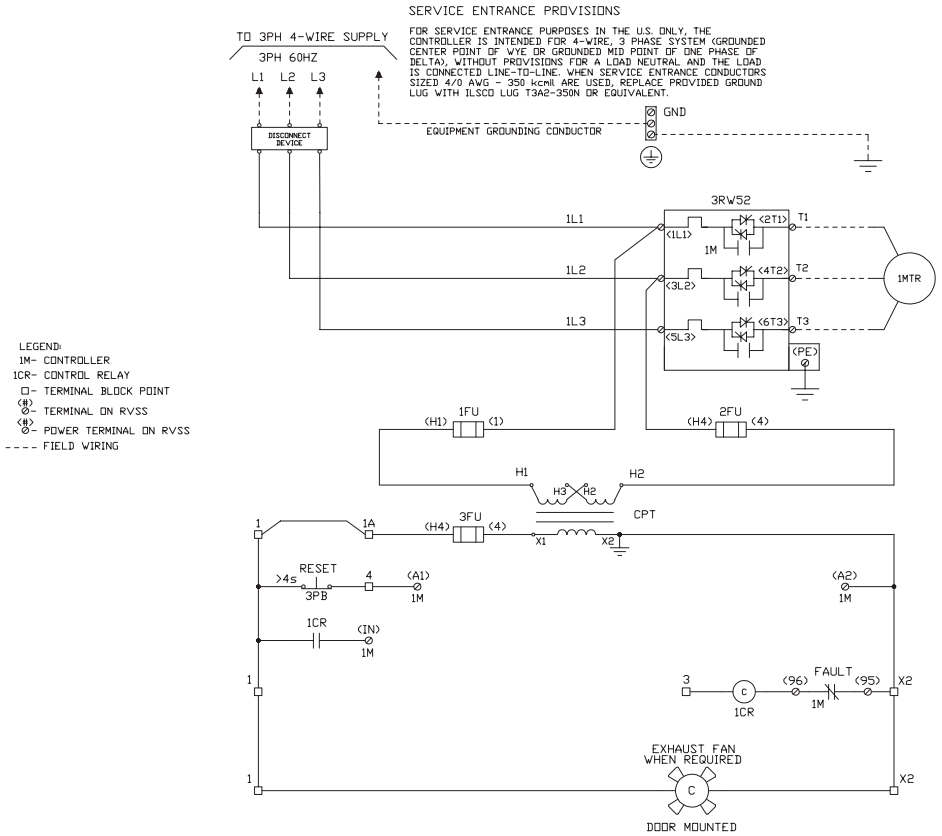

## 3RE470 Combination with disconnect device



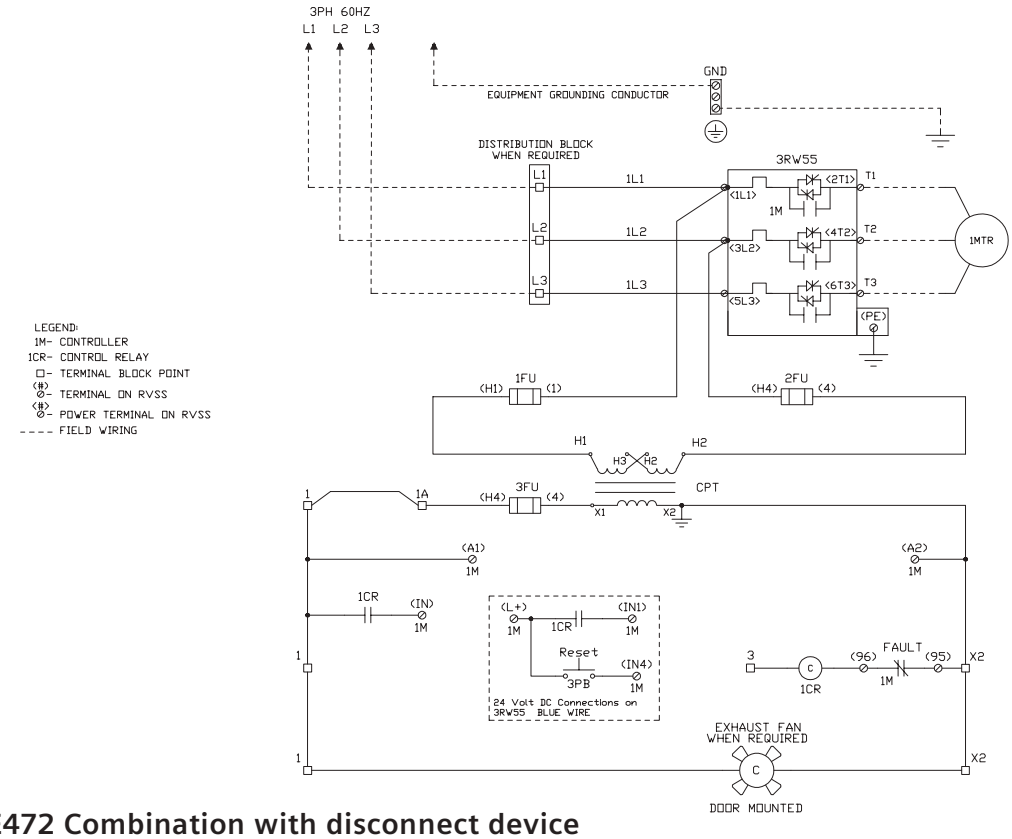
## 3RE471 Non-Combination (no disconnect device)



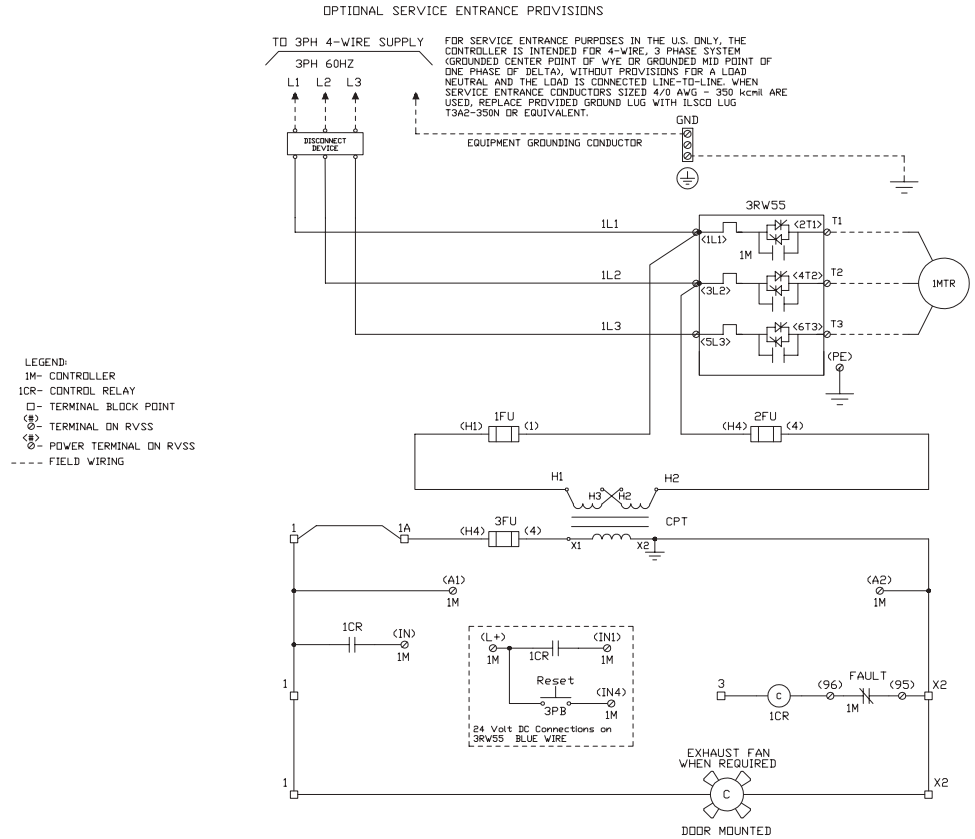

## 3RE471 Combination with disconnect device



## 3RE472 Non-Combination (no disconnect device)




## 3RE472 Combination with disconnect device



# 3RE47 Soft Starters

## Dimension Diagrams

**FIGURE 1**

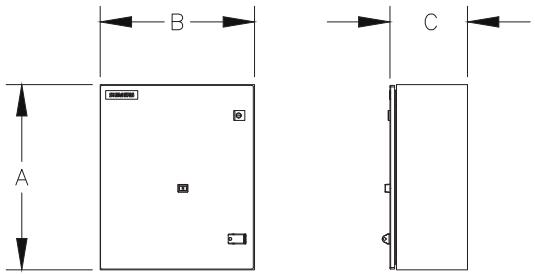
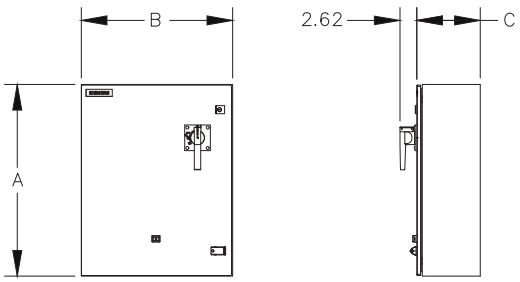



**FIGURE 2**




**3RE47 with 3RW40 open starters**
**NEMA 1, 12, 3R and 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47024** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47026** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47027** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47028** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47036** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **3RE47037** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **3RE47038** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **3RE47046** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **Combination Starter** | | | | | | | | |
| **3RE47024** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47026** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47027** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47028** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47036** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47037** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47038** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47046** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| **3RE47047** | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |

**3RE47 with 3RW40 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47024** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47026** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47027** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47028** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47036** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 12 |
| **3RE47037** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 12 |
| **3RE47038** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 12 |
| **3RE47046** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 12 |
| **Combination Starter** | | | | | | | | |
| **3RE47024** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| **3RE47026** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| **3RE47027** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| **3RE47028** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| **3RE47036** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| **3RE47037** | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| **3RE47038** | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 12 |
| **3RE47046** | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 12 |
| **3RE47047** | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 10 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 1, 12, 3R and 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47113/3RE47213** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47114/3RE47214** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47115/3RE47215** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47116/3RE47216** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47117/3RE47217** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47124/3RE47224** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47125/3RE47225** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47126/3RE47226** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47127/3RE47227** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **3RE47134/3RE47234** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **3RE47135/3RE47235** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |
| **3RE47136/3RE47236** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 10 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47113/3RE47213** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47114/3RE47214** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47115/3RE47215** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47116/3RE47216** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47117/3RE47217** | 1 | 24 | 20 | 10 | 1 | 30 | 24 | 10 |
| **3RE47124/3RE47224** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 12 |
| **3RE47125/3RE47225** | 1 | 30 | 24 | 10 | 1 | 36 | 30 | 12 |
| **3RE47126/3RE47226** | 1 | 36 | 30 | 12 | 1 | 42 | 36 | 12 |
| **3RE47127/3RE47227** | 1 | 36 | 30 | 12 | 1 | 42 | 36 | 12 |
| **3RE47134/3RE47234** | 1 | 36 | 30 | 12 | 1 | 42 | 36 | 12 |
| **3RE47135/3RE47235** | 1 | 36 | 30 | 12 | 1 | 42 | 36 | 12 |
| **3RE47136/3RE47236** | 1 | 42 | 36 | 12 | 1 | 60 | 36 | 12 |

# 3RE47 Soft Starters

## Dimension Diagrams

**FIGURE 1**

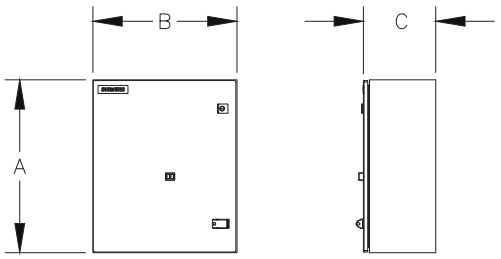



**FIGURE 2**

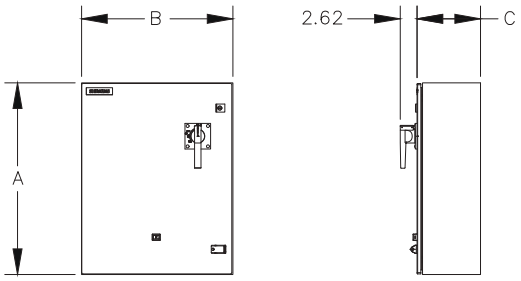



**FIGURE 3**

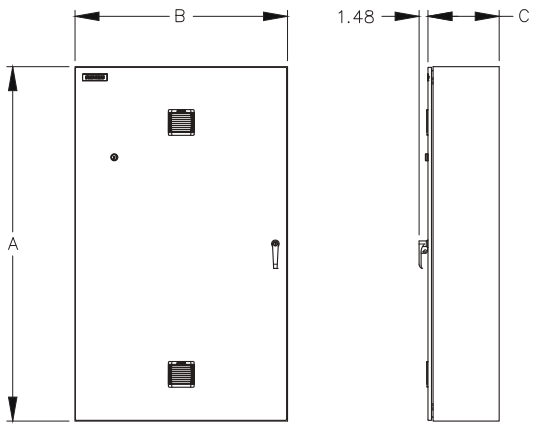
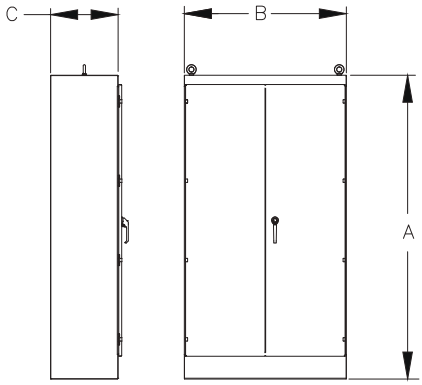



**FIGURE 7**




**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 1, 12, 3R and 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| 3RE47113/3RE47213 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| 3RE47114/3RE47214 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| 3RE47115/3RE47215 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| 3RE47116/3RE47216 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| 3RE47117/3RE47217 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 10 |
| 3RE47124/3RE47224 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |
| 3RE47125/3RE47225 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |
| 3RE47126/3RE47226 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |
| 3RE47127/3RE47227 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |
| 3RE47134/3RE47234 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |
| 3RE47135/3RE47235 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |
| 3RE47136/3RE47236 | 2 | 36 | 30 | 10 | 2 | 42 | 36 | 10 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| 3RE47113/3RE47213 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| 3RE47114/3RE47214 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| 3RE47115/3RE47215 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| 3RE47116/3RE47216 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| 3RE47117/3RE47217 | 2 | 30 | 24 | 10 | 2 | 36 | 30 | 12 |
| 3RE47124/3RE47224 | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 12 |
| 3RE47125/3RE47225 | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 12 |
| 3RE47126/3RE47226 | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 12 |
| 3RE47127/3RE47227 | 2 | 36 | 30 | 12 | 2 | 42 | 36 | 12 |
| 3RE47134/3RE47234 | 2 | 42 | 36 | 12 | 2 | 60 | 36 | 12 |
| 3RE47135/3RE47235 | 2 | 42 | 36 | 12 | 2 | 60 | 36 | 12 |
| 3RE47136/3RE47236 | 2 | 60 | 36 | 12 | 2 | 72 | 30 | 24 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 1 & 12**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non Combination Starter** | | | | | | | | |
| 3RE47143/3RE47243 | 1 | 36 | 30 | 10 | 1 | 42 | 36 | 12 |
| 3RE47144/3RE47244 | 1 | 36 | 30 | 10 | 1 | 42 | 36 | 12 |
| 3RE47145/3RE47245 | 1 | 36 | 30 | 10 | 1 | 42 | 36 | 12 |
| 3RE47146/3RE47246 | 1 | 60 | 36 | 12 | 1 | 60 | 36 | 12 |
| 3RE47147/3RE47247 | 1 | 60 | 36 | 12 | 7 | 90 | 36 | 24 |
| 3RE48148/3RE48248 | 3 | 60 | 36 | 12 | 7 | 90 | 36 | 24 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 3R & 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non Combination Starter** | | | | | | | | |
| 3RE47143/3RE47243 | 1 | 36 | 30 | 10 | 1 | 42 | 36 | 12 |
| 3RE47144/3RE47244 | 1 | 36 | 30 | 10 | 1 | 42 | 36 | 12 |
| 3RE47145/3RE47245 | 1 | 36 | 30 | 10 | 1 | 42 | 36 | 12 |
| 3RE47146/3RE47246 | 1 | 48 | 36 | 12 | 1 | 60 | 36 | 12 |
| 3RE47147/3RE47247 | 1 | 60 | 36 | 12 | 7 | 90 | 36 | 24 |
| 3RE48148/3RE48248 | 7 | 90 | 36 | 24 | 7 | 90 | 48 | 20 |

# 3RE47 Soft Starters

## Dimension Diagrams

**FIGURE 1**

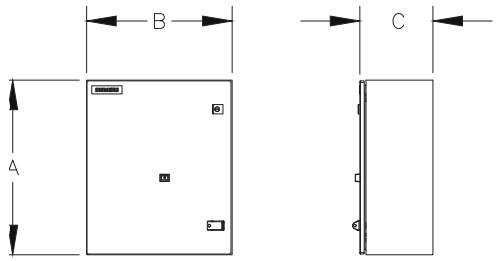



**FIGURE 2**

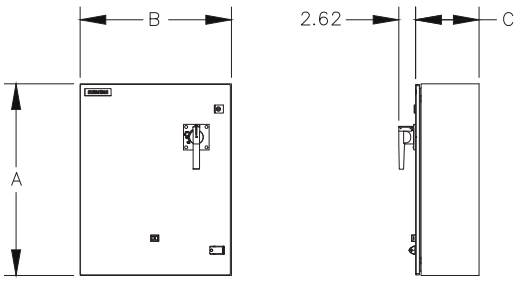



**FIGURE 4**

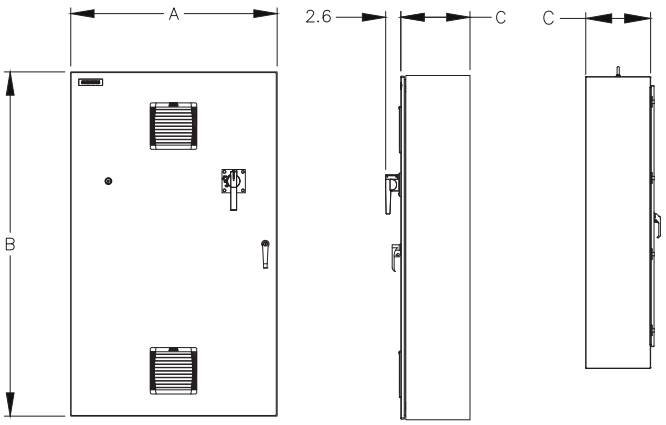



**FIGURE 7**

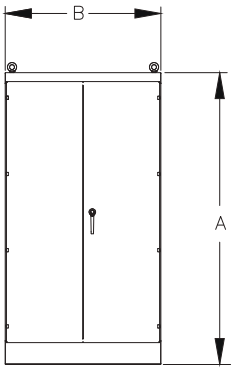
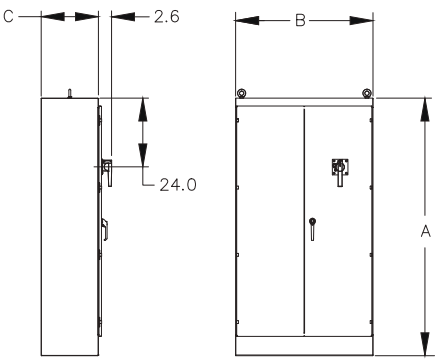



**FIGURE 8**




**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47143/3RE47243** | 1 | 60 | 36 | 12 | 7 | 72 | 30 | 24 |
| **3RE47144/3RE47244** | 1 | 60 | 36 | 12 | 7 | 72 | 30 | 24 |
| **3RE47145/3RE47245** | 7 | 71 | 30 | 24 | 7 | 90 | 36 | 20 |
| **3RE47146/3RE47246** | 7 | 90 | 36 | 20 | 7 | 90 | 48 | 20 |
| **3RE47147/3RE47247** | 7 | 90 | 36 | 20 | 7 | 90 | 48 | 20 |
| **3RE48148/3RE48248** | 7 | 90 | 36 | 20 | 7 | 90 | 48 | 20 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 1 & 12**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| **3RE47143/3RE47243** | 2 | 48 | 36 | 12 | 2 | 60 | 36 | 12 |
| **3RE47144/3RE47244** | 2 | 48 | 36 | 12 | 2 | 60 | 36 | 12 |
| **3RE47145/3RE47245** | 2 | 60 | 36 | 12 | 8 | 90 | 36 | 24 |
| **3RE47146/3RE47246** | 4 | 48 | 36 | 12 | 8 | 90 | 36 | 24 |
| **3RE47147/3RE47247** | 4 | 60 | 36 | 12 | 8 | 90 | 36 | 24 |
| **3RE48148/3RE48248** | 4 | 60 | 36 | 12 | 8 | 90 | 36 | 24 |

# 3RE47 Soft Starters

## Dimension Diagrams

**FIGURE 2**

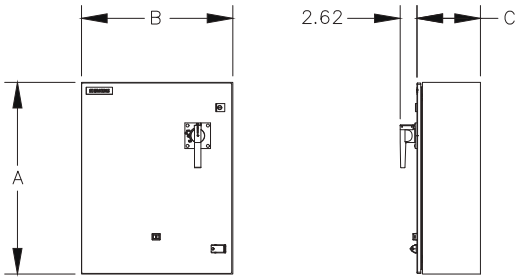



**FIGURE 7**

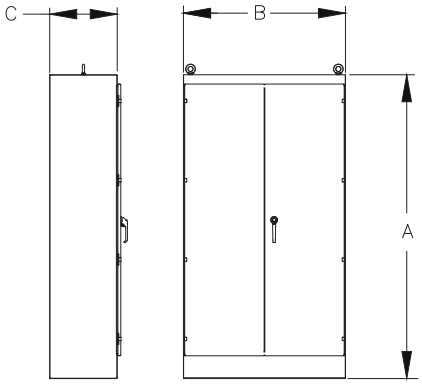



**FIGURE 8**

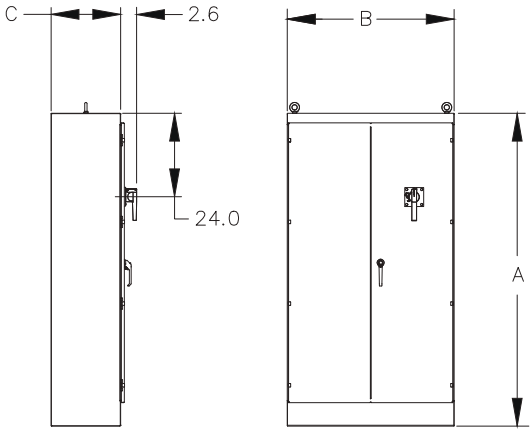
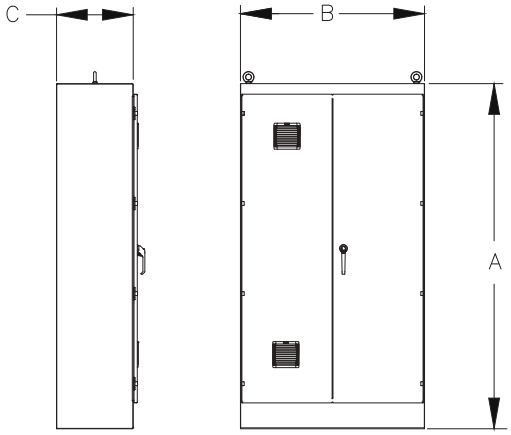



**FIGURE 9**




**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 3R & 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| **3RE47143/3RE47243** | 2 | 48 | 36 | 12 | 2 | 60 | 36 | 12 |
| **3RE47144/3RE47244** | 2 | 48 | 36 | 12 | 2 | 60 | 36 | 12 |
| **3RE47145/3RE47245** | 2 | 60 | 36 | 12 | 8 | 90 | 36 | 24 |
| **3RE47146/3RE47246** | 8 | 90 | 36 | 24 | 8 | 90 | 48 | 20 |
| **3RE47147/3RE47247** | 8 | 90 | 36 | 24 | 8 | 90 | 48 | 20 |
| **3RE48148/3RE48248** | 8 | 90 | 36 | 24 | 8 | 90 | 48 | 20 |

**3RE47 with 3RW52 & 3RW55 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| **3RE47143/3RE47243** | 8 | 71 | 30 | 24 | 8 | 90 | 36 | 20 |
| **3RE47144/3RE47244** | 8 | 90 | 36 | 20 | 8 | 90 | 48 | 20 |
| **3RE47145/3RE47245** | 8 | 90 | 36 | 20 | 8 | 90 | 48 | 20 |
| **3RE47146/3RE47246** | 8 | 90 | 36 | 20 | 8 | 90 | 48 | 20 |
| **3RE47147/3RE47247** | 8 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |
| **3RE48148/3RE48248** | 8 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |

**3RE47 with 3RW55 open starters**
**NEMA 1 & 12**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47252** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47253** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47254** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47256** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47258** | 9 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |

# 3RE47 Soft Starters

## Dimension Diagrams

**FIGURE 5**

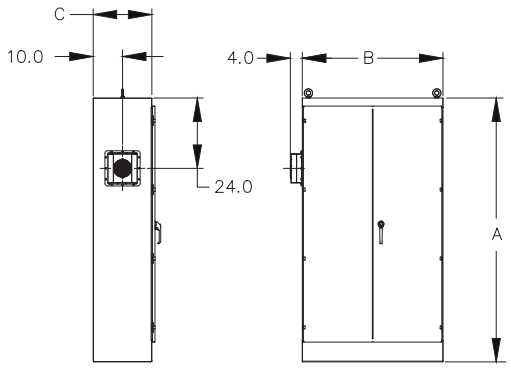



**FIGURE 7**

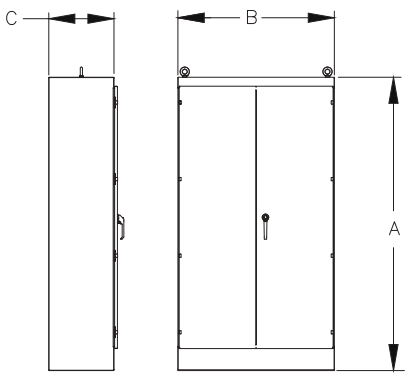



**FIGURE 8**

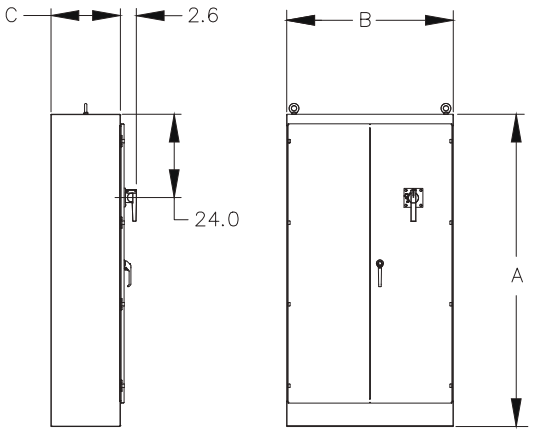
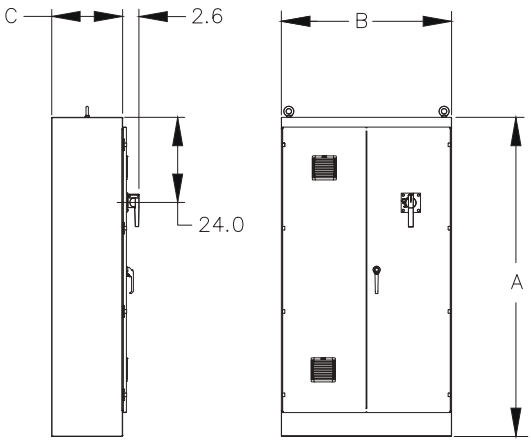



**FIGURE 10**




**3RE47 with 3RW55 open starters**
**NEMA 3R & 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47252** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47253** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47254** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47256** | 7 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |
| **3RE47258** | 5 | 90 | 48 | 20 | 7 | 90 | 60 | 20 |

**3RE47 with 3RW55 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Non-Combination Starter** | | | | | | | | |
| **3RE47252** | 7 | 90 | 48 | 20 | 7 | 90 | 72 | 20 |
| **3RE47253** | 7 | 90 | 48 | 20 | 7 | 90 | 72 | 20 |
| **3RE47254** | 7 | 90 | 48 | 20 | 7 | 90 | 72 | 20 |
| **3RE47256** | 5 | 90 | 48 | 20 | 7 | 90 | 72 | 20 |
| **3RE47258** | 5 | 90 | 48 | 20 | 7 | 90 | 72 | 20 |

**3RE47 with 3RW55 open starters**
**NEMA 1 & 12**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| **3RE47252** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47253** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47254** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47256** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47258** | 10 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |

## Dimension Diagrams

**FIGURE 6**

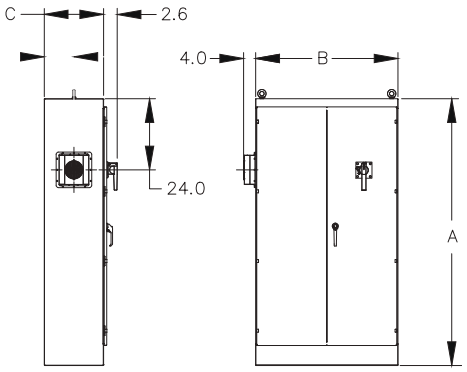
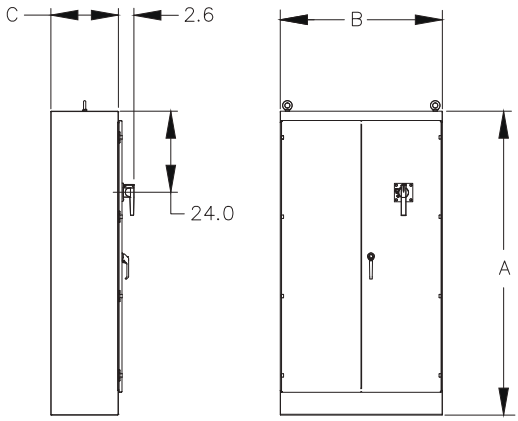



**FIGURE 8**




**3RE47 with 3RW55 open starters**
**NEMA 3R & 4**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| **3RE47252** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47253** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47254** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47256** | 8 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |
| **3RE47258** | 6 | 90 | 48 | 20 | 8 | 90 | 60 | 20 |

**3RE47 with 3RW55 open starters**
**NEMA 4X stainless steel**

| Catalog number | Standard enclosure | | | | Oversized enclosure | | | |
|---|---|---|---|---|---|---|---|---|
| | FIG | A | B | C | FIG | A | B | C |
| **Combination Starter** | | | | | | | | |
| — | 8 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |
| **3RE47253** | 8 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |
| **3RE47254** | 6 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |
| **3RE47256** | 6 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |
| **3RE47258** | 6 | 90 | 48 | 20 | 8 | 90 | 72 | 20 |

# SINAMICS G120X

## An infrastructure drive for pumps, fans and compressors

Siemens introduces an exciting new addition to the existing SINAMICS product portfolio—the G120X—an "infrastructure" drive up to 700 hp (630kW), which is targeted for pump, fan and compressor applications in the water/wastewater, HVAC, irrigation/agriculture and industrial chiller and refrigeration industries.

### Seamless process for higher efficiency

SINAMICS G120X is simple, seamless, cost- and energy-efficient, robust, reliable and fit for digitalization. It integrates easily into existing applications, works with any standard motor (induction, synchronous and synchronous reluctance) and can be configured for cost-optimization and resource-saving operation which ultimately helps reduce total cost of ownership. SINAMICS G120X meets all the latest industry standards with regard to energy efficiency and product safety, and offers enhanced safety with SIL3-rated safety functions and up to 100kA short-circuit current rating according to new UL61800-5-1 design.

### Application functions

**Pump-specific**

- Deragging or blockage protection
- Pipe filling
- Multi-pump control
  - Pump switchover
  - Stop mode
  - Service mode
  - Cascade control mode
- Blockage, leakage and dry-running protection
- Cavitation protection
- Condensation protection
- Frost protection

**Fan-specific**

- Flying restart
- Automatic restart
- Skip frequency bands
- Fire mode (essential service mode)
- No load, torque and rotation (belt) monitoring with sensor

**Increase energy efficiency and system performance**

- Eco mode
- Hibernation or sleep mode
- Bypass mode
- Energy/flow calculator
- Support to high efficiency motors (PMSM and SRM)
- Real time clock and programmable timer (3)

**Optimize pump and fan operation and increase system availability**

- Keep running mode
- PID controller
- Dual ramp
- Multi-speed setpoints

### Protection functions

- Phase-loss detection for both supply and motor
- Overvoltage controller
- Undervoltage controller
- Drive overtemperature protection
- Loss of analog input signal monitoring
- External fault and warning monitoring (up to 3)
- Motor overtemperature protection (with and without sensor)
- Motor overload monitoring and protection
- Motor short-circuit and ground fault protection
- Speed and torque monitoring
- Blocking and stalling monitoring and protection
- Detection of missing communication telegrams
- Detection of communication bus interruption

## Technical data

| | |
|---|---|
| **Line voltage and output power range** | |
| FSA…FSF | 3AC 200V (-20%)…240V (+10%) 1 hp…75 hp (0.75kW…55kW) |
| FSA…FSG | 3AC 380V (-20%)…480V (+10%) 1 hp…400 hp (0.75kW…250kW) |
| FSH, FSJ | 3AC 380V (-15%)…480V (+10%) 400 hp…700 hp (315kW…560kW) |
| FSD…FSG | 3AC 500V (-20%)…690V (+10%) 4 hp…250 hp (3kW…250kW) |
| FSH, FSJ | 3AC 500V (-15%)…690V (+10%) 350 hp…700 hp (315kW…630kW) |
| **Output voltage** | 3AC 0V….line voltage x 0.97 |
| **Input frequency** | 47 Hz…63 Hz |
| **Output frequency** | |
| FSA…FSG | 0 Hz…550 Hz (depending upon the control mode) |
| FSH, FSJ | 0 Hz…150 Hz (depending upon the control mode) |
| **Fundamental power factor (Cos ϕ)** | 0.96…0.99 |
| **Efficiency class** | IE2 (Based on power losses according to EN 50598-2 and IEC 61800-9-2) |
| **Efficiency (η)** | 98% |
| **Motor control** | ▪ V/Hz control (linear, linear with flux current control/FCC, parabolic and eco mode)<br>▪ Sensorless less vector control (SLVC) |
| **Supported motor types** | ▪ Asynchronous (induction) motor<br>▪ Permanent magnet synchronous motor (PMSM)<br>▪ Synchronous reluctance motor (SRM) |
| **Degree of protection** | IP20/UL Open Type |
| **Operating temperature** | -4° F to 113° F (-20° C to 45° C) without derating<br>> 113° F up to 140° F (> 45° C up to 60° C) with derating<br>For PROFINET, EtherNet/IP™ up to 55° C (131° F) with derating |
| **Overload** | |
| Low Overload (LO)/Variable Torque (VT) | 110% x $I_L$ for 60s |
| High Overload (HO)/Constant Torque (CT) | 150% x $I_H$ for 60s |
| **Communication** | PROFINET, EtherNet/IP™, USS, Modbus RTU, BACnet MS/TP, PROFIBUS DP |
| **Functional safety** | Hardware-based SIL3 Safe Torque Off (STO) function with on/off switch |
| **Short-circuit current rating (SCCR)** | Up to 100kA according to NEW UL 61800-5-1 design |
| **Control inputs and outputs** | |
| 6 Digital Inputs (DI 0 … DI 5) | 24V (12–30V) electrically isolated, 4mA current, PNP/NPN switchable |
| 2 Digital (Relay) Outputs (DO 0…DO 1) | Type C, 250V AC, 2A/30V DC, 2A for resistive, inductive or capacitive load |
| 2 Analog Inputs (AI 0…AI 1) | Differential input 0V… 10V or -10V … +10V: typical current drain: 0.1 mA, max. voltage 35V<br>0/4 mA ... 20 mA: 120 Ω input resistance, voltage < 10V, current < 80 mA |
| 1 Analog Output (AO 0) | Not isolated, switchable between voltage (0V… 10V) and current (0/4 mA ... 20 mA) via parameter setting |
| 1 motor temperature sensor input | PTC, KTY, PT1000, bi-metallic switch with normally closed contact |
| 1 failsafe digital input | STO—electrically isolated |
| 1 internal aux. supply voltage | 24V DC, max. 250 mA<br>10V DC, max. 10 mA |
| 1 external aux. supply voltage | 24V DC (20.4 … 28.8V DC), current consumption 0.5A |
| 1 memory card slot | For optional SD memory cards (as a backup storage device for saving of the settings after drive commissioning, and also for a series commissioning of a several identical drives via cloning of the settings) |
| **Additional control inputs and outputs (With optional I/O Extension Module)** | |
| 2 Digital Inputs (DI 6…DI 7) | 24V (12–30V) electrically isolated, 4mA current, PNP / NPN switchable |
| 4 Digital (Relay) Outputs (DO 2…DO 5) | 2x Type A and 2x Type C relay outputs rated 250V AC, 2A / 30V DC, 2A for resistive, inductive or capacitive load |
| 1 Analog Input (AI 2) | Analog current input (0/4 mA … 20 mA) or Temperature sensor input (Pt10000 / LG-Ni10000 / DIN-Ni1000) |
| 1 motor temperature sensor input (AI 3) | Temperature sensor input (Sensor Pt10000 / LG-Ni10000 / DIN-Ni1000) |
| 2 Analog Output (AO 1 … AO 2) | Not isolated, switchable between voltage (0V… 10V) and current (0/4 mA ... 20 mA) via parameter setting |
| **User interface** | |
| Standard | Intelligent Operator Panel (IOP-2)—a high-resolution graphical color keypad |
| Optional | Smart Access Module (SAM) Part number: 6SL3255-0AA00-5AA0—a WiFi-based web server module and engineering tool for quick setup and diagnostics using a mobile device (PC, smartphone, tablet, etc.) |
| | Basic Operator Panel (BOP-2)—a basic keypad<br>Blank (no Operator Panel/keypad) |

# SINAMICS G120X

## It's the simple, seamless and easy-to-use drive — right out of the box.

## Digitalization

| Digitalization and IoT based secured health monitoring | |
|---|---|
| SINAMICS CONNECT 300 and Analyze MyDrives | SINAMICS CONNECT 300 (Part number: 6SL3255-0AG30-0AA0) is the IoT gateway. It is designed to acquire data through the serial port of the SINAMICS G120X and synchronize the data to MindSphere (cloud-based open IoT operating system of Siemens) using the MindSphere application Analyze MyDrives (AMD).<br><br>This offers users the opportunity to analyze valuable operating data gathered from the drive and enables the visualization and analysis of status information, providing users with valuable data which can be used as the basis for process optimization and maintenance strategies.<br><br>For more information visit: www.siemens.com/sinamics-digitalization |

## Certification

| | |
|---|---|
| **Certification / marking** | ■ cULus marking according to UL61800-5-1 and CSA C22.2 No. 274 with SCCR up to 100kA<br>■ **CE** marking according to European Low-Voltage Directive 2014/35/EU EU and IEC/EN 61800-5-1, Machinery directive 2006/42/EC and IEC/EN 61800-5-2, EMC Directive 2014/30/EU and IEC/EN 61800-3, RoHS directive 2011/65/EU and EN 50581<br>■ IE2 efficiency level based on power losses according to EN 50598-2 and IEC 61800-9-2<br>■ Safe torque off (STO) SIL3 rating according to IEC/EN 61800-5-2<br>■ EAC, K, RCM (formerly C-Tick), REACH, RoHS II, SEMI F47 |

## Dimensions and clearance distances FSA...FSJ

| Frame size | Dimensions | | | | Max. weight of frame | |
|---|---|---|---|---|---|---|
| | H mm (inch) | W mm (inch) | D mm (inch) | Additional depth with Operator Panel mm (inch) | No filter kg (lbs)[1] | With filter kg (lbs)[1] |
| FSA | 232 (9.1) | 73 (2.9) | 209 (8.2) | 9 (0.4) | 3.4 (7.5) | 3.6 (8) |
| FSB | 275 (10.8) | 100 (3.9) | | | 5.8 (12.8) | 6.2 (13.7) |
| FSC | 295 (11.6) | 140 (5.5) | | | 7.11 (15.7) | 7.7 (17) |
| FSD | 472 (18.6) | 200 (7.9) | 239 (9.4) | | 18.8 (41.5) | 19.5 (43) |
| FSE | 551 (21.7) | 275 (10.8) | | | 26.7 (59) | 28.7 (63.3) |
| FSF | 709 (27.9) | 305 (12) | 360 (14.2) | | 66.5 (146.6) | 71 (156.53) |
| FSG | 999.4 (39.3) | 305 (12) | | | — | 120 (264.6) |
| FSH | 1696 (66.8) | 548 (21.6) | 393 (15.5) | — | | 162 (357.2) |
| FSJ | 1621 (63.8) | 801 (31.5) | | | | 250 (551.16) |

[1] Refer to SINAMICS G120X operating instructions or rating plate information of a unit to obtain the weight specific to each rating / order number

## For additional information on SINAMICS G120X

- SINAMICS G120X Catalog: click to download PDF
- SINAMICS G120X Webpage: www.usa.siemens.com/sinamics-g120x
- For additional technical information including operating instructions please visit SINAMICS G120X Technical Reference site: https://support.industry.siemens.com/cs/us/en/ps/25454

## SINAMICS G120X — Selection and ordering data

**Voltage class 3AC 200...240V, 47...63Hz**

| Frame size | kW (200V) | hp (240V) | Rated Output Current $I_L$, A (240V) | Order number |
|---|---|---|---|---|
| FSA | 0.75 | 1 | 4.2 | 6SL3220-0YC10-0UU0 |
| | 1.1 | 1.5 | 6 | 6SL3220-0YC12-0UU0 |
| | 1.5 | 2 | 7.4 | 6SL3220-0YC14-0UU0 |
| FSB | 2 | 3 | 10.4 | 6SL3220-0YC16-0UU0 |
| | 3 | 4 | 13.6 | 6SL3220-0YC18-0UU0 |
| | 4 | 5.0 | 17.5 | 6SL3220-0YC20-0UU0 |
| FSC | 5.5 | 7.5 | 22 | 6SL3220-0YC22-0UU0 |
| | 7.5 | 10 | 28 | 6SL3220-0YC24-0UU0 |
| FSD | 11 | 15 | 42 | 6SL3220-0YC26-0UU0 |
| | 15 | 20 | 54 | 6SL3220-0YC28-0UU0 |
| | 18.5 | 25 | 68 | 6SL3220-0YC30-0UU0 |
| FSE | 22 | 30 | 80 | 6SL3220-0YC32-0UU0 |
| | 30 | 40 | 104 | 6SL3220-0YC34-0UU0 |
| FSF | 37 | 50 | 130 | 6SL3220-0YC36-0UU0 |
| | 45 | 60 | 154 | 6SL3220-0YC38-0UU0 |
| | 55 | 75 | 192 | 6SL3220-0YC40-0UU0 |

| | |
|---|---|
| **Special coating according to IEC/EN 60721-3-3** | |
| Class 3C2 (Standard) | **2** |
| Class 3C3* | **3** |
| **User interface** | |
| Blank (No operator panel/keypad) | **1** |
| BOP-2 (Basic keypad, Class 3C3*) | **2** |
| IOP-2 (Standard — high-resolution graphical color keypad, Class 3C3*) | **3** |
| **I/O extension module** | |
| without I/O extenstion module | **0** |
| with I/O extenstion module, Class 3C3* | **1** |
| **EMC class** | |
| No EMI/RFI filter | **U** |
| **Communication interface** | |
| PROFINET, EtherNet/IP™ (Standard) | **F** |
| USS, Modbus, RTU, BACnet MS/TP | **B** |
| PROFIBUS DP | **P** |

*Special coating or sealing for operation in harsh/corrosive environments

## SINAMICS G120X — Selection and ordering data

**Voltage class 3AC 380...480V, 47...63Hz**

| Frame size | kW (400V) | hp (480V) | Rated Output Current $I_L$, A (480V) | Order number |
|---|---|---|---|---|
| FSA | 0.75 | 1 | 2.1 | 6SL3220-0YE10-_ _0 |
| | 1.1 | 1.5 | 3 | 6SL3220-0YE12-_ _0 |
| | 1.5 | 2 | 3.4 | 6SL3220-0YE14-_ _0 |
| | 2.2 | 3 | 4.8 | 6SL3220-0YE16-_ _0 |
| | 3 | 4 | 6.2 | 6SL3220-0YE18-_ _0 |
| FSB | 4 | 5 | 7.6 | 6SL3220-0YE20-_ _0 |
| | 5.5 | 7.5 | 11 | 6SL3220-0YE22-_ _0 |
| | 7.5 | 10 | 14 | 6SL3220-0YE24-_ _0 |
| FSC | 11 | 15 | 21 | 6SL3220-0YE26-_ _0 |
| | 15 | 20 | 27 | 6SL3220-0YE28-_ _0 |
| FSD | 18.5 | 25 | 34 | 6SL3220-0YE30-_ _0 |
| | 22 | 30 | 40 | 6SL3220-0YE32-_ _0 |
| | 30 | 40 | 52 | 6SL3220-0YE34-_ _0 |
| | 37 | 50 | 65 | 6SL3220-0YE36-_ _0 |
| FSE | 45 | 60 | 77 | 6SL3220-0YE38-_ _0 |
| | 55 | 75 | 96 | 6SL3220-0YE40-_ _0 |
| FSF | 75 | 100 | 124 | 6SL3220-0YE42-_ _0 |
| | 90 | 125 | 156 | 6SL3220-0YE44-_ _0 |
| | 110 | 150 | 180 | 6SL3220-0YE46-_ _0 |
| | 132 | 200 | 240 | 6SL3220-0YE48-_ _0 |
| FSG | 160 | 250 | 302 | 6SL3220-0YE50-_ _0 |
| | 200 | 300 | 361 | 6SL3220-0YE52-_ _0 |
| | 250 | 400 | 477 | 6SL3220-0YE54-_ _0 |
| FSH | 315 | 400 | 477 | 6SL3220-2YE56-_C0 |
| | 355 | 450 | 515 | 6SL3220-2YE58-_C0 |
| | 400 | 500 | 590 | 6SL3220-2YE60-_C0 |
| FSJ | 450 | 500 | 663 | 6SL3220-2YE62-_C0 |
| | 500 | 600 | 724 | 6SL3220-2YE64-_C0 |
| | 560 | 700 | 830 | 6SL3220-2YE66-_C0 |

| | |
|---|---|
| **Special coating according to IEC/EN 60721-3-3** | |
| Class 3C2 (Standard) | **2** |
| Class 3C3* | **3** |
| **User interface** | |
| Blank (No operator panel/keypad) | **1** |
| BOP-2 (Basic keypad, Class 3C3*) | **2** |
| IOP-2 (Standard — high-resolution graphical color keypad, Class 3C3*) | **3** |
| **I/O extension module** | |
| without I/O extenstion module | **0** |
| with I/O extenstion module, Class 3C3* | **1** |
| **EMC class** | |
| No filter (Standard — without integrated EMI/RFI filter) for FSA to FSF only | **U** |
| Filter C2 (With integrated EMI/RFI filter Category C2) for FSA to FSG only, see Note 1 | **A** |
| Filter C3 (Standard — with integrated EMI/RFI filter Category C3) for FSG to FSJ only, see Note 1 | **C** |
| **Communication interface** | |
| PROFINET, EtherNet/IP™ (Standard) | **F** |
| USS, Modbus, RTU, BACnet MS/TP | **B** |
| PROFIBUS DP | **P** |

*Special coating or sealing for operation in harsh/corrosive environments

Note 1: For frame sizes FSG, FSH and FSJ, the filter can be deactivated by removing a grounding screw/clip for applications in an ungrounded or a high-resistance grounded or a corner-grounded supply system. Please refer to the SINAMICS G120X Operating Instructions for more information.

## SINAMICS G120X — Selection and ordering data

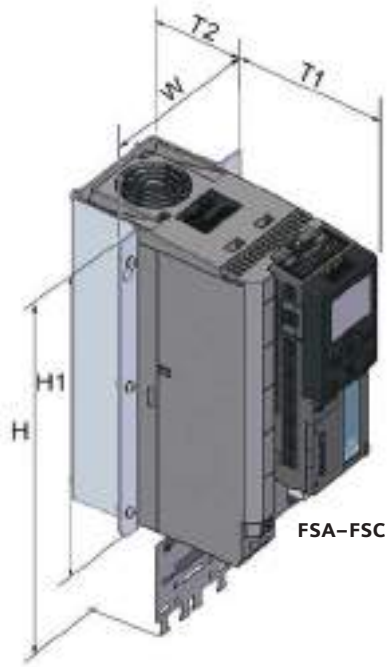
**Voltage class 3AC 500...690V, 47...63Hz**

| Frame size | kW (690V) | hp (600V) | Rated Output Current $I_L$, A (600V) | Order number |
|---|---|---|---|---|
| FSD | 3 | 4 | 5 | 6SL3220-0YH18-0□□0 |
| | 4 | 5 | 6.3 | 6SL3220-0YH20-0□□0 |
| | 5.5 | 7.5 | 9 | 6SL3220-0YH22-0□□0 |
| | 7.5 | 10 | 11 | 6SL3220-0YH24-0□□0 |
| | 11 | 10 | 14 | 6SL3220-0YH26-0□□0 |
| | 15 | 15 | 19 | 6SL3220-0YH28-0□□0 |
| | 18.5 | 20 | 23 | 6SL3220-0YH30-0□□0 |
| | 22 | 25 | 27 | 6SL3220-0YH32-0□□0 |
| | 30 | 30 | 35 | 6SL3220-0YH34-0□□0 |
| | 37 | 40 | 42 | 6SL3220-0YH36-0□□0 |
| FSE | 45 | 50 | 52 | 6SL3220-0YH38-0□□0 |
| | 55 | 60 | 62 | 6SL3220-0YH40-0□□0 |
| FSF | 75 | 75 | 80 | 6SL3220-0YH42-0□□0 |
| | 90 | 100 | 100 | 6SL3220-0YH44-0□□0 |
| | 110 | 125 | 125 | 6SL3220-0YH46-0□□0 |
| | 132 | 150 | 144 | 6SL3220-0YH48-0□□0 |
| FSG | 160 | 150 | 171 | 6SL3220-0YH50-0□C0 |
| | 200 | 200 | 208 | 6SL3220-0YH52-0□C0 |
| | 250 | 250 | 250 | 6SL3220-0YH54-0□C0 |
| FSH | 315 | 350 | 345 | 6SL3220-2YH56-0□C0 |
| | 355 | 400 | 388 | 6SL3220-2YH58-0□C0 |
| | 400 | 450 | 432 | 6SL3220-2YH60-0□C0 |
| | 450 | 500 | 487 | 6SL3220-2YH62-0□C0 |
| FSJ | 500 | 500 | 546 | 6SL3220-2YH64-0□C0 |
| | 560 | 600 | 610 | 6SL3220-2YH66-0□C0 |
| | 630 | 700 | 679 | 6SL3220-2YH68-0□C0 |

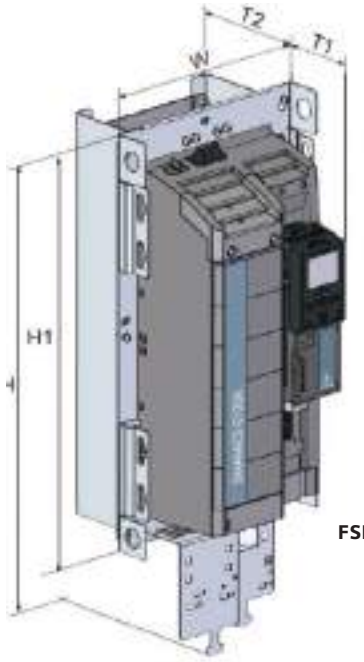
| Order number | | |
|---|---|---|
| **Special coating according to IEC/EN 60721-3-3** | | |
| Class 3C2 (Standard) | 2 | |
| Class 3C3* | 3 | |
| **User interface** | | |
| Blank (No operator panel/keypad) | 1 | |
| BOP-2 (Basic keypad, Class 3C3*) | 2 | |
| IOP-2 (Standard — high-resolution graphical color keypad, Class 3C3*) | 3 | |
| **I/O extension module** | | |
| without I/O extenstion module | | 0 |
| with I/O extenstion module, Class 3C3* | | 1 |
| **EMC class** | | |
| No filter (Standard — without integrated EMI/RFI filter) for FSD to FSF only | | U |
| Filter C2 (With integrated EMI/RFI filter Category C2) for FSD to FSE only | | A |
| Filter C3 (With integrated EMI/RFI filter Category C3) for FSF to FSJ only, standard for FSG to FSJ, see Note 1 | | C |
| **Communication interface** | | |
| PROFINET, EtherNet/IP™ (Standard) | | F |
| USS, Modbus, RTU, BACnet MS/TP | | B |
| PROFIBUS DP | | P |

*Special coating or sealing for operation in harsh/corrosive environments

Note 1: For frame sizes FSG, FSH and FSJ, the filter can be deactivated by removing a grounding screw/clip for applications in an ungrounded or a high-resistance grounded or a corner-grounded supply system. Please refer to the SINAMICS G120X Operating Instructions for more information.




FSA–FSC with PT kit




FSD–FSG with PT kit

## SINAMICS G120X IP20 Push-Through kits

| SINAMICS G120X | Push-Through kit (PT) | Overall dimensions of SINAIMCS G120X with PT kit installed | | | | |
|---|---|---|---|---|---|---|
| | | Width mm (inch) | Height mm (inch) | | Depth mm (inch) | |
| Frame size | Part number | W | H = with shield plate | H1= without shield plate | T1 = front of PT bracket | T2 = back of PT bracket |
| FSA | **6SL3261-6GA00-0BA0** | 127 (5.0) | 324 (12.8) | 234 (9.2) | 160 (6.3) | 57 (2.2) |
| FSB | **6SL3261-6GB00-0BA0** | 154 (6.1) | 384 (15.1) | 279 (11.0) | 153 (6.0) | 66 (2.6) |
| FSC | **6SL3261-6GC00-0BA0** | 192 (7.6) | 407 (16.0) | 295 (11.6) | 154 (6.1) | 65 (2.6) |
| FSD | **6SL3261-6GD00-0BA0** | 271 (10.7) | 647 (25.5) | 514 (20.2) | 142 (5.6) | 98 (3.9) |
| FSE | **6SL3261-6GE00-0BA0** | 360 (14.2) | 773 (30.4) | 600 (23.6) | 145 (5.7) | 93 (3.7) |
| FSF | **6SL3261-6GF00-0BA0** | 396 (15.6) | 1003 (39.5) | 749 (29.5) | 185 (7.3) | 185 (7.3) |
| FSG | **6SL3261-6GG00-0BA0** | 384 (15.1) | 1275 (50.2) | 1026 (40.4) | 184 (7.3) | 188 (7.4) |

## SINAMICS G120X — options and features

**Options**

- Special coating (Class 3C3) for operation of a drive in the harsh environments where corrosive gases for example, Hydrogen Sulfide ($H_2S$), Chlorine (Cl) or Ammonia ($NH_3$) are often present
- Add-on Push-Through (PT) kit to enable UL Open Type/IP20 drive in to UL Open Type/IP20 push-through drive (up to FSG)
- Input and output reactors
- Output dv/dt filter
- Output Sinusoidal filter
- Passive line harmonic filter
- EMI/RFI filters
- Communication: PROFINET, EtherNet/IP™, USS, Modbus RTU, BACnet MS/TP and PROFIBUS DP
- I/O extension module

## contents

**Introduction** 8/2

**Solid-state switching devices**

General data 8/3

**Solid-state switching devices for resistive loads**

*Solid-state relays*

3RF21 solid-state relays, single-phase, 22.5 mm 8/8
3RF20 solid-state relays, single-phase, 45 mm 8/9
3RF22 solid-state relays, three-phase, 45 mm 8/10

*Solid-state contactors*

General data 8/11
3RF23 solid-state contactors, single-phase 8/12
3RF24 solid-state contactors, 3-phase 8/14

**Solid-state switching devices for switching motors**

*Solid-state contactors*

General data 8/15
3RF34 solid-state contactors, 3-phase 8/16
3RF34 solid-state reversing contactors, 3-phase 8/17

**3RF29 Function modules**

Assignment of modules 8/18
Converters 8/23
Load monitoring 8/24
Heating current monitoring 8/25
Power controllers 8/26
Power control regulators 8/27

**Technical data**

*Solid-state relays*

3RF21 solid-state relays, single-phase, 22.5 mm 8/29
3RF20 solid-state relays, single-phase, 45 mm 8/32
3RF22 solid-state relays, three-phase, 45 mm 8/34

*Solid-state contactors*

3RF23 solid-state contactors, single-phase 8/36
3RF24 solid-state contactors, three-phase 8/39
3RF34 solid-state contactors, three-phase 8/41
3RF29 Function modules
Converters, load monitors, power controller, heating current monitors 8/46
Power control regulators 8/48
Thermal data 8/49
Dimensions 8/63
Wiring diagrams 8/72

## Introduction

### Overview

3RF21

3RF20

3RF22

3RF23

3RF24

3RF34 (Motor)

3RF29

| | | Order No. | Page |
|---|---|---|---|
| **SIRIUS solid-state switching devices for switching resistive loads** | | | |
| ***Solid-state relays*** | | | |
| **22.5 mm solid-state relays, 45 mm solid-state relays** | • Widths of 22.5 mm and 45 mm<br>• Compact and space-saving design<br>• "Zero-point switching" version<br>• Mounting onto existing heat sinks | 3RF21,<br>3RF20<br>3RF22 | 8/9<br>8/10<br>8/43 |
| ***Solid-state contactors*** | | | |
| **Solid-state contactors** | • Complete units comprising a solid-state relay and an optimized heat sink, "ready to use"<br>• Compact and space-saving design<br>• Versions for resistive loads "zero-point switching" and inductive loads "instantaneous switching"<br>• Special versions "Low Noise" and "Short-Circuit Resistant" | 3RF23<br>3RF24 | 8/24<br>8/46<br>8/8, 8/12 |
| ***Function modules*** | For extending the functionality of the 3RF21 solid-state relays and the 3RF23 solid-state contactors for many different applications: | | |
| **Converters** | • For converting an analog input signal into an on/off ratio; can also be used on 3RF22 and 3RF24 3-phase switching devices | 3RF29 00-0EA18 | 8/13 |
| **Load monitoring** | • For load monitoring of one or more loads (partial loads) | 3RF29 20-0FA08, 3RF29 .0-0GA.. | 8/14 |
| **Heating current monitoring** | • For load monitoring of one or more loads (partial loads); remote teach | 3RF29 ..-0JA.. | 8/14 |
| **Power control regulators** | • For supplying the current by means of a solid-state switching device depending on a setpoint value. There is a choice of full-wave control and generalized phase control. | 3RF29 ..-0KA. | 8/14 |
| **Power controllers** | • For supplying the current by means of a solid-state switching device depending on a setpoint value. Closed-loop control: Full-wave control or generalized phase control | 3RF29 .0-0HA.. | 8/15 |
| **SIRIUS Innovations solid-state switching devices for switching motors** | | | |
| ***Solid-state contactors*** | | | |
| **Solid-state contactors**<br>**Solid-state reversing contactors** | • Complete "ready to use" units with an integrated insulated heatsink<br>• Compact and space-saving design<br>• Version for motors, "instantaneous switching" | 3RF34 | 8/16<br>8/17 |

### Nomenclature Guide

| 3RF2 | 0 | 20 | - | 1 | A | A | 0 | 2 |
|---|---|---|---|---|---|---|---|---|
| **SIRIUS SC** | Type<br><br>0 = 45 mm Relay<br>1 = 22.5 mm Relay<br>2 = 3-phase 45 mm Relay<br>3 = Contactor<br>4 = 3-phase Contactor<br>9 = Function Module | Rating | | Terminal Type<br><br>1 = Screw<br>2 = Spring<br>3 = Ring Tounge | Switching<br><br>A = Zero Point<br>B = Instantaneous<br>C = Low Noise<br>D = Short Circuit | Control Phases<br><br>A = 1-phase<br>B = 2-phase<br>C = 3-phase | Coil Type<br><br>0 = 24 VDC<br>2 = 110 - 230 VAC<br>4 = 4 - 30 VDC<br>5 = 230 VAC | Power Voltage<br><br>2 = 24 - 230 VAC<br>4 = 230 - 460 VAC<br>5 = 48 - 600 VAC<br>6 = 400 - 600 VAC |

**Note:** This is only a guide to decode the model number. All possible combinations of these are not produced.
Character of "3" in position four indicates Sirius Innovations

## General data

### Overview

3RF21

3RF20

3RF22

3RF23

3RF24

3RF34 (Motor)

3RF29

#### *SIRIUS 3RF2 solid-state switching devices*

Solid-state switching devices for resistive loads
- Solid-state relays
- Solid-state contactors
- Function modules

Solid-state switching devices for switching motors
- Solid-state contactors
- Solid state reversing contactors

#### *The most reliable solution for any application*

Compared to electro mechanical contactors, our SIRIUS 3RF2 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, insusceptible to faults. With its variable connection methods and a wide spread of control voltages, the SIRIUS 3RF2 family is universally applicable. Depending on the individual requirements of the application, our modular switchgear can also be quite easily expanded by the addition of standardized function modules.

#### *Semiconductor relays*

SIRIUS SC semiconductor relays are suitable for surface mounting on existing cooling surfaces. Installation is quick and easy, involving just two screws. Depending on the nature of the heat sink, the capacity reaches up to 88 A on resistive loads. The 3RF21 semiconductor relays can be expanded with various function modules to adapt them to individual applications.

The semiconductor relays are available in 2 different widths:
- 3RF21 semiconductor relay with a width of 22.5 mm
- 3RF20 and 3RF22 semiconductor relay with a width of 45 mm

Both variants are only available in the "zero-point switching" version. This standard version is ideally suited for operation with resistive loads.

#### *Selecting semiconductor relays*

When selecting semiconductor relays, in addition to information about the power system, the load and the ambient conditions it is also necessary to know details of the planned design. The semiconductor relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink. The following procedure is recommended:
- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a semiconductor relay with higher rated current than the load requires
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagram

#### *Solid-state contactors for switching motors*

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 5 HP and reversing up to 3 HP. The devices are constructed with complete insulation and can be mounted directly to 3RV2 MSPs and SIRIUS overload relays, resulting in a very simple integration into motor feeders.

These three-phase solid-state contactors are equipped with a two-phase control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Important features:
- Insulated enclosure with integrated heat sink
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs

#### *Selecting solid-state contactors*

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions. As the solid-state contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for solid-state relays.

The following procedure is recommended:
- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing the maximum permissible switching frequency based on the characteristic curves. To do this, the starting current, the starting time and the motor load in the operating phase must be known.
- If the permissible switching frequency is below the desired frequency, it is possible to achieve an increase by overdimensioning the motor.

### Benefits
- Devices with integrated heat sink, "ready to use"
- Compact and space-saving design
- Reversing contactors with integrated interlocking

### Application

#### *Standards and approvals*
- IEC 60947-4-3
- UL 508, CSA for North America[1)]
- CE marking for Europe
- C-Tick approval for Australia

[1)] Please note: For reversing motor applications use overvoltage protection device Type 3TX7462-3L; max. cut-off-voltage 6000 V; min. energy handling capability 100 J.

## General data

| Type | Solid-state relays | | | Solid-state contactors | | Function modules | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-phase | | 3-phase | 1-phase | 3-phase | Converter | Load monitoring | | Heating current monitoring | Power controllers | Power regulators |
| | 22.5 mm | 45 mm | 45 mm | | | | Basic | Extended | | | |
| **Usage** | | | | | | | | | | | |
| Simple use of existing solid-state relays | ❑ | ✓ | ❑ | ❑ | ❑ | -- | -- | -- | -- | -- | -- |
| Complete device "Ready to use" | ❑ | ❑ | ❑ | ✓ | ✓ | -- | -- | -- | -- | -- | -- |
| Space-saving | ✓ | -- | ✓ | ✓ | ✓ | ✓ | ✓ | -- | -- | -- | -- |
| Can be extended with modular function modules | ✓ | -- | ✓ | ✓ | ✓ | -- | -- | -- | -- | -- | -- |
| Frequent switching and monitoring of loads and solid-state relays/solid-state contactors | -- | -- | -- | -- | -- | -- | ✓ | ✓ | ✓ | ✓ | ✓ |
| Monitoring of up to 6 partial loads | -- | -- | -- | -- | -- | -- | ✓ | -- | ✓ | -- | -- |
| Monitoring of more than 6 partial loads | -- | -- | -- | -- | -- | -- | -- | ✓ | -- | -- | -- |
| Control of the heating power through an analog input | -- | -- | -- | -- | -- | ✓ | -- | -- | -- | ✓ | ✓ |
| Power control | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | ✓ |
| **Startup** | | | | | | | | | | | |
| Easy setting of setpoints with "Teach" button | -- | -- | -- | -- | -- | -- | ✓ | ✓ | -- | ✓ | ✓ |
| "Remote Teach" input for setting setpoints | -- | -- | -- | -- | -- | -- | -- | -- | ✓ | -- | -- |
| **Mounting** | | | | | | | | | | | |
| Mounting onto mounting rails or mounting plates | -- | -- | -- | ✓ | ✓ | -- | -- | -- | -- | -- | -- |
| Can be snapped directly onto a solid-state relay or contactor | -- | -- | -- | -- | -- | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| For use with "Coolplate" heat sink | ✓ | ✓ | ✓ | -- | -- | -- | -- | -- | -- | -- | -- |
| **Cable routing** | | | | | | | | | | | |
| Connection of load circuit as for controls | ✓ | -- | ✓ | ✓ | ✓ | -- | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection of load circuit from above | -- | ✓ | -- | -- | -- | -- | -- | -- | -- | -- | -- |

✓ Function is available

❑ Function is possible

**Note:** Permissible for use at altitudes of more than 2500 m above sea level with the following derating for 3RF2 Devices:

Site altitude 2500 m above sea level:

- Reduction of rated insulation voltage to 0,93 x $U_i$
- Reduction of load current to 0,93 x $I_e$

Site altitude 3000 m above sea level:

- Reduction of rated insulation voltage to 0,88 x $U_i$
- Reduction of load current to 0,9 x $I_e$

Site altitude 4000 m above sea level:

- Reduction of rated insulation voltage to 0,79 x $U_i$
- Reduction of load current to 0,8 x $I_e$

Site altitude 5000 m above sea level:

- Reduction of rated insulation voltage to 0,75 x $U_i$
- Reduction of load current to 0,7 x $I_e$

These ratings apply to a maximum ambient temperature of 40 °C (140 °F).

## Benefits

- Considerable space savings thanks to a width of only 22.5 mm
- Variety of connection techniques: screw connection, spring-type connection or ring terminal end, makes for easy terminations
- Flexible for a wide range of applications with function modules for retrofitting
- Possibility of fuseless short-circuit resistant design

***Advantages:***

- Saves time and costs with easy wiring, simple installation and fast commissioning
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: standardized function modules and heat sinks can be used in conjunction with 22.5 mm style semiconductor relays to satisfy unique application requirements
- Vibration-resistant and shock-resistant spring-loaded terminal connection system provides a superior connection even under tough conditions

## Area of application

***Applications***

***Solid-state relays***

SIRIUS solid-state relays are suitable for surface mounting on existing cooling surfaces. Installation is quick and easy, involving just two screws. The special technology of the power semiconductor ensures there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the capacity reaches up to 88 A on resistive loads.

The solid-state relays are available in three different versions:

- 3RF21 single-phase solid-state relay with a width of 22.5 mm
- 3RF20 single-phase solid-state relay with a width of 45 mm
- 3RF22 three-phase solid-state relay with a width of 45 mm

The 3RF21 and 3RF22 solid-state relays can be expanded with various function modules to adapt them to individual applications.

***Solid-state contactors***

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current intensities of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on carrier plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building engineering. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in two different versions:

- 3RF23 single-phase solid-state contactors
- 3RF24 three-phase solid-state contactors

***3RF22 three-phase solid-state relay with a width of 45 mm***

With its compact design, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay is the ultimate in space-saving construction, at a width of 45 mm. Installation on cooling surfaces is quick and easy, involving just two screws. The logical connection arrangement, with the power infeed from above and connection of the load from below, ensures tidy installation in the control cabinet.

***3RF24 three-phase solid-state contactors***

The compact design enables small compact units with currents up to 50 A. All special features of the solid-state relays for saving time and space are effective here too.

Example plastic machine industry:

Thanks to their high switching endurance, SIRIUS SC semiconductor switching devices are ideally suited for use in the control of electroheat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency needs to be. The accurate regulation of electroheat is used for example in many processes in the plastic machine industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects.

The powerful SIRIUS SC semiconductor relays and contactors can be used to control several heating loads at the same time. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated which can be sent to the controller.

Protecting the semiconductor relays and semiconductor contactors with 5 SY supplemental protectors.

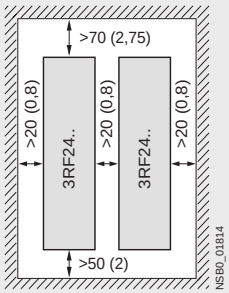
Short-circuit protection and line protection with 5 SY supplemental protectors is easy to achieve with SIRIUS SC semiconductor relays and semiconductor contactors in comparison with designing load feeders with fuses. A special version of the semiconductor contactors can be protected against damage in the case of a short-circuit with 5 SY supplementary protector with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switching device.

## Design

There is no typical design of a load feeder with semiconductor relays or semiconductor contactors; instead, the great variety of connection systems and control voltages offers universal application opportunities. SIRIUS SC semiconductor relays and semiconductor contactors can be installed in fuseless or fused feeders, as required.

There are special versions with which it is even possible to achieve short-circuit strength in a fuseless design.

***Mounting regulations***




Distances for stand-alone installation

## General data

### Functions

#### *Connection*

All SIRIUS SC semiconductor switching devices are characterized by the great variety of connection methods. You can choose between the following connection techniques:

SIGUT connection system (screw)

The SIGUT connection system is the standard among industrial switching devices. Open terminals and a plus-minus screw are just two features of this technology. Two conductors of up to 6 $mm^2$ [1] can be connected in just one terminal. As a result, loads of up to 50 A can be connected.

Spring-loaded connection system

This innovative technology holds the conductor without screw connection. This means that very high vibration resistance is achieved. Two conductors of up to 2.5 $mm^2$ [1] can be connected to each terminal. As a result, loads of up to 20 A can be dealt with.

Ring terminal end connection

The ring terminal end connection is equipped with an M5 screw. Ring terminal ends of up to 25 $mm^2$ can be connected. In this way it is possible to connect conductors with up to 88 A safely. Additional finger safety can be provided with a special cover.

#### *Switching types*

In order to guarantee an optimized control method for different loads, the functionality of our semiconductor switching devices can be adapted accordingly.

The "**zero-point switching**" method is ideal for resistive loads, i.e. where the power semiconductor is activated at zero voltage.

For inductive loads, on the other hand, for example in the case of valves, it is better to go with "**instantaneous switching**". By distributing the ON point over the entire sine curve of the mains voltage, disturbances are reduced to a minimum.

A special “low noise” version is available due to a special control, this special version can be used in public networks up to 16A without any additional measures such as interference suppressor filters. As a result, it conforms to limit value curve class B according to EN 60947-4-3 in terms of emitted interference.

### Function

#### *Two-phase controlled version*

In many three-phase applications there is no need of a three-phase controller. Loads in a delta circuit or wye circuit, which have no connection to the neutral conductor, can be safely switched on and off using only two phases.

Nevertheless, the 3RF22 and 3RF24 three-phase solid-state switching devices provide the possibility of connecting all three phases to the switching device, with the middle phase looped directly through the device. Thanks to the lower power loss compared to a three-phase controlled device it is possible for the mounted accessories to be more compact.

#### *Three-phase controlled version*

This version is used in three-phase applications which have to switch all phases on and off for system reasons or in the case of loads in a wye circuit with connection to the neutral conductor.

#### *Performance characteristics*

The performance of the semiconductor switching devices are substantially determined by the type of power semiconductors used and the internal design. In the case of the SIRIUS SC semiconductor contactors and semiconductor relays, only thyristors are used instead of less powerful Triacs.

Two of the most important features of thyristors are the blocking voltage and the maximum load integral:

Blocking voltage

Thyristors with a high blocking voltage can also be operated without difficulty in power systems with high interference voltages. Separate protective measures, such as a protective circuit with a varistor, are not necessary in most cases.

With SIRIUS SC, for example, thyristors with 800 V blocking voltage are fitted for operation in power systems up to 230 V. Thyristors with up to 1600 V are used for power systems with higher voltages.

Maximum load integral

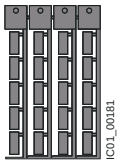
One of the purposes of specifying the maximum load integral ($I^2t$) is to determine the rating of the short-circuit protection. Only a large power semiconductor with a correspondingly high $I^2t$ value can be given appropriate protection against destruction from a short-circuit by means of a protective device matched to the application. However, SIRIUS SC is also characterized by the optimum matching of the thyristors ($I^2t$ value) with the rated currents. The rated currents specified on the devices in conformance with EN 60947-4-3 were confirmed by extensive testing.

1) For $mm^2$ to AWG conversion see page 19/21 of Industrial Controls catalog.

## Selection and ordering data

### *Inscription labels for 3RF2 series*

| Designation | Labeling area (W x H) | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|
| | mm x mm | | d | | | | | |
| **Blank labels** | | | | | | | | |
| **Unit labeling plates for "SIRIUS"[1)]** | 10 x 7 | Titanium gray | 20 | **3RT2900-1SB10** | | 100 | 816 units | 41B |
| | 20 x 7 | Titanium gray | 20 | **3RT2900-1SB20** | | 100 | 340 units | 41B |
| **Adhesive labels for SIRIUS** | 19 x 6 | Titanium gray | 5 | **3RT2900-1SB60** | | 100 | 3 060 units | 41B |




3RT2900-1SB20
(1 frame = 20 units)

[1)] PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see page 16/15).

## Integration

### *Notes on integration in the load feeders*

The SIRIUS solid-state switching devices are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. Detailed information, for example in relation to solid-state contactors about the minimum spacing and to solid-state relays about the choice of heat sink, is given in the technical specifications (see Technical Information LV 1 T or our Mall) and the product data sheets.

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short-circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short-circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly. The technical specifications and the product data sheets contain details both about the solid-state fuse protection itself and about use of the devices with conventional protection equipment.

Semiconductor motor and reversing contactors can be easily combined with the 3RV motor starter protectors and 3RB2 overload relay from the SIRIUS modular system. Thus, fuseless and fuse motor feeders can be designed easily and in a space-saving manner.

The solid-state switching devices for resistive loads are suitable for interference-free operation in industrial networks without further measures. If they are used in public networks, it may be necessary for conducted interference to be reduced by means of filters. This does not include the special solid-state contactors of type 3RF23..-.CA.. "Low Noise". These comply with the class B limit values up to a rated current of 16 A. If other versions are used, and at currents of over 16 A, standard filters can be used in order to comply with the limit values. The decisive factors when it comes to selecting the filters are essentially the current loading and the other parameters (operational voltage, design type, etc.) in the load feeder.

Suitable filters can be ordered from EPCOS AG.

You can find more information on the Internet at:

http://www.epcos.com

# Solid-State Relays

## 22.5 mm semiconductor relays

### Selection and ordering data

3RF21 20-1AA02

3RF21 20-2AA02

3RF21 20-3AA02

| Type current [1] | Maximum achievable power for type current and $U_e$ = | | | Screw connection [2] | Spring-loaded connection [3] | Ring cable connection | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|---|---|---|---|
| | 115 V | 230 V | 400 V | | | | | |
| A | kW | kW | kW | Order No. | Order No. | Order No. | | kg |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V** | | | | | | | | |
| 20 | 2.3 | 4.6 | - | **3RF21 20-1AA□2** | **3RF21 20-2AA□2** | **3RF21 20-3AA□2** | 1 unit | 0.075 |
| 30 | 3.5 | 6.9 | - | **3RF21 30-1AA□2** | **-** | **-** | 1 unit | 0.075 |
| 50 | 5.8 | 11.5 | - | **3RF21 50-1AA□2** | **3RF21 50-2AA□2** | **3RF21 50-3AA□2** | 1 unit | 0.075 |
| 70 | 8.1 | 16.1 | - | **3RF21 70-1AA□2** | **-** | **-** | 1 unit | 0.075 |
| 90 | 10.4 | 20.7 | - | **3RF21 90-1AA□2** | **3RF21 90-2AA□2** | **3RF21 90-3AA□2** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control DC 4 ... 30 V** | | | | | | | | |
| 20 | 2.3 | 4.6 | - | **3RF21 20-1AA42** | **3RF21 20-2AA42** | **-** | 1 unit | 0.075 |
| 30 | 3.5 | 6.9 | - | **3RF21 30-1AA42** | **-** | **-** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V** | | | | | | | | |
| 20 | - | 4.6 | 8 | **3RF21 20-1AA□4** | **3RF21 20-2AA□4** | **3RF21 20-3AA□4** | 1 unit | 0.075 |
| 30 | - | 6.9 | 12 | **3RF21 30-1AA□4** | **-** | **-** | 1 unit | 0.075 |
| 50 | - | 11.5 | 20 | **3RF21 50-1AA□4** | **3RF21 50-2AA□4** [4] | **3RF21 50-3AA□4** | 1 unit | 0.075 |
| 70 | - | 16.1 | 28 | **3RF21 70-1AA□4** | **-** | **-** | 1 unit | 0.075 |
| 90 | - | 20.7 | 36 | **3RF21 90-1AA□4** | **3RF21 90-2AA□4** | **3RF21 90-3AA□4** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, control DC 4 ... 30 V** | | | | | | | | |
| 20 | - | 4.6 | 8 | **3RF21 20-1AA45** | **3RF21 20-2AA45** | **-** | 1 unit | 0.075 |
| 30 | - | 6.9 | 12 | **3RF21 30-1AA45** | **-** | **-** | 1 unit | 0.075 |
| 50 | - | 11.5 | 20 | **3RF21 50-1AA45** | **-** | **-** | 1 unit | 0.075 |
| 70 | - | 16.1 | 28 | **3RF21 70-1AA45** | **-** | **-** | 1 unit | 0.075 |
| 90 | - | 20.7 | 36 | **3RF21 90-1AA45** | **-** | **3RF21 90-3AA44** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, blocking voltage 1600 V** | | | | | | | | |
| 30 | - | - | 12 | **3RF21 30-1AA□6** | **-** | **-** | 1 unit | 0.075 |
| 50 | - | - | 20 | **3RF21 50-1AA□6** | **3RF21 50-2AA□6** | **3RF21 50-3AA□6** | 1 unit | 0.075 |
| 70 | - | - | 28 | **3RF21 70-1AA□6** | **-** | **-** | 1 unit | 0.075 |
| 90 | - | - | 36 | **3RF21 90-1AA□6** | **3RF21 90-2AA□6** | **3RF21 90-3AA□6** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, control 24 V DC low power** | | | | | | | | |
| 70 | - | - | 28 | **3RF21 70-1AA05-0KN0** | **-** | **-** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control 110 V to 230 V** | | | | | | | | |
| 50 | - | - | - | **3RF21 50-1BA22** | **-** | **-** | 1 unit | 0.075 |
| **instantaneous switching, rated operational voltage $U_e$ = 48 V to 460 V, control 24 V DC acc. to EN 61131-2** | | | | | | | | |
| 20 | - | - | - | **3RF21 20-1BA04** | **-** | **-** | 1 unit | 0.075 |
| 30 | - | - | - | **3RF21 30-1BA04** | **-** | **-** | 1 unit | 0.075 |
| 50 | - | - | - | **3RF21 50-1BA04** | **-** | **-** | 1 unit | 0.075 |
| 70 | - | - | - | **3RF21 70-1BA04** | **-** | **-** | 1 unit | 0.075 |
| 90 | - | - | - | **3RF21 90-1BA04** | **-** | **-** | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, control 24 V DC acc. to EN 61131-2, blocking voltage 1600 V** | | | | | | | | |
| 50 | - | - | - | **3RF21 50-1BA06** | **-** | **-** | 1 unit | 0.075 |
| **Low noise [3] - zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V, control 24 V DC acc. to EN 61131-2** | | | | | | | | |
| 70 | - | - | - | **3RF21 70-1CA04** | **-** | **-** | 1 unit | 0.075 |

| **Order No. extension for rated control supply voltage $U_s$** | | | |
|---|---|---|---|
| DC 24 V acc. to EN 61131-2 | **0** | **0** | **0** |
| AC 110 V... 230 V | **2** | **2** | **2** |

Other rated control supply voltages on request.

1) The type current provides information about the performance of the semiconductor relay. The actual permitted operational current $I_e$ can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to 50 A and a conductor cross section of 10 mm$^2$.

3) Please note that this version can only be used for a rated current of up to 20 A and a conductor cross section of 2.5 mm$^2$. See page 19/21 of Industrial controls catalog for mm$^2$ to AWG conversion chart.

4) 50 A version with 24 AC/DC control - 3RF21 50-2AA14.

**Note:** See page 19/21 of Industrial Controls catalog for mm$^2$ to AWG conversion chart.

### *Fused design with semiconductor protection (similar to type of coordination "2")*[1)]

The semiconductor protection for the SIRIUS SC control gear can be used with different protective devices. This allows protection by means of LV HRC fuses of operational class gL/gG or supplementary protectors. The table on page 7/21 lists the maximum permissible fuses for each SIRIUS SC controlgear.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems.
For protective devices with operational class gL/gG and for SITOR full range fuses 3NE1, the minimum cross-sections for the conductor to be connected must be taken into account.

## Selection and ordering data

3RF20 20-1AA02

| Type current [1)] | Maximum achievable power for type current and $U_e$ = | | | Screw connection [2)] | Spring-loaded connection [3)] | Ring cable connection | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|---|---|---|---|
| | 115 V | 230 V | 400 V | | | | | |
| A | kW | kW | kW | Order No. | Order No. | Order No. | | kg |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V** | | | | | | | | |
| 20 | 2.3 | 4.6 | - | **3RF20 20-1AA□2** | - | - | 1 unit | 0.085 |
| 30 | 3.5 | 6.9 | - | **3RF20 30-1AA□2** | - | - | 1 unit | 0.085 |
| 50 | 5.8 | 11.5 | - | **3RF20 50-1AA□2** | - | - | 1 unit | 0.085 |
| 70 | 8.1 | 16.1 | - | **3RF20 70-1AA□2** | - | - | 1 unit | 0.085 |
| 88 | 10.4 | 20.7 | - | **3RF20 90-1AA□2** | - | - | 1 unit | 0.085 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control DC 4 ... 30 V** | | | | | | | | |
| 20 | - | - | - | - | **3RF21 20-2AA42** | - | 1 unit | 0.075 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V** | | | | | | | | |
| 20 | - | 4.6 | 8 | **3RF20 20-1AA□4** | - | - | 1 unit | 0.085 |
| 30 | - | 6.9 | 12 | **3RF20 30-1AA□4** | - | - | 1 unit | 0.085 |
| 50 | - | 11.5 | 20 | **3RF20 50-1AA□4** | - | - | 1 unit | 0.085 |
| 70 | - | 16.1 | 28 | **3RF20 70-1AA□4** | - | - | 1 unit | 0.085 |
| 88 | - | 20.7 | 36 | **3RF20 90-1AA□4** | - | - | 1 unit | 0.085 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control DC 4 ... 30 V** | | | | | | | | |
| 20 | - | - | - | **3RF20 20-1AA42** | **3RF21 20-2AA42** | - | 1 unit | 0.085 |
| 30 | - | - | - | **3RF20 30-1AA42** | - | - | 1 unit | 0.085 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, control DC 4 ... 30 V** | | | | | | | | |
| 20 | - | 4.6 | 8 | **3RF20 20-1AA45** | - | - | 1 unit | 0.085 |
| 50 | - | 11.5 | 20 | **3RF20 50-1AA45** | - | - | 1 unit | 0.085 |
| 70 | - | 16.1 | 28 | **3RF20 70-1AA45** | - | - | 1 unit | 0.085 |
| 90 | - | 20.7 | 36 | **3RF20 90-1AA45** | - | - | 1 unit | 0.085 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, blocking voltage 1600 V** | | | | | | | | |
| 30 | - | - | 12 | **3RF20 30-1AA□6** | - | - | 1 unit | 0.085 |
| 50 | - | - | 20 | **3RF20 50-1AA□6** | - | - | 1 unit | 0.085 |
| 70 | - | - | 28 | **3RF20 70-1AA□6** | - | - | 1 unit | 0.085 |
| 88 | - | - | 36 | **3RF20 90-1AA□6** | - | - | 1 unit | 0.085 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V, control DC 4 ... 30 V switching** | | | | | | | | |
| 50 | - | - | - | **3RF20 50-1AA44** | - | - | 1 unit | 0.085 |
| **Instantaneous switching, rated operational voltage $U_e$ = 48 V to 460 V, control 24 V DC acc. to EN 61131-2** | | | | | | | | |
| 30 | - | - | - | **3RF20 30-1BA04** | - | - | 1 unit | 0.085 |

| **Order No. extension for rated control supply voltage $U_s$** | | | |
|---|---|---|---|
| DC 24 V acc. to EN 61131-2 | **0** | **0** | **0** |
| AC 110 V... 230 V | **2** | **2** | **2** |

Other rated control supply voltages on request.

1) The type current provides information about the performance of the semiconductor relay. The actual permitted operational current $I_e$ can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to 50 A and a conductor cross section of 10mm$^2$.

3) Screw terminals and spring terminals (control current side).

**Note:** For mm$^2$ to AWG conversion chart see Industrial Controls catalog page 19/21.

# Solid-State Relays

## 3RF22 solid-state relays, 3-phase, 45 mm

### Selection and ordering data

#### *Selecting solid-state relays*

When selecting solid-state relays, in addition to information about the power system, the load and the ambient conditions it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink. The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagrams.

3RF22 30-1AB45

| Type current[1] | Rated control supply voltage | Screw terminal[2] | Weight per pack approx. |
|---|---|---|---|
| | | Order No. | |
| A | V | | kg |
| **Zero-point switching<br>Rated operational voltage $U_e$ 48 V ... 600 V** | | | |
| ***Two-phase controlled*** | | | |
| 30 | 4 ... 30 V DC | **3RF22 30-1AB□5** | 0.150 |
| 55 | | **3RF22 55-1AB□5** | 0.150 |
| ***Three-phase controlled*** | | | |
| 30 | 4 ... 30 V DC | **3RF22 30-1AC□5** | 0.150 |
| 55 | | **3RF22 55-1AC□5** | 0.150 |
| | 110 V AC | **3** | |
| | 4 ... 30 V DC | **4** | |

3RF22 30-2AB45

| Type current[1] | Rated control supply voltage | Spring-loaded terminals[3] | Weight per pack approx. |
|---|---|---|---|
| | | Order No. | |
| A | V | | kg |
| **Zero-point switching<br>Rated operational voltage $U_e$ 48 V ... 600 V** | | | |
| ***Two-phase controlled*** | | | |
| 30 | 4 ... 30 V DC | **3RF22 30-2AB45** | 0.150 |
| 55 | | **3RF22 55-2AB45** | 0.150 |
| ***Three-phase controlled*** | | | |
| 30 | 4 ... 30 V DC | **3RF22 30-2AC45** | 0.150 |
| 55 | | **3RF22 55-2AC45** | 0.150 |

3RF22 30-3AB45

| Type current[1] | Rated control supply voltage | Ring terminal end connection | Weight per pack approx. |
|---|---|---|---|
| | | Order No. | |
| A | V | | kg |
| **Zero-point switching<br>Rated operational voltage $U_e$ 48 V ... 600 V** | | | |
| ***Two-phase controlled*** | | | |
| 30 | 4 ... 30 V DC | **3RF22 30-3AB45** | 0.150 |
| 55 | | **3RF22 55-3AB45** | 0.150 |
| ***Three-phase controlled*** | | | |
| 30 | 4 ... 30 V DC | **3RF22 30-3AC45** | 0.150 |
| 55 | | **3RF22 55-3AC45** | 0.150 |

1) The type current provides information about the performance of the solid-state relay.
The actual permitted rated operational current $I_e$ can be smaller depending on the connection method and cooling conditions.

2) Please note that the version with an M4 screw terminal can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm$^2$.

3) Please note that this version can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm$^2$.

## Overview

### Solid-state contactors

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current strengths of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on support plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building management systems. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in 2 different versions:

- 3RF23 single-phase solid-state contactors,
- 3RF24 three -phase solid-state contactors

### Single-phase versions

The 3RF23 solid-state contactors can be expanded with various function modules to adapt them to individual applications.

### Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

### Version for inductive loads, "instantaneous switching"

In this version the solid-state contactor is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

### Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures such as interference suppressor filters. As a result it conforms to limit value curve class B according to EN 60947-4-3 in terms of emitted interference.

### Special "Short-circuit-proof" version

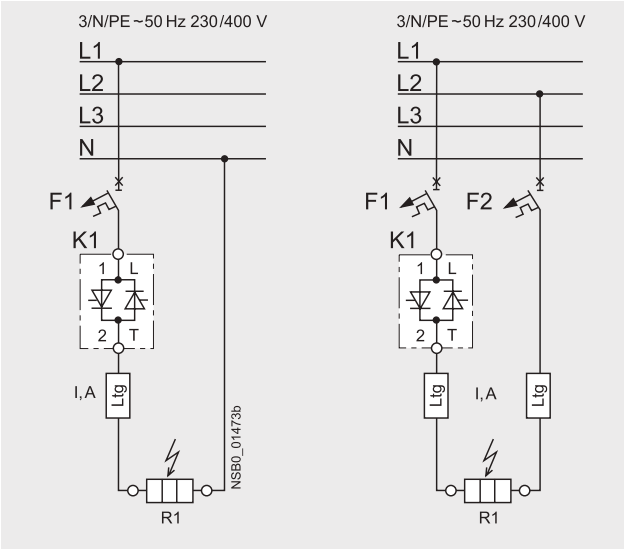
Skillful matching of the power semiconductor with the performance capacity of the solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B-type MCB or a conventional line protection fuse, the result is a short-circuit resistant feeder.

In order to achieve problem-free short-circuit protection by means of miniature circuit breakers, however, certain boundary conditions must be observed. As the magnitude and duration of the short-circuit current are determined not only by the short-circuit breaking response of the miniature circuit breaker but also the properties of the wiring system, such as the internal resistance of the input to the network and damping by controls and cables, particular attention must also be paid to these parameters. The necessary cable lengths are therefore shown for the main factor, the line resistance, in the table above right.

The following miniature circuit breakers with a type B tripping characteristic and 10 kA or 6 kA breaking capacity protect the 3RF23..-.DA.. solid-state contactors in the event of short-circuits on the load and the specified conductor cross-sections and lengths:

| Rated current of the miniature circuit breaker | Example Type[1)] | Max. conductor cross-section | Minimum cable length from contactor to load |
|---|---|---|---|
| 6 A | 5SY4 106-6, 5SX2 106-6 | 1 mm$^2$ | 5 m |
| 10 A | 5SY4 110-6, 5SX2 110-6 | 1.5 mm$^2$ | 8 m |
| 16 A | 5SY4 116-6, 5SX2 116-6 | 1.5 mm$^2$ | 12 m |
| 16 A | 5SY4 116-6, 5SX2 116-6 | 2.5 mm$^2$ | 20 m |
| 20 A | 5SY4 120-6, 5SX2 120-6 | 2.5 mm$^2$ | 20 m |
| 25 A | 5SY4 125-6, 5SX2 125-6 | 2.5 mm$^2$ | 26 m |

1) The miniature circuit breakers can be used up to a maximum rated voltage of 480 V!




The setup and installation above can also be used for the solid-state relays with a $I^2t$ value of at least 6600 A$^2$s.

### Three-phase versions

The three-phase solid-state contactors for resistive loads up to 50 A are available with

- two-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- three-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched).

The converter function module can be snapped onto both versions for the simple power control of AC loads by means of analog signals.

- Check the correct contactor size with the aid of the rated current diagram, taking account of the design conditions.

## Selection and ordering data

### *Selecting solid-state contactors*

The semiconductor contactors are selected on the basis of details of the power system, the load and the ambient conditions. As the semiconductor contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for semiconductor relays.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a semiconductor contactor with the same or higher rated current than the load
- Check the correct contactor size with the aid of the rated current diagram, taking account of the design conditions

3RF23 10-1AA02

3RF23 30-1AA02

3RF23 40-1AA02

3RF23 50-3AA02

3RF23 70-3AA02

3RF23 90-3AA02

| Type current 1) $I_{max.}$ | Maximum achievable power for $I_{max}$ and $U_e$ = 115 V | 230 V | 400 V | Screw connection | Spring-loaded connection | Ring cable connection | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|---|---|---|---|
| A | kW | kW | kW | Order No. | Order No. | Order No. | | kg |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V** | | | | | | | | |
| 10.5 | 1.2 | 2.4 | - | **3RF23 10-1AA□2** | **3RF23 10-2AA□2** | **3RF23 10-3AA□2** | 1 unit | 0.136 |
| 20 | 2.3 | 4.6 | - | **3RF23 20-1AA□2** | **3RF23 20-2AA□2** | **3RF23 20-3AA□2** | 1 unit | 0.204 |
| 30 | 3.5 | 6.9 | - | **3RF23 30-1AA□2** | - | **3RF23 30-3AA□2** | 1 unit | 0.354 |
| 40 | 4.6 | 9.2 | - | **3RF23 40-1AA□2** | - | **3RF23 40-3AA□2** | 1 unit | 0.496 |
| 50 | 6 | 12 | - | **3RF23 50-1AA□2** | - | **3RF23 50-3AA□2** | 1 unit | 0.496 |
| 70 | 8 | 16 | - | - | - | **3RF23 70-3AA□2** | 1 unit | 0.944 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control 24 V DC acc. to EN 61131-2 3)** | | | | | | | | |
| 50 | - | - | - | **3RF20 50-4AA02** | - | - | 1 unit | 0.085 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control 24 V DC low power** | | | | | | | | |
| 20 | - | - | - | **3RF23 20-1AA02-0KN0** | - | - | 1 unit | 0.240 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V** | | | | | | | | |
| 10.5 | - | 2.4 | 4.2 | **3RF23 10-1AA□4** | **3RF23 10-2AA□4** | **3RF23 10-3AA□4** | 1 unit | 0.136 |
| 20 | - | 4.6 | 8 | **3RF23 20-1AA□4** | **3RF23 20-2AA□4** | **3RF23 20-3AA□4** | 1 unit | 0.204 |
| 30 | - | 6.9 | 12 | **3RF23 30-1AA□4** | - | **3RF23 30-3AA□4** | 1 unit | 0.354 |
| 40 | - | 9.2 | 16 | **3RF23 40-1AA□4** | - | **3RF23 40-3AA□4** | 1 unit | 0.496 |
| 50 | - | 12 | 20 | **3RF23 50-1AA□4** | - | **3RF23 50-3AA□4** | 1 unit | 0.496 |
| 70 | - | 16 | 28 | - | - | **3RF23 70-3AA□4** | 1 unit | 0.944 |
| **Zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V, control 24 V AC/DC** | | | | | | | | |
| 10.5 | - | - | - | **3RF23 10-1AA12** | - | - | 1 unit | 0.165 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V, control 24 V DC low power** | | | | | | | | |
| 50 | - | - | - | **3RF23 10-1AA04-0KN0** | - | - | 1 unit | 0.165 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V, control 24 V AC/DC** | | | | | | | | |
| 10.5 | - | - | - | **3RF23 10-1AA14** | - | - | 1 unit | 0.165 |
| 20 | - | - | - | **3RF23 20-1AA14** | - | - | 1 unit | 0.240 |
| 30 | - | - | - | **3RF23 30-1AA14** | - | - | 1 unit | 0.400 |
| 40 | - | - | - | **3RF23 40-1AA14** | - | - | 1 unit | 0.550 |
| 50 | - | - | - | **3RF23 50-1AA14** | - | - | 1 unit | 0.550 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, control DC 4 ... 30 V** | | | | | | | | |
| 10.5 | - | 2.4 | 4.2 | **3RF23 10-1AA45** | - | - | 1 unit | 0.135 |
| 20 | - | 4.6 | 8 | **3RF23 20-1AA45** | - | - | 1 unit | 0.204 |
| 30 | - | 6.9 | 12 | **3RF23 30-1AA45** | - | - | 1 unit | 0.354 |
| 30 | - | - | - | **3RF23 30-1AA25** 2) | - | - | 1 unit | 0.354 |
| 40 | - | 9.2 | 16 | **3RF23 40-1AA45** | - | **3RF23 40-3AA45** | 1 unit | 0.496 |
| 50 | - | 12 | 20 | **3RF23 50-1AA45** | - | - | 1 unit | 0.496 |
| 70 | - | 16 | 26 | - | - | **3RF23 70-3AA45** | 1 unit | 0.944 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V, control 4 V ... 30 V DC** | | | | | | | | |
| 10.5 | - | - | - | **3RF23 10-1AA44** | - | - | 1 unit | 0.165 |
| 20 | - | - | - | **3RF23 20-1AA44** | - | **3RF23 20-3AA44** | 1 unit | 0.240 |
| 30 | - | - | - | **3RF23 30-1AA44** | - | **3RF23 30-3AA44** | 1 unit | 0.400 |
| 50 | - | - | - | - | - | **3RF23 50-3AA44** | 1 unit | 0.400 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, blocking voltage 1600 V** | | | | | | | | |
| 10.5 | - | - | 4.2 | **3RF23 10-1AA□6** | **3RF23 10-2AA□6** | **3RF23 10-3AA□6** | 1 unit | 0.136 |
| 20 | - | - | 8 | **3RF23 20-1AA□6** | **3RF23 20-2AA□6** | **3RF23 20-3AA□6** | 1 unit | 0.204 |
| 30 | - | - | 12 | **3RF23 30-1AA□6** | - | **3RF23 30-3AA□6** | 1 unit | 0.354 |
| 40 | - | - | 16 | **3RF23 40-1AA□6** | - | **3RF23 40-3AA□6** | 1 unit | 0.496 |
| 50 | - | - | 20 | **3RF23 50-1AA□6** | - | **3RF23 50-3AA□6** | 1 unit | 0.496 |
| 70 | - | - | 28 | - | - | **3RF23 70-3AA□6** | 1 unit | 0.944 |
| **Order No. extension for rated control supply voltage $U_s$** | | | | **0 2** | **0 2** | **0 2** | | |
| DC 24 V acc. to EN 61131-2 | | | | | | | | |
| AC 110 V ... 230 V | | | | | | | | |

Other rated control supply voltages on request.

1) The type current provides information about the performance of the semiconductor contactor. The actual permitted operational current $I_e$ can be smaller depending on the connection method and start-up conditions. Derating acc. to curves from page 7/45, 7/46, 7/47.
2) 110 ... 230 AC control voltage.

# Solid-State Contactors

## SIRIUS SC semiconductor contactors – single phase selection

| Type current [1] $I_{max.}$ | Maximum achievable power for $I_{max}$ and $U_e$ = 115 V | 230 V | 400 V | Screw connection | Spring-loaded connection | Ring cable connection | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|---|---|---|---|
| A | kW | kW | kW | Order No. | Order No. | Order No. | | kg |
| **Instantaneous switching, rated operational voltage $U_e$ = 24 V to 230 V** | | | | | | | | |
| 10.5 | 1.2 | 2.4 | - | **3RF23 10-1BA□2** | - | - | 1 unit | 0.136 |
| 20 | 2.3 | 4.6 | - | **3RF23 20-1BA□2** | - | - | 1 unit | 0.204 |
| 30 | 3.5 | 6.9 | - | **3RF23 30-1BA□2** | - | - | 1 unit | 0.354 |
| 40 | 4.6 | 9.2 | - | **3RF23 40-1BA□2** | - | - | 1 unit | 0.496 |
| 50 | 6 | 12 | - | **3RF23 50-1BA□2** | - | - | 1 unit | 0.496 |
| 70 | 8 | 16 | - | **3RF23 70-1BA□2** | - | **3RF23 70-3BA□2** | 1 unit | 0.944 |
| 88 | 10 | 20 | - | **3RF23 90-1BA□2** | - | - | 1 unit | 2.600 |
| **Instantaneous switching, rated operational voltage $U_e$ = 48 V to 460 V** | | | | | | | | |
| 10.5 | - | 2.4 | 4.2 | **3RF23 10-1BA□4** | - | - | 1 unit | 0.136 |
| 20 | - | 4.6 | 8 | **3RF23 20-1BA□4** | - | - | 1 unit | 0.204 |
| 30 | - | 6.9 | 12 | **3RF23 30-1BA□4** | - | - | 1 unit | 0.354 |
| 40 | - | 9.2 | 16 | **3RF23 40-1BA□4** | - | - | 1 unit | 0.496 |
| 50 | - | 12 | 20 | **3RF23 50-1BA□4** | - | - | 1 unit | 0.496 |
| 70 | - | 16 | 28 | **3RF23 70-1BA□4** | - | **3RF23 70-3BA□4** | 1 unit | 0.944 |
| 88 | - | 20 | 35 | **3RF23 90-1BA□4** | - | - | 1 unit | 2.600 |
| **Zero-point switching, rated operational voltage $U_e$ = 48 V to 600 V, control 110 V to 230 V** | | | | | | | | |
| 30 | - | - | - | **3RF23 30-1AA25** | - | - | 1 unit | 0.400 |
| **Instantaneous switching, rated operational voltage $U_e$ = 48 V to 600 V, blocking voltage 1600 V** | | | | | | | | |
| 10.5 | - | - | 4.2 | **3RF23 10-1BA□6** | - | - | 1 unit | 0.136 |
| 20 | - | - | 8 | **3RF23 20-1BA□6** | - | - | 1 unit | 0.204 |
| 30 | - | - | 12 | **3RF23 30-1BA□6** | - | - | 1 unit | 0.354 |
| 40 | - | - | 16 | **3RF23 40-1BA□6** | - | - | 1 unit | 0.496 |
| 50 | - | - | 20 | **3RF23 50-1BA□6** | - | - | 1 unit | 0.496 |
| 70 | - | - | 28 | **3RF23 70-1BA□6** | - | **3RF23 70-3BA□6** | 1 unit | 0.944 |
| 88 | - | - | 35 | **3RF23 90-1BA□6** | - | - | 1 unit | 2.600 |
| **Low noise, zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V** | | | | | | | | |
| 20 | 2.3 | 4.6 | - | **3RF23 20-1CA□2** | **3RF23 20-2CA□2** | - | 1 unit | 0.204 |
| 30 | - | - | - | **3RF23 30-1CA02** | - | - | 1 unit | 0.204 |
| **Low noise, zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V** | | | | | | | | |
| 20 | - | 4.6 | 8 | **3RF23 20-1CA□4** | **3RF23 20-2CA□4** | - | 1 unit | 0.204 |
| **Instantaneous switching, rated operational voltage $U_e$ = 48 V to 460 V, control DC 4 ... 30 V switching** | | | | | | | | |
| 20 | - | - | - | **3RF23 20-1BA44** | - | - | 1 unit | 0.240 |
| 30 | - | - | - | **3RF23 30-1BA44** | - | - | 1 unit | 0.400 |
| 50 | - | - | - | **3RF23 50-1BA44** | - | - | 1 unit | 0.550 |
| **Short-circuit resistant with B-automatic device, zero-point switching, rated operational voltage $U_e$ = 24 V to 230 V** | | | | | | | | |
| 20 | 2.3 | 4.6 | - | **3RF23 20-1DA□2** | **3RF23 20-2DA22** | **3RF23 20-3DA□2** | 1 unit | 0.204 |
| **Short-circuit resistant with B-automatic device, zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V** | | | | | | | | |
| 20 | - | 4.6 | 8 | **3RF23 20-1DA□4** | **3RF23 20-2DA24** | **3RF23 20-3DA□4** | 1 unit | 0.204 |
| 20 | - | - | - | **3RF23 20-1DA44** [2] | - | - | 1 unit | 0.204 |
| 30 | - | - | - | **3RF23 30-1DA44** [2] | - | - | 1 unit | 0.204 |
| **Low noise, zero-point switching, rated operational voltage $U_e$ = 48 V to 460 V, control 4 V to 30 V DC** | | | | | | | | |
| 70 | - | - | 28 | **3RF21 70-1CA04** | - | - | 1 unit | 0.240 |
| 20 | - | - | - | **3RF23 20-1CA44** | - | - | 1 unit | 0.240 |
| **Order No. extension for rated control supply voltage $U_S$** | | | | | | | | |
| DC 24 V acc. to EN 61131-2 | | | | **0** | **0** | **0** | | |
| AC 110 V ... 230 V | | | | **2** | **2** | **2** | | |

1) The type current provides information about the performance of the semiconductor contactor. The actual permitted operational current $I_e$ can be smaller depending on the connection method and start-up conditions. Derating acc. to curves from page 7/45, 7/46, 7/47.

Other rated control supply voltages on request.

2) 4...30 DC control voltage

| | Version | Order No. | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|
| | | | | kg |
| | **Accessories** | | | |
| | **Terminal cover** for 3RF21 semiconductor relays and 3RF23 semiconductor contactors with ring terminal end (after simple adaptation, this terminal cover can also be used for screw connection). | **3RF29 00-3PA88** | 10 units | 0.010 |

3RF29 00-3PA88

# Solid-State Contactors

## 3RF24 solid-state contactors, 3-phase

### Selection and ordering data

| Type current[1] $I_{max}$ | Rated control supply voltage $U_s$ | DT | Screw terminals<br>Order No. | List Price $ per PU | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|---|---|
| A | V | | | | | kg |
| **Zero-point switching<br>Rated operational voltage $U_e$ 48 V ... 600 V** | | | | | | |
| ***Two-phase controlled*** | | | | | | |
| 10.5 | 4 ... 30 DC | A | **3RF24 10-1AB45** | | 1 unit | 0.320 |
| 20 | | B | **3RF24 20-1AB45** | | 1 unit | 0.400 |
| 30 | | B | **3RF24 30-1AB45** | | 1 unit | 0.540 |
| 40 | | B | **3RF24 40-1AB45** | | 1 unit | 0.800 |
| 50 | | B | **3RF24 50-1AB45** | | 1 unit | 1.100 |
| 10.5 | 110 AC | A | **3RF24 10-1AB35** | | 1 unit | 0.320 |
| 20 | | B | **3RF24 20-1AB35** | | 1 unit | 0.400 |
| 30 | | B | **3RF24 30-1AB35** | | 1 unit | 0.540 |
| 40 | | B | **3RF24 40-1AB35** | | 1 unit | 0.800 |
| 50 | | B | **3RF24 50-1AB35** | | 1 unit | 1.100 |
| 10.5 | 230 AC | B | **3RF24 10-1AB55** | | 1 unit | 0.320 |
| 20 | | B | **3RF24 20-1AB55** | | 1 unit | 0.400 |
| 30 | | B | **3RF24 30-1AB55** | | 1 unit | 0.540 |
| 40 | | B | **3RF24 40-1AB55** | | 1 unit | 0.800 |
| 50 | | B | **3RF24 50-1AB55** | | 1 unit | 1.100 |
| ***Three-phase controlled*** | | | | | | |
| 10.5 | 4 ... 30 DC | B | **3RF24 10-1AC45** | | 1 unit | 0.320 |
| 20 | | B | **3RF24 20-1AC45** | | 1 unit | 0.540 |
| 30 | | A | **3RF24 30-1AC45** | | 1 unit | 0.800 |
| 40 | | B | **3RF24 40-1AC45** | | 1 unit | 1.100 |
| 50 | | B | **3RF24 50-1AC45** | | 1 unit | 1.850 |
| 10.5 | 110 AC | B | **3RF24 10-1AC35** | | 1 unit | 0.320 |
| 20 | | B | **3RF24 20-1AC35** | | 1 unit | 0.540 |
| 30 | | A | **3RF24 30-1AC35** | | 1 unit | 0.800 |
| 40 | | B | **3RF24 40-1AC35** | | 1 unit | 1.100 |
| 50 | | B | **3RF24 50-1AC35** | | 1 unit | 1.850 |
| 10.5 | 230 AC | B | **3RF24 10-1AC55** | | 1 unit | 0.320 |
| 20 | | B | **3RF24 20-1AC55** | | 1 unit | 0.540 |
| 30 | | B | **3RF24 30-1AC55** | | 1 unit | 0.800 |
| 40 | | B | **3RF24 40-1AC55** | | 1 unit | 1.100 |
| 50 | | B | **3RF24 50-1AC55** | | 1 unit | 1.850 |

3RF24 20-1AB45

3RF24 10-1AC45

| | | | Spring-loaded terminals | | | |
|---|---|---|---|---|---|---|
| **Zero-point switching · Integrated heat sink,<br>rated operational voltage $U_e$ 48 ... 600 V AC** | | | | | | |
| ***Two-phase controlled*** | | | | | | |
| 10 | 4 ... 30 DC | 5 | **3RF2410-2AB45** | | 1 unit | |
| 20 | | 5 | **3RF2420-2AB45** | | 1 unit | |
| 10 | 230 AC | 5 | **3RF2410-2AB55** | | 1 unit | |
| 20 | | 5 | **3RF2420-2AB55** | | 1 unit | |
| ***Three-phase controlled*** | | | | | | |
| 10 | 4 ... 30 DC | 5 | **3RF2410-2AC45** | | 1 unit | |
| 20 | | 5 | **3RF2420-2AC45** | | 1 unit | |
| 10 | 230 AC | 5 | **3RF2410-2AC55** | | 1 unit | |
| 20 | | 5 | **3RF2420-2AC55** | | 1 unit | |

3RF2410-2AB45

| | | | Ring terminal lug connection | | | |
|---|---|---|---|---|---|---|
| **Zero-point switching · Integrated heat sink,<br>rated operational voltage $U_e$ 48 ... 600 V AC** | | | | | | |
| ***Two-phase controlled*** | | | | | | |
| 50 | 4 ... 30 DC | 5 | **3RF2450-3AB45** | | 1 unit | |
| 50 | 230 AC | 5 | **3RF2450-3AB55** | | 1 unit | |
| ***Three-phase controlled*** | | | | | | |
| 50 | 4 ... 30 DC | 5 | **3RF2450-3AC45** | | 1 unit | |
| 50 | 230 AC | 5 | **3RF2450-3AC55** | | 1 unit | |

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current $I_e$ can be smaller depending on the connection method and installation conditions. For derating characteristic curves, see page 6/120, "More information".

For accessories, see page 6/144.

# Solid-State Contactors for Switching Motors



## Overview

Solid-state contactor for direct-on-line starting

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 7.5 kW and reversing up to 3.0 kW. The devices are constructed with complete insulation and can be mounted directly on SIRIUS motor starter protectors, overload relays and current monitoring relays, resulting in a very simple integration into motor feeders.

These three-phase solid-state contactors are equipped with a two-phase control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Important features:

- Insulated enclosure with integrated heat sink
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs
- Wide voltage range for AC control supply voltage

### *Switching functions*

The solid-state contactors for switching motors are “”instantaneous switching” because this method is particularly suited for inductive loads. By distributing the ON point over the entire sine curve of the mains voltage, disturbances are reduced to a minimum

### *Selecting solid-state contactors*

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing the maximum permissible switching frequency based on the characteristic curves (see “Technical Information”). To do this, the starting current, the starting time and the motor loaded in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase only by overdimensioning the motor and the solid-state contactor!

## Benefits

- Units with integrated heat sink, “ready to use”
- Compact and space-saving design
- Reversing contactors with integrated interlocking

## Application

### *Use in load feeders*

There is no typical design of a load feeder with solid-state relays or solid-state contactors; instead, the great variety of connection methods and control voltages offers universal application opportunities. SIRIUS solid-state relays and solid-state contactors can be installed in fuseless or fused feeders, as required.

### *Standards and approvals*

- IEC 60947-4-2
- UL 508, CSA for North America1)
- CE marking for Europe
- C-Tick approval for Australia
- CCC approval for China

1) Please note: Use overvoltage protection device; max. cut-off-voltage 6000 V; min. energy handling capability 100 J.

# Solid-State Contactors for Switching Motors

## 3RF34 solid-state contactors, 3-phase

### Selection and ordering data

***Motor contactors · Instantaneous switching · Two-phase controlled***

| Rated operational current $I_e$ | Rated HP at supply voltage | | | | | | | Rated control supply voltage $U_s$ | DT | Screw terminals / Configurator | Std. Pack Qty |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single Phase | | | Three Phase | | | | | | | |
| A | 115V | 200/ 208V | 230/ 240V | 200/ 208V | 230/ 240V | 460/ 480V | 575/ 600V | V | | Order No. | |
| **Rated operational voltage $U_e$ 48 ... 480 V AC** | | | | | | | | | | | |
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 24 DC acc. to IEC 61131-2 | A | **3RF34 05-1BB04** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-1BB04** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-1BB04** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-1BB04** | 1 unit |
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 110 ... 230 AC | B | **3RF34 05-1BB24** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-1BB24** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-1BB24** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-1BB24** | 1 unit |

3RF34 05-1BB

| **Rated operational voltage $U_e$ 48 ... 600 V AC, blocking voltage 1600 V** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 24 DC acc. to IEC 61131-2 | B | **3RF34 05-1BB06** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-1BB06** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-1BB06** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-1BB06** | 1 unit |
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 110 ... 230 AC | B | **3RF34 05-1BB26** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-1BB26** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-1BB26** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-1BB26** | 1 unit |

3RF34 10-1BB

| Rated operational current $I_e$ | Rated HP at supply voltage | | | | | | | Rated control supply voltage $U_s$ | DT | Spring-type terminals / Configurator | Std. Pack Qty |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single Phase | | | Three Phase | | | | | | | |
| A | 115V | 200/ 208V | 230/ 240V | 200/ 208V | 230/ 240V | 460/ 480V | 575/ 600V | V | | Order No. | |
| **Rated operational voltage $U_e$ 48 ... 480 V AC** | | | | | | | | | | | |
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 24 DC acc. to IEC 61131-2 | B | **3RF34 05-2BB04** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-2BB04** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-2BB04** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-2BB04** | 1 unit |
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 110 ... 230 AC | B | **3RF34 05-2BB24** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-2BB24** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-2BB24** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-2BB24** | 1 unit |

3RF34 05-2BB

| **Rated operational voltage $U_e$ 48 ... 600 V AC, blocking voltage 1600 V** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 24 DC acc. to IEC 61131-2 | B | **3RF34 05-2BB06** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-2BB06** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-2BB06** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-2BB06** | 1 unit |
| 5.2 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 110 ... 230 AC | B | **3RF34 05-2BB26** | 1 unit |
| 9.2 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-2BB26** | 1 unit |
| 12.5 | 1/3 | 1/2 | 3/4 | 2 | 2 | 3 | 5 | | B | **3RF34 12-2BB26** | 1 unit |
| 16 | 1/3 | 3/4 | 1 | 2 | 2 | 5 | 7 | | B | **3RF34 16-2BB26** | 1 unit |

3RF34 10-2BB

For online configurator see www.siemens.com/sirius/configurators.

# Solid-State Contactors for Switching Motors

## 3RF34 solid-state – reversing contactors, 3-phase

### Selection and ordering data

***Reversing contactors · Instantaneous switching · Two-phase controlled***

| Rated operational current $I_e$ | Rated HP at supply voltage – Single Phase | | | Three Phase | | | | Rated control supply voltage $U_s$ | DT | Screw terminals / Configurator | Std. Pack Qty |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 115V | 200/208V | 230/240V | 200/208V | 230/240V | 460/480V | 575/600V | V | | Order No. | |
| **Rated operational voltage $U_e$ 48 ... 480 V AC** | | | | | | | | | | | |
| 3.8 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 24 DC acc. to IEC 61131-2 | B | **3RF34 03-1BD04** | 1 unit |
| 5.4 | 1/6 | 1/3 | 1/3 | 1 | 1 | 3 | 5 | | B | **3RF34 05-1BD04** | 1 unit |
| 7.4 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-1BD04** | 1 unit |
| 3.8 | 1/10 | 1/4 | 1/4 | 1/2 | 3/4 | 2 | 2 | 110 ... 230 AC | B | **3RF34 03-1BD24** | 1 unit |
| 5.4 | 1/6 | 1/3 | 1/3 | 1 | 1 | 3 | 5 | | B | **3RF34 05-1BD24** | 1 unit |
| 7.4 | 1/4 | 1/2 | 3/4 | 1 1/2 | 2 | 3 | 5 | | B | **3RF34 10-1BD24** | 1 unit |

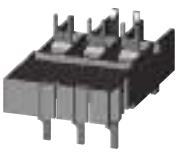
3RF34 03-1BD

3RF34 10-1BD

For online configurator see www.siemens.com/sirius/configurators.

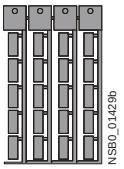
### Accessories

| Version | DT | Order No. | Price per PU | Std. Pack Qty |
|---|---|---|---|---|
| **Link modules for solid-state contactor to motor starter protector** | | | | |
| **Link module** between solid-state reversing contactor and motor starter protector with screw terminals | | **Screw terminals** | | |
| For 3RV2 motor starter protectors size S00/S0 | A | **3RA29 21-1BA00** | | 1 unit |
| **Link adapters for solid-state contactor to overload relay** | | | | |
| **Link adapters** for direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays to the solid-state contactor with screw terminals | | | | |
| The adapter is snapped onto the enclosure of the 3RF34 contactor and receives the fixing hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting. | A | **3RF39 00-0QA88** | | 1 unit |
| **Blank labels** | | | | |
| **Unit labeling plates**[1] for SIRIUS devices | | | | |
| 20 mm × 7 mm, pastel turquoise | D | **3RT19 00-1SB20** | | 340 units |



3RA29 21-1BA00

3RF39 00-0QA88




3SB19 00-1SB20

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH

# 3RF29 Function Modules

## Selection Tables

### Overview

***Function modules for SIRIUS 3RF2 solid-state switching devices***

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor. The plug-in connection to control the solid-state switching devices can simply remain in use.

The following function modules are available:

- Converters
- Load monitoring
- Heating current monitoring
- Power controllers
- Power regulators

With the exception of the converter, the function modules can be used only with single-phase solid-state switching devices.

***Recommended assignment of the function modules to the 3RF21 single-phase solid-state relays***

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers[1] | Power regulators[1] |
| | | Basic | Extended | | | |
| **Type current = 20 A** | | | | | | |
| **3RF21 20-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF21 20-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF21 20-1A.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | -- |
| **3RF21 20-1A.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | -- |
| **3RF21 20-1A.42** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF21 20-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF21 20-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF21 20-2A.02** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 20-2A.04** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 20-2A.22** | -- | -- | -- | -- | -- | -- |
| **3RF21 20-2A.24** | -- | -- | -- | -- | -- | -- |
| **3RF21 20-2A.42** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 20-2A.45** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 20-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA13 | -- | -- | 3RF29 20-0HA13 |
| **3RF21 20-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF21 20-3A.22** | -- | -- | 3RF29 20-0GA33 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF21 20-3A.24** | -- | -- | 3RF29 20-0GA36 | -- | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **Type current = 30 A** | | | | | | |
| **3RF21 30-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF21 30-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 30-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 30-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF21 30-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 30-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 30-1A.42** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF21 30-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 30-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **Type current = 50 A** | | | | | | |
| **3RF21 50-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF21 50-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF21 50-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 50-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 50-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-1B.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-1B.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF21 50-2A.02** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 50-2A.04** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 50-2A.06** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 50-2A.14** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 50-2A.22** | -- | -- | -- | -- | -- | -- |
| **3RF21 50-2A.24** | -- | -- | -- | -- | -- | -- |
| **3RF21 50-2A.26** | -- | -- | -- | -- | -- | -- |
| **3RF21 50-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF21 50-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 50-3A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF21 50-3A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 50-3A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |

1) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

# 3RF29 Function Modules

## Selection Tables

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers[1] | Power regulators[1] |
| | | Basic | Extended | | | |
| **Type current = 70 A** | | | | | | |
| **3RF21 70-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF21 70-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 70-1A.05** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 70-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 70-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF21 70-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 70-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 70-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 70-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 70-1C.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **Type current = 90 A** | | | | | | |
| **3RF21 90-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF21 90-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 90-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 90-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF21 90-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 90-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF21 90-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 90-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF21 90-2A.02** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 90-2A.04** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 90-2A.06** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF21 90-2A.22** | -- | -- | -- | -- | -- | -- |
| **3RF21 90-2A.24** | -- | -- | -- | -- | -- | -- |
| **3RF21 90-2A.26** | -- | -- | -- | -- | -- | -- |
| **3RF21 90-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA13 | -- | -- | 3RF29 90-0HA13 |
| **3RF21 90-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | 3RF29 32-0JA16 | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF21 90-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | 3RF29 32-0JA16 | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF21 90-3A.22** | -- | -- | 3RF29 90-0GA33 | -- | -- | 3RF29 90-0HA33 |
| **3RF21 90-3A.24** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF21 90-3A.26** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF21 90-3A.44** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | 3RF29 32-0JA16 | 3RF29 90-0KA16 | 3RF29 90-0HA16 |

1) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

### *Recommended assignment of the function modules to the 3RF22 three-phase solid-state relays*

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers | Power regulators |
| | | Basic | Extended | | | |
| **Type current up to 55 A** | | | | | | |
| **3RF22 ..-1A...** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF22 ..-2A...** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF22 ..-3A...** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |

### *Recommended assignment of the function modules to the 3RF23 single-phase solid-state contactors*

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers[1] | Power regulators[1] |
| | | Basic | Extended | | | |
| **Type current $I_e$ = 10.5 A** | | | | | | |
| **3RF23 10-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | 3RF29 16-0JA13 | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 10-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-1A.12** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA13 | 3RF29 16-0JA13 | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 10-1A.14** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-1A.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 10-1A.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 10-1A.26** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 10-1A.44** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |

# 3RF29 Function Modules

## Selection Tables

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers[1] | Power regulators[1] |
| | | Basic | Extended | | | |
| **Type current $I_e$ = 10.5 A** | | | | | | |
| **3RF23 10-1B.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | 3RF29 16-0JA13 | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 10-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-1B.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-1B.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 10-1B.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 10-1B.26** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 10-2A.02** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 10-2A.04** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 10-2A.06** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 10-2A.22** | -- | -- | -- | -- | -- | -- |
| **3RF23 10-2A.24** | -- | -- | -- | -- | -- | -- |
| **3RF23 10-2A.26** | -- | -- | -- | -- | -- | -- |
| **3RF23 10-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA13 | 3RF29 16-0JA13 | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 10-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 10-3A.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 10-3A.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 10-3A.26** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **Type current $I_e$ = 20 A** | | | | | | |
| **3RF23 20-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 20-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1A.14** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | -- | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1A.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 20-1A.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-1A.26** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-1A.44** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1A.45** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1B.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 20-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1B.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1B.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 20-1B.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-1B.26** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-1B.44** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1C.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 20-1C.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1C.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 20-1C.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-1C.44** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1D.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 20-1D.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-1D.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 20-1D.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-1D.44** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-2A.02** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 20-2A.04** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 20-2A.06** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 20-2A.22** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-2A.24** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-2A.26** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-2C.02** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 20-2C.04** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF23 20-2C.22** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-2C.24** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-2D.22** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-2D.24** | -- | -- | -- | -- | -- | -- |
| **3RF23 20-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 20-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-3A.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 20-3A.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-3A.26** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **3RF23 20-3A.44** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |

1) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

# 3RF29 Function Modules

## Selection Tables

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers[1] | Power regulators[1] |
| | | Basic | Extended | | | |
| **Type current $I_e$ = 20 A** | | | | | | |
| **3RF23 20-3D.02** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA13 | -- | 3RF29 20-0KA13 | 3RF29 20-0HA13 |
| **3RF23 20-3D.04** | 3RF29 00-0EA18 | -- | 3RF29 20-0GA16 | 3RF29 32-0JA16 | 3RF29 20-0KA16 | 3RF29 20-0HA16 |
| **3RF23 20-3D.22** | -- | -- | 3RF29 20-0GA33 | -- | -- | 3RF29 20-0HA33 |
| **3RF23 20-3D.24** | -- | -- | 3RF29 20-0GA36 | -- | -- | 3RF29 20-0HA36 |
| **Type current $I_e$ = 30 A** | | | | | | |
| **3RF23 30-1A.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 30-1A.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1A.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1A.14** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 30-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-1A.25** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-1A.44** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1A.45** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1B.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 30-1B.04** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1B.06** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1B.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 30-1B.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-1B.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-1B.44** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-1C.02** | 3RF29 00-0EA18 | 3RF29 20-0FA08 | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 30-1D.44** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 30-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-3A.066** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 30-3A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 30-3A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-3A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 30-3A.44** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | 3RF29 32-0JA16 | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **Type current $I_e$ = 40 A** | | | | | | |
| **3RF23 40-1A.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 40-1A.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-1A.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-1A.14** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 40-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 40-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 40-1A.45** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-1B.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 40-1B.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-1B.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-1B.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 40-1B.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 40-1B.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 40-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 40-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 40-3A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 40-3A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 40-3A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 40-3A.45** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **Type current $I_e$ = 50 A** | | | | | | |
| **3RF23 50-1A.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 50-1A.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-1A.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-1A.14** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-1A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 50-1A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 50-1A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 50-1A.45** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |

1) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

# 3RF29 Function Modules

## Selection Tables

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers[1] | Power regulators[1] |
| | | Basic | Extended | | | |
| **Type current $I_e$ = 50 A** | | | | | | |
| **3RF23 50-1B.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 50-1B.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-1B.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-1B.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 50-1B.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 50-1B.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 50-1B.44** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 50-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 50-3A.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 50-3A.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 50-3A.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 50-3A.44** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **Type current $I_e$ = 70 A** | | | | | | |
| **3RF23 70-1B.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 70-1B.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 70-1B.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 70-1B.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 70-1B.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 70-1B.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 70-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA13 | -- | | 3RF29 90-0HA13 |
| **3RF23 70-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 70-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 70-3A.22** | -- | -- | 3RF29 90-0GA33 | -- | -- | 3RF29 90-0HA33 |
| **3RF23 70-3A.24** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF23 70-3A.26** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF23 70-3A.45** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 70-3B.02** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA13 | -- | | 3RF29 90-0HA13 |
| **3RF23 70-3B.04** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 70-3B.06** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 70-3B.22** | -- | -- | 3RF29 90-0GA33 | -- | -- | 3RF29 90-0HA33 |
| **3RF23 70-3B.24** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF23 70-3B.26** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **Type current $I_e$ = 90 A** | | | | | | |
| **3RF23 90-1B.02** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA13 | -- | -- | 3RF29 50-0HA13 |
| **3RF23 90-1B.04** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 90-1B.06** | 3RF29 00-0EA18 | -- | 3RF29 50-0GA16 | -- | 3RF29 50-0KA16 | 3RF29 50-0HA16 |
| **3RF23 90-1B.22** | -- | -- | 3RF29 50-0GA33 | -- | -- | 3RF29 50-0HA33 |
| **3RF23 90-1B.24** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 90-1B.26** | -- | -- | 3RF29 50-0GA36 | -- | -- | 3RF29 50-0HA36 |
| **3RF23 90-3A.02** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA13 | -- | -- | 3RF29 90-0HA13 |
| **3RF23 90-3A.04** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 90-3A.06** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 90-3A.22** | -- | -- | 3RF29 90-0GA33 | -- | -- | 3RF29 90-0HA33 |
| **3RF23 90-3A.24** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF23 90-3A.26** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF23 90-3A.45** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 90-3B.02** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA13 | -- | -- | 3RF29 90-0HA13 |
| **3RF23 90-3B.04** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 90-3B.06** | 3RF29 00-0EA18 | -- | 3RF29 90-0GA16 | -- | 3RF29 90-0KA16 | 3RF29 90-0HA16 |
| **3RF23 90-3B.22** | -- | -- | 3RF29 90-0GA33 | -- | -- | 3RF29 90-0HA33 |
| **3RF23 90-3B.24** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |
| **3RF23 90-3B.26** | -- | -- | 3RF29 90-0GA36 | -- | -- | 3RF29 90-0HA36 |

1) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

### *Recommended assignment of the function modules to the 3RF24 three-phase solid-state contactors*

| Order No. | Accessories | | | | | |
|---|---|---|---|---|---|---|
| | Converters | Load monitoring | | Heating current monitoring | Power controllers | Power regulators |
| | | Basic | Extended | | | |
| **Type current up to 50 A** | | | | | | |
| **3RF24 ..-1..4.** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF24 ..-2..4.** | -- | -- | -- | -- | -- | -- |
| **3RF24 ..-3..4.** | 3RF29 00-0EA18 | -- | -- | -- | -- | -- |
| **3RF24 ..-...5.** | -- | -- | -- | -- | -- | -- |

## Overview

### *Converter for SIRIUS SC semiconductor switching devices*

This module is used to convert analog drive signals, such as those output from many temperature controllers, for example, into a pulse-width-modulated digital signal. The connected semiconductor contactors and relays can therefore regulate the output of a load as a percentage.

## Area of application

The device is used for conversion from an analog input signal to an on/off ratio. The function module can only be used in conjunction with a 3RF21 semiconductor relay or a 3RF23 semiconductor contactor.

## Design

### *Mounting*

Simply snapping onto the 3RF21 semiconductor relays or 3RF23 semiconductor contactors establishes the connections to the semiconductor switching devices. The connector on the semiconductor switching devices from the control circuit can be used on the converter without rewiring.

## Functions

The analog value from a temperature controller is present at the 0–10 V terminals. This controls the on-to-off period, as a function of voltage. The period duration is predefined at one second. Conversion of the analog voltage is linear in the voltage range from 0.1 to 9.9 V. At voltages below 0.1 V the connected switching device is not activated, while at voltages above 9.9 V the connected switching device is always activated.

## Technical specifications

### *Control input for converter and load monitoring*

| Type | | 3RF29 00-0EA18 | 3RF29 ..-0HA. |
|---|---|---|---|
| | | | |
| **Analog input** | V | 0 ... 10 | 0 ... 10 |
| Permissible range | V | -1 ... 11 | -1 ... 11 |
| **Input resistance** | kΩ | 100 | 8 |
| **Period duration** | s | 1 | 1 |

## Selection and ordering data

| | Rated operational current $I_e$ | Rated operational voltage $U_e$ | **Rated control supply voltage $U_s$ AC/DC 24 V** | Std. Pack Qty. | Weight per pack approx. |
|---|---|---|---|---|---|
| | A | V | Order No. | | kg |
| | | | | | |
| | — | — | **3RF29 00-0EA18** | 1 unit | 0.025 |

3RF29 00-0EA18

# Function Modules

## Load monitoring

### Overview

#### *Load monitoring for SIRIUS SC semiconductor switching devices*

With the addition of the load monitoring module many faults can be quickly detected by monitoring a load circuit connected to the semiconductor switching device. Examples include the failure of load elements (up to 6 in the basic version or up to 12 in the extended version), alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by one or more LEDs and reported to the controller via a PLC-compatible output.

The operating principle is based on monitoring of the current. This figure is continuously compared with the reference value stored once during commissioning by the simple press of a button. In order to detect the failure of one of several loads, the current decrease must be 1/6 (in the basic version) or 1/12 (in the extended version) of the reference value. In the event of a fault, a contact (NC) is actuated and one or more LEDs indicate the fault.

### Area of application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 semiconductor relay or a 3RF23 semiconductor contactor. The devices with spring-loaded connections in the load circuit are not suitable for use with load monitoring modules.

### Design

#### *Mounting*

Simply snapping the load monitoring module onto the 3RF21 semiconductor relays or 3RF23 semiconductor contactors establishes the control connections to the semiconductor switching devices. Because of the special design, the straight-through transformer of the load monitoring module covers the lower main power connection. The cable to the load is simply pushed through and secured with the terminal screw.

### Functions

The function module is activated when an "ON" signal is applied (IN terminal). The module constantly monitors the current level and compares this with the setpoint value.

#### *Start-up*

Pressing the "Teach" button switches the device on; the current through the semiconductor switching device is measured and is stored as the setpoint. During this process the two lower (red[1]) LEDs flash alternately; simultaneous maintained light from the 3 (red[1]) LEDs indicates the conclusion of the teaching process.

The "Teach" button can also be used to switch on the connected semiconductor switching device briefly for test purposes. In this case the "ON" LED is switched on.

#### *Partial load faults, "basic" load monitoring*

If a decrease of at least 1/6 of the stored setpoint value is detected, a fault is signaled. The fault is indicated via a "Fault" LED and by activation of the fault signaling output.

| | OK | Fault | | |
|---|---|---|---|---|
| **LEDs** | | Partial load failure/ load short-circuit | Thyristor defect | Mains failure/ fuse rupture |
| ON/OFF | ✔ | ✔ | - | ✔ |
| Current flowing | ✔ | ✔ | ✔ | - |
| Group fault | - | ✔ | ✔ | ✔ |

✔ Function is available
- Function not available

#### *Partial load faults, "extended" load monitoring*

Depending on the setting of the "response time" potentiometer, a decrease of at least 1/12 of the stored setpoint value after a response time of between 100 ms and 3 s is signaled as a fault. The fault is indicated via a "Load" LED and by activation of the fault signaling output.

The potentiometer can also be used to determine the response behavior of the fault signaling output. When delay values are set in the left-hand half, the fault signal is stored. This can only be reset by switching on and off by means of the control supply voltage.

When settings are made on the right-hand side, the fault output is automatically reset after the deviation has been corrected.

#### *Voltage compensation, "extended" load monitoring*

In addition to the current, the load voltage is also monitored. This makes it possible to compensate for influences on the current strength resulting from voltage fluctuations.

#### *Thyristor fault*

If a current greater than the residual current of the switching device is measured in the deenergized state, the device triggers a thyristor fault after the set time delay. This means that the fault output is activated and the "Fault" ("Thyristor"[1]) LED lights up.

#### *Supply fault*

If no current is measured in the energized state, the device triggers a supply fault after the set time delay. This means that the fault output is activated and the "Fault" ("Supply"[1]) LED lights up.

1) "Extended" load monitoring

### Selection and ordering data

| Rated operational current $I_e$ A | Rated operational voltage $U_e$ V | **Rated control supply voltage $U_s$ AC 110 V** Order No. | **Rated control supply voltage $U_s$ AC/DC 24 V** Order No. | Std. Pack Qty | Weight per pack approx. kg | **Rated control supply voltage $U_s$ DC 24 V** Order No. | Std. Pack Qty | Weight per pack approx. kg |
|---|---|---|---|---|---|---|---|---|
| **Basic load monitoring** | | | | | | | | |
| 6 | - | **-** | **-** | | | **3RF29 06-0FA08**[1] | 1 unit | 0.050 |
| 20 | - | **-** | **-** | | | **3RF29 20-0FA08** | | |
| **Extended load monitoring** | | | | | | | | |
| 20 | 110 ... 230 | **3RF29 20-0GA33** | **3RF29 20-0GA13** | 1 unit | 0.120 | **-** | | |
| 20 | 400 ... 600 | **3RF29 20-0GA36** | **3RF29 20-0GA16** | 1 unit | 0.120 | **-** | | |
| 50 | 110 ... 230 | **3RF29 50-0GA33** | **3RF29 50-0GA13** | 1 unit | 0.120 | **-** | | |
| 50 | 400 ... 600 | **3RF29 50-0GA36** | **3RF29 50-0GA16** | 1 unit | 0.120 | **-** | | |
| 90 | 110 ... 230 | **3RF29 90-0GA33** | **3RF29 90-0GA13** | 1 unit | 0.120 | **-** | | |
| 90 | 400 ... 600 | **3RF29 90-0GA36** | **3RF29 90-0GA16** | 1 unit | 0.120 | **-** | | |

1) To order with mounted 3RF29 00-0RA88 cover, add -0KH0 to part number.

# 3RF29 Function Modules

## Heating current monitoring

### Overview

***Heating current monitoring for 3RF2 single-phase solid-state switching devices***

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of up to 6 load elements, alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by LEDs and reported to the controller by way of a relay output (NC contact).

The principle of operation is based on permanent monitoring of the current strength. This figure is continuously compared with the reference value stored once during start-up. In order to detect the failure of one of several loads, the current difference must be 1/6 of the reference value. In the event of a fault, an output is actuated and the LEDs indicate the fault.

The heating current monitoring has a teach input and therefore differs from the load monitoring. This remote teaching function enables simple adjustment to changing loads without manual intervention.

***Special versions: deviations from the standard version***

3RF29 ..-0JA1.-1KK0

If the current is below 50 % of the lower teach current during the teach routine, the device will go into "Standby" mode; the LOAD LED will flicker. The device thus detects a non-connected load, e. g. channels not required for tool heaters, and does not signal a fault. This mode can be reset by re-teaching.

### Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-loaded connections in the load circuit are not suitable.

### Selection and ordering data

| Rated operational current $I_e$ | Rated operational voltage $U_e$ | Order No. | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|
| A | V | | | kg |
| **Heating current monitoring**[1] | | | | |
| Rated control supply voltage 24 V AC/DC | | | | |
| 16 | 110 … 230 | **3RF29 16-0JA13** | 1 unit | 0.175 |
| 16 | 110 … 230 | **3RF29 16-0JA13-1KK0** | 1 unit | 0.175 |
| 16 | 400 … 600 | **3RF29 16-0JA16-1KK0** | 1 unit | 0.175 |
| 32 | 110 … 230 | **3RF29 32-0JA13-1KK0** | 1 unit | 0.175 |
| 32 | 400 … 600 | **3RF29 32-0JA16** | 1 unit | 0.175 |
| 32 | 400 … 600 | **3RF29 32-0JA16-1KK0** | 1 unit | 0.175 |

1) Supplied without control connector. The control connector can be purchased from Phoenix Contact by quoting Order No. 1982 790 (2.5 HC/6-ST-5.08).

| Version | Order No. | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|
| | | | kg |
| **Optional accessories** | | | |
| **Sealable covers for function modules** (not for converters) | **3RF29 00-0RA88** | 10 units | 0.001 |

3RF29 00-0RA88

*** You can order this quantity or a multiple thereof.**

# 3RF29 Function Modules

## Power controllers

### Overview

***Power controllers for 3RF2 single-phase solid-state switching devices***

The power controller is a function module for the autonomous power control of complex heating systems and inductive loads.

The following functions have been integrated:

- Power controller for adjusting the power of the connected load. Here, the setpoint value is set with a rotary knob on the module as a percentage with reference to the 100 % power stored as a setpoint value.
- Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps or infrared lamps which have an inrush transient current.
- Load circuit monitoring for detecting load failure, partial load faults, alloyed power semiconductors, lack of voltage or a break in the load circuit.

***Special versions: deviations from the standard version***

3RF29 04-0KA13-0KC0

During the teaching process the connected solid-state relay or contactor is not activated; i. e. no current flow takes place. No current reference value is stored. No part-load monitoring!

3RF29 ..-0KA1.-0KT0

No part-load monitoring!

### Application

The power controller can be used for:

- Complex heating systems
- Inductive loads
- Loads with temperature-dependent resistor
- Loads with ageing after long-time service
- Simple indirect control of temperature

The power controller can be used on the instantaneously switching 3RF21 and 3RF23 solid-state switching devices (single-phase). If only the full-wave operating mode is used, the power controller can also be used on the "zero-point switching" solid-state relays and contactors.

***Power control***

The power controller adjusts the power in the connected load by means of a solid-state switching device depending on the setpoint selection. It does not compensate for changes in the mains voltage or load resistance. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer ($t_R$), the control is carried out according to the principle of full-wave control or generalized phase control.

***Full-wave control***

In this operating mode the output is adjusted to the required setpoint value changing the on-to-off period. The period duration is predefined at one second.

***Generalized phase control***

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

### Selection and ordering data

| Rated operational current $I_e$ | Rated operational voltage $U_e$ | Order No. | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|
| A | V | | | kg |
| **Power controllers** | | | | |
| Rated control supply voltage 24 V AC/DC | | | | |
| 4 | 110 … 230 | **3RF29 04-0KA13-0KC0** | 1 unit | 0.175 |
| 4 | | **3RF29 04-0KA13-0KT0** | 1 unit | 0.175 |
| 20 | | **3RF29 20-0KA13** | 1 unit | 0.175 |
| 50 | | **3RF29 50-0KA13** | 1 unit | 0.175 |
| 90 | | **3RF29 90-0KA13** | 1 unit | 0.175 |
| 20 | 400 … 600 | **3RF29 20-0KA16** | 1 unit | 0.175 |
| 50 | | **3RF29 50-0KA16** | 1 unit | 0.175 |
| 50 | | **3RF29 50-0KA16-0KT0** | 1 unit | 0.175 |
| 90 | | **3RF29 90-0KA16** | 1 unit | 0.175 |

| Version | Order No. | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|
| | | | kg |
| **Optional accessories** | | | |
| **Sealable covers for function modules** (not for converters) | **3RF29 00-0RA88** | 10 units | 0.001 |

3RF29 00-0RA88

## Overview

### *Power controllers for SIRIUS SC semiconductor switching devices*

This module provides similar functionality to a power control regulator.

The following functions are integrated:

Power control regulator with proportional-action control for adjusting the power of the connected load. Here, the setpoint is set with a rotary knob on the module as a percentage with reference to the 100% power stored as a setpoint. In this way the power is kept constant even in the event of voltage fluctuations or a change in load resistance.

Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps which have an inrush transient current.

Load circuit monitoring for detecting load failure, alloyed power semiconductors, lack of voltage or a break in the load circuit.

## Area of application

The power controller adjusts the current in the connected load by means of a semiconductor switching device depending on a setpoint. This compensates for changes in the mains voltage or in the load resistance. The setpoint can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer ($t_R$), the adjustment is carried out according to the principle of full-wave control or generalized phase control.

### *Full-wave control*

In this operating mode the output is adjusted to the required setpoint by changing the on-to-off period. The period duration is predefined at one second.

### *Generalized phase control*

In this operating mode the output is adjusted to the required setpoint by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial power systems, a choke rated at at least 200 µH must be included in the load circuit.

## Design

### *Mounting*

Easy snapping onto the 3RF21 semiconductor relays or 3RF23 semiconductor contactors establishes the connections to the semiconductor switching devices. Because of the special design, the straight-through transformer of the power controller module covers the lower main power connection. The cable to the load is simply pushed through and secured with the terminal screw.

## Functions

### *Start-up*

Pressing the "Teach" button switches the device on; the current through the semiconductor switching device and the mains voltage are detected and stored. The resultant output is taken as the 100% output for the setpoint selection. During this process the two lower red LEDs flash alternately. Simultaneous maintained light from the three red LEDs indicates the completion of the "Teach" process.

The "Teach" button can also be used to switch on the connected semiconductor switching device briefly for test purposes. In this case the "ON" LED is switched on.

### *Setpoint selection*

The setting on the setpoint potentiometer (P) determines how the setpoint selection is to be made:

External setpoint selection

At 0 % the setpoint selection is set via an external 0 – 10 V analog signal (terminals IN / 0 – 10 V). The device is switched on and off via the power supply (terminals A1 / A2).

Internal setpoint selection

Above 0 % the setpoint is set using the potentiometer. To allow this, the potential at terminal A1 must additionally be applied at the IN terminal. After removal of the "ON" signal, the switching module is switched off.

Inrush current limitation

The ramp time ($t_R$) for a voltage ramp on switching on is set with the potentiometer for the purpose of inrush current limitation. If a time longer than 0 s is set, the device operates according to the phase-angle principle. If 0 s is set, there is no voltage ramp and the device operates according to the principle of full-wave control.

### *Load fault*

If upon switching on with voltage applied the current flowing is not greater than the residual current of the switching device, the device triggers a load fault. The fault relay is activated and the "Load" LED lights up.

### *Thyristor fault*

If a current greater than the residual current of the switching device is measured in the deenergized state, the device triggers a thyristor fault. The fault relay is activated and the "Thyristor" LED lights up.

### *Supply fault*

If no current is measured in the energized state, the device triggers a supply fault. The fault relay is activated and the "Supply" LED lights up.

## Selection and ordering data

| Rated operational current $I_e$ | Rated operational voltage $U_e$ | Rated control supply voltage $U_s$ AC 110 V | Rated control supply voltage $U_s$ AC/DC 24 V | Std. Pack Qty | Weight per pack approx. |
|---|---|---|---|---|---|
| A | V | Order No. | Order No. | | kg |
| **Power controllers**[1] | | | | | |
| 20 | 110 ... 230 | **3RF29 20-0HA33** | **3RF29 20-0HA13** | 1 unit | 0.120 |
| 20 | 400 ... 600 | **3RF29 20-0HA36** | **3RF29 20-0HA16** | 1 unit | 0.120 |
| 50 | 110 ... 230 | **3RF29 50-0HA33** | **3RF29 50-0HA13** | 1 unit | 0.120 |
| 50 | 400 ... 600 | **3RF29 50-0HA36** | **3RF29 50-0HA16** | 1 unit | 0.120 |
| 90 | 110 ... 230 | **3RF29 90-0HA33** | **3RF29 90-0HA13** | 1 unit | 0.120 |
| 90 | 400 ... 600 | **3RF29 90-0HA36** | **3RF29 90-0HA16** | 1 unit | 0.120 |

1) Optional sealable cover - 3RF29 00-0RA88 can be used.

## Overview

### *Power control regulators for SIRIUS solid-state switching devices*

The power control regulator is a function module for the autonomous power control regulation of complex heating systems and inductive loads, for the operation of loads with temperature-dependent resistors or long-term aging, and for simple indirect temperature control.

The power control regulator can be used on the 3RF21 and 3RF23 instantaneous switching solid-state switching devices (single-phase). If only the full-wave control mode is used, the power control regulator can also be used on the zero-point-switching solid-state relays and contactors.

## Application

The power control regulator sets the load current of the solid-state switching device depending on a setpoint value as a percentage. Changes in the mains voltage or in the load resistance are not compensated in this case. The modulation, the On/off ratio or the phase angle, remains unchanged in accordance with the setpoint. The autonomous power control regulation is performed between 0 and 100 % of the setpoint value

### *Full-wave control*

If the left potentiometer $t_R$ is set to 0 s (= far left), the power control regulator works according to the principle of full-wave control. The power set, be it internal or external, is converted into a pulse-width-modulated digital signal. The power control regulator controls the On and Off time of the solid-state switching device within a fixed period duration of 1 s so that the specified power is applied to the load. The "ON" LED flashes in the same rhythm as the solid-state switching device switches on and off.

### *Generalized phase control*

If the left potentiometer $t_R$ is set to higher than 0 s, the power control regulator works according to the principle of generalized phase control. With generalized phase control, a choke rated at at least 200 µH must be included in the load circuit in order to observe the limit values of the conducted interference voltage for industrial networks.

## Design

### *Mounting*

Easy snapping onto the 3RF21 solid-state relays or 3RF23 solid-state contactors establishes the connections to the solid-state switching devices. Because of the special design, the straight-through transformer of the function module covers the lower main power connection. The cable to the load is simply pushed through and secured with the terminal screw.

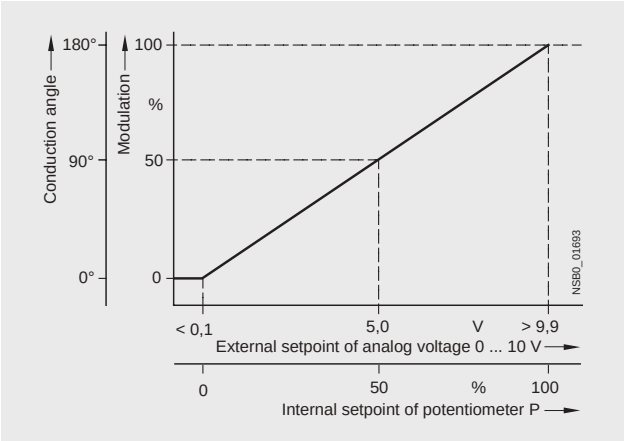
## Function

### *Setpoint selection*

The setpoint is selected either internally using the right-hand potentiometer P with 0 ... 100 % on the module or externally through the analog input 0 ... 10 V.

100 % corresponds in full-wave control to permanently On and in generalized phase control to a conduction angle of 180° and hence maximum power.

When the setpoint is selected internally the module is controlled through the IN terminal. The terminal 10 then has no function.




Input characteristic curve

When the setpoint is selected externally (potentiometer P set far left = 0 %) the module is controlled by applying the analog voltage 0 ... 10 V. 0 ... 10 V corresponds to 0 ... 100 % power. Conversion of the voltage is linear between 0.1 and 9.9 V. Below 0.1 V the switching device remains off; at voltages above 9.9 V the power is always set to 100 %.

### *Inrush current limitation*

The ramp time ($t_R$) for a voltage ramp on switching on is set with the left potentiometer for the purpose of inrush current limitation. The set time refers to a power of 100 %. If, for example, a ramp time of 10 s is set and the selected power is 60 %, then a power of 60 % is reached after approx. 6 s.

### *Line and thyristor monitoring*

The power control regulator recognizes supply failures and thyristor faults. The faults are indicated by the LEDs on the module and the fault output is activated.

## 3RF21 Solid-state relays – technical data

### Overview

#### *22.5 mm semiconductor relays*

With its compact design, which stays the same even at currents of up to 88 A, the 3RF21 semiconductor relay is the ultimate in space-saving construction, at a width of 22.5 mm. The logical connection arrangement, with the power infeed from above and connection of the load from below, ensures clean installation in the control cabinet.

### Technical specifications

| Type | | 3RF21 ..-1.... | 3RF21 ..-2.... | 3RF21 ..-3.... |
|---|---|---|---|---|
| **General data** | | | | |
| **Ambient temperature** | | | | |
| during operation, derating from 40 °C | °C | -25 ... +60 | | |
| when stored | °C | -55 ... +80 | | |
| **Site altitude** | m | 0 ... 1000; derating from 1000 | | |
| **Shock resistance** | g/ms | 15/11 | | |
| acc. to IEC 60068-2-27 | | | | |
| **Vibration resistance** | g | 2 | | |
| acc. to IEC 60068-2-6 | | | | |
| **Electromagnetic compatibility (EMC)** | | | | |
| Emitted interference | | | | |
| • Conducted interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications | | |
| • Emitted, high-frequency interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications | | |
| Noise immunity | | | | |
| • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 | | |
| • Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 | | |
| • Burst acc. to IEC 61000-4-4 | kV | 2/5.0 kHz; behavior criterion 1 | | |
| • Surge acc. to IEC 61000-4-5 | kV | Conductor - ground 2; conductor - conductor 1; behavior criterion 2 | | |
| **Connection technique** | | **Screw-type connection** | **Spring-loaded connection** | **Ring cable connection** |
| **Main contact connection** | | | | |
| Conductor cross-section | | | | |
| Solid | $mm^2$ | 2 x (1.5 ... 2.5), 2 x (2.5 ... 6) | 2 x (0,5 ... 2.5) | - |
| Finely stranded with end sleeve | $mm^2$ | 2 x (1.5 ... 2.5), 2 x (2.5 ... 6), 1 x 10 | 2 x (0.5 ... 1.5) | - |
| Finely stranded without end sleeves | $mm^2$ | | 2 x (0.5 ... 2.5) | - |
| Solid or stranded AWG conductors | AWG | 2 x (14 ... 10) | 2 x (18 ... 14) | - |
| Insulation stripping length | mm | 10 | 10 | - |
| Terminal screw | | M 4 | - | M 5 |
| • Tightening torque | Nm | 2 ... 2.5 | - | 2 ... 2.5 |
| | lb.in | 18 ... 22 | - | 18 ... 22 |
| Cable lug | | | | |
| • DIN | | - | - | DIN 46234 -5-2.5, -5-6, -5-10, -5-16, -5-25 |
| • JIS | | - | - | JIS C 2805 R 2-5, 5.5-5, 8-5, 14-5 |
| **Auxiliary/control contact connections** | | | | |
| Conductor cross-section | $mm^2$ | 1x (0.5 ... 2.5); 2x (0.5 ... 1) | 0.5 ... 1.5 | 1x (0.5 ... 2.5); 2x (0.5 ... 1) |
| | AWG | 20 ... 12 | 20 ... 12 | 20 ... 12 |
| Insulation stripping length | mm | 7 | 10 | 7 |
| Terminal screw | | M 3 | - | M 3 |
| • Tightening torque | Nm | 0.5 ... 0.6 | - | 0.5 ... 0.6 |
| | lb.in | 4.5 ... 5.3 | - | 4.5 ... 5.3 |

| Type | | 3RF21 ..-....2 | 3RF21 ..-....4 | 3RF21 ..-....5 | 3RF21 ..-....6 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| **Rated operational voltage $U_e$** | V | 24 ... 230 | 230 ... 460 | 48 ... 600 | 400 ... 600 |
| • Tolerance | % | -15 / +10 | | | |
| • Rated frequency | Hz | 50/60 | | | |
| **Rated insulation voltage $U_i$** | V | 600 | | | |
| **Blocking voltage** | V | 800 | 1200 | 1200 | 1600 |
| **Rate of voltage rise** | V/µs | 1000 | | | |

## 3RF21 Solid-state – technical data

| Order No. | $I_{max}$ [1] at $R_{thha}/T_u$ = 40 °C | | $I_e$ acc. to IEC 60947-4-3 at $R_{thha}/T_u$ = 40 °C | | $I_e$ acc. to UL/CSA at $R_{thha}/T_u$ = 50 °C | | Power loss at $I_{max}$ | Minimum load current | Leakage current |
|---|---|---|---|---|---|---|---|---|---|
| | A | K/W | A | K/W | A | K/W | W | A | mA |
| **Main circuit** | | | | | | | | | |
| **3RF21 20-.....** | 20 | 2.0 | 20 | 1.7 | 20 | 1.3 | 28.6 | 0.1 | 10 |
| **3RF21 30-1....** | 30 | 1.1 | 30 | 0.79 | 30 | 0.56 | 44.2 | 0.5 | 10 |
| **3RF21 50-1....** | 50 | 0.68 | 50 | 0.48 | 50 | 0.33 | 66 | 0.5 | 10 |
| **3RF21 50-2....** | 50 | 0.68 | 20 | 2.6 | 20 | 2.9 | 66 | 0.5 | 10 |
| **3RF21 50-3....** | 50 | 0.68 | 50 | 0.48 | 50 | 0.33 | 66 | 0.5 | 10 |
| **3RF21 70-1....** | 70 | 0.40 | 50 | 0.77 | 50 | 0.6 | 94 | 0.5 | 10 |
| **3RF21 90-1....** | 88 | 0.33 | 50 | 0.94 | 50 | 0.85 | 118 | 0.5 | 10 |
| **3RF21 90-2....** | 88 | 0.33 | 20 | 2.8 | 20 | 3.5 | 118 | 0.5 | 10 |
| **3RF21 90-3....** | 88 | 0.33 | 88 | 0.22 | 83 | 0.19 | 118 | 0.5 | 10 |

[1] $I_{max}$ provides information about the performance of the solid-state relay. The actual permitted rated operational current $I_e$ can be smaller depending on the connection method and cooling conditions.

*Note: The required heat sinks for the corresponding load currents can be determined from the characteristic curves, page 4/10. The minimum thickness values for the mounting surface must be observed.*

| Order No. | Rated impulse withstand capacity $I_{tsm}$ | $I^2t$ value |
|---|---|---|
| | A | $A^2s$ |
| **Main circuit** | | |
| **3RF21 20-.....** | 200 | 200 |
| **3RF21 30-..A.2** | 300 | 450 |
| **3RF21 30-..A.4** | 300 | 450 |
| **3RF21 30-..A.5** | 300 | 450 |
| **3RF21 30-..A.6** | 400 | 800 |
| **3RF21 50-.....** | 600 | 1800 |
| **3RF21 70-..A.2** | 1200 | 7200 |
| **3RF21 70-..A.4** | 1200 | 7200 |
| **3RF21 70-..A.5** | 1200 | 7200 |
| **3RF21 70-..A.6** | 1150 | 6600 |
| **3RF21 90-.....** | 1150 | 6600 |

| Type | | 3RF21 ..-....2 | 3RF21 ..-....4 | 3RF21 ..-....5 | 3RF21 ..-....6 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| **Rated operational voltage $U_e$** | V | 24 ... 230 | 48 ... 460 | 48 ... 600 | 48 ... 600 |
| • Operating range | V | 20 ... 253 | 40 ... 506 | 40 ... 660 | 40 ... 660 |
| • Rated frequency | Hz | 50/60 ± 10 % | | | |
| **Rated insulation voltage $U_i$** | V | 600 | | | |
| **Blocking voltage** | V | 800 | 1200 | | 1600 |
| **Rage of voltage rise** | V/µs | 1000 | | | |

| Type | | 3RF21 ..-...0. | 3RF21 ..-...1. | | 3RF21 ..-...2. | 3RF21 ..-...4. |
|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | |
| **Method of operation** | | DC operation | AC/DC operation | | AC operation | DC operation |
| **Rated control supply voltage $U_s$** | V | 24 acc. to EN 61131-2 | 24 AC | 24 DC | 110 ... 230 | 4 ... 30 |
| **Rated frequency** of the control supply voltage | Hz | -- | 50/60 ± 10 % | -- | 50/60 ± 10 % | -- |
| **Control supply voltage, max.** | V | 30 | 26.5 AC | 30 DC | 253 | 30 |
| **Typical actuating current** | mA | 20 / Low Power: 6.5[1] | 20 | 20 | 15 | 20 |
| **Response voltage** | V | 15 | 14 AC | 15 DC | 90 | 4 |
| **Drop-out voltage** | V | 5 | 5 AC | 5 DC | 40 | 1 |
| **Operating times** | | | | | | |
| • ON-delay | ms | 1 + max. one half-wave[2] | 10 + max. one half-wave[2] | | 40 + max. one half-wave[2] | 1 + max. one half-wave[2] |
| • OFF-delay | ms | 1 + max. one half-wave | 15 + max. one half-wave | | 40 + max. one half-wave | 1 + max. one half-wave |

[1] Applies to the version "Low Power" 3RF21 ..-.AA..-**0KN0**.
[2] Only for zero-point-switching devices.

### *Fused version with semiconductor protection (similar to type of coordination "2")*[1)]

The semiconductor protection for the SIRIUS controls can be used with different protective devices. This allows protection by means of LV HRC fuses of gG operational class or miniature circuit breakers. Siemens recommends the use of special SITOR semiconductor fuses. The table below lists the maximum permissible fuses for each SIRIUS control.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems.

For protective devices with gG operational class and for SITOR 3NE1 all-range fuses, the minimum cross-sections for the conductor to be connected must be taken into account.

| Order No. | All-range fuses | | Semiconductor fuses/partial-range fuses | | | |
|---|---|---|---|---|---|---|
| | LV HRC design | Cylindrical design | LV HRC design | Cylindrical design | | |
| | gR/SITOR | gR/NEOZED[2)] | aR/SITOR | aR/SITOR | aR/SITOR | aR/SITOR |
| | | SILIZED | | 10 mm x 38 mm | 14 mm x 51 mm | 22 mm x 58 mm |
| | 3NE1 | 5SE1 | 3NE8 | 3NC1 0 | 3NC1 4 | 3NC2 2 |
| **3RF21 20-...2** | 3NE1 814-0 | 5SE1 325 | 3NE8 015-1 | 3NC1 020 | 3NC1 420 | 3NC2 220 |
| **3RF21 20-...4** | 3NE1 813-0[4)] | 5SE1 320 | 3NE8 015-1 | 3NC1 016[4)] | 3NC1 420 | 3NC2 220 |
| **3RF21 20-....5**[3)] | 3NE1 813-0[4)] | 5SE1 320 | 3NE8 015-1 | 3NC1 016[4)] | 3NC1 420 | 3NC2 220 |
| **3RF21 30-...2** | 3NE1 815-0[4)] | 5SE1 335 | 3NE8 003-1 | 3NC1 032 | 3NC1 432 | 3NC2 232 |
| **3RF21 30-...4** | 3NE1 815-0[4)] | 5SE1 325[4)] | 3NE8 003-1 | 3NC1 025[4)] | 3NC1 430 | 3NC2 232 |
| **3RF21 30-....5**[3)] | 3NE1 815-0[4)] | 5SE1 325[4)] | 3NE8 003-1 | 3NC1 025[4)] | 3NC1 430 | 3NC2 232 |
| **3RF21 30-...6** | 3NE1 815-0[4)] | -- | 3NE8 003-1 | 3NC1 032 | 3NC1 432 | 3NC2 232 |
| **3RF21 50-...2** | 3NE1 817-0 | 5SE1 350 | 3NE8 017-1 | -- | 3NC1 450 | 3NC2 250 |
| **3RF21 50-...4** | 3NE1 802-0[4)] | 5SE1 335[4)] | 3NE8 017-1 | -- | 3NC1 450 | 3NC2 250 |
| **3RF21 50-....5**[3)] | 3NE1 802-0[4)] | 5SE1 335[4)] | 3NE8 017-1 | -- | 3NC1 450 | 3NC2 250 |
| **3RF21 50-...6** | 3NE1 803-0[4)] | -- | 3NE8 017-1 | -- | 3NC1 450 | 3NC2 250 |
| **3RF21 70-...2**[5)] | 3NE1 820-0 | 5SE1 363[4)] | 3NE8 020-1 | -- | -- | 3NC2 280 |
| **3RF21 70-...4**[5)] | 3NE1 020-2 | 5SE1 363[4)] | 3NE8 020-1 | -- | -- | 3NC2 280 |
| **3RF21 70-....5**[3)5)] | 3NE1 020-2 | -- | 3NE8 020-1 | -- | -- | 3NC2 280 |
| **3RF21 70-...6**[5)] | 3NE1 020-2 | -- | 3NE8 020-1 | -- | -- | 3NC2 280 |
| **3RF21 90-...2**[5)] | 3NE1 021-2 | -- | 3NE8 021-1 | -- | -- | 3NC2 200 |
| **3RF21 90-...4**[5)] | 3NE1 021-2 | -- | 3NE8 021-1 | -- | -- | 3NC2 280[4)] |
| **3RF21 90-....5**[3)5)] | 3NE1 021-2 | -- | 3NE8 021-1 | -- | -- | 3NC2 280[4)] |
| **3RF21 90-...6**[5)] | 3NE1 817-0[4)] | -- | 3NE8 021-1 | -- | -- | 3NC2 280[4)] |

| Order No. | Cable and line protection fuses | | | | |
|---|---|---|---|---|---|
| | LV HRC design[4)] | Cylindrical design[4)] | | | DIAZED[4)] |
| | gG | gG | gG | gG | quick |
| | | 10 mm x 38 mm | 14 mm x 51 mm | 22 mm x 58 mm | |
| | 3NA2 | 3NW6 0 | 3NW6 1 | 3NW6 2 | 5SB |
| **3RF21 20-...2** | 3NA2 803 | 3NW6 000-1 | 3NW6 101-1 | -- | 5SB1 41 |
| **3RF21 20-...4** | 3NA2 801 | -- | 3NW6 101-1 | -- | 5SB1 41 |
| **3RF21 20-....5**[3)] | 3NA2 801 | -- | 3NW6 101-1 | -- | 5SB1 41 |
| **3RF21 30-...2** | 3NA2 803 | -- | 3NW6 103-1 | -- | 5SB1 71 |
| **3RF21 30-...4** | 3NA2 803 | -- | 3NW6 101-1 | -- | 5SB1 71 |
| **3RF21 30-....5**[3)] | 3NA2 803 | -- | 3NW6 101-1 | -- | 5SB1 71 |
| **3RF21 30-...6** | 3NA2 803-6 | -- | -- | -- | -- |
| **3RF21 50-...2** | 3NA2 810 | -- | 3NW6 107-1 | 3NW6 207-1 | 5SB3 11 |
| **3RF21 50-...4** | 3NA2 807 | -- | -- | 3NW6 205-1 | 5SB3 11 |
| **3RF21 50-....5**[3)] | 3NA2 807 | -- | -- | 3NW6 205-1 | 5SB3 11 |
| **3RF21 50-...6** | 3NA2 807-6 | -- | -- | -- | -- |
| **3RF21 70-...2**[5)] | 3NA2 817 | -- | -- | 3NW6 217-1 | 5SB3 31 |
| **3RF21 70-...4**[5)] | 3NA2 812 | -- | -- | 3NW6 212-1 | 5SB3 31 |
| **3RF21 70-....5**[3)5)] | 3NA2 812 | -- | -- | 3NW6 212-1 | -- |
| **3RF21 70-...6**[5)] | 3NA2 812-6 | -- | -- | -- | -- |
| **3RF21 90-...2**[5)] | 3NA2 817 | -- | -- | 3NW6 217-1 | -- |
| **3RF21 90-...4**[5)] | 3NA2 812 | -- | -- | 3NW6 212-1 | -- |
| **3RF21 90-....5**[3)5)] | 3NA2 812 | -- | -- | 3NW6 212-1 | -- |
| **3RF21 90-...6**[5)] | 3NA2 812-6 | -- | -- | -- | -- |

Suitable fuse holders, fuse bases and controls can be found in Catalog LV 1, Chapter 19.

1) Type of coordination "2" according to EN 60947-4-1: In the event of a short-circuit, the controls in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.

2) For use only with operational voltage $U_e$ up to 400 V.

3) For use only with operational voltage $U_e$ up to 506 V.

4) These fuses have a smaller rated current than the solid-state relays.

5) These versions can also be protected against short-circuits with miniature circuit breakers as described in the notes on "SIRIUS Solid-State Contactors → Special Version Short-Circuit Resistant".

## 3RF20 Solid-state relays – technical data

### Overview

***45 mm semiconductor relays***

The semiconductor relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to retrofit existing semiconductor relays. The connection of the control cable also saves space in much the same way as the 22.5 mm design, as it is simply plugged on.

### Technical specifications

| Type | | 3RF20 |
|---|---|---|
| **General data** | | |
| **Ambient temperature** | | |
| during operation, derating at 40 °C | °C | -25 ... +60 |
| when stored | °C | -55 ... +80 |
| **Site altitude** | m | 0 ... 1000; derating from 1000 |
| **Shock resistance** acc. to IEC 60068-2-27 | g/ms | 15/11 |
| **Vibration resistance** acc. to IEC 60068-2-6 | g | 2 |
| **Electromagnetic compatibility (EMC)** | | |
| Emitted interference | | |
| • Conducted interference voltage IEC acc. to 60947-4-3 | | Class A for industrial applications |
| • Emitted, high-frequency interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications |
| Noise immunity | | |
| • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 |
| • Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 |
| • Burst acc. to IEC 61000-4-4 | kV | 2/5.0 kHz; behavior criterion 1 |
| • Surge acc. to IEC 61000-4-5 | kV | Conductor - ground 2; conductor - conductor 1; behavior criterion 2 |
| **Connection, main contacts, screw connection** | | |
| Conductor cross-section | | |
| Solid | $mm^2$ | 2 x (1.5 ... 2.5); 2 x (2.5 ... 6) |
| Finely stranded with end sleeve | $mm^2$ | 2 x (1.5 ... 2.5); 2 x (2.5 ... 6); 1 x 10 |
| Solid or stranded AWG conductors | AWG | 2 x (14 ... 10) |
| Insulation stripping length | mm | 10 |
| Terminal screw | | M 4 |
| • Tightening torque | Nm | 2 ... 2.5 |
| | lb.in | 18 ... 22 |
| **Connection, auxiliary/control contacts, screw connection** | | |
| Conductor cross-section | $mm^2$ | 1x (0.5 ... 2.5); 2x (0.5 ... 1.0); AWG 20 ... 12 |
| Insulation stripping length | mm | 7 |
| Terminal screw | | M 3 |
| • Tightening torque | Nm | 0.5 ... 0.6 |
| | lb.in | 4.5 ... 5.3 |

| Type | | 3RF20 .0-1AA.2 | 3RF20 .0-1AA.4 | 3RF20..-....5 | 3RF20 .0-1AA.6 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| **Rated operational voltage $U_e$** | V | 24 ... 230 | 230 ... 460 | 48 ... 600 | 400 ... 600 |
| • Tolerance | % | -15/+10 | | | |
| • Rated frequency | Hz | 50/60 | | | |
| **Rated insulation voltage $U_i$** | V | 600 | | | |
| **Blocking voltage** | V | 800 | 1200 | 1200 | 1600 |
| **Rage of voltage rise** | V/µs | 1000 | | | |

## 3RF20 Solid-state relays – technical data

| Order No. | $I_{max}$ [1] at $R_{thha}/T_u$ = 40 °C | | $I_e$ to IEC 60947-4-3 at $R_{thha}/T_u$ = 40 °C | | $I_e$ to UL/CSA at $R_{thha}/T_u$ = 50 °C | | Power loss for $I_{max}$ | Minimum load current | Leakage current |
|---|---|---|---|---|---|---|---|---|---|
| | A | K/W | A | K/W | A | K/W | W | A | mA |
| **Main circuit** | | | | | | | | | |
| **3RF20 20-1AA..** | 20 | 2.0 | 20 | 2.0 | 20 | 1.7 | 28.6 | 0.5 | 10 |
| **3RF20 30-1AA..** | 30 | 1.1 | 30 | 1.1 | 30 | 0.88 | 44.2 | 0.5 | 10 |
| **3RF20 50-1AA..** | 50 | 0.68 | 50 | 0.68 | 50 | 0.53 | 66 | 0.5 | 10 |
| **3RF20 70-1AA..** | 70 | 0.4 | 50 | 0.95 | 50 | 0.8 | 94 | 0.5 | 10 |
| **3RF20 90-1AA..** | 88 | 0.33 | 50 | 1.25 | 50 | 1.02 | 118 | 0.5 | 10 |

1) $I_{max}$ provides information about the performance of the semiconductor relay. The actual permitted operational current $I_e$ can be smaller depending on the connection method and cooling conditions.

| Order No. | Rated impulse withstand capacity $I_{tsm}$ | $I^2t$ value |
|---|---|---|
| | A | $A^2s$ |
| **Main circuit** | | |
| **3RF20 20-1AA..** | 200 | 200 |
| **3RF20 30-1AA.2** | 300 | 450 |
| **3RF20 30-1AA.4** | 300 | 450 |
| **3RF20 30-1AA.6** | 400 | 800 |
| **3RF20 50-1AA..** | 600 | 1800 |
| **3RF20 70-1AA.2** | 1200 | 7200 |
| **3RF20 70-1AA.4** | 1200 | 7200 |
| **3RF20 70-1AA.6** | 1150 | 6600 |
| **3RF20 90-1AA..** | 1150 | 6600 |

| Type | | **3RF20 .0-1AA0.** | **3RF20 .0-1AA4.** | **3RF20 .0-1AA2.** |
|---|---|---|---|---|
| **Control circuit** | | | | |
| **Method of operation** | | DC operation | DC operation | AC operation |
| **Rated control supply voltage $U_s$** | V | 24 acc. to EN 61131-2 | 4 ... 30V DC | 110 ... 230 |
| **Max. rated control voltage** | V | 30 | 30 | 253 |
| **Rated control current at $U_s$** | mA | 15 | 15 | 6 |
| **Rated frequency** of the control supply voltage | Hz | - | - | 50/60 |
| **Response voltage** | V | 15 | 4 | 90 |
| current | mA | >2 | >2 | 2 |
| **Drop-out voltage** | V | 5 | 1 | 40 |
| **Operating times** | | | | |
| closing time | ms | 1 + max. one half wave | 1 + max. one half wave | 40 + max. one half wave |
| opening time | ms | 1 + max. one half wave | 1 + max. one half wave | 40 + max. one half wave |

## Fused design with semiconductor protection

| Order No. | All-range fuse LV design gR/SITOR 3NE1 | Semiconductor protection fuse Cylindrical design | | | Cable and line protection fuse | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | LV design gL/gG/3NA | Cylindrical design | | | DIAZED quick 5SB |
| | | 10 × 38 mm aR/SITOR 3NC1 0 | 14 × 51 mm aR/SITOR 3NC1 4 | 22 × 58 mm aR/SITOR 3NC2 2 | | 10 × 38 mm gL/gG 3NW | 14 × 51 mm gL/gG 3NW | 22 × 58 mm gL/gG 3NW | |
| **3RF20 20-1AA.2** | 3NE1 814-0 | 3NC1 020 | 3NC1 420 | 3NC2 220 | 3NA2 803 | 3NW6 001-1 | 3NW6 101-1 | - | 5SB1 71 |
| **3RF20 20-1AA.4** | 3NE1 813-0 | 3NC1 016 | 3NC1 420 | 3NC2 220 | 3NA2 801 | - | 3NW6 101-1 | - | 5SB1 41 |
| **3RF20 30-1AA.2** | 3NE1 815-0 | 3NC1 032 | 3NC1 432 | 3NC2 232 | 3NA2 803 | - | 3NW6 103-1 | - | 5SB3 11 |
| **3RF20 30-1AA.4** | 3NE1 815-0 | 3NC1 025 | 3NC1 432 | 3NC2 232 | 3NA2 803 | - | 3NW6 101-1 | - | 5SB1 71 |
| **3RF20 30-1AA.6** | 3NE1 815-0 | 3NC1 032 | 3NC1 432 | 3NC2 232 | 3NA2 803-6 | - | - | - | - |
| **3RF20 50-1AA.2** | 3NE1 817-0 | - | 3NC1 450 | 3NC2 250 | 3NA2 810 | - | 3NW6 107-1 | 3NW6 207-1 | 5SB3 21 |
| **3RF20 50-1AA.4** | 3NE1 802-0 | - | 3NC1 450 | 3NC2 250 | 3NA2 807 | - | - | 3NW6 205-1 | 5SB3 11 |
| **3RF20 50-1AA.6** | 3NE1 803-0 | - | 3NC1 450 | 3NC2 250 | 3NA2 807-6 | - | - | - | - |
| **3RF20 70-1AA.2** [2] | 3NE1 820-0 | - | - | 3NC2 280 | 3NA2 817 | - | - | 3NW6 217-1 | 5SB3 31 |
| **3RF20 70-1AA.4** [2] | 3NE1 020-2 | - | - | 3NC2 280 | 3NA2 812 | - | - | 3NW6 212-1 | 5SB3 21 |
| **3RF20 70-1AA.6** [2] | 3NE1 020-2 | - | - | 3NC2 280 | 3NA2 812-6 | - | - | - | - |
| **3RF20 90-1AA.2** [2] | 3NE1 021-2 | - | - | 3NC2 200 | 3NA2 817 | - | - | 3NW6 217-1 | 5SB3 31 |
| **3RF20 90-1AA.4** [2] | 3NE1 021-2 | - | - | 3NC2 280 | 3NA2 812 | - | - | 3NW6 212-1 | 5SB3 21 |
| **3RF20 90-1AA.6** [2] | 3NE1 020-2 | - | - | 3NC2 280 | 3NA2 812-6 | - | - | - | - |

1) Type of coordination "2" acc. to EN 60947-4-1:
In the event of a short-circuit, the control gear in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.

2) These versions can also be protected against short-circuit with miniature circuit-breakers as described on page 7/11.

## 3RF22 Solid-state relays – technical data

### Overview

***45 mm solid-state relays***

The 3RF22 solid-state relays with a width of 45 mm provide space advantages over solutions with single-phase versions. The logical connection arrangement, with the power infeed from above and connection of the load from below, ensures tidy installation in the control cabinet.

Important features:
- LED indicators
- Variety of connection techniques
- Plug-in control connection
- Zero-point switching
- Two or three-phase controlled

### Technical specifications

| Type | | 3RF22 ..-1.... | 3RF22 ..-2.... | 3RF22 ..-3.... |
|---|---|---|---|---|
| **General data** | | | | |
| **Ambient temperature** | | | | |
| • During operation, derating from 40 °C | °C | -25 ... +60 | | |
| • During storage | °C | -55 ... +80 | | |
| **Site altitude** | m | 0 ... 1000; > 1000 ask Technical Assistance | | |
| **Shock resistance** acc. to IEC 60068-2-27 | *g*/ms | 15/11 | | |
| **Vibration resistance** acc. to IEC 60068-2-6 | *g* | 2 | | |
| **Insulation strength** at 50/60 Hz (main/control circuit to ground) | V rms | 4000 | | |
| **Electromagnetic compatibility** (EMC) | | | | |
| • Emitted interference | | | | |
| - Conducted interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications[1)] | | |
| - Emitted, high-frequency interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications | | |
| • Interference immunity | | | | |
| - Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 | | |
| - Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 | | |
| - Burst acc. to IEC 61000-4-4 | kV | 2/5.0 kHz; behavior criterion 1 | | |
| - Surge acc. to IEC 61000-4-5 | kV | Conductor – ground 2; conductor – conductor 1; behavior criterion 2 | | |
| **Connection technique** | | **Screw terminal** | **Spring-loaded connection** | **Ring terminal end connection** |
| **Main contact connection** | | | | |
| • Conductor cross-section | | | | |
| - Solid | $mm^2$ | 2 x (1.5 ... 2.5), 2 x (2.5 ... 6) | 2 x (0.5 ... 2.5) | -- |
| - Finely stranded with end sleeve | $mm^2$ | 2 x (1 ... 2.5), 2 x (2.5 ... 6), 1 x 10 | 2 x (0.5 ... 1.5) | -- |
| - Finely stranded without end sleeve | $mm^2$ | -- | 2 x (0.5 ... 2.5) | -- |
| - Solid or stranded, AWG conductors | | 2 x (AWG 14 ... 10) | 2 x (AWG 18 ... 14) | -- |
| • Stripped length | mm | 10 | 10 | |
| • Terminal screw | | M4 | -- | M5 |
| - Tightening torque, 5 ... 6 mm, PZ 2 | Nm<br>lb.in | 2 ... 2.5<br>18 ... 22 | | 2.5 ... 2<br>18 ... 22 |
| • Cable lug | | -- | -- | |
| - acc. to DIN 46234 | | | | 5-2.5 ... 5-25 |
| - acc. to JIS C 2805 | | | | R 2-5 ... 14-5 |
| **Connection, auxiliary/control contacts** | | | | |
| • Conductor cross-section, with or without end sleeve | mm<br>AWG | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)<br>20 ... 12 | 0.5 ... 2.5<br>20 ... 12 | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)<br>20 ... 12 |
| • Stripped length | mm | 7 | 10 | 7 |
| • Terminal screw | | M3 | -- | M3 |
| - Tightening torque, 3.5 , PZ 1 | Nm<br>lb.in | 0.5 ... 0.6<br>4.5 ... 5.3 | | 0.5 ... 0.6<br>4.5 ... 5.3 |

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case the may be required to introduce additional damping measures.

## 3RF22 Solid-state relays – technical data

| Type | | 3RF22 ..-.AB.5 | 3RF22 ..-.AC.5 |
|---|---|---|---|
| **Main circuit** | | | |
| **Controlled phases** | | Two-phase | Three-phase |
| **Rated operational voltage $U_e$** | V | 48 ... 600 | 48 ... 600 |
| • Operating range | V | 40 ... 660 | 40 ... 660 |
| • Rated frequency | Hz | 50/60 ± 10 % | 50/60 ± 10 % |
| **Rated insulation voltage $U_i$** | V | 600 | 600 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | 6 |
| **Blocking voltage** | V | 1200 | 1200 |
| **Rage of voltage rise** | V/µs | 1.000 | 1.000 |

| Order No. | $I_{max}$ [1] at $R_{thha}/T_u$ = 40 °C | | $I_e$ acc. to IEC 60947-4-3 at $R_{thha}/T_u$ = 40 °C | | $I_e$ acc. to UL/CSA at $R_{thha}/T_u$ = 50 °C | | Power loss at $I_{max}$ | Minimum load current | Max. leakage current |
|---|---|---|---|---|---|---|---|---|---|
| | A | K/W | A | K/W | A | K/W | W | A | mA |
| **Main circuit** | | | | | | | | | |
| **3RF22 30-. AB..** | 30 | 0.57 | 30 | 0.57 | 30 | 0.44 | 81 | 0.5 | 10 |
| **3RF22 55-1AB..** | 55 | 0.18 | 50 | 0.27 | 50 | 0.19 | 151 | 0.5 | 10 |
| **3RF22 55-2AB..** | | | 20 | 1.83 | 20 | 1.58 | | | |
| **3RF22 55-3AB..** | | | 50 | 0.27 | 50 | 0.19 | | | |
| **3RF22 30-. AC..** | 30 | 0.33 | 30 | 0.33 | 30 | 0.25 | 122 | 0.5 | 10 |
| **3RF22 55-1AC..** | 55 | 0.09 | 50 | 0.15 | 50 | 0.1 | 226 | 0.5 | 10 |
| **3RF22 55-2AC..** | | | 20 | 1.19 | 20 | 1.02 | | | |
| **3RF22 55-3AC..** | | | 88 | 0.15 | 83 | 0.1 | | | |

1) $I_{max}$ provides information about the performance of the solid-state relay. The actual permitted rated operational current $I_e$ can be smaller depending on the connection method and cooling conditions.

| Order No. | Rated impulse withstand capacity $I_{tsm}$ | $I^2t$ value |
|---|---|---|
| | A | $A^2s$ |
| **Main circuit** | | |
| **3RF22 30-....5** | 300 | 450 |
| **3RF22 55-....5** | 600 | 1800 |

| Type | | 3RF22 ..-.AB4. / 3RF22 ..-.AC4. |
|---|---|---|
| **Control circuit** | | |
| **Method of operation** | | DC operation |
| **Rated control supply voltage $U_s$** | V | 4 ... 30 |
| **Response voltage** | V | 15 |
| • For tripping current | mA | 2 |
| **Drop-out voltage** | V | 1 |
| **Operating times** | | |
| • ON-delay | ms | 1 + max. one half-wave |
| • OFF delay | ms | 1 + max. one half-wave |

# Solid-State Contactors

## 3RF23 Solid-state contactors– technical data

### Technical specifications

| Order No. | | 3RF23 ..-.A... | 3RF23 ..-.B... | 3RF23 ..-.C... | 3RF23 ..-.D... |
|---|---|---|---|---|---|
| **General data** | | | | | |
| **Ambient temperature** | | | | | |
| during operation, derating at 40 °C | °C | -25 ... +60 | | | |
| when stored | °C | -55 ... +80 | | | |
| **Site altitude** | m | 0 ... 1000; derating from 1000 | | | |
| **Shock resistance** acc. to IEC 60068-2-27 | g/ms | 15/11 | | | |
| **Vibration resistance** acc. to IEC 60068-2-6 | g | 2 | | | |
| **Electromagnetic compatibility (EMC)** | | | | | |
| Emitted interference acc. to IEC 60947-4-3 | | Class A for industrial applications | | Class A for industrial applications; Class B for resi-dential/business/ commercial areas up to 16 A, AC51 Low Noise | Class A for industrial applications |
| • Conducted interference voltage | | | | | |
| • Emitted high-frequency interference voltage | | | | | |
| Noise immunity | | | | | |
| • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 | | | |
| • Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 | | | |
| • Burst acc. to IEC 61000-4-4 | kV | 2/5.0 kHz; behavior criterion 1 | | | |
| • Surge acc. to IEC 61000-4-5 | kV | Conductor - ground 2; conductor - conductor 1; behavior criterion 2 | | | |

| Order No. | | 3RF23 ..-1.... | 3RF23 ..-2.... | 3RF23 ..-3.... |
|---|---|---|---|---|
| **General data** | | | | |
| **Connection technique** | | **Screw connection** | **Spring-loaded connection** | **Ring cable connection** |
| **Main contact connection** | | | | |
| Conductor cross-section | | | | |
| Solid | $mm^2$ | 2 x (1.5 ... 2.5), 2 x (2.5 ... 6) | 2 x (0.5 ... 2.5) | - |
| Finely stranded with end sleeve | $mm^2$ | 2 x (1.5 ... 2.5), 2 x (2.5 ... 6), 1 x 10 | 2 x (0.5 ... 1.5) | - |
| Finely stranded without end sleeves | $mm^2$ | | 2 x (0.5 ... 2.5) | - |
| Solid or stranded AWG conductors | AWG | 2 x (14 ... 10) | 2 x (18 ... 14) | - |
| Insulation stripping length | mm | 10 | 10 | - |
| Terminal screw | | M 4 | - | M 5 |
| • Tightening torque | Nm | 2 ... 2.5 | - | 2 ... 2.5 |
| • Tightening torque | lb.in | 18 ... 22 | - | 18 ... 22 |
| Cable lug | | | | |
| • DIN | | - | - | DIN 46234 -5-2.5, -5-6, -5-10, -5-16, -5-25 |
| • JIS | | - | - | JIS C 2805 R 2-5, 5.5-5, 8-5, 14-5 |
| **Auxiliary/control contact connections** | | | | |
| Conductor cross-section | $mm^2$ | 1x (0.5 ... 2.5); 2x (0.5 ... 1.0) | 0.5 ... 1.5 | 1x (0.5 ... 2.5); 2x (0.5 ... 1.0) |
| | AWG | 20 ... 12 | 20 ... 12 | 20 ... 12 |
| Insulation stripping length | mm | 7 | 10 | 7 |
| Terminal screw | | M 3 | - | M 3 |
| • Tightening torque | Nm | 0.5 ... 0.6 | - | 0.5 ... 0.6 |
| | lb.in | 4.5 ... 5.3 | - | 4.5 ... 5.3 |

| Type | | 3RF23 ..-....2 | 3RF23 ..-....4 | 3RF21 ..-....5 | 3RF23 ..-....6 |
|---|---|---|---|---|---|
| **Main circuit** | | | | | |
| **Rated operational voltage $U_e$** | V | 24 ... 230 | 230 ... 460 | 48 ... 600 | 400 ... 600 |
| • Tolerance | % | -15/+10 | | | |
| • Rated frequency | Hz | 50/60 Hz | | | |
| **Rated insulation voltage $U_i$** | V | 600 | | | |
| **Blocking voltage** | V | 800 | 1200 | 1200 | 1600 |
| **Rate of voltage rise** | V/µs | 1000 | | | |

| Type | | 3RF23 ..-...0. | 3RF23 ..-...2. |
|---|---|---|---|
| **Control circuit** | | | |
| **Method of operation** | | DC operation | AC operation |
| **Rated control supply voltage $U_s$** | V | 24 to EN 61131-2 | 110 ... 230 |
| **Max. rated control voltage** | V | 30 | 253 |
| **Rated control current at $U_s$** | mA | 15 | 6 |
| **Rated frequency** of the control supply voltage | Hz | | 50/60 |
| **Response voltage** | V | 15 | 90 |
| for tripping current | mA | 2 | 2 |
| **Drop-out voltage** | V | 5 | 40 |
| **Operating times** | | | |
| closing time | ms | 1 + max. one half-wave | 40 + max. one half-wave |
| opening time | ms | 1 + max. one half-wave | 40 + max. one half-wave |

# Solid-State Contactors

## 3RF23 Solid-state contactors – technical data

### Technical specifications

| Order No. | Type current AC-51[1] $I_{max}$ at 40 °C | acc. to IEC 60947-4-3 at 40 °C | UL/CSA at 50 °C | Power loss at $I_{max}$ | Minimum load current | Leakage current | Rated impulse withstand capacity $I_{tsm}$ | $I^2t$ value |
|---|---|---|---|---|---|---|---|---|
| | A | A | A | W | A | mA | A | $A^2s$ |
| **Main circuit** | | | | | | | | |
| **3RF23 1.-.A..2**<br>**3RF23 1.-.A..4**<br>**3RF23 1.-.A.45**<br>**3RF23 1.-.A..6** | 10.5 | 7.5 | 9.6 | 11 | 0.5 | 10 | 200<br>200<br><br>400 | 200<br>200<br><br>800 |
| **3RF23 2.-.A..2**<br>**3RF23 2.-.C..2**<br>**3RF23 2.-.D..2**<br>**3RF23 2.-.A..4**<br>**3RF23 2.-.C..4**<br>**3RF23 2.-.D..4**<br>**3RF23 2.-.A.45**<br>**3RF23 2.-.A..6** | 20 | 13.2 | 17.6 | 20 | 0.5 | 10<br>25<br>10<br>10<br>25<br>10<br><br>10 | 600<br>600<br>1150<br>600<br>600<br>1150<br><br>600 | 1800<br>1800<br>6600<br>1800<br>1800<br>6600<br><br>1800 |
| **3RF23 3.-.A..2**<br>**3RF23 3.-.A..4**<br>**3RF23 3.-.A.45**<br>**3RF23 3.-.A..6** | 30 | 22 | 27 | 33 | 0.5 | 10 | 600 | 1800 |
| **3RF23 4.-.A..2**<br>**3RF23 4.-.A..4**<br>**3RF23 4.-.A.45**<br>**3RF23 4.-.A..6** | 40 | 33 | 36 | 44 | 0.5 | 10 | 1200<br>1200<br><br>1150 | 7200<br>7200<br><br>6600 |
| **3RF23 5.-.A..2**<br>**3RF23 5.-.A..4**<br>**3RF23 5.-.A.45**<br>**3RF23 5.-.A..6** | 50 | 36 | 45 | 54 | 0.5 | 10 | 1150 | 6600 |
| **3RF23 7.-.A..2**<br>**3RF23 7.-.A..4**<br>**3RF23 7.-.A.45**<br>**3RF23 7.-.A..6** | 70 | 70 | 62 | 83 | 0.5 | 10 | 1150 | 6600 |
| **3RF23 9.-.A..2**<br>**3RF23 9.-.A..4**<br>**3RF23 9.-.A.45**<br>**3RF23 9.-.A..6** | 88 | 88 | 80 | 117 | 0.5 | 10 | 1150 | 6600 |

| Order No. | Type current AC-51[1] $I_{max}$ at 40 °C | acc. to IEC 60947-4-3 at 40 °C | UL/CSA at 50 °C | AC-15 | Parameters | Power loss at $I_{max}$ | Minimum load current | Leakage current | Rated impulse withstand capacity $I_{tsm}$ | $I^2t$ value |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | A | A | A | | W | A | mA | A | $A^2s$ |
| **Main circuit** | | | | | | | | | | |
| **3RF23 1.-.B..2**<br>**3RF23 1.-.B..4**<br>**3RF23 1.-.B..6** | 10.5 | 7.5 | 9.6 | 6 | 1200 1/h<br>50 % ED | 11 | 0.5 | 10 | 200<br>200<br>400 | 200<br>200<br>800 |
| **3RF23 2.-.B..2**<br>**3RF23 2.-.B..4**<br>**3RF23 2.-.B..6** | 20 | 13.2 | 17.6 | 12 | 1200 1/h<br>50 % ED | 20 | 0.5 | 10 | 600 | 1800 |
| **3RF23 3.-.B..2**<br>**3RF23 3.-.B..4**<br>**3RF23 3.-.B..6** | 30 | 22 | 27 | 15 | 1200 1/h<br>50 % ED | 33 | 0.5 | 10 | 600 | 1800 |
| **3RF23 4.-.B..2**<br>**3RF23 4.-.B..4**<br>**3RF23 4.-.B..6** | 40 | 33 | 36 | 20 | 1200 1/h<br>50 % ED | 44 | 0.5 | 10 | 1200<br>1200<br>1150 | 7200<br>7200<br>6600 |
| **3RF23 5.-.B..2**<br>**3RF23 5.-.B..4**<br>**3RF23 5.-.B..6** | 50 | 36 | 45 | 25 | 1200 1/h<br>50 % ED | 54 | 0.5 | 10 | 1150 | 6600 |
| **3RF23 7.-.B..2**<br>**3RF23 7.-.B..4**<br>**3RF23 7.-.B..6** | 70 | 70 | 62 | 27.5 | 1200 1/h<br>50 % ED | 83 | 0.5 | 10 | 1150 | 6600 |
| **3RF23 9.-.B..2**<br>**3RF23 9.-.B..4**<br>**3RF23 9.-.B..6** | 88 | 88 | 80 | 30 | 1200 1/h<br>50 % ED | 117 | 0.5 | 10 | 1150 | 6600 |

1) The type current provides information about the performance of the semiconductor contactor. The actual permitted operational current $I_e$ can be smaller depending on the connection method and start-up conditions. Derating acc. to curves from page 7/34, 7/35, 7/36.

# Solid-State Contactors

## 3RF23 Solid-state contactors – technical data

### *Fused design with semiconductor protection (similar to type of coordination "2")*[1)]

The semiconductor protection for the SIRIUS SC controlgear can be used with different protective devices. This allows protection by means of LV HRC fuses of operational class gL/gG or supplementary protectors. Siemens recommends the use of special SITOR semiconductor fuses. The table below lists the maximum permissible fuses for each SIRIUS SC control gear.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems.
For protective devices with operational class gL/gG and for SITOR full range fuses 3NE1, the minimum cross-sections for the conductor to be connected must be taken into account.

| Order No. | All-range fuse | Semiconductor protection fuse | | | Cable and line protection fuse | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LV HRC design gR/SITOR 3NE1 | Cylindrical design | | | LV HRC design gL/gG 3NA | Cylindrical design | | | DIAZED quick 5SB |
| | | 10 x 38 mm aR/SITOR 3NC1 0 | 14 x 51 mm aR/SITOR 3NC1 4 | 22 x 58 mm aR/SITOR 3NC2 2 | | 10 x 38 mm gL/gG 3NW | 14 x 51 mm gL/gG 3NW | 22 x 58 mm gL/gG 3NW | |
| **3RF23 1.-....2** | 3NE1 813-0 | 3NC1 010 | 3NC1 410 | 3NC2 220 | 3NA2 803 | 3NW6 001-1 | 3NW6 101-1 | - | 5SB1 41 |
| **3RF23 1.-....4** | 3NE1 813-0 | 3NC1 010 | 3NC1 410 | 3NC2 220 | 3NA2 801 | 3NW6 001-1 | 3NW6 101-1 | - | 5SB1 41 |
| **3RF23 1.-....6** | 3NE1 813-0 | 3NC1 010 | 3NC1 410 | 3NC2 220 | 3NA2 803-6 | - | - | - | - |
| **3RF23 2.-....2** | 3NE1 814-0 | 3NC1 020 | 3NC1 420 | 3NC2 220 | 3NA2 807 | 3NW6 007-1 | 3NW6 107-1 | 3NW6 207-1 | 5SB1 71 |
| **3RF23 2.-....4** | 3NE1 814-0 | 3NC1 020 | 3NC1 420 | 3NC2 220 | 3NA2 807 | 3NW6 005-1 | 3NW6 105-1 | 3NW6 205-1 | 5SB1 71 |
| **3RF23 2.-....6** | 3NE1 814-0 | 3NC1 020 | 3NC1 420 | 3NC2 220 | 3NA2 807-6 | - | - | - | - |
| **3RF23 3.-....2** | 3NE1 803-0 | 3NC1 032 | 3NC1 432 | 3NC2 232 | 3NA2 810 | - | 3NW6 107-1 | 3NW6 207-1 | 5SB3 11 |
| **3RF23 3.-....4** | 3NE1 803-0 | 3NC1 032 | 3NC1 432 | 3NC2 232 | 3NA2 807 | - | 3NW6 105-1 | 3NW6 205-1 | 5SB3 11 |
| **3RF23 3.-....6** | 3NE1 803-0 | 3NC1 032 | 3NC1 432 | 3NC2 232 | 3NA2 807-6 | - | - | - | - |
| **3RF23 4.-....2** | 3NE1 802-0 | - | 3NC1 440 | 3NC2 240 | 3NA2 817 | - | 3NW6 117-1 | 3NW6 217-1 | 5SB3 21 |
| **3RF23 4.-....4** | 3NE1 802-0 | - | 3NC1 440 | 3NC2 240 | 3NA2 812 | - | 3NW6 112-1 | 3NW6 212-1 | 5SB3 21 |
| **3RF23 4.-....6** | 3NE1 802-0 | - | 3NC1 440 | 3NC2 240 | 3NA2 812-6 | - | - | - | - |
| **3RF23 5.-....2** | 3NE1 817-0 | - | 3NC1 450 | 3NC2 250 | 3NA2 817 | - | 3NW6 117-1 | 3NW6 217-1 | 5SB3 21 |
| **3RF23 5.-....4** | 3NE1 817-0 | - | 3NC1 450 | 3NC2 250 | 3NA2 812 | - | - | 3NW6 210-1 | 5SB3 21 |
| **3RF23 5.-....6** | 3NE1 817-0 | - | 3NC1 450 | 3NC2 250 | 3NA2 812-6 | - | - | - | - |
| **3RF23 7.-....2** | 3NE1 820-0 | - | - | 3NC2 280 | 3NA2 817 | - | - | 3NW6 217-1 | 5SB3 31 |
| **3RF23 7.-....4** | 3NE1 020-2 | - | - | 3NC2 280 | 3NA2 812 | - | - | 3NW6 210-1 | 5SB3 21 |
| **3RF23 7.-....6** | 3NE1 020-2 | - | - | 3NC2 280 | 3NA2 812-6 | - | - | - | - |
| **3RF23 9.-....2** | 3NE1 021-2 | - | - | 3NC2 200 | 3NA2 817 | - | - | 3NW6 217-1 | 5SB3 31 |
| **3RF23 9.-....4** | 3NE1 021-2 | - | - | 3NC2 280 | 3NA2 812 | - | - | 3NW6 210-1 | 5SB3 21 |
| **3RF23 9.-....6** | 3NE1 020-2 | - | - | 3NC2 280 | 3NA2 812-6 | - | - | - | - |

1) Type of coordination "2" acc. to EN 60947-4-1:
In the event of a short-circuit, the controlgear in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.

# Solid-State Contactors

## 3RF24 Solid-state contactors – technical data

### Overview

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current intensities of up to 50 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design. With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on carrier plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building engineering. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

***Version for resistive loads, "zero-point switching"***

This standard version is often used for switching space heaters on and off.

### Technical specifications

| Order No. | | 3RF24 ..-1.... | 3RF24 ..-2.... | 3RF24 ..-3.... |
|---|---|---|---|---|
| **General data** | | | | |
| **Ambient temperature** | | | | |
| • During operation, derating from 40 °C | °C | -25 ... +60 | | |
| • During storage | °C | -55 ... +80 | | |
| **Site altitude** | m | 0 ... 1000; derating from 1000 | | |
| **Shock resistance** acc. to IEC 60068-2-27 | *g*/ms | 15/11 | | |
| **Vibration resistance** acc. to IEC 60068-2-6 | *g* | 2 | | |
| **Insulation strength** at 50/60 Hz (main/control circuit to ground) | V rms | 4000 | | |
| **Electromagnetic compatibility (EMC)** | | | | |
| • Emitted interference acc. to IEC 60947-4-3 | | | | |
| - Conducted interference voltage | | Class A for industrial applications[1)] | | |
| - Emitted, high-frequency interference voltage | | Class A for industrial applications | | |
| • Interference immunity | | | | |
| - Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 | | |
| - Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 | | |
| - Burst acc. to IEC 61000-4-4 | kV | 2/5.0 kHz; behavior criterion 1 | | |
| - Surge acc. to IEC 61000-4-5 | kV | Conductor – ground 2; conductor – conductor 1; behavior criterion 2 | | |
| **Connection technique** | | **Screw terminal** | **Spring-loaded connection** | **Ring terminal end connection** |
| **Main contact connection** | | | | |
| • Conductor cross-section | | | | |
| - Solid | $mm^2$ | 2 x (1.5 ... 2.5), 2 x (2.5 ... 6) | 2x (0.5 ... 2.5) | -- |
| - Finely stranded with end sleeve | $mm^2$ | 2 x (1 ... 2.5), 2 x (2.5 ... 6), 1 x 10 | 2x (0.5 ... 1.5) | -- |
| - Finely stranded without end sleeve | $mm^2$ | -- | 2x (0.5 ... 2.5) | -- |
| - Solid or stranded, AWG conductors | | 2 x (AWG 14 ... 10) | 2 x (AWG 18 ... 14) | -- |
| • Stripped length | mm | 10 | 10 | -- |
| • Terminal screw | | M4 | -- | M5 |
| - Tightening torque | NM | 2 ... 2.5 | | 2 ... 2.5 |
| | lb.in | 18 ... 22 | | 18 ... 22 |
| • Cable lug | | -- | -- | |
| - acc. to DIN 46234 | | | | 5-2.5 ... 5-25 |
| - acc. to JIS C 2805 | | | | R 2-5 ,,, 14-5 |
| **Connection, auxiliary/control contacts** | | | | |
| • Conductor cross-section | mm | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) | 0.5 ... 2.5 | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) |
| | AWG | AWG 20 ... 12 | AWG 20 ... 12 | AWG 20 ... 12 |
| • Stripped length | mm | 7 | 10 | 7 |
| • Terminal screw | | M3 | -- | M3 |
| - Tightening torque, ∅ 3.5 , PZ 1 | NM | 0.5 ... 0.6 | | 0.5 ... 0.6 |
| | lb.in | 4.5 ... 5.3 | | 4.5 ... 5.3 |

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case the may be required to introduce additional damping measures.

# Solid-State Contactors

## 3RF24 Solid-state contactors – technical data

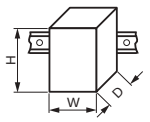
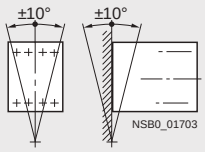
| Type | | 3RF24 ..-.AB.5 | 3RF24 ..-.AC.5 |
|---|---|---|---|
| **Main circuit** | | | |
| **Controlled phases** | | Two-phase | Three-phase |
| **Rated operational voltage $U_e$** | V | 48 ... 600 | 48 ... 600 |
| • Operating range | V | 40 ... 660 | 40 ... 660 |
| • Rated frequency | Hz | 50/60 ± 10 % | 50/60 ± 10 % |
| **Rated insulation voltage $U_i$** | V | 600 | 600 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | 6 |
| **Blocking voltage** | V | 1200 | 1200 |
| **Rage of voltage rise** | V/µs | 1000 | 1000 |

| Order No. | Type current $I_{AC-51}$ at 40 °C | Rated operational current $I_e$ acc. to IEC 60947-4-3 for 40°C | Rated operational current $I_e$ acc. to UL/CSA for 50 °C | Power loss at $I_{AC-51}$ | Minimum load current | Max. leakage current | Rated impulse withstand current $I_{tsm}$ | $I^2t$ value |
|---|---|---|---|---|---|---|---|---|
| | A | A | A | w | A | mA | A | $A^2s$ |
| **Main circuit** | | | | | | | | |
| **3RF24 10-.AB.5** | 10.5 | 7.5 | 9.5 | 21 | 0.1 | 10 | 200 | 200 |
| **3RF24 20-.AB.5** | 20 | 15 | 18 | 39 | 0.5 | 10 | 500 | 1800 |
| **3RF24 30-.AB.5** | 30 | 22 | 26 | 61 | 0.5 | 10 | 1200 | 7200 |
| **3RF24 40-.AB.5** | 40 | 32 | 35 | 81 | 0.5 | 10 | 1150 | 6600 |
| **3RF24 50-.AB.5** | 50 | 38 | 45 | 105 | 0.5 | 10 | 1150 | 6600 |
| **3RF24 10-.AC.5** | 10.5 | 7 | 9 | 32 | 0.1 | 10 | 300 | 450 |
| **3RF24 20-.AC.5** | 20 | 15 | 18 | 67 | 0.5 | 10 | 600 | 1800 |
| **3RF24 30-.AC.5** | 30 | 22 | 26 | 93 | 0.5 | 10 | 1200 | 7200 |
| **3RF24 40-.AC.5** | 40 | 29 | 35 | 121 | 0.5 | 10 | 1150 | 6600 |
| **3RF24 50-.AC.5** | 50 | 38 | 45 | 160 | 0.5 | 10 | 1150 | 6600 |

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current $I_e$ can be smaller depending on the connection method and start-up conditions. For derating see the characteristic curves on page 4/18.

| Type | | 3RF24 ..-...4. | 3RF24 ..-...5. |
|---|---|---|---|
| **Control circuit** | | | |
| **Method of operation** | | DC operation | AC operation |
| **Rated control supply voltage $U_s$** | V | 4 ... 30 | 190 ... 230 |
| **Rated frequency** of the control supply voltage | Hz | -- | 50/60 ± 10% |
| **Actuating voltage, max.** | V | 30 | 253 |
| • For actuating current | mA | 15 | 6 |
| **Response voltage** | V | 4 | 180 |
| • For tripping current | mA | > 3 | > 2 |
| **Drop-out voltage** | V | < 1 | < 40 |
| **Operating times** | | | |
| • ON-delay | ms | 1 + max. one half-wave | 40 + max. one half-wave |
| • OFF delay | ms | 1 + max. one half-wave | 40 + max. one half-wave |

## Technical specifications

| Type | | | 3RF34 05-1BB..<br>3RF34 03-1BD..,<br>3RF34 05-1BD.. | 3RF34 10-1BB..,<br>3RF34 12-1BB..,<br>3RF34 16-1BB..<br>3RF34 10-1BD.. | 3RF34 05-2BB.. | 3RF34 10-2BB..,<br>3RF34 12-2BB..,<br>3RF34 16-2BB.. |
|---|---|---|---|---|---|---|
| Dimensions (W x H x D) |  | mm | 45 x 95 x 96.5 | 90 x 95 x 96.5 | 45 x 95 x 96.5 | 90 x 95 x 96.5 |
| **General technical specifications** | | | | | | |
| **Ambient temperature** | | | | | | |
| • During operation, derating from 40 °C | | °C | -25 ... +60 | | | |
| • During storage | | °C | -55 ... +80 | | | |
| **Installation altitude** | | m | 0 ... 1000; derating from 1000 on request | | | |
| **Shock resistance** acc. to IEC 60068-2-27 | | *g*/ms | 15/11 | | | |
| **Vibration resistance** acc. to IEC 60068-2-6 | | *g* | 2 | | | |
| **Insulation strength** at 50/60 Hz (main/control circuit to floor) | | V rms | 4000 | | | |
| **Electromagnetic compatibility (EMC)** | | | | | | |
| • Emitted interference according to IEC 60947-4-2 | | | | | | |
| - Conducted interference voltage | | | Class A for industrial applications[1] | | | |
| - Emitted, high-frequency interference voltage | | | Class A for industrial applications | | | |
| • Interference immunity | | | | | | |
| - Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3) | | kV | Contact discharge: 4; Air discharge: 8; Behavior criterion 2 | | | |
| - Induced RF fields according to IEC 61000-4-6 | | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 | | | |
| - Burst acc. to IEC 61000-4-4 | | kV | 2; at 5 kHz; behavior criterion 2 | | | |
| - Surge according to IEC 61000-4-5[2] | | kV | Conductor - Ground: 2; Conductor - Conductor: 1; Behavior criterion 2 | | | |
| **Connection type** | | | **Screw terminals** | | **Spring-type terminals** | |
| **Operating devices** | | | Standard screwdriver size 2 and Pozidriv 2 | | 3.0 x 0.5 and 3.5 x 0.5 | |
| **Conductor cross-sections, main contacts** | | | | | | |
| • Solid | | $mm^2$ | 2 x (1.5 ... 2.5)[3], 2 x (2.5 ... 6)[3] | | 2 x (0.5 ... 2.5) | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (1 ... 2.5)[3]; 2 x (2.5 ... 6)[3]; 1 x 10 | | 2 x (0.5 ... 1.5) | |
| • Finely stranded without end sleeve | | $mm^2$ | -- | | 2 x (0.5 ... 2.5) | |
| • AWG cables, solid or stranded | | | 2 x (AWG 14 ... 10) | | 2 x (AWG 18 ... 14) | |
| **Conductor cross-sections, auxiliary/control contacts** | | | | | | |
| • With/without end sleeve | | $mm^2$ | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) | | 0.5 ... 2.5 | |
| • AWG cables, solid or stranded | | | AWG 20 ... 12 | | AWG 20 ... 12 | |
| **Permissible mounting positions** |  | | | | | |

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case these may be required to introduce additional interference suppression measures.

2) The following applies for reversing contactors: To maintain the values, a 3TX7 462-3L surge suppressor (see "3TB Contactors", Chapter 3) should be used between the phases L1 and L3 as close as possible to the reversing contactor.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

# Solid-State Contactors

## 3RF34 Solid-state contactors – technical data

### Overview

These two-phase controlled, instantaneous switching solid-state contactors in the insulting enclosure are offered in 45 mm width to 5.2 A – and in 90 mm width to 16 A. This means that it is possible to operate motors up to 7.5 kW.

### Technical specifications

| Type | | 3RF34 05-.BB.. | 3RF34 10-.BB.. | 3RF34 12-.BB.. | 3RF34 16-.BB.. |
|---|---|---|---|---|---|
| **Fuseless design with 3RV2 motor starter protector, CLASS 10** | | | | | |
| **Rated operational current $I_{AC-53}$**[1] according to IEC 60947-4-2 | | | | | |
| • At 40 °C | A | 5.2 (4.5) | 9.2 | 12.5 | 16 |
| • UL/CSA, at 50 °C | A | 4.6 (4.0) | 8.4 | 11.5 | 14 |
| • At 60 °C | A | 4.2 (3.5) | 7.6 | 10.5 | 12.5 |
| **Power loss** at $I_{AC-53}$ | | | | | |
| • At 40 °C | W | 10 (8) | 16 | 22 | 28 |
| **Short-circuit protection with type of coordination "1"** at an operational voltage of $U_e$ to 440 V | | | | | |
| • Motor starter protector, type | | 3RV20 11-1GA10 | 3RV20 11-1JA10 | 3RV20 11-1KA10 | 3RV20 11-4AA10 |
| • Current $I_q$ | kA | 50 | 5 | 5 | 3 |

1) The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous butt-mounting.

| Type | | 3RF34 05-.BB.4 | 3RF34 05-.BB.6 | 3RF34 10-.BB.. | 3RF34 12-.BB.4 | 3RF34 12-.BB.6 | 3RF34 16-.BB.. |
|---|---|---|---|---|---|---|---|
| **Fused design with directly connected 3RB3 overload relay** | | | | | | | |
| **Rated operational current $I_{AC-53}$** according to IEC 60947-4-2 | | | | | | | |
| • At 40 °C | A | 4 | | 7.8 | 9.5 | | 11 |
| • UL/CSA, at 50 °C | A | 3.6 | | 7 | 8.5 | | 10 |
| • At 60 °C | A | 3.2 | | 6.2 | 7.6 | | 9 |
| **Power loss** at $I_{AC-53}$ | | | | | | | |
| • At 40 °C | W | 7 | | 13 | 16 | | 18 |
| **Minimum load current** | A | 0.5 | | | | | |
| **Max. off-state current** | mA | 10 | | | | | |
| **Rated peak withstand current $I_{tsm}$** | A | 200 | 600 | 600 | 1200 | 1150 | 1150 |
| **$I^2t$ value** | $A^2s$ | 200 | 1800 | 1800 | 7200 | 6600 | 6600 |

| Type | | 3RF34 ..-.BB.4 | 3RF34 ..-.BB.6 |
|---|---|---|---|
| **Main circuit** | | | |
| **Controlled phases** | | 2-phase | 2-phase |
| **Rated operational voltage $U_e$** | V AC | 48 ... 480 | 48 ... 600 |
| • Operating range | V AC | 40 ... 506 | 40 ... 660 |
| • Rated frequency | Hz | 50/60 ± 10 % | 50/60 ± 10 % |
| **Rated insulation voltage $U_i$** | V | 600 | 600 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | 6 |
| **Blocking voltage** | V | 1200 | 1600 |
| **Rage of voltage rise** | V/µs | 1000 | 1000 |

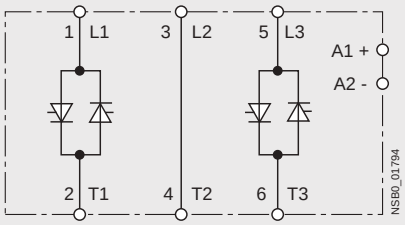
# Solid-State Contactors

## 3RF34 Solid-state contactors – technical data

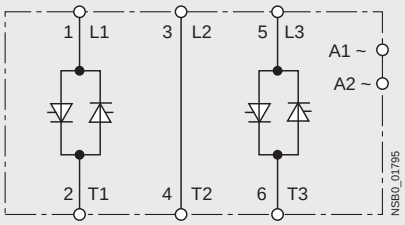
| Type | | 3RF34 ..-.BB0. | 3RF34 ..-.BB2. |
|---|---|---|---|
| **Control circuits** | | | |
| **Method of operation** | | DC operation | AC operation |
| **Rated control supply voltage $U_s$** | V | 24 acc. to IEC 61131-2 | 110 ... 230 |
| **Rated frequency** of the control supply voltage | Hz | -- | 50/60 ± 10 % |
| **Control supply voltage, max.** | V | 30 | 253 |
| **Typical actuating current** | mA | 20 | 15 |
| **Response voltage** | V | 15 | 90 |
| **Drop-out voltage** | V | 5 | < 40 |
| **Operating times** | | | |
| • ON-delay | ms | 1 | 5 |
| • OFF-delay | ms | 1 + max. one half-wave | 30 + max. one half-wave |

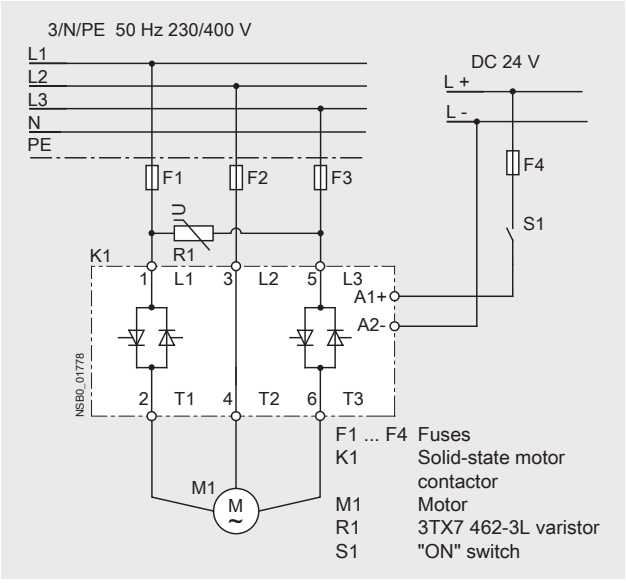
### *Circuit diagrams*

DC control supply voltage




AC control supply voltage



## 3RF34 Solid-state reversing contactors – technical data

### Overview

The integration of four conducting paths to a reverse switch, combined in one enclosure makes this device a particularly compact solution. Compared to conventional systems, for which two contactors are required, it is possible to save up to 50 % width with the three-phase reversing contactors. Devices with 45 mm width cover motors up to 2.2 kW – and those with 90 mm width up to 3 kW.

### Technical specifications

| Type | | 3RF34 03-.BD.4 | 3RF34 05-.BD.4 | 3RF34 10-.BD.4 |
|---|---|---|---|---|
| **Fuseless design with 3RV2 motor starter protector, CLASS 10** | | | | |
| **Rated operational current $I_{AC-53}$**[1] according to IEC 60947-4-2 | | | | |
| • At 40 °C | A | 3.8 (3.4) | 5.4 (4.8) | 7.4 |
| • UL/CSA, at 50 °C | A | 3.5 (3.1) | 5 (4.3) | 6.8 |
| • At 60 °C | A | 3.2 (2.8) | 4.6 (3.8) | 6.2 |
| **Power loss** at $I_{AC-53}$ | | | | |
| • At 40 °C | W | 7 (6) | 9 (8) | 13 |
| **Short-circuit protection with type of coordination "1"** at an operational voltage of $U_e$ to 440 V | | | | |
| • Motor starter protector, type | | 3RV20 11-1FA10 | 3RV20 11-1GA10 | 3RV20 11-1JA10 |
| • Current $I_q$ | kA | 50 | 50 | 10 |

[1] The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous butt-mounting.

| Type | | 3RF34 03-.BD.4 | 3RF34 05-.BD.4 | 3RF34 10-.BD.4 |
|---|---|---|---|---|
| **Fused design with directly connected 3RB3 overload relay** | | | | |
| **Rated operational current $I_{AC-53}$** according to IEC 60947-4-2 | | | | |
| • At 40 °C | A | 3.8 | 5.4 | 7.4 |
| • UL/CSA, at 50 °C | A | 3.5 | 5 | 6.8 |
| • At 60 °C | A | 3.2 | 4.6 | 6.2 |
| **Power loss** at $I_{AC-53}$ | | | | |
| • At 40 °C | W | 6 | 8 | 16 |
| **Minimum load current** | A | 0.5 | | |
| **Max. off-state current** | mA | 10 | | |
| **Rated peak withstand current $I_{tsm}$** | A | 200 | 600 | |
| **$I^2t$ value** | $A^2s$ | 200 | 1800 | |

| Type | | 3RF34 ..-.BD.4 |
|---|---|---|
| **Main circuit** | | |
| **Controlled phases** | | 2-phase |
| **Rated operational voltage $U_e$**[1] | V AC | 48 ... 480 |
| • Operating range | V AC | 40 ... 506 |
| • Rated frequency | Hz | 50/60 ± 10 % |
| **Rated insulation voltage $U_i$** | V | 600 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Blocking voltage** | V | 1 200 |
| **Rage of voltage rise** | V/µs | 1 000 |

[1] To reduce the risk of a phase short circuit due to overvoltage, we recommend using a varistor type 3TX7 462-3L between the phases L1 and L3 and as close as possible to the switchgear.

We recommend a design with semiconductor protection as short-circuit protection.

# Solid-State Contactors

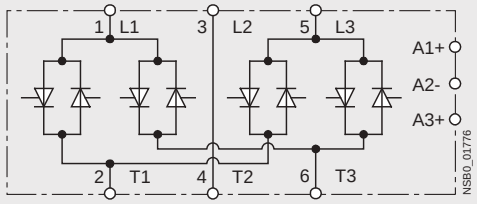
## 3RF34 Solid-state reversing contactors – technical data

| Type | | 3RF34 ..-.BD0. | 3RF34 ..-.BD2. |
|---|---|---|---|
| **Control circuits** | | | |
| **Method of operation** | | DC operation | AC operation |
| **Rated control supply voltage $U_s$** | V | 24 acc. to IEC 61131-2 | 110 ... 230 |
| **Rated frequency** of the control supply voltage | Hz | -- | 50/60 ± 10 % |
| **Control supply voltage, maximum** | V | 30 | 253 |
| **Typical actuating current** | mA | 15 | 10 |
| **Response voltage** | V | 15 | 90 |
| **Drop-out voltage** | V | 5 | < 40 |
| **Operating times** [1] | | | |
| • ON-delay | ms | 5 | 20 |
| • OFF-delay | ms | 5 + max. one half-wave | 10 + max. one half-wave |
| • Interlocking time | ms | 60 ... 100 | 50 ... 100 |

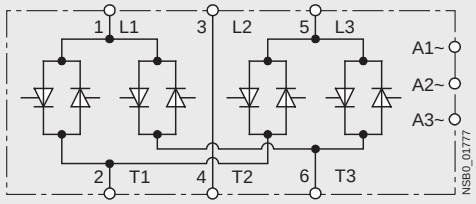
[1] Caution! Risk of phase short circuit in automatic mode.
The control inputs must not be actuated until after a delay time of 40 ms after the main voltage is applied

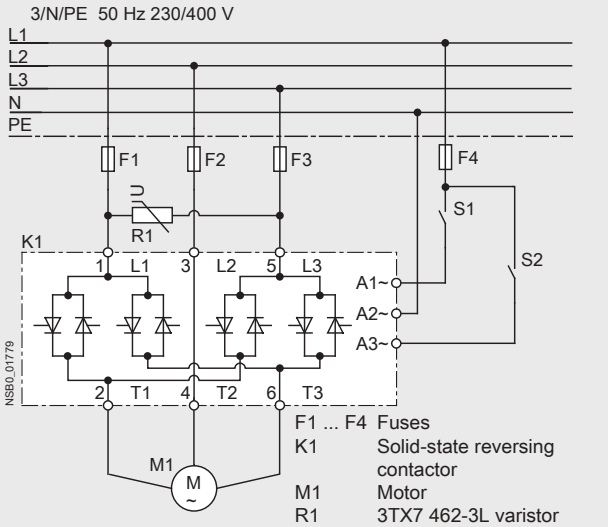
### *Circuit diagrams*

DC control supply voltage




AC control supply voltage



## Overview

### *Function modules for SIRIUS SC semiconductor switching devices*

A great variety of applications demand an expanded range of functionality. These applications can easily be met with Sirius SC function modules. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the semiconductor relay or contactor.

The plug-in connection to control the semiconductor switching devices can simply remain in use.

The following function modules are available:

- Converter
- Load monitors (basic and enhanced)
- Power controller

## Technical specifications

| Type | | 3RF29 ..-.E... | 3RF29 ..-.F... | 3RF29 ..-.G... | 3RF29 ..-.H... |
|---|---|---|---|---|---|
| **General data** | | | | | |
| **Ambient temperature** | | | | | |
| during operation, derating at 40 °C | °C | -25 ... +60 | | | |
| when stored | °C | -55 ... +80 | | | |
| **Site altitude** | m | 0 ... 1000; derating from 1000 | | | |
| **Shock resistance** acc. to IEC 60068-2-27 | g/ms | 15/11 | | | |
| **Vibration resistance** acc. to IEC 60068-2-6 | g | 2 | | | |
| **Electromagnetic compatibility (EMC)** | | | | | |
| Emitted interference | | | | | |
| • Conducted interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications[1] | | | |
| • Emitted, high-frequency interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications | | | |
| Noise immunity | | | | | |
| • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 | | | |
| • Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBµV; behavior criterion 1 | | | |
| • Burst acc. to IEC 61000-4-4 | | 2 kV/5.0 kHz; behavior criterion 1 | | | |
| • Surge acc. to IEC 61000-4-5 | kV | Conductor - ground 2; conductor - conductor 1; behavior criterion 2 | | | |
| **Connection, auxiliary/control contacts, screw connection** | | | | | |
| Conductor cross-section | $mm^2$ | 1x (0.5 ... 2.5); 2x (0.5 ... 1) AWG 20 ... 12 | | | |
| • Insulation stripping length | mm | 7 | | | |
| Terminal screw | | M3 | | | |
| • Tightening torque | Nm | 0.5 ... 0.6 | | | |
| **Converter diameter of hole** | mm | - | 7 | 17 | |

1) Note limitations for power controller function module on page 2/31.

| Type | | 3RF29 ..-.E..8 | 3RF29 ..-.F..8 | 3RF29 ..-.G..3 | 3RF29 ..-.G..6 | 3RF29 ..-.H..3 | 3RF29 ..-.H..6 |
|---|---|---|---|---|---|---|---|
| **Main circuit** | | | | | | | |
| **Rated operational voltage $U_e$** | V | -[1] | | 110 ... 230 | 400 ... 600 | 110 ... 230 | 400 ... 600 |
| • Tolerance | % | - | | -15 / +10 | | | |
| • Rated frequency | Hz | - | | 50/60 | | | |
| **Rated insulation voltage $U_i$** | V | - | | 600 | | | |
| **Voltage detection** | | | | | | | |
| Measuring range | V | - | | 93.5 ... 253 | 340 ... 660 | 93.5 ... 253 | 340 ... 660 |
| **Mains voltage fluctuation compensation** | % | - | | 20 | | | |

1) Versions do not depend on main circuit.

| Type | | 3RF29 ..-...0. | 3RF29 ..-...1. | 3RF29 ..-...3. |
|---|---|---|---|---|
| **Control circuit** | | | | |
| **Method of operation** | | DC operation | AC/DC operation | AC operation |
| **Rated control supply voltage $U_s$** | V | 24 | 24 | 110 |
| Rated operating current | mA | 15 | 15 | 15 |
| **Max. rated control voltage** | V | 30 | 30 | 121 |
| Rated control current at maximum voltage | mA | 15 | 15 | 15 |
| **Rated frequency** of the control supply voltage | Hz | - | 50/60 | 50/60 |
| **Response voltage** | V | 15 | 15 | 90 |
| for tripping current | mA | 2 | 2 | 2 |
| **Drop-out voltage** | V | 5 | 5 | - |

| Type | | 3RF29 2.-.F... | 3RF29 2.-.G... | 3RF29 2.-.H... | 3RF29 5.-.G... | 3RF29 5.-.H... | 3RF29 9.-.G... | 3RF29 9.-.H... |
|---|---|---|---|---|---|---|---|---|
| **Current detection** | | | | | | | | |
| **Rated operational current $I_e$** | A | 20 | | | 50 | | 90 | |
| **Measuring range** | A | 4 ... 22 | | | 4 ... 55 | | 4 ... 99 | |
| **Number of partial loads** | | 6 | 12 | - | 12 | - | 12 | - |

# 3RF29 Function Modules

## General and technical data

### Overview

***Function modules for SIRIUS SC solid-state switching devices***

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor. The plug-in connection to control the solid-state switching devices can simply remain in use.

The following function modules are available:

- Converter
- Load monitoring
- Heating current monitoring
- Power control regulators
- Power controller

### Technical specifications

| Type | | 3RF29 ..-.K... |
|---|---|---|
| **General data** | | |
| **Ambient temperature** | | |
| • During operation, derating from 40 °C | °C | -25 ... +60 |
| • During storage | °C | -55 ... +80 |
| **Site altitude** | m | 0 ... 1000; derating from 1000 |
| **Shock resistance** acc. to IEC 60068-2-27 | *g*/ms | 15/11 |
| **Vibration resistance** acc. to IEC 60068-2-27 | *g* | 2 |
| **Insulation resistance** between load and control circuit | MΩ | 1.5 |
| **Electromagnetic compatibility (EMC)** | | |
| • Emitted interference | | |
| - Conducted interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications [1] |
| - Emitted, high-frequency interference voltage acc. to IEC 60947-4-3 | | Class A for industrial applications |
| • Interference immunity | | |
| - Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) | kV | Contact discharge 4; air discharge 8; behavior criterion 2 |
| - Induced RF fields acc. to IEC 61000-4-6 | MHz | 0.15 ... 80; 140 dBμV; behavior criterion 1 |
| - Burst acc. to IEC 61000-4-4 | | 2 kV/5.0 kHz; behavior criterion 1 |
| - Surge acc. to IEC 61000-4-5 | kV | Conductor – ground 2; conductor – conductor 1; behavior criterion 2 |
| **Connection, auxiliary/control contacts, screw terminal** | | |
| • Conductor cross-section | $mm^2$ | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0), 1 x (AWG 20 ... 12) |
| • Stripped length | mm | 7 |
| • Terminal screw | | M3 |
| - Tightening torque | Nm<br>lb.in | 0.5 ... 0.6<br>4.5 ... 5.3 |
| **Converter, diameter of hole** | mm | 17 |

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case the user may require to introduce additional damping measures.

## Technical specifications

| Type | | 3RF29 ..-0KA.3 | 3RF29 ..-0KA.6 |
|---|---|---|---|
| **Main circuit** | | | |
| **Rated operational voltage $U_e$** | V | 110 ... 230 | 400 ... 600 |
| • Tolerance | % | -15/+10 | |
| • Rated frequency | Hz | 50/60 | |
| **Rated insulation voltage $U_i$** | V | 600 | |
| **Voltage detection** | | | |
| • Measuring/teach range | V | 93.5 ... 253 | 340 ... 660 |
| **Compensation of mains voltage fluctuation** | % | 20 (only within the measuring range) | |

| Type | | 3RF29 04-0KA.. | 3RF29 20-0KA.. | 3RF29 50-0KA.. | 3RF29 90-0KA.. |
|---|---|---|---|---|---|
| **Current measurement** | | | | | |
| **Rated operational current $I_e$** | A | 4 | 20 | 50 | 90 |
| **Current measurement** | | | | | |
| • Teach range | A | 0.15 ... 4 | 0.65 ... 20 | 1.6 ... 50 | 2.9 ... 90 |
| • Measuring range | A | 0 ... 4 | 0 ... 22 | 0 ... 55 | 0 ... 99 |
| • Minimum partial load current | A | -- | 0.65 | 1.6 | 2.9 |
| **Number of partial loads** | | | 1 ... 6 | | |

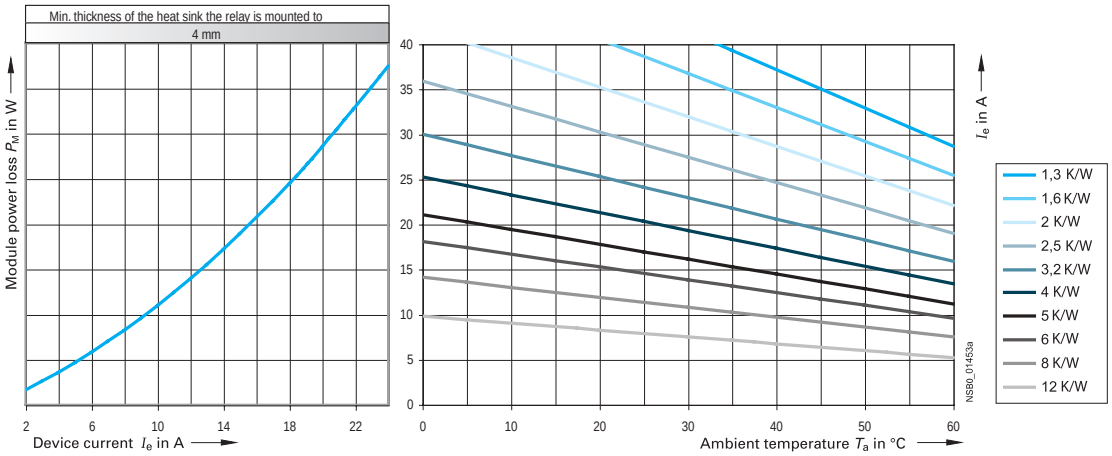
| Type | | 3RF29 ..-0KA1. | | 3RF29 ..-0KA3. |
|---|---|---|---|---|
| **Control circuit A1–A2** | | | | |
| ***General data*** | | | | |
| **Rated control supply voltage $U_s$** | V | 24 AC/DC | | AC 110 |
| • Operating range | V | 20.5 ... 26.5 | DC 18 ... 30 | 90 ... 121 |
| **Rated frequency** of the control supply voltage | Hz | 50/60 ± 10% | -- | 50/60 ± 10% |
| **Current consumption** | mA | < 40 | | < 20 |
| ***Control input IN*** | | | | |
| **Rated control voltage $U_c$** | V | 24 AC/DC | | AC 110 |
| • For actuating current | mA | < 15 | | < 15 |
| • Actuating voltage, max. | mA | AC 26.5 | DC 30 | 121 |
| **Control supply voltage, min./max.** | V | AC 20.5 ... 26.5 | DC 18 ... 30 | 90 ... 121 |
| **Response voltage** | V | AC 14 | DC 15 | 79 |
| • For tripping current | mA | > 2 | > 2 | > 2 |
| **Drop-out voltage** | V | 5 | 5 | 15 |
| ***Control input 0 ... 10 V*** | | | | |
| **Input analog** | V | 0 ... 10 | | |
| • Permissible range | V | -1 ... 11 | | |
| **Input resistance** | kΩ | 8 | | |
| **Period duration** | s | 1 | | |
| **Auxiliary circuit 11–12** | | | | |
| **Switching voltage** | V | 24 AC/DC | | AC 110 |
| • Actuating current (utilization category) | A | 0.5 (DC-12) | | 0.5 (AC-12) |
| • Switching voltage, min./max. | V | 15 ... 30 | | 90 ... 121 |
| **Continuous thermal current, max. $I_{th}$** | A | 1 | | 1 |

## Characteristics

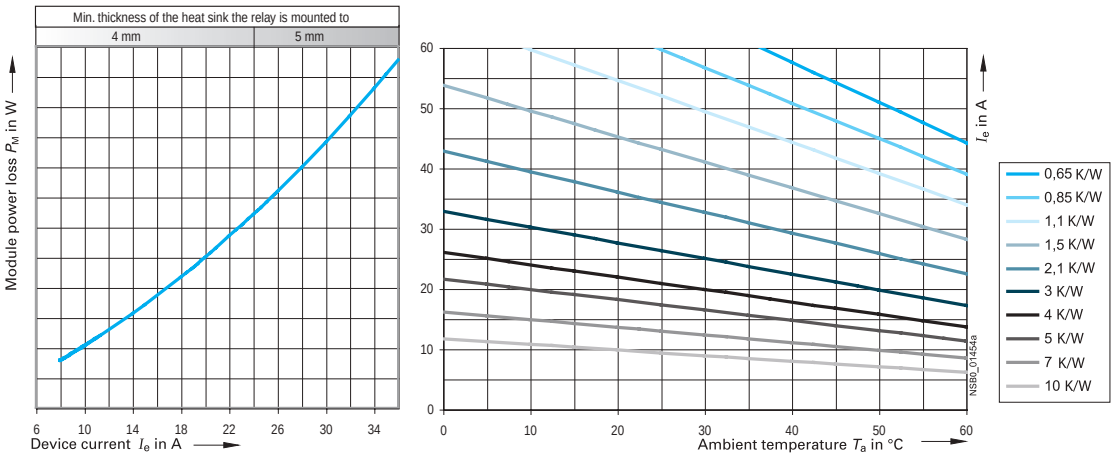
### *SIRIUS SC semiconductor relays*

Dependence of the device current $I_e$ on the ambient temperature $T_a$ (Chart data for SIRIUS SC relays based on I max)

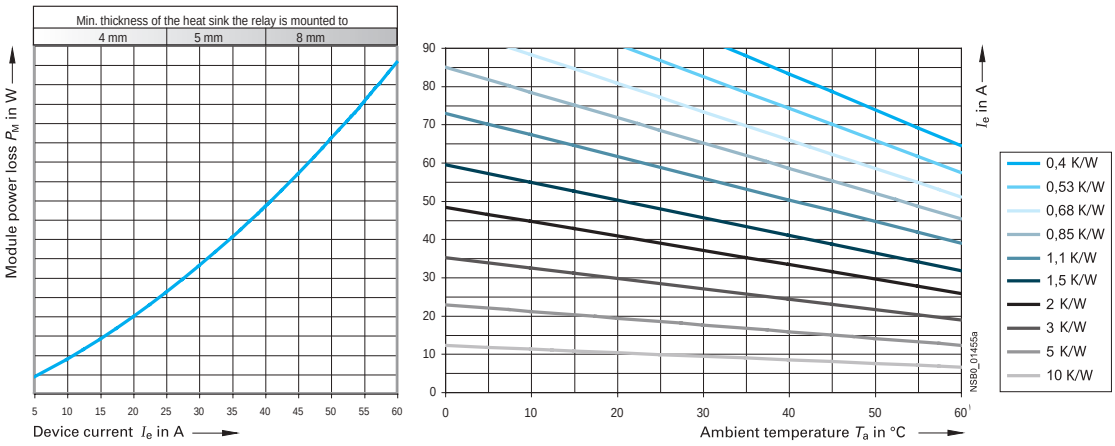
SIRIUS SC semiconductor relay with 20 A type current (3RF21 20/3RF20 20)[1)]




SIRIUS SC semiconductor relay with 30 A type current (3RF21 30/3RF20 30)




SIRIUS SC semiconductor relay with 50 A type current (3RF21 50/3RF20 50)

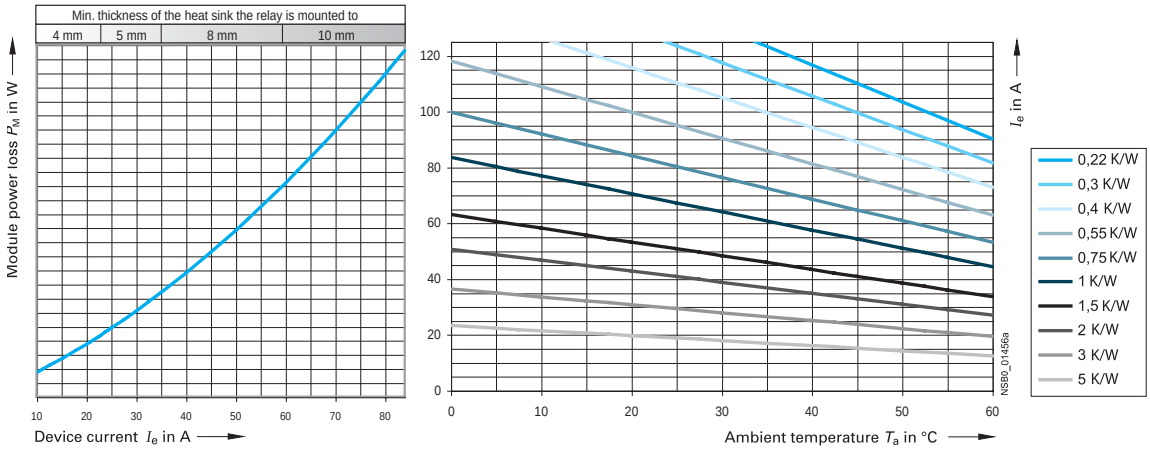



1) Arrangement example for $I_e$ = 20 A and $T_a$ = 40 C:
The task is to find the thermal resistance $R_{thha}$ and the heat-sink overtemperature $dT_{ha}$. From the diagram on the left -> $P_M$ = 28 W, from the diagram on the right -> **$R_{thha}$ = 1.7 K/W**.

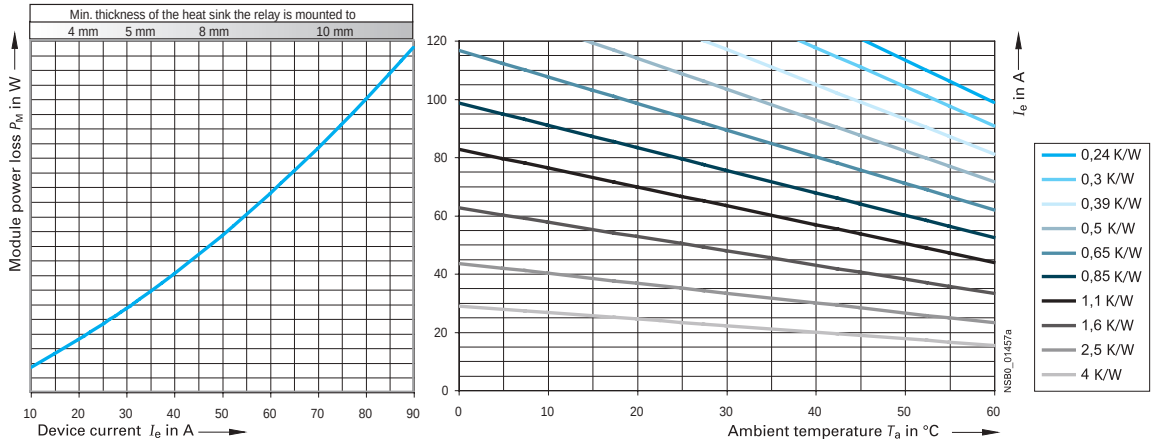
This results in: $dT_{ha} = R_{thha} \times P_M$ = 1.7 K/W x 28 W = 47.6 K. At **$dT_{ha}$ = 47.6 K** the heat sink must therefore have an **$R_{thha}$ = 1.7 K/W**. (Chart data for SIRIUS SC relays based on I max)

Dependence of the device current $I_e$ on the ambient temperature $T_a$ (Chart data for SIRIUS SC relays based on I max)

SIRIUS SC semiconductor relay with 70 A type current (3RF21 70/3RF20 70)



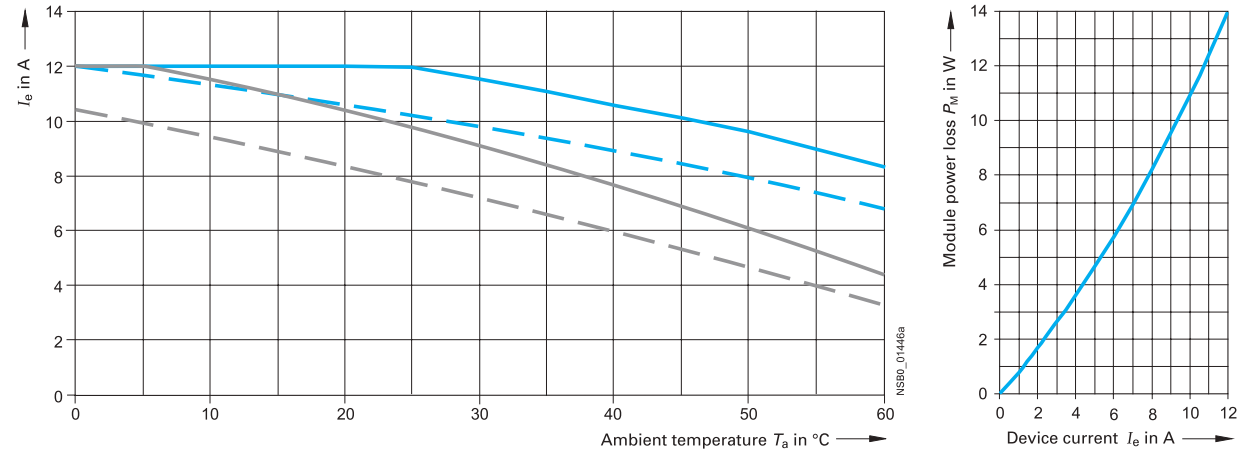

SIRIUS SC semiconductor relay with 88 A type current (3RF21 90/3RF20 90)




## *SIRIUS SC semiconductor contactors*

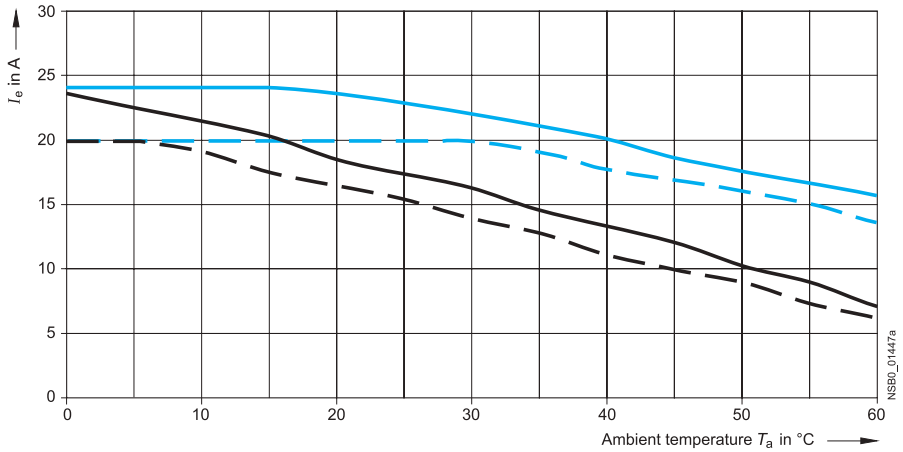
Derating curves

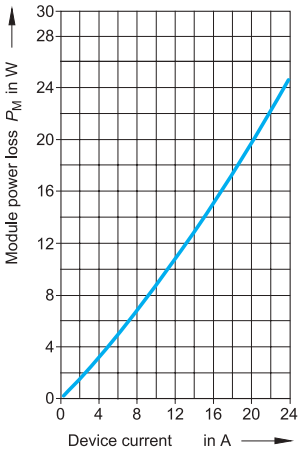
SIRIUS SC semiconductor contactor with 10 A type current (3RF23 10)



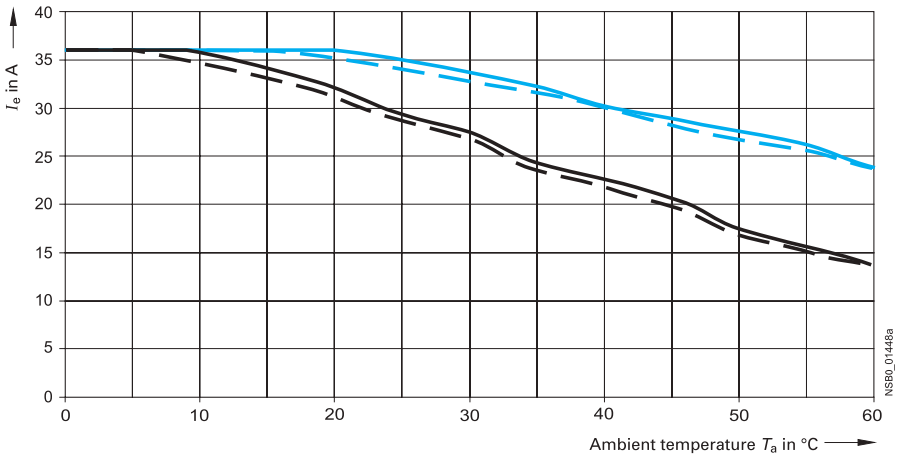
## Derating curves

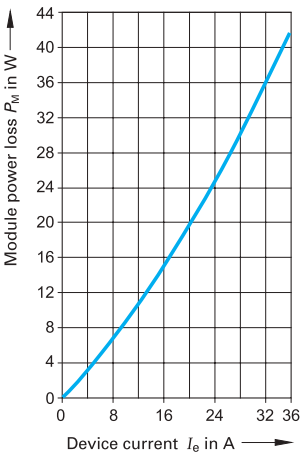
SIRIUS SC semiconductor contactor with 20 A type current (3RF23 20)



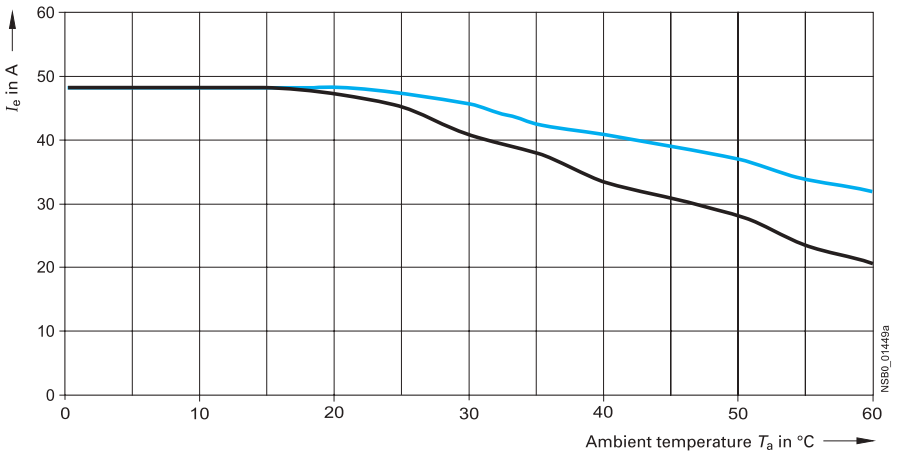



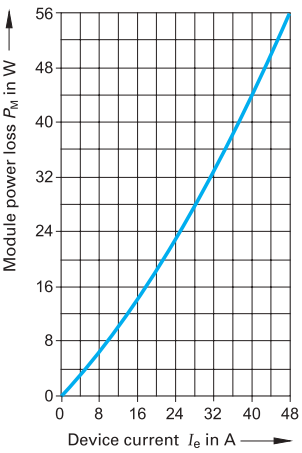

SIRIUS SC semiconductor contactor with 30 A type current (3RF23 30)




SIRIUS SC semiconductor contactor with 40 A type current (3RF23 40)[1)]



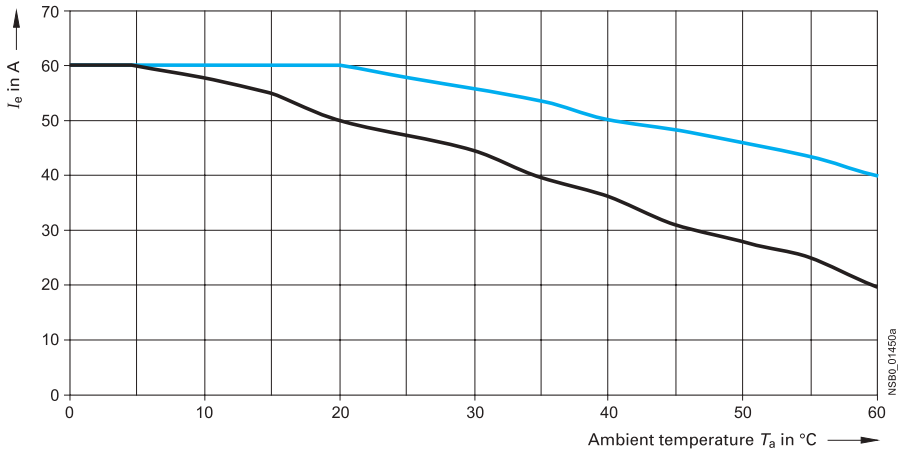

$I_{max}$ Thermal limit current for individual mounting
$I_{max}$ Thermal limit current for side-by-side mounting
$I_{IEC}$ Current acc. to IEC 947-4-3 for individual mounting
$I_{IEC}$ Current acc. to IEC 947-4-3 for side-by-side mounting

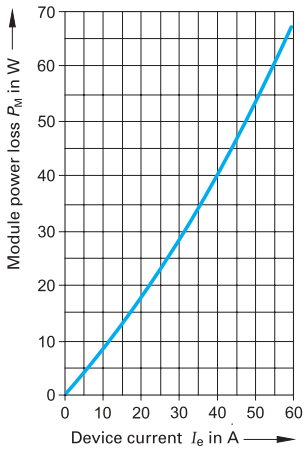
NSB0_01474

1) Identical current/temperature curves for individual and side-by-side mounting.

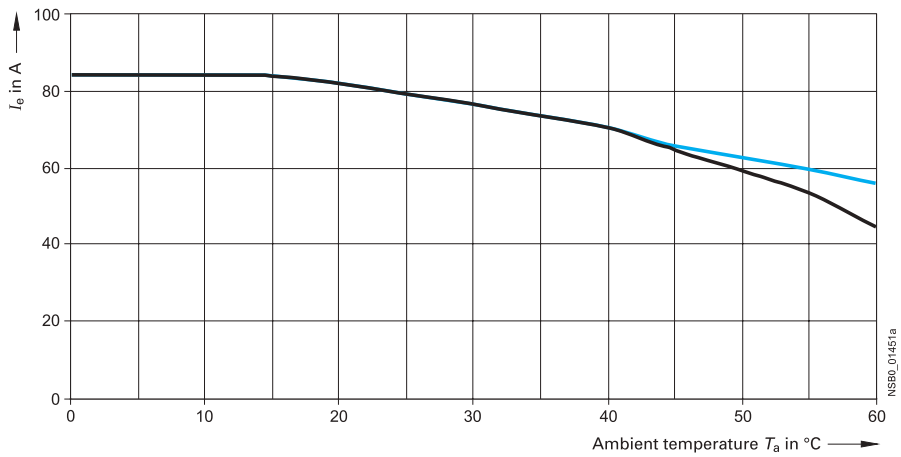
## Derating curves

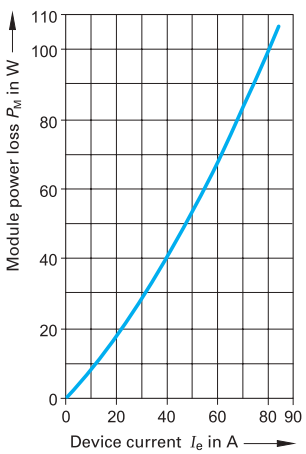
SIRIUS SC semiconductor contactor with 50 A type current (3RF23 50)[1)]



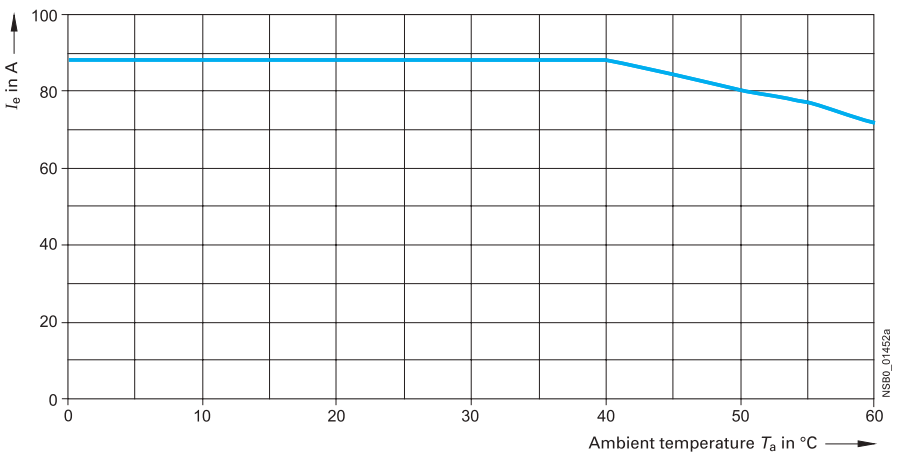



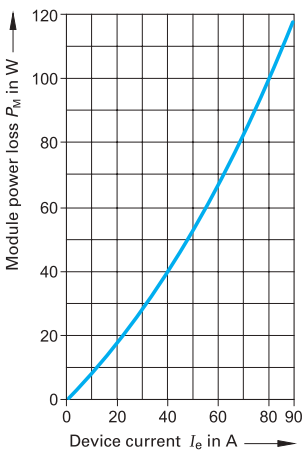

SIRIUS SC semiconductor contactor with 70 A type current (3RF23 70)[1)]

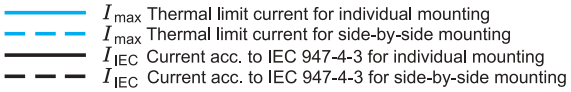



SIRIUS SC semiconductor contactor with 88 A type current (3RF23 90)[1)]



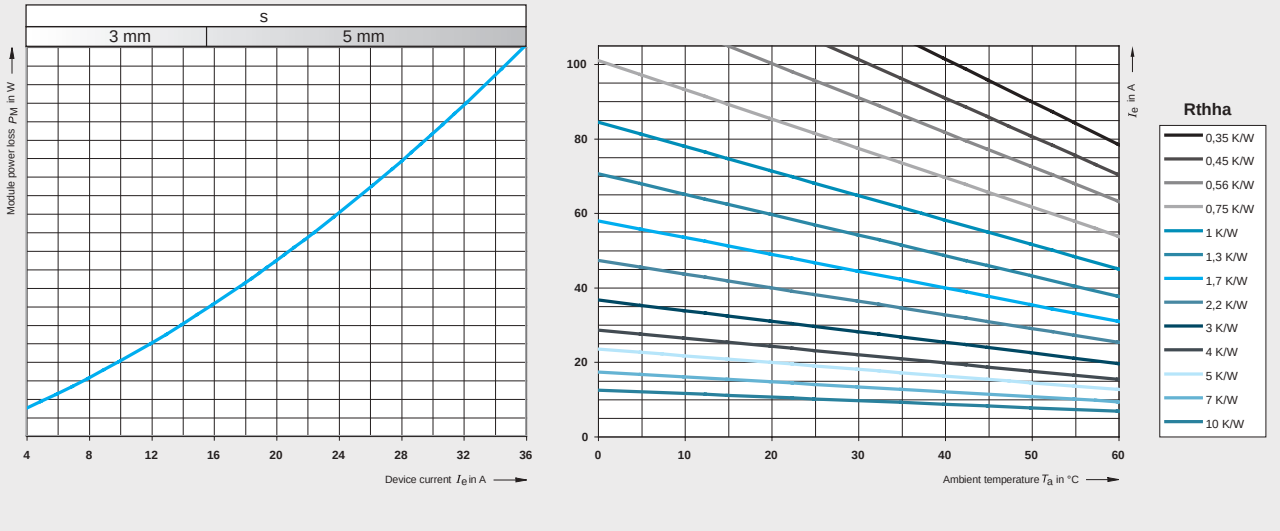



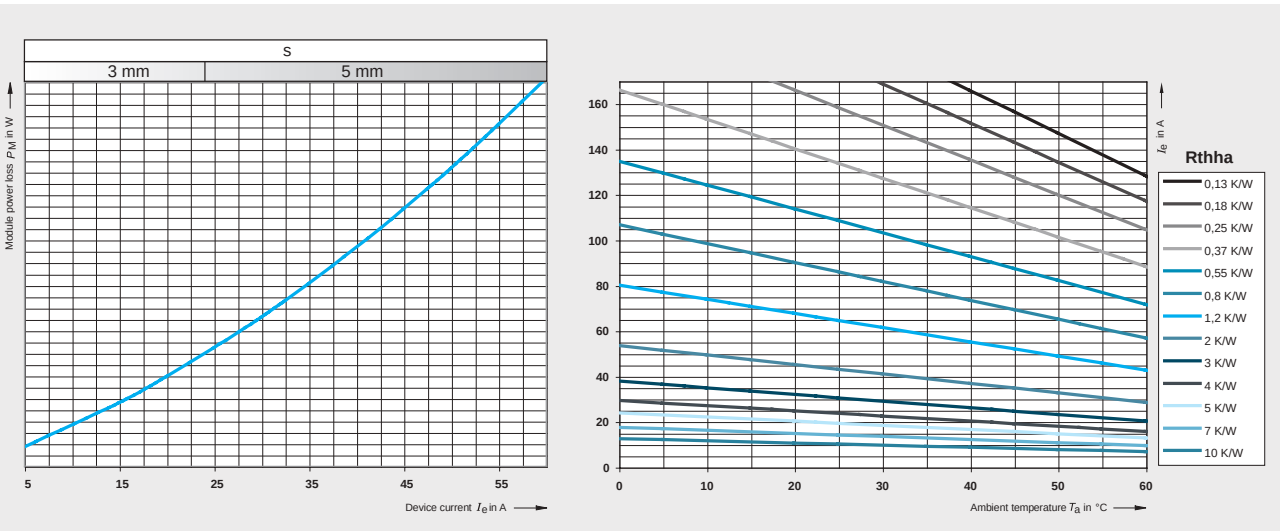

1) Identical current/temperature curves for individual and side-by-side mounting.

## Characteristic curves

### *Dependence of the device current $I_e$ on the ambient temperature $T_a$ (two-phase controlled)*

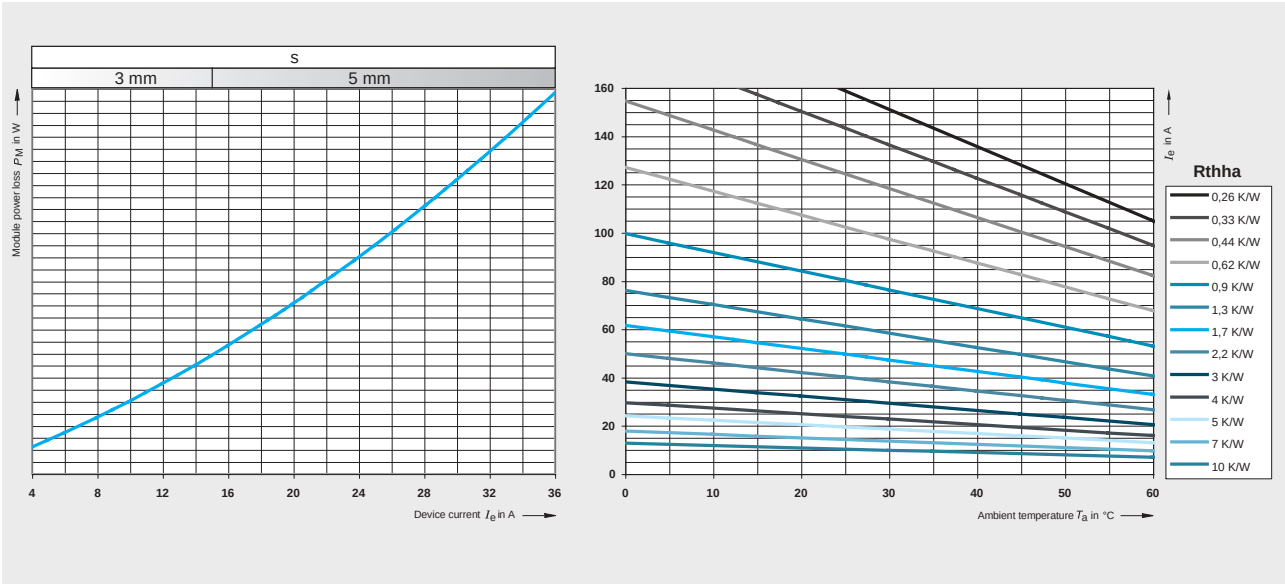



Type current 30 A (3RF22 30-.AB..)

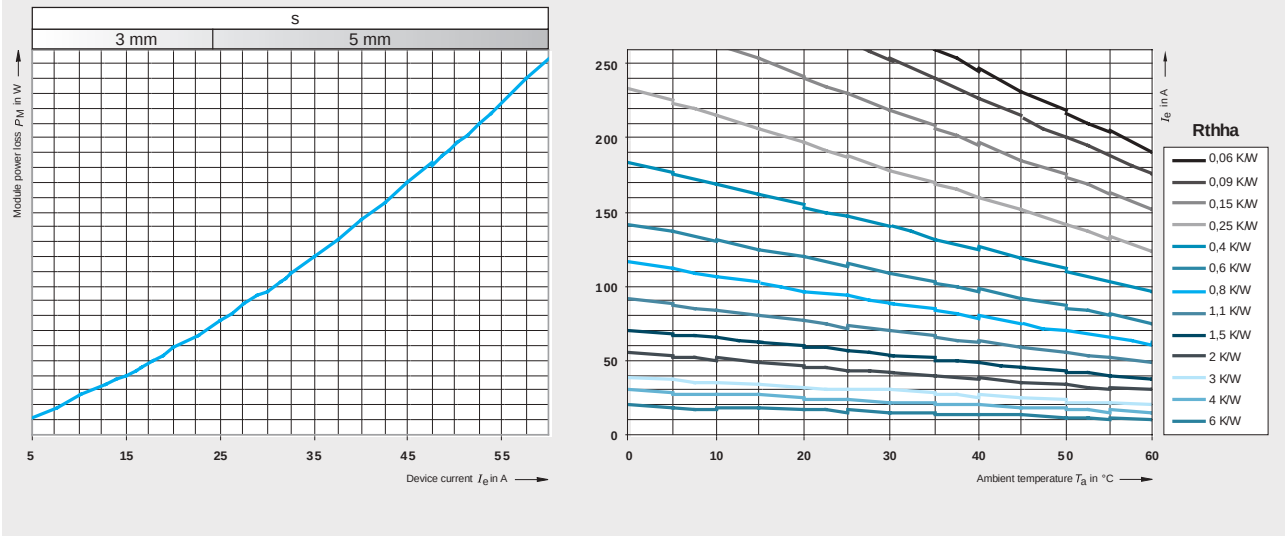



Type current 55 A (3RF22 55-.AB..)

## *Dependence of the device current $I_e$ on the ambient temperature $T_a$ (three-phase controlled)*




Type current 30 A (3RF22 30-.AC..)




Type current 55 A (3RF22 55-.AC..)

Arrangement example

Given conditions: $I_e$ = 55 A and $T_a$ = 40 C.
The task is to find the thermal resistance $R_{thha}$ and the heat sink overtemperature $dT_{ha}$.

From the diagram on the left → $P_M$ = 227 W,
from the diagram on the right → $R_{thha}$ = 0.09 K/W.

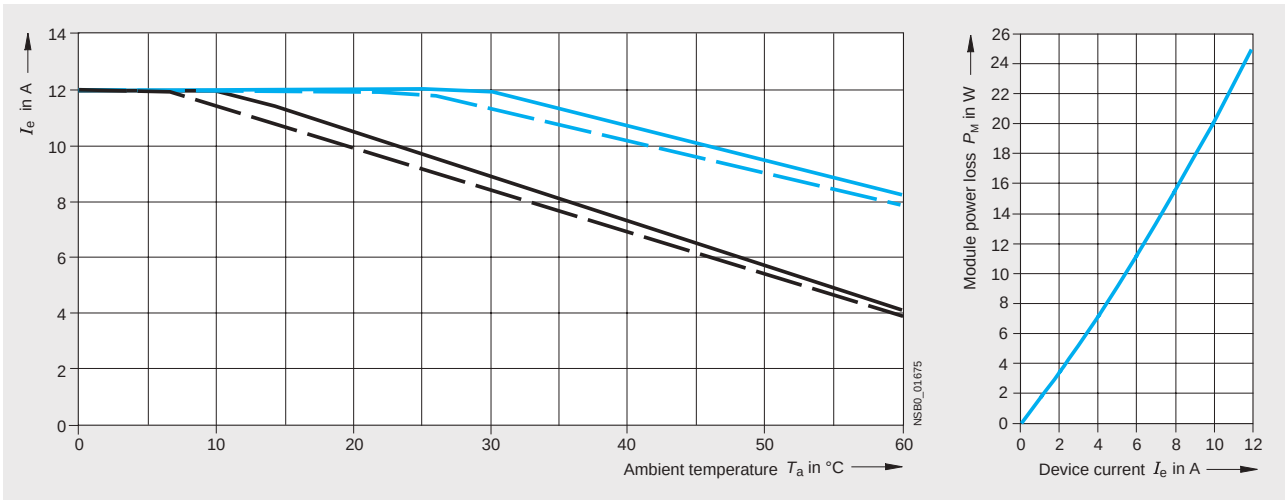
This results in:

$dT_{ha} = R_{thha} \times PM = 0.09\ K/W \times 227\ W = 20.4\ K.$

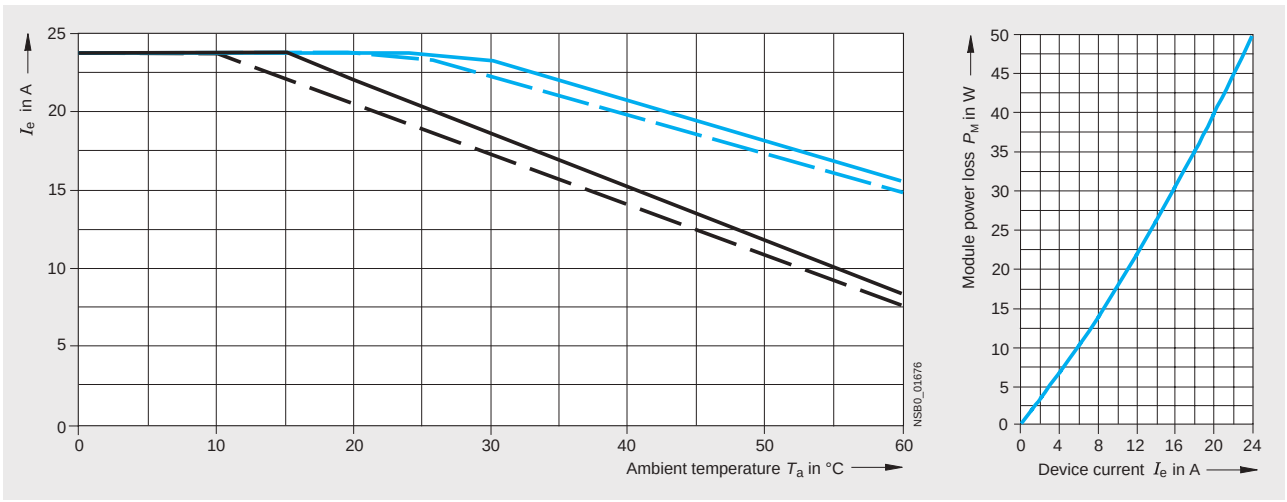
At $dT_{ha}$ = 20.4 K the heat sink must therefore have an $R_{thha}$ = 0.09 K/W.

## Characteristic curves

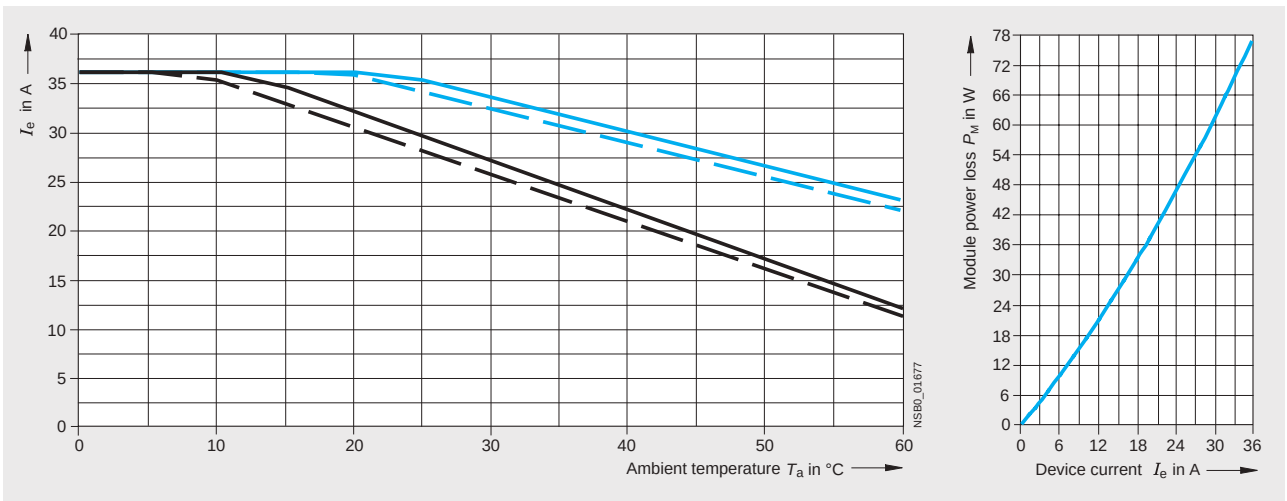
### *Derating curves, two-phase controlled*




Type current 10.5 A (3RF24 10-.AB..)



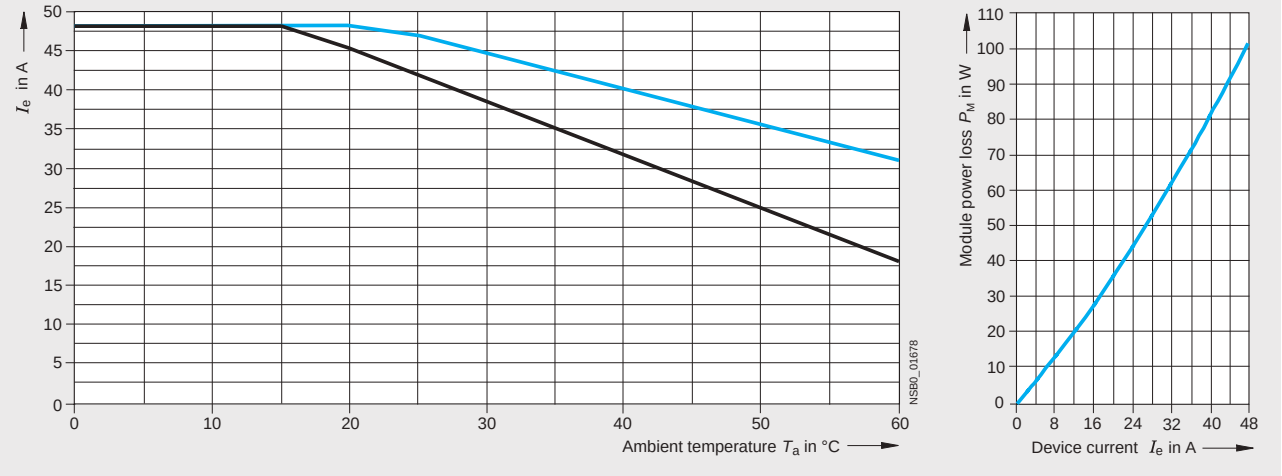

Type current 20 A (3RF24 20-.AB..)



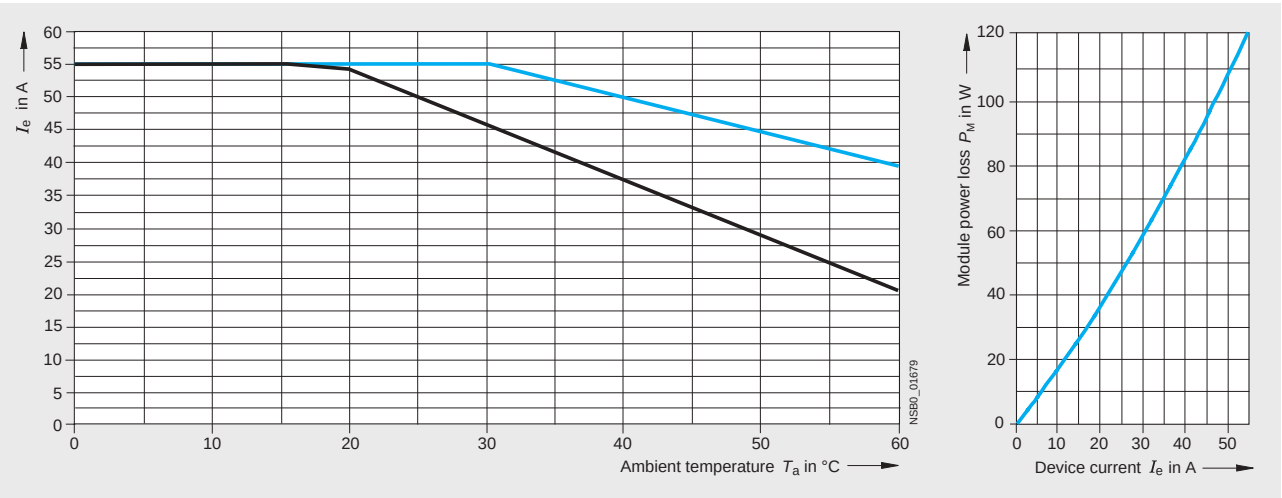

Type current 30 A (3RF24 30-.AB..)

# Solid-State Contactors

## 3RF24 solid-state contactors, 3-phase




Type current 40 A (3RF24 40-.AB..)[1)]

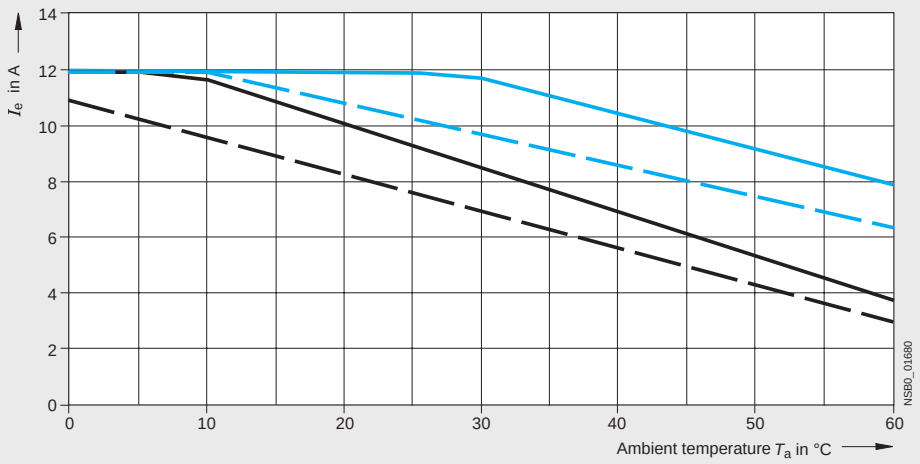


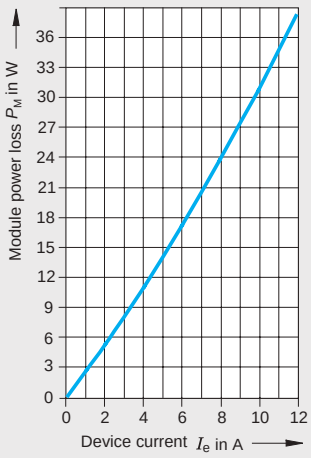

Type current 50 A (3RF24 50-.AB..)[1)]

$I_{max}$ Thermal limit current for individual mounting
$I_{max}$ Thermal limit current for side-by-side mounting
$I_{IEC}$ Current acc. to IEC 947-4-3 for individual mounting
$I_{IEC}$ Current acc. to IEC 947-4-3 for side-by-side mounting

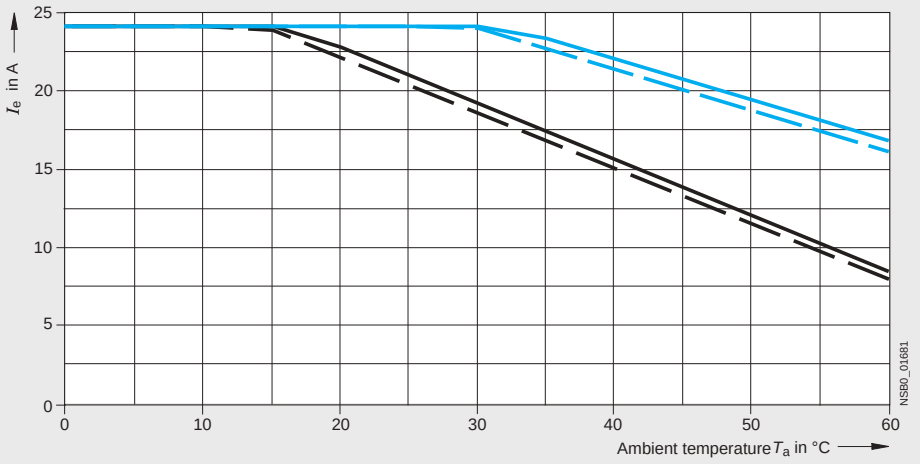
1) Identical current/temperature curves for stand-alone and side-by-side installation.

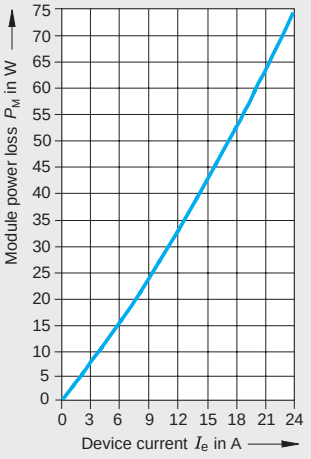
### *Derating curves, three-phase controlled*



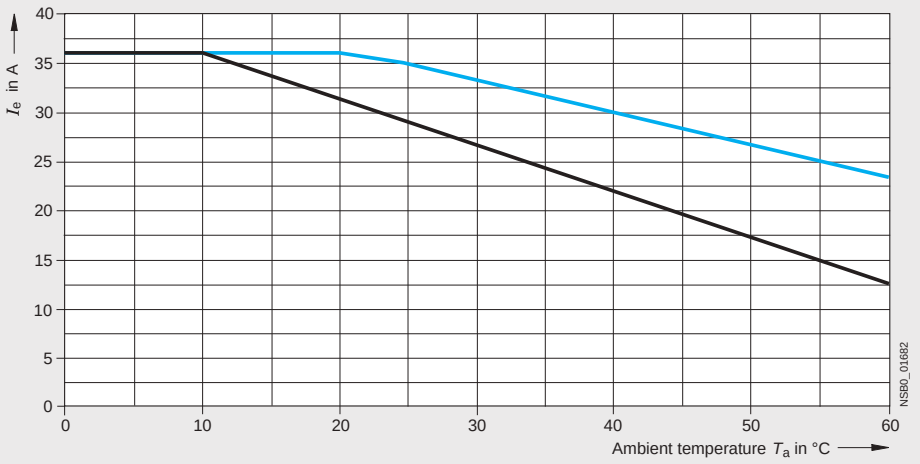

Type current 10.5 A (3RF24 10-.AC..)

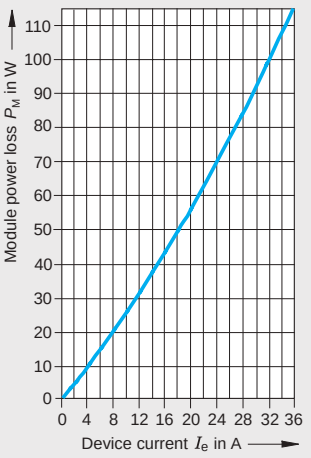



Type current 20 A (3RF24 20-.AC..)

1) Identical current/temperature curves for stand-alone and side-by-side installation.



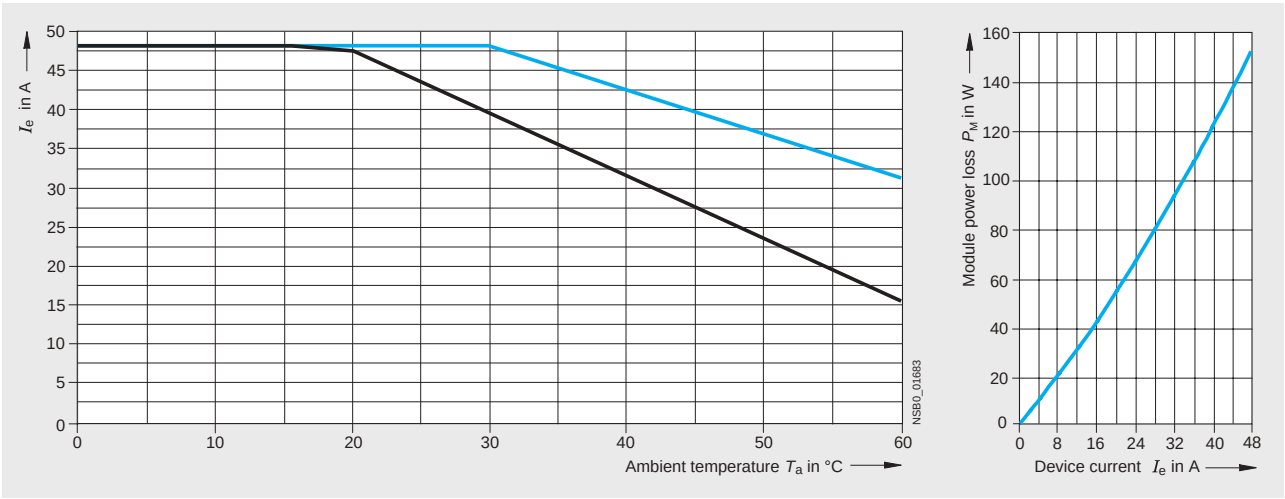




Type current 30 A (3RF24 30-.AC..)[1)]

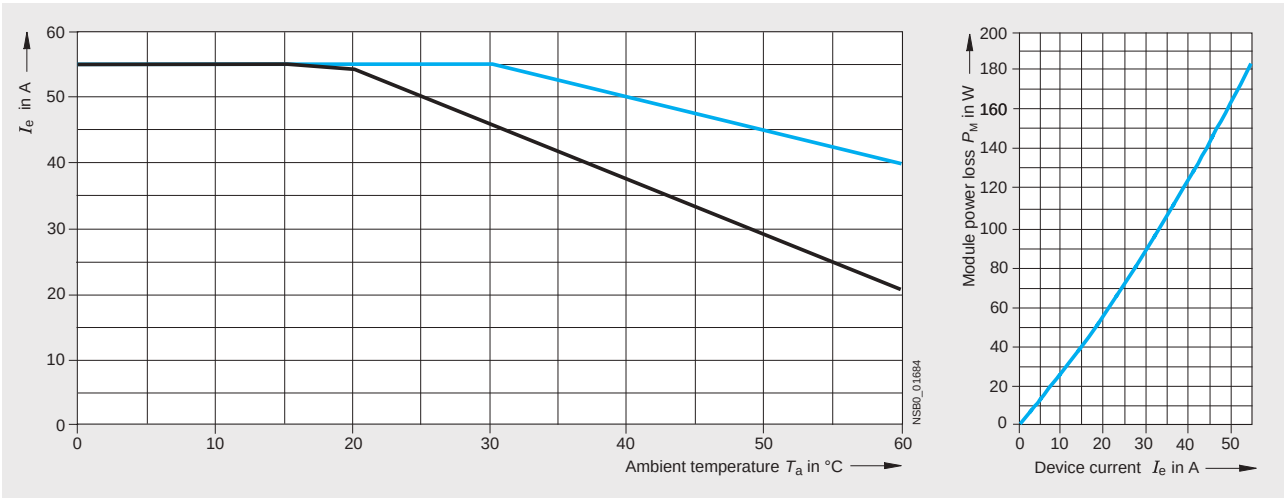
1) Identical current/temperature curves for stand-alone and side-by-side installation.

# Solid-State Contactors

## 3RF24 solid-state contactors, 3-phase




Type current 40 A (3RF24 40-.AC..)[1)]

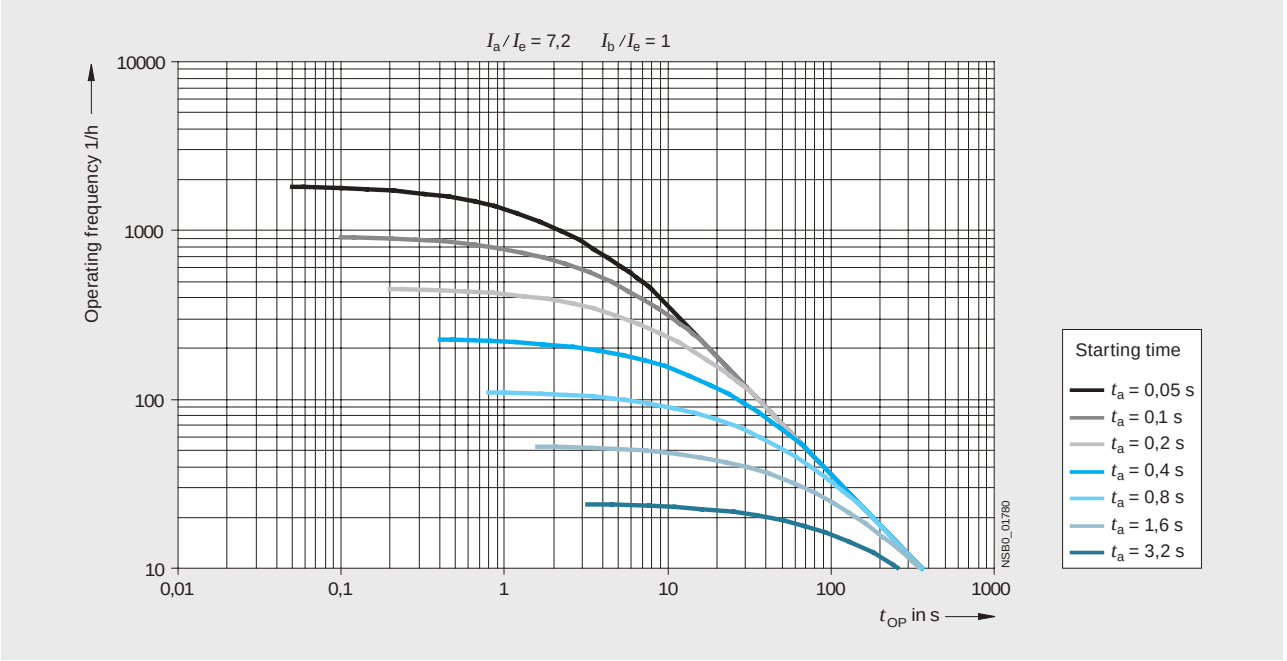



Type current 50 A (3RF24 50-.AC..)[1)]

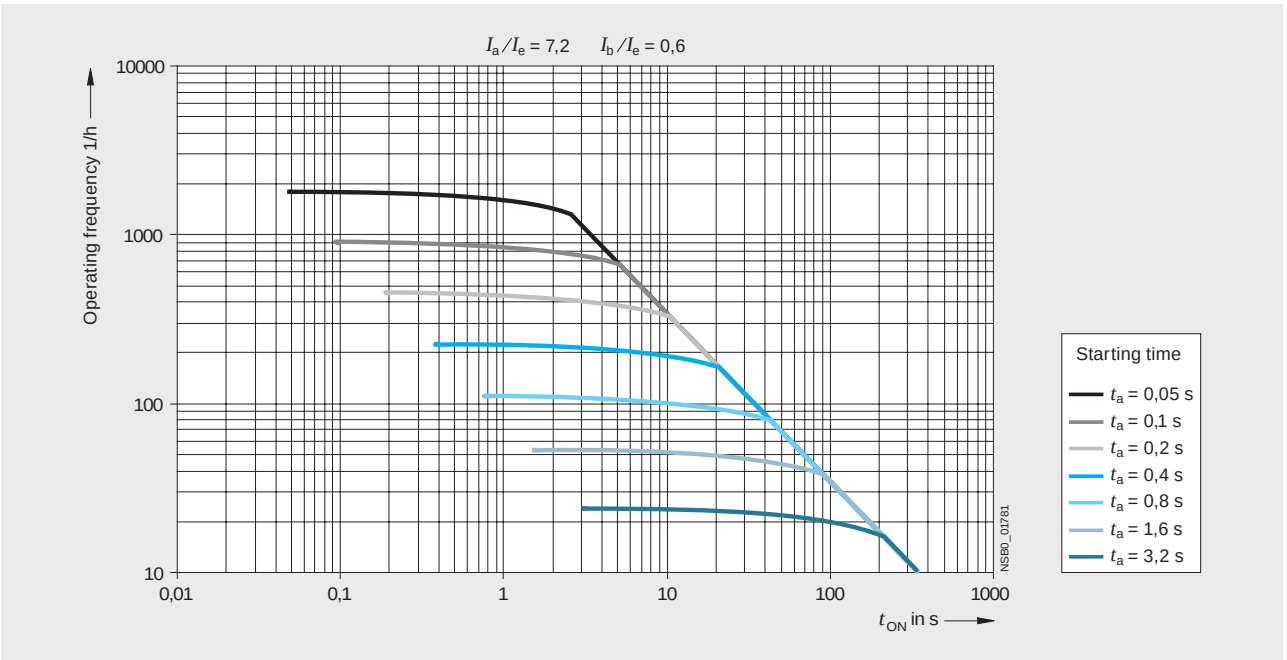
- $I_{max}$ Thermal limit current for individual mounting
- $I_{max}$ Thermal limit current for side-by-side mounting
- $I_{IEC}$ Current acc. to IEC 947-4-3 for individual mounting
- $I_{IEC}$ Current acc. to IEC 947-4-3 for side-by-side mounting

1) Identical current/temperature curves for stand-alone and side-by-side installation.

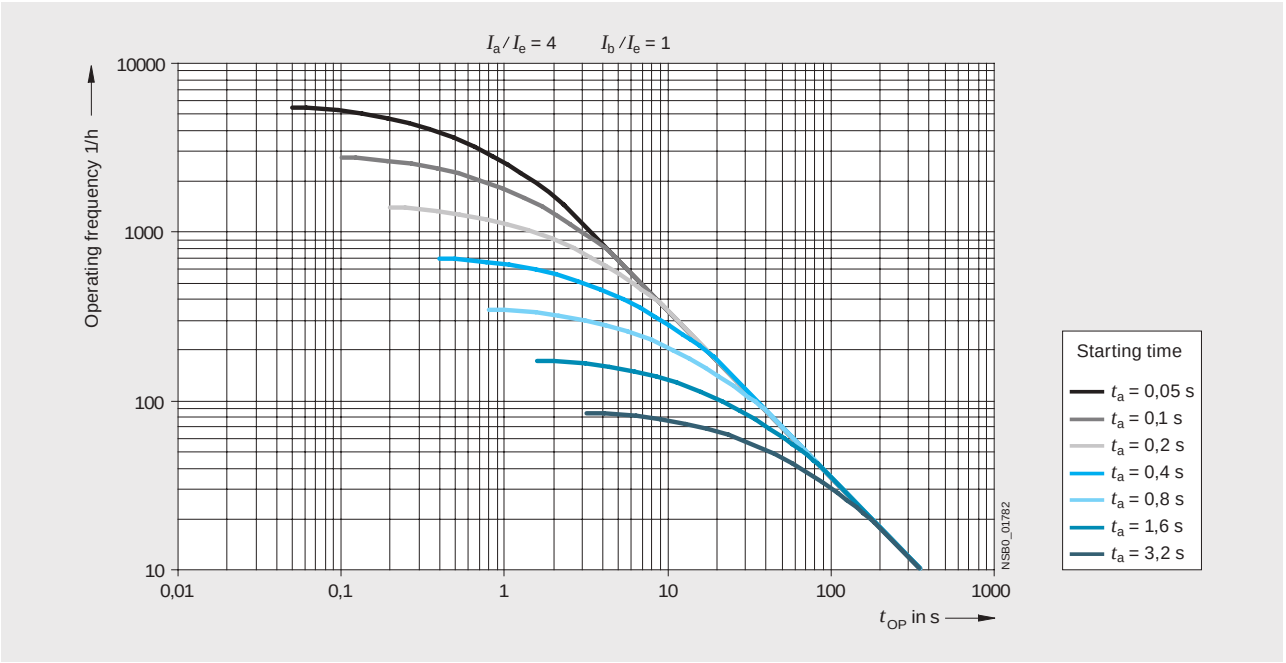
### *Maximum permissible switching frequency depending on the starting time $t_a$ and the ON period $t_{ED}$*



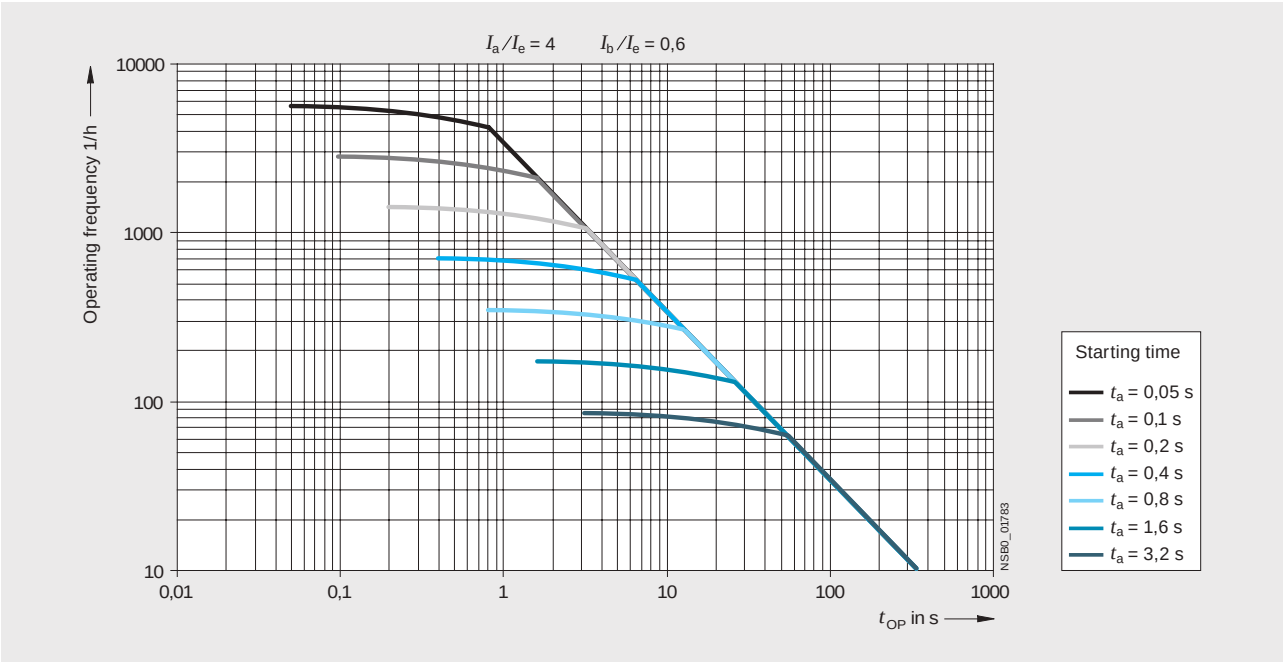

For motors with a starting current of 4- to 7.2 times the rated current and with a full load




For motors with a starting current of 4- to 7.2 times the rated current and with a 60 % load

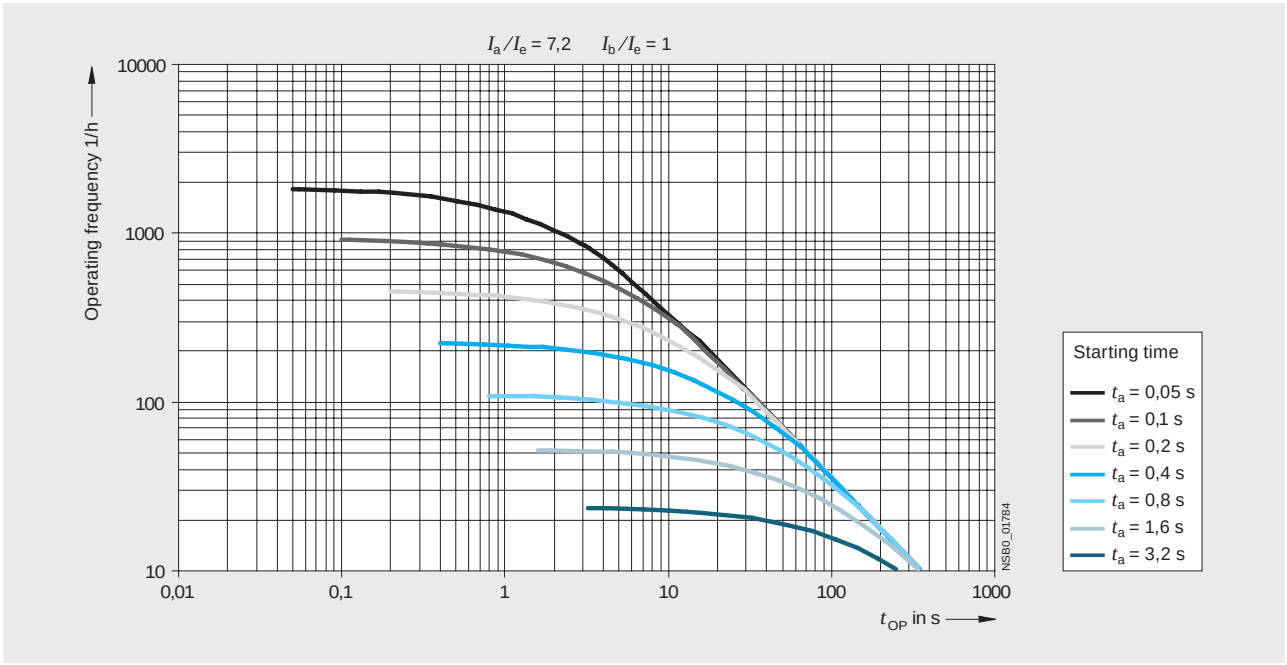



For motors with a starting current of up to 4 times the rated current and with a full load

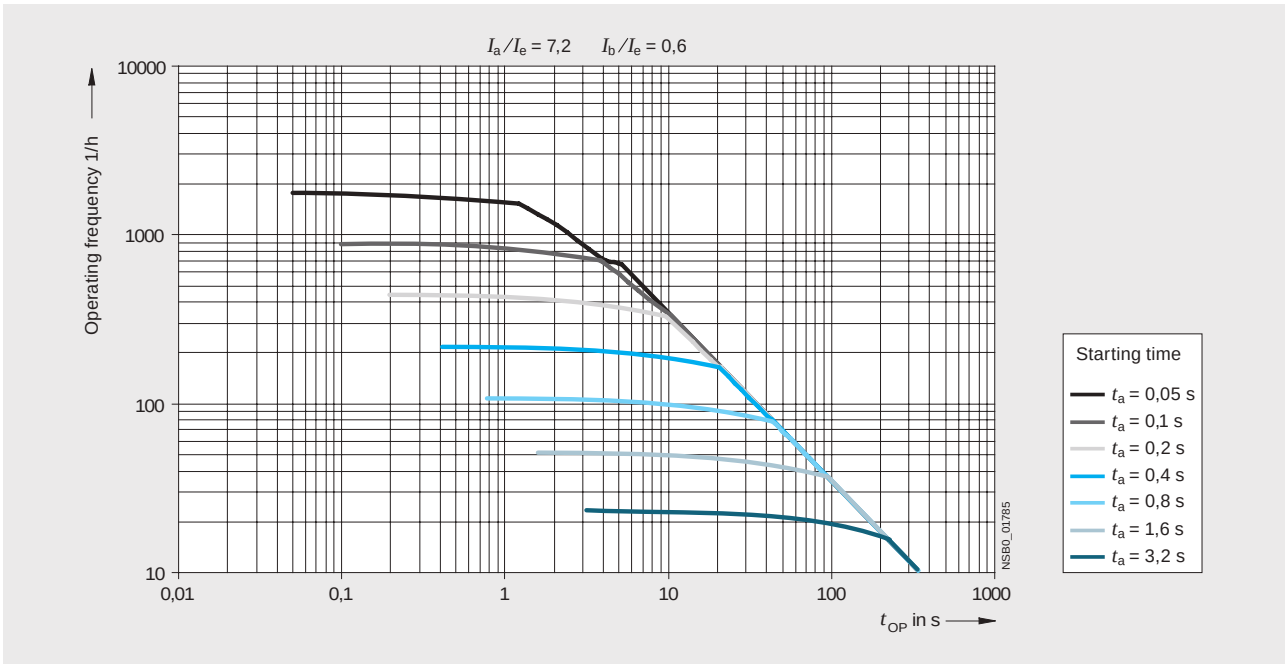



For motors with a starting current of up to 4 times the rated current and with a 60 % load

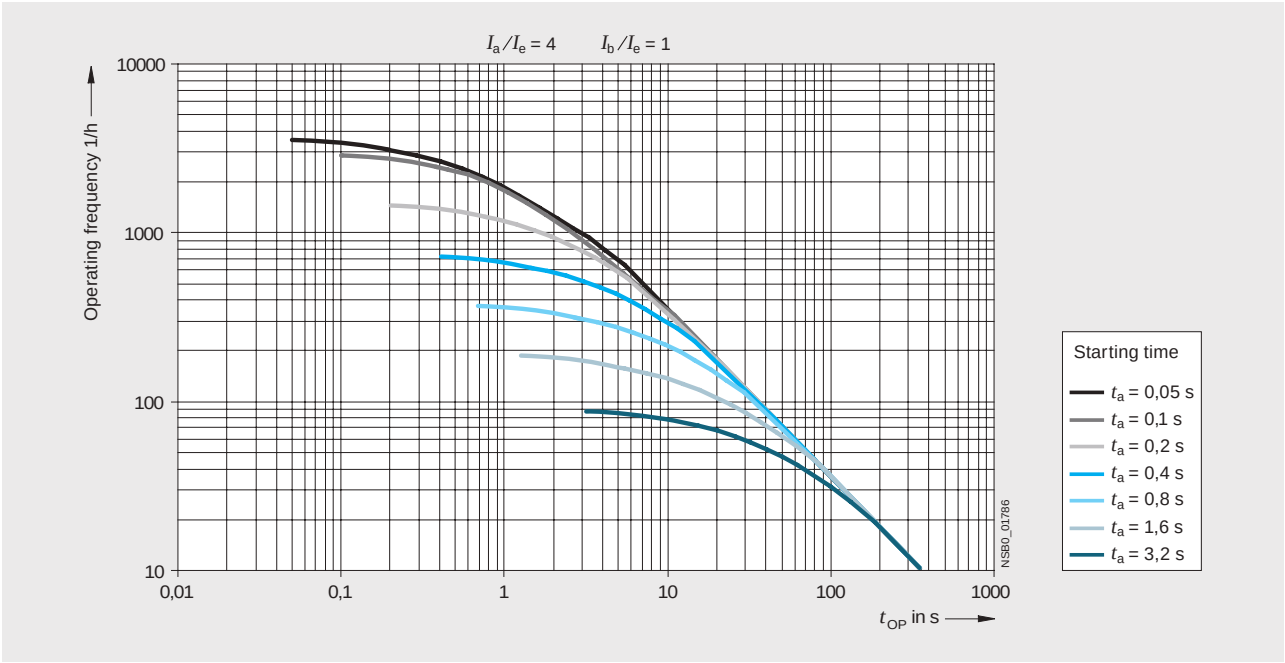
***Maximum permissible switching frequency depending on the starting time $t_a$ and the ON period $t_{ED}$***



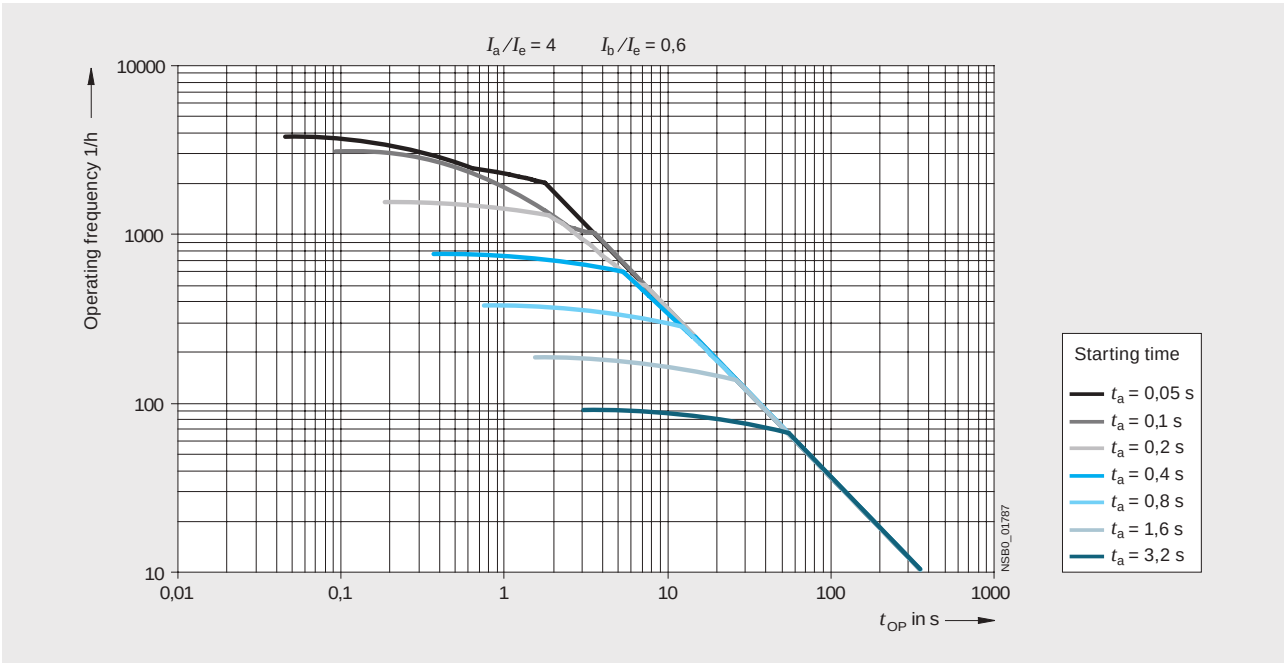

For motors with a starting current of 4- to 7.2 times the rated current and with a full load




For motors with a starting current of 4- to 7.2 times the rated current and with a 60 % load




For motors with a starting current of up to 4 times the rated current and with a full load



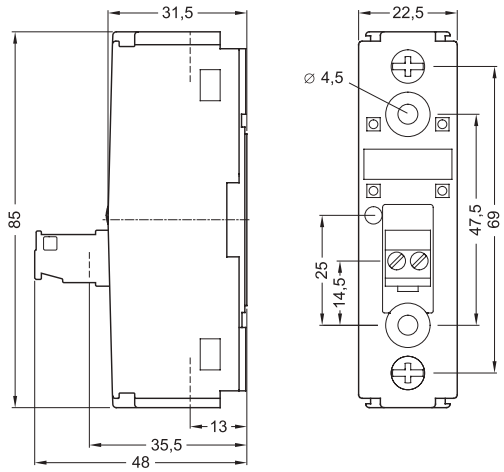

For motors with a starting current of up to 4 times the rated current and with a 60 % load

## Dimension drawings

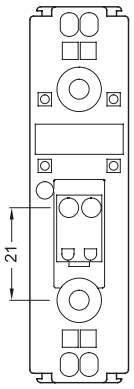
### *SIRIUS SC semiconductor relays*

22.5 mm semiconductor relays

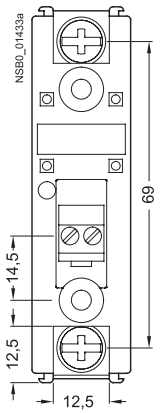
**Screw connection 3RF21 .0-1AA..**




**Spring-loaded connection 3RF21 .0-2AA..**

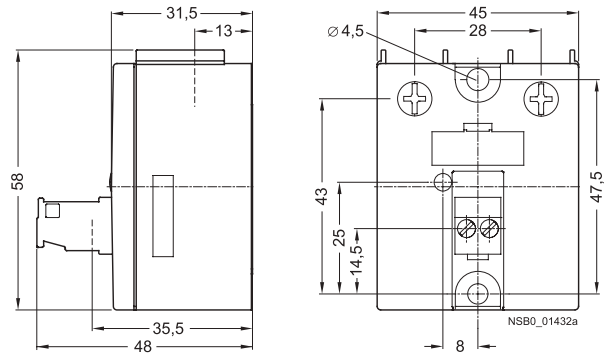



**Ring connection 3RF21 .0-3AA..**




45 mm semiconductor relays

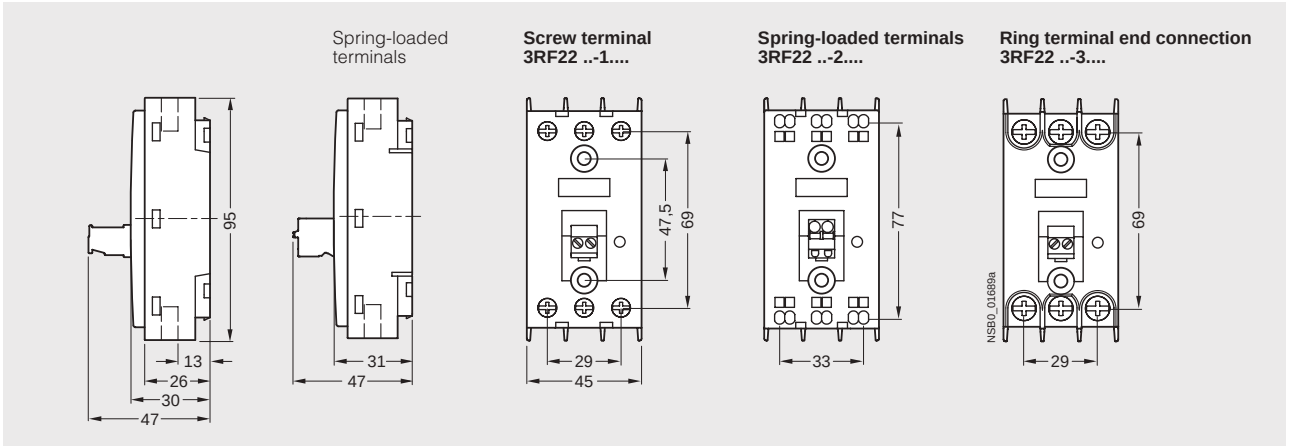
**3RF20 .0-1AA.**



## 3RF22 solid-state relays, 3-phase, 45 mm

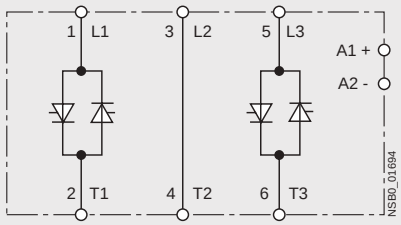
### Dimensional drawings

Solid-state relays

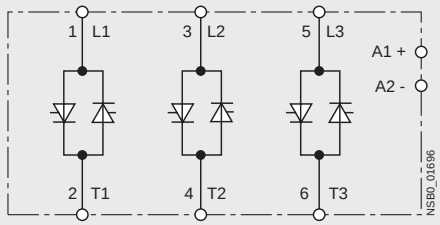



### Schematics

Two-phase controlled
DC control supply voltage




Three-phase controlled
DC control supply voltage

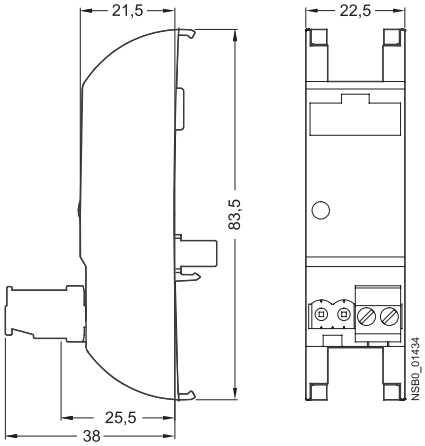


## Dimensions

### *Function modules for SIRIUS SC semiconductor switching devices*

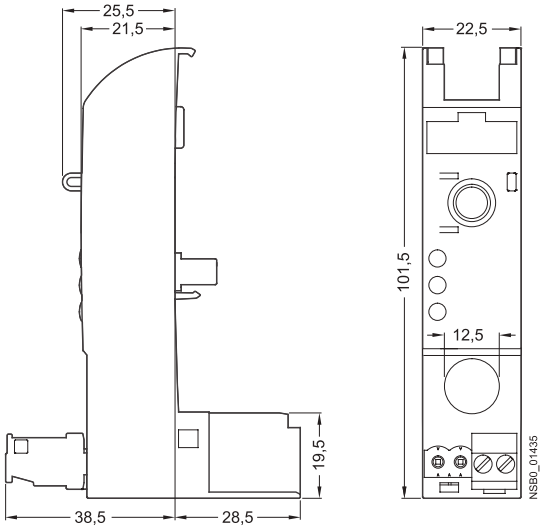
Converters

**3RF29 00-0EA18**



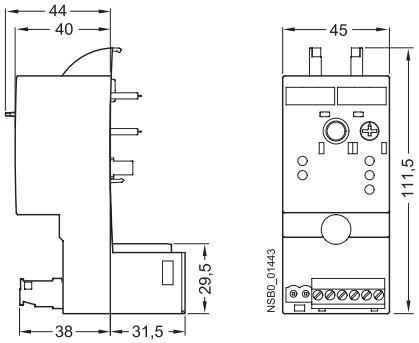

Basic load monitoring

**3RF29 00-0FA08**



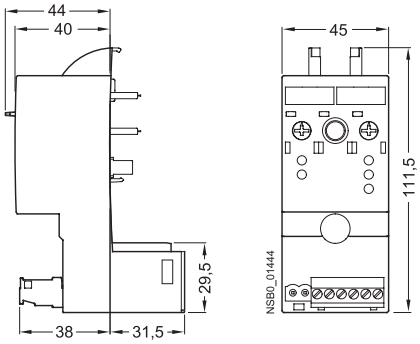

Extended load monitoring

**3RF29 .0-0GA..**




Power controllers

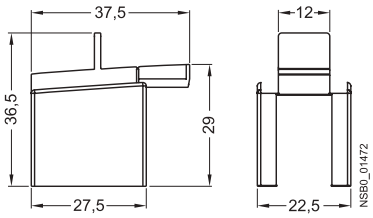
**3RF29 .0-0HA..**




### *Accessories for SIRIUS SC semiconductor switching devices*

Terminal cover for SIRIUS semiconductor switching devices

**3RF29 00-3PA88**



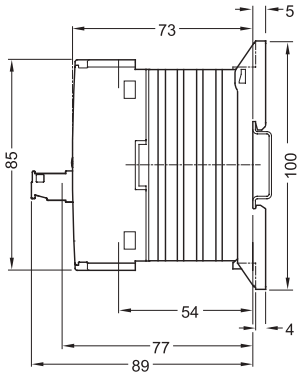
# Semiconductor Relays and Contactors, Function Modules

## Dimensions

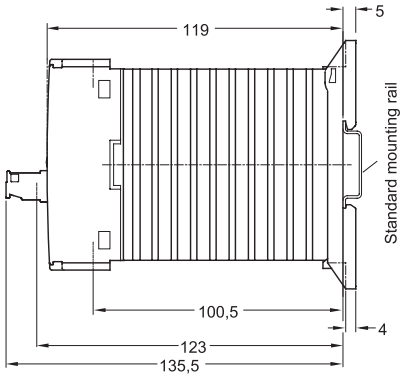
### *SIRIUS SC semiconductor contactors*

Semiconductor contactors with 10 A and 20 A type current

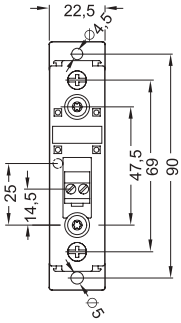
**3RF23 10-.....**



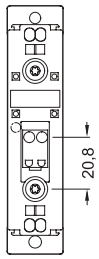

**3RF23 20-.....**



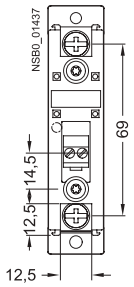

**Screw connection**
**3RF23 10-1....**
**3RF23 20-1....**



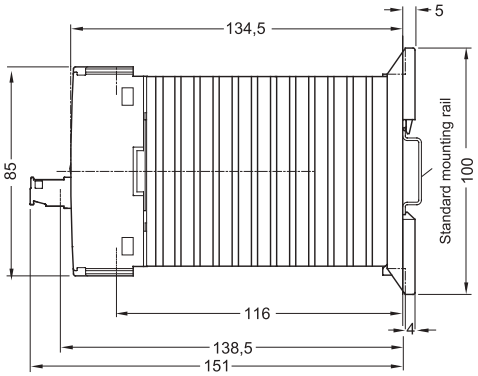

**Spring-loaded connection**
**3RF23 10-2....**
**3RF2320-2....**



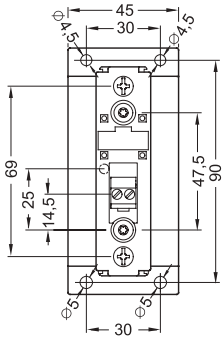

**Ring connection**
**3RF23 10-3....**
**3RF23 20-3....**



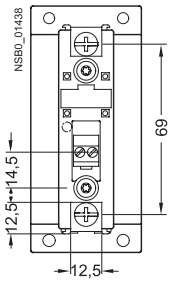

Semiconductor contactors with 30 A type current




**Screw connection**
**3RF23 30-1....**

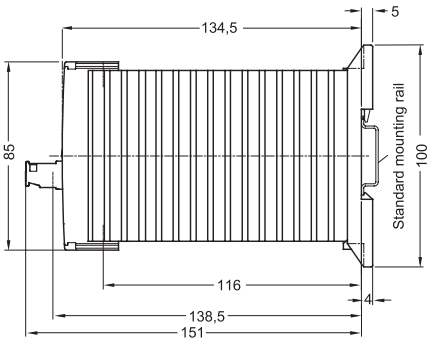


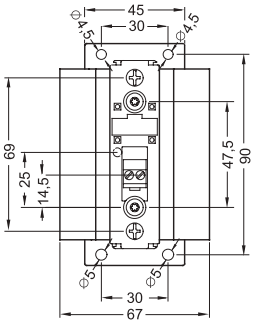

**Ring connection**
**3RF23 30-3....**



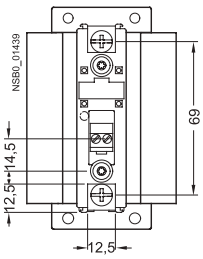

Semiconductor contactors with 40 A and 50 A type current

**Screw connection**
**3RF23 40-1....**
**3RF23 50-1....**




**Ring connection**
**3RF23 40-3....**
**3RF23 50-3....**

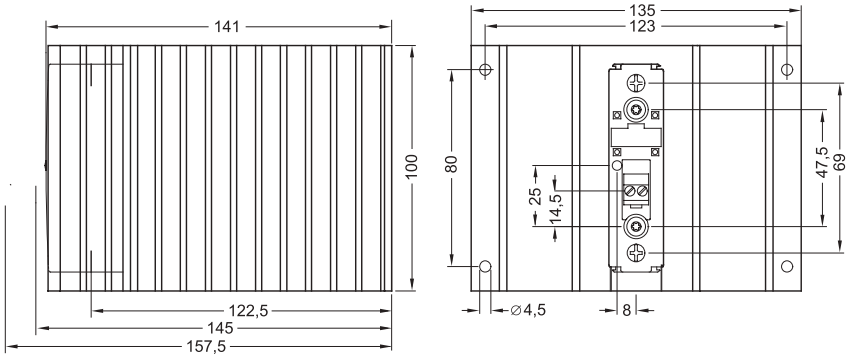


# Semiconductor Relays and Contactors, Function Modules

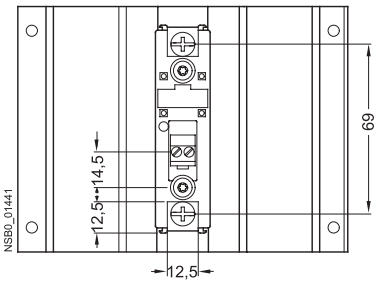
## Dimensions

Semiconductor contactors with 70 A type current

**Screw connection**
**3RF23 70-1....**

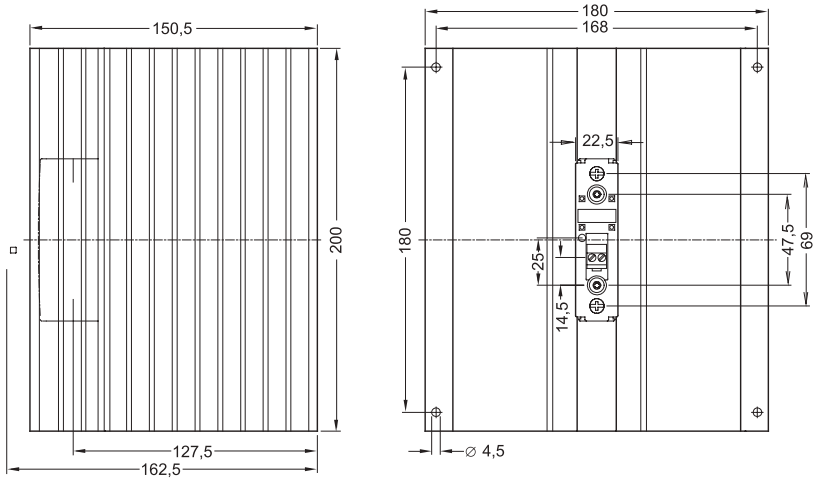



**Ring connection**
**3RF23 70-3....**

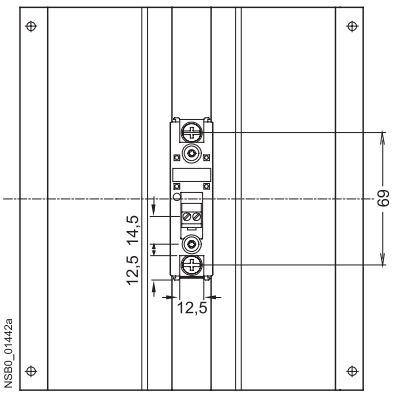



Semiconductor contactors with 88 A type current

**Screw connection**
**3RF23 90-1....**

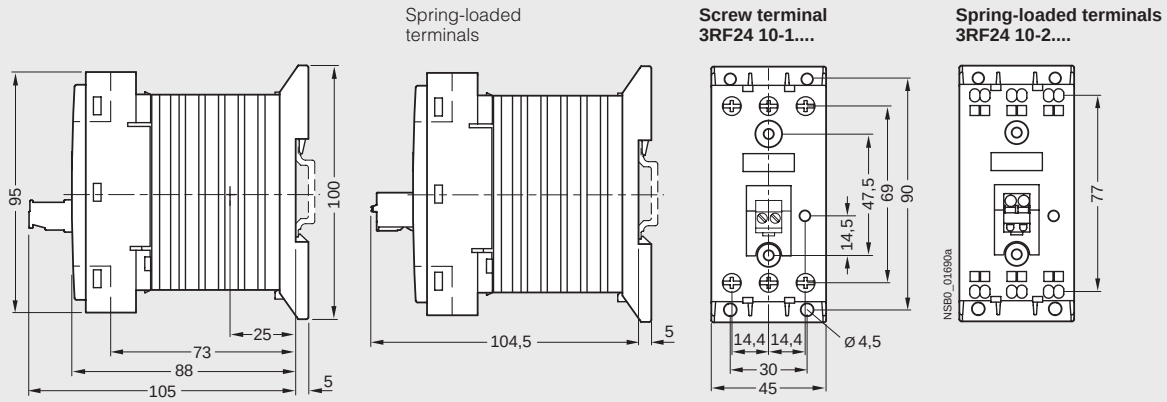



**Ring connection**
**3RF23 90-3....**

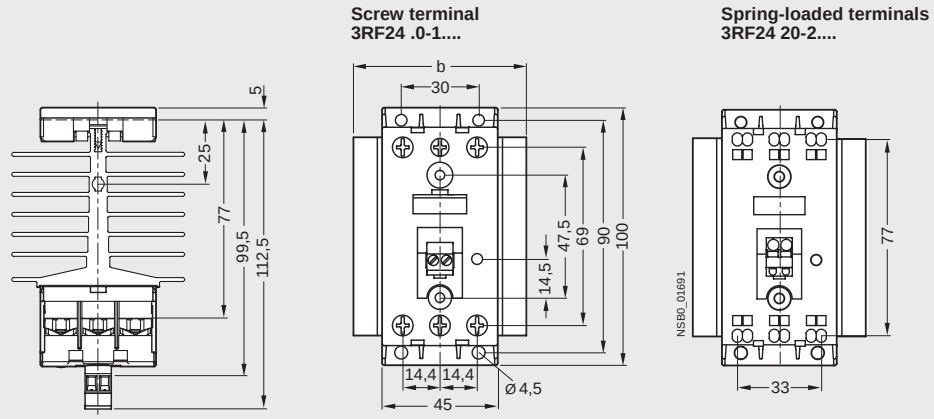


## Dimensional drawings

Type current 10.5 A



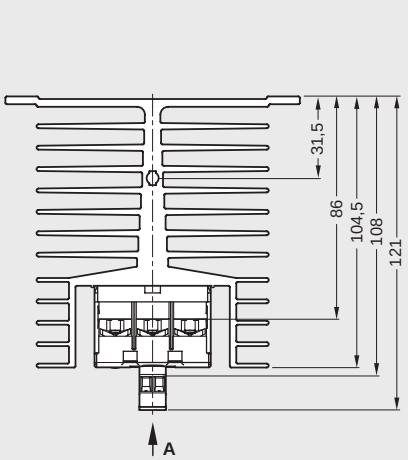

Type current 20 A; 30 A (2-phase controlled)



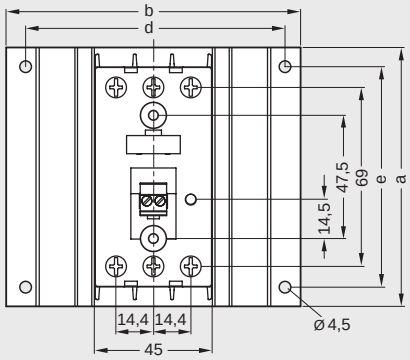

| | b |
|---|---|
| 3RF2420-.AB.. | 67 |
| 3RF2420-.AC..<br>3RF2430-.AB.. | 89,5 |

## Dimensions

Type current 30 A (3-phase controlled); 40 A, 50 A

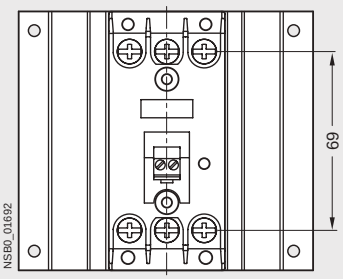



**Screw terminal**
**3RF24 .0-1....**




View A

**Ring terminal end connection**
**3RF24 50-3....**

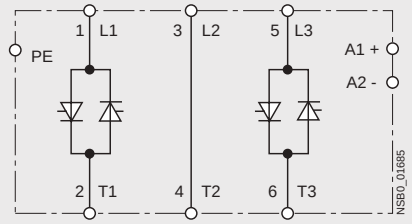



View A

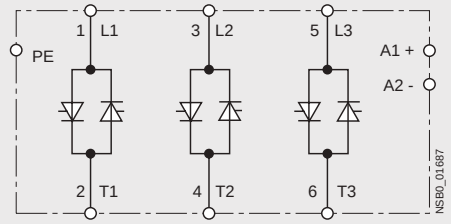
| | a | b | d | e |
|---|---|---|---|---|
| 3RF2430-.AC..<br>3RF2440-.AB.. | 100 | 113,5 | 100 | 85 |
| 3RF2440-.AC..<br>3RF2450-.AB.. | 100 | 157,5 | 146 | 80 |
| 3RF2450-.AC.. | 180 | 157,5 | 146 | 160 |

## Schematics

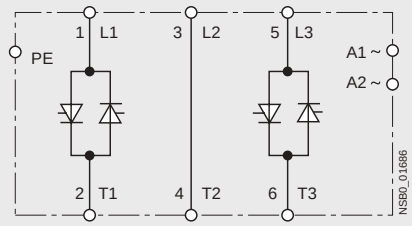
Two-phase controlled
DC control supply voltage



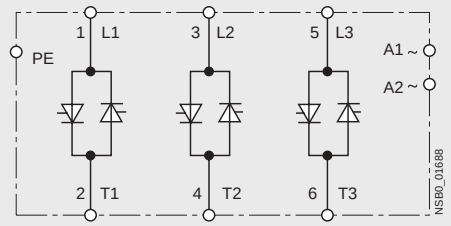

Three-phase controlled
DC control supply voltage




Two-phase controlled
AC control supply voltage

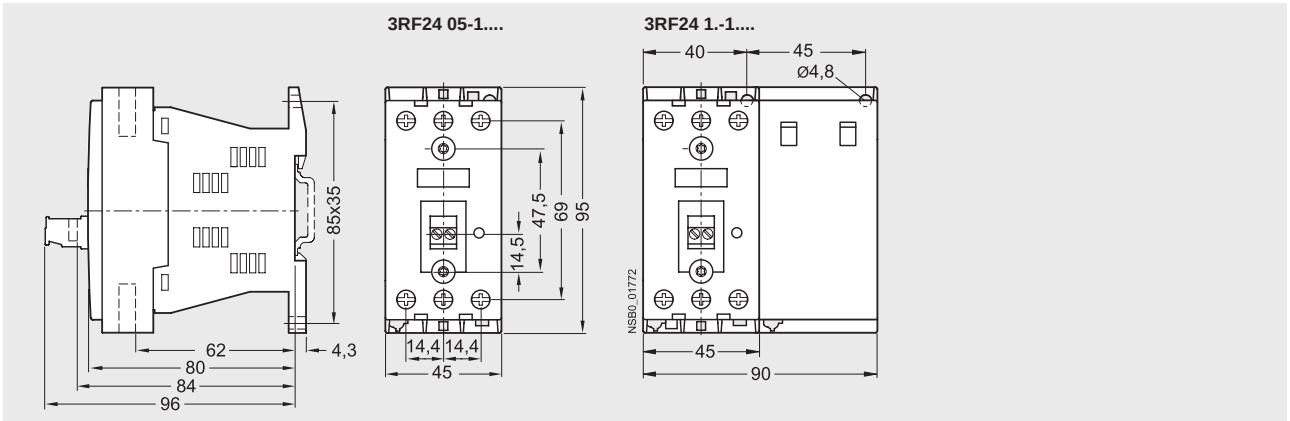



Three-phase controlled
AC control supply voltage

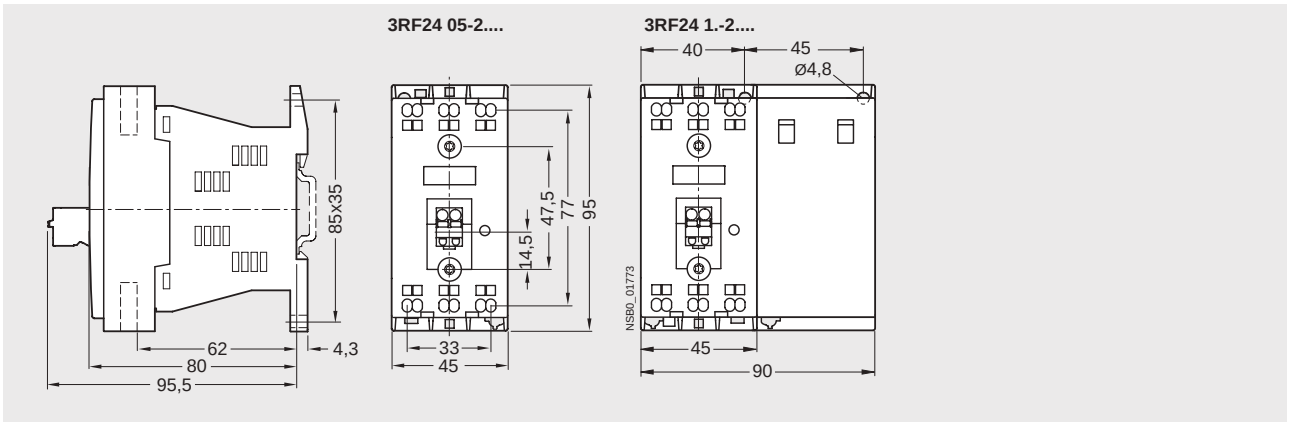


## Dimensional drawings

### *Screw terminals*

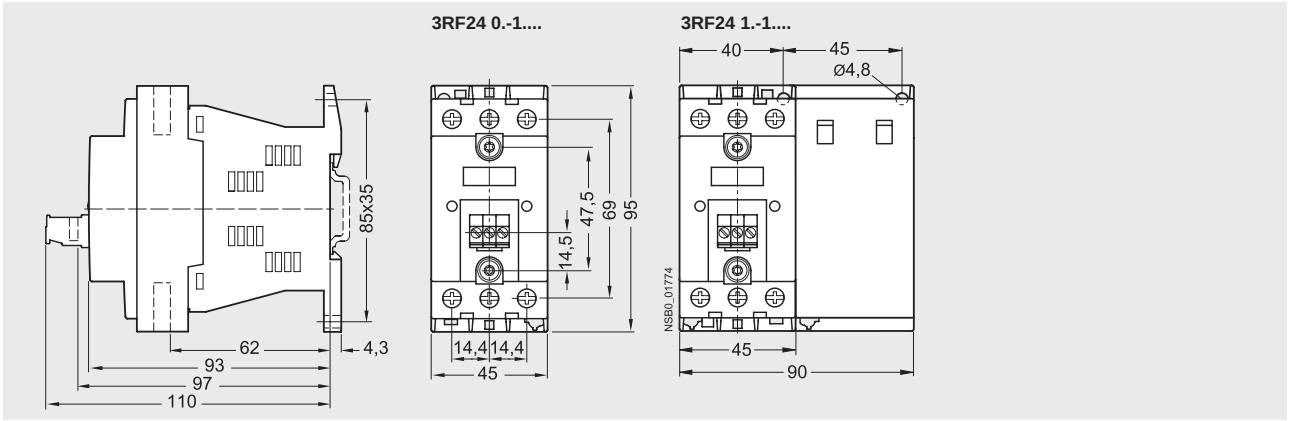



### *Spring-loaded terminals*



## Dimensional drawings

### *Screw terminals*



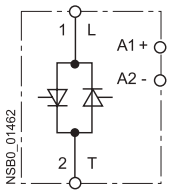
# Semiconductor Relays and Contactors, Function Modules

## Wiring diagrams

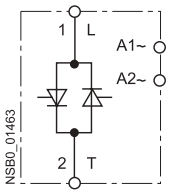
### Circuit diagrams

#### *SIRIUS SC semiconductor relays*

DC control version

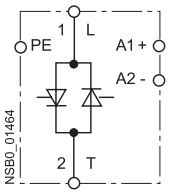



AC control version

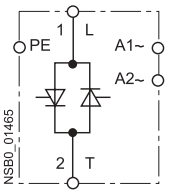



#### *SIRIUS SC semiconductor contactors*

DC control version

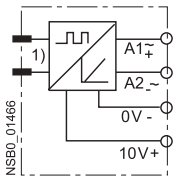



AC control version

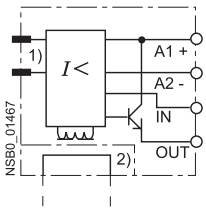



#### *Function modules for SIRIUS SC semiconductor switching devices*

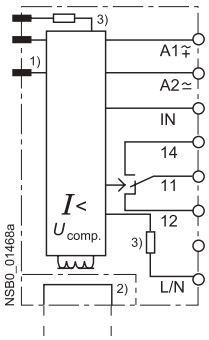
Converters



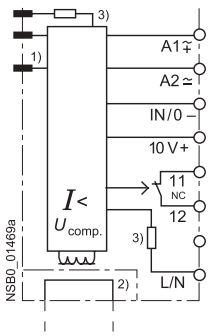

Basic load monitoring




Extended load monitoring



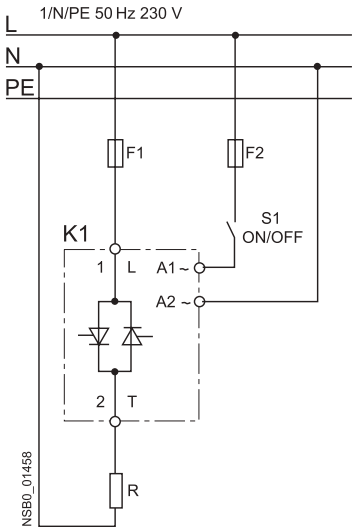

Power controllers




1) Internal connection.
2) Straight-through transformer.

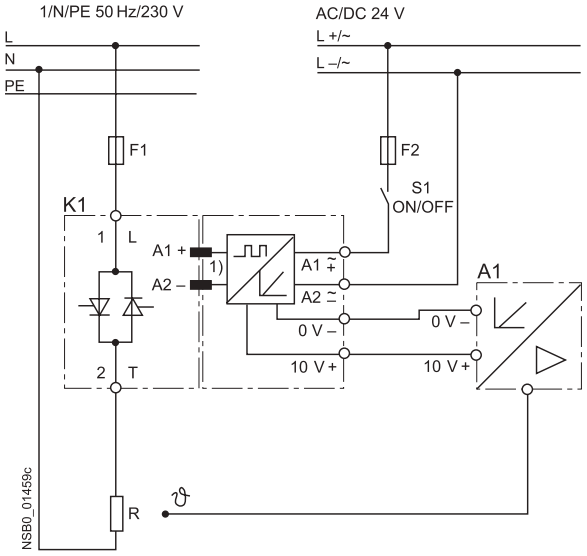
#### *SIRIUS SC semiconductor relays*

Typical circuit diagram

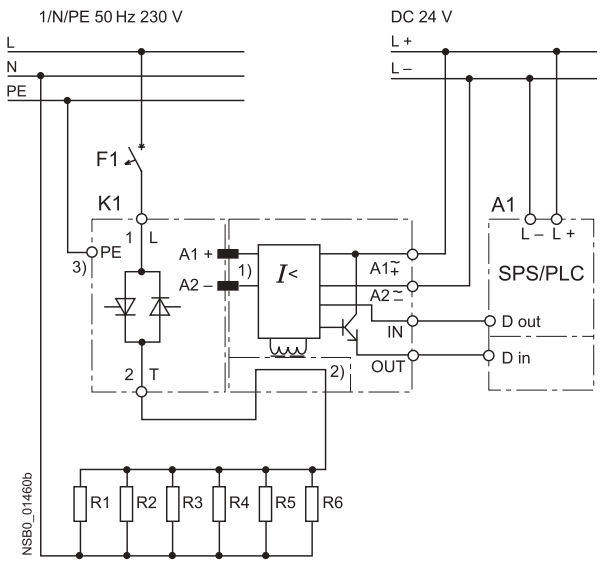


### *Function modules for SIRIUS SC semiconductor switching devices*

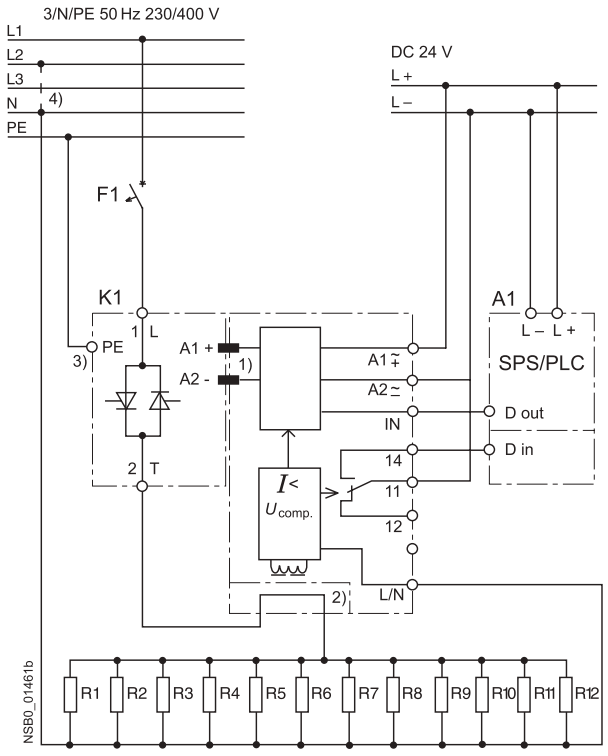
Converters Typical circuit diagram



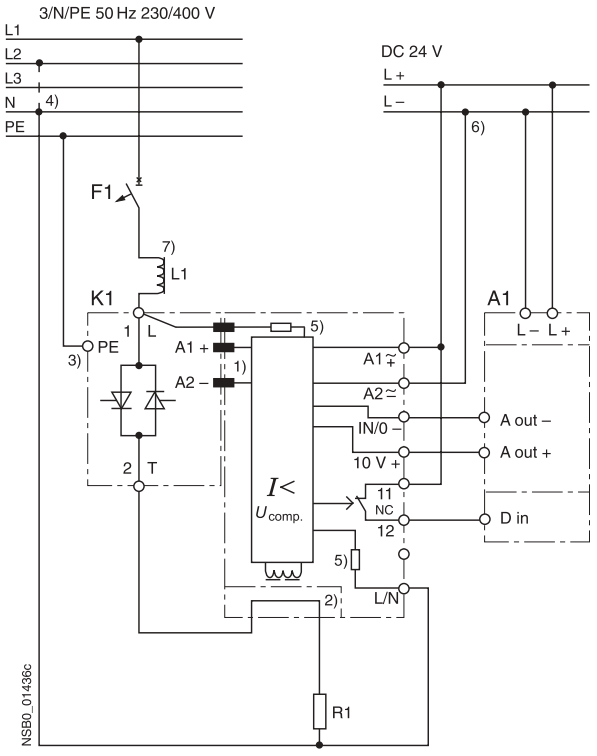

Basic load monitoring Typical circuit diagram




Extended load monitoring Typical circuit diagram




Power controllers Typical circuit diagram




1) Internal connection.
2) Straight-through transformer.
3) PE/ground connection for semiconductor contactors according to installation regulations.
4) Connection of contact L/N to N conductor or a second phase according to the rated operational voltage of the function module.
5) In order to observe the limit values of the conducted interference voltage for generalized phase control, a choke rated at at least 200 µH must be included in the load circuit.

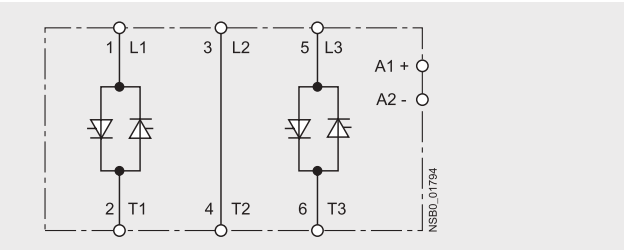
1) Internal connection to the solid state relay/contactor.
2) Straight-through.
3) Make PE/ground connection according to installation regulations.
4) Connection of L/N contact with
- 3RF29 ..-0GA.3 load monitoring on neutral conductor N (e.g. 230 V),
- 3RF29 ..-0GA.6 load monitoring on a second phase (e.g. 400V).
5) Voltage detection not electically isolated (3MΩ per path).
6) Grounding of connection L- is recommended.
7) A200 µH choke must be used when operating with leading-edge phase in order to observe the limit values of the conducted interference voltage according to Class A.

# Solid-State Contactors

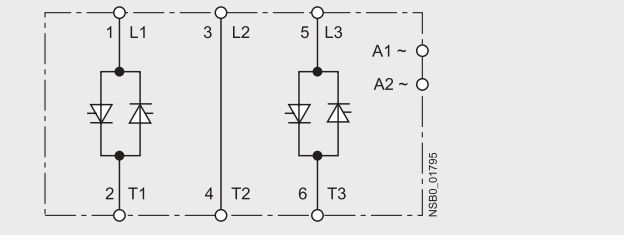
## 3RF24 solid-state contactors, 3-phase

### Schematics

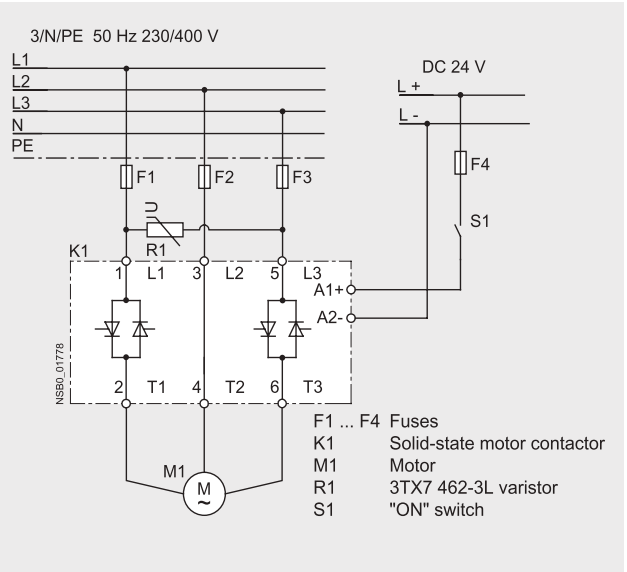
Two-phase controlled,
DC control supply voltage




Two-phase controlled,
AC control supply voltage




Sample schematic



Class 14

Class 17, 18

Class 3RE48,
82, 83, 84, 87, 88

Class LE,
LC, CLM

**3RE41** see
IC Sect 04

**3RE47** see
IC Sect 07

## contents


| | |
|---|---|
| Product Overview | 9/3 |
| **Manual Control** | |
| Fractional HP Starters, Class SMF | 9/4 - 9/5 |
| Switches, Class MMS and MRS | 9/6 - 9/7 |
| **NEMA Control** | |
| Catalog Numbering System | 9/8 |
| Non-Combination Starters Features and Benefits | 9/9 - 9/10 |
| Non-Reversing Starters, Class 14 | 9/11 - 9/12 |
| Combination Starters Features and Benefits | 9/13 |
| Combination Starters, Class 17 and 18 | 9/14 - 9/19 |
| Reversing Starters, Class 22 | 9/20 |
| Combination Reversing Starters, Class 25 and 26 | 9/21 - 9/22 |
| Two Speed Starters Features and Benefits | 9/23 |
| Two Speed Starters, Class 30 | 9/24 - 9/25 |
| Combination Two Speed Starters, Class 32 | 9/26 - 9/29 |
| **Heavy Duty Contactors** | |
| SIRIUS NEMA Rated Contactors | 9/30 - 9/31 |
| Non-Reversing Contactors, Class 40 | 9/32 - 9/33 |
| Vacuum Contactors, | 9/32 |
| Reversing Contactors, Class 43 | 9/34 |
| **Definite Purpose Contactors** | 9/35 - 9/41 |
| **Overload Relays** | |
| Class 3UB8, 48, 958 and 3RB20 | 9/42 - 9/46 |
| **Duplex Controllers** | |
| Features and Benefits | 9/47 |
| Non Combination, Class 83 | 9/48 |
| Combination, Class 84 | 9/49 - 9/50 |
| **Pump Control Panels** | |
| Advanced Technology Line, 3RE48 | 9/51 - 9/53 |
| Class 87 and 88 Features and Benefits | 9/54 - 9/55 |
| Classic Line, Class 87 | 9/56 |
| Vacuum Starter Type, Class 87 | 9/57 |
| Reduced-Voltage Type, Class 88 | 9/58 - 9/59 |
| **Lighting Control** | |
| Electrically Held Contactors, Class LE | 9/61 - 9/66 |
| Electrically Held Contactors, Class LC | 9/67 - 9/71 |
| Mechanically Held Contactors, Class CLM | 9/72 - 9/74 |
| **Control Power Transformers** | |
| Domestic and International (UL, CSA, CE) Class MT, MTG | 9/75 - 9/79 |
| **Modifications and Drawings** | |
| Field Modification Kits | 9/80 - 9/89 |
| Enclosure Kits | 9/90 - 9/92 |
| Factory Modifications | 9/93 - 9/97 |
| Dimensions | 9/105 - 9/131 |
| Wiring Diagrams | 9/132 - 9/151 |
| **Replacement Parts** | |
| SMF Manual Starter Heater Elements | 9/98 |
| NEMA Coils and Contact Kits | 9/99 - 9/100 |
| Coil VA Ratings and Overload Relays | 9/101 |
| Lighting Contactor Parts and Kits | 9/102 |
| **Enclosed IEC Controls, 3RE41** | 4/73 - 4/89 |
| **Enclosed Soft Starters, 3RE47** | 7/111 - 7/149 |

## Starters at the speed you need

Siemens NEMA enclosed starters and pump panels are known for their dependability and ruggedness, and now they are delivered faster than ever before through Controls Express.

Controls Express puts our most popular products in your hands faster, because we stock more products across our entire product line. Our enclosed Class 14, 17, 18, 87 and 3RE48 are now available in stock for immediate or next day shipping. In addition,  are now offering Class 17s with "M" suffix factory modifications that can be shipped in 3 days through Controls Express. To meet these lead times, orders must be quantity 3 or less for each part number.

Siemens is committed to making your job easier by stocking more products, offering more configurations, expediting factory modifications, and delivering industry leading turnaround times on our most requested control products.

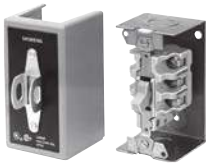
Controls Express lead times apply to orders of up to 3 units of the specified Class 14, 17, 18, 87 and 3RE48. Please contact customer service at 1-866-663-7324 for lead times of larger order volumes.

For more information on Controls Express and a complete list of available products, please download the program's flyer:
Controls Express Stocking Program

# NEMA & General Purpose Controls

## Product Overview

**Class SMF**
Fractional Horsepower
Manual Starters
Page 9/4



**Class MMS & MRS**
Fractional Horsepower
Manual Switches
Page 9/6

**Class 14**
NEMA Starters
Page 9/11

**Class 17, 18**
NEMA Combination
Starters
Page 9/14

**Class 22**
NEMA Reversing Starters
Page 9/20

**Class 25, 26**
NEMA Combination
Reversing Starters
Page 9/21

**Class 30**
NEMA Multi-Speed
Starters
Page 9/24

**Class 32**
NEMA Combination
Multi-Speed Starters
Page 9/26

SIRIUS NEMA Rated
Contactors
Page 9/30

**Class 40**
NEMA Contactors
and Vacuum Contactors
Page 9/32

**Class 43**
NEMA Reversing
Contactors
Page 9/34

**Class 42, 45**
Definite Purpose
Contactors
Page 9/42

**Class 48, 958, 3RB20**
Overload Relays
Page 9/42

**3RE48, Class 83,**
**84, 87, 88**
Pump Controls
Page 9/51

**Class LE, LC, CLM**
Lighting Contactors
Page 9/61

**Class MT, MTG**
Control Power
Transformers
Page 9/75

Modifications and
Drawings
Page 9/80

Replacement Parts
Page 9/98

**3RE41 Enclosed IEC**
motor controllers
See Section 4
pages 4/73 - 4/89

**3RE47 Enclosed**
soft starters
See Section 7
pages 7/111 - 7/149

## Class SMF

Class SMF fractional horsepower starters provide overload protection as well as manual on-off control for small horsepower motors in a variety of industrial and commercial applications. Available in one or two pole versions, these devices are suitable for use with AC single phase motors up to 1 HP. Two pole starters can also be used with DC motors up to ¾ HP. Typical applications include fans, conveyors, pumps, and small machine tools.

### Continuous Current Rating

16 amperes.

### Overload Trip Assembly

Motor protection is provided by a Class SMFH heater element which must be installed before the starter will operate.

### Two Speed Starters

Two speed manual starters are designed for control of small single phase AC motors having separate windings for high and low speed operation. Two toggle operated starters are used, with overload protection included for each motor winding. Surface mounting devices, and those with a gray flush plate, utilize a mechanical interlock which allows direct control of the motor by means of the toggle operators.

### Enclosures

Class SMF, NEMA Type 1 surface mounting enclosures are sheet steel with a thermo-plastic wrap-around cover for convenience in wiring. The NEMA Type 1 enclosure is also available in an oversized version which allows more wiring space. A zinc alloy die casting is used for NEMA Type 4 enclosures.

### Pilot Lights

Red or green neon pilot light units are available for flush mounting plates, NEMA Type 1 enclosures, and NEMA Type 4 enclosures. Pilot lights may be either factory or field installed. (For starters that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.)

### Terminals

Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

### Mounting

Open types without a pilot light fit standard single gang switch boxes, and can be used with any cover plate having a standard toggle cutout. Single-unit flush mounting types, including those with pilot lights, are suitable for wall mounting in a standard switch box or for machine cavity mounting without a box.

### Operation

Available with toggle handle or with removable key type operator to discourage unauthorized operation.

Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light

### Emergency Off Actuator

A toggle operator extender is available for Class SMF, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only for field installation.

### Handle Guard/Lock-Off

An optional handle guard on Class SMF, NEMA Type 1 enclosed starters prevents accidental operation of the toggle operator and also allows the toggle operator to be padlocked in either the "ON" or "OFF" position. This handle guard can be factory installed on NEMA Type 1 enclosed starters and is also available in kit form for field installation on NEMA Type 1 surface and flush mounting enclosures. Standard NEMA Type 4 metallic enclosures include provisions for padlocking the device in the OFF position.

# Fractional HP Starters with Melting Alloy Overload, Class SMF

## Selection

Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light

### Ordering Information

- ► Heater Elements see page 9/98.
- ► Field Modification Kits see page 9/80.
- ► Dimensions see page 9/105.
- ► Wiring Diagrams see page 9/132.

### Horsepower Ratings

| Volts | Maximum Horsepower | | |
|---|---|---|---|
| | AC Single Phase | | DC |
| | 1-Pole | 2-Pole | 2-Pole |
| 115 | 1 | 1 | ¾ |
| 230 | 1 | 2 | ¾ |
| 277 | 1 | 1 | — |

### Starter—Class SMF, Single Phase①

| Type of Operator | No. of Poles | Starter Features② | General Purpose Flush Mounting Open Starter with Flush Plate (No Enclosure Provided) | | | NEMA Type 1 General Purpose Enclosure, Surface Mounting | | NEMA Type 3R, 4 & 12 Watertight, Dust-tight, Metallic Enclosure with Clear Cover | NEMA Type 4 Watertight, Dust-tight, Metallic Enclosure |
|---|---|---|---|---|---|---|---|---|---|
| | | | Gray Flush Plate | Standard Stainless Steel Flush Plate | Jumbo Stainless Steel Flush Plate | Standard | Oversized | | |
| | | | Catalog No. | Catalog No. | Catalog No. | Catalog No. | Catalog No. | Catalog No. | Catalog No. |
| Toggle | 1 | Standard | **SMFFF1** | **SMFFS1** | — | **SMFFG1** | — | — | — |
| | | Red Pilot Light | — | **SMFFS1P** | — | **SMFFG1P** | — | — | — |
| | 2 | Standard | — | — | — | **SMFFG2** | — | — | — |
| | | Red Pilot Light | **SMFFF2P** | **SMFFS2P** | — | **SMFFG2P** | — | — | — |
| Key | 1 | Standard | — | — | — | — | — | — | — |
| | | Red Pilot Light | — | — | — | — | — | — | — |
| | 2 | Standard | — | — | — | — | — | — | — |
| | | Red Pilot Light | — | — | — | — | — | — | — |

### Starter With Handle Guard/Lock-Off—Class SMF, Single Phase①

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Toggle | 1 | Standard | ③ | ③ | ③ | **SMFFG5** | — | — | **SMFFW1**④ |
| | | Red Pilot Light | ③ | ③ | ③ | **SMFFG5P** | — | — | — |
| | 2 | Standard | ③ | ③ | ③ | — | — | — | **SMFFW2**④ |
| | | Red Pilot Light | ③ | ③ | ③ | **SMFFG6P** | — | — | — |

① One heater element required.
② For starters that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.
③ Order Open Type starter plus separate handle guard kit.
④ Furnished with (1) ¾" NPT Outlet in bottom (reversible for top feed).

## Class MMS, MRS

Class MMS and MRS motor starting switches provide manual "ON-OFF" control of single or three phase AC motors where overload protection is not required or is provided separately. Compact construction and a 600 volt rating make these switches suitable for a wide range of industrial and commercial uses. Typical applications include small machine tools, pumps, fans, conveyors and many other types of electrical machinery. They can also be used on non-motor loads such as resistance heating applications.

### Continuous Current Rating

**MMS & MRS:** 30 amperes at 250 volts max, 26.4 amperes at 277 volts, 20 amperes at 600 volts max, 30 amperes resistive at 600 volts max.

### Two Speed—Class MRS

Two speed manual switches may be used with separate winding three phase or single phase AC motors where overload protection is not required or is provided separately. Two switches are employed to give "ON-OFF" control in each speed.

### Reversing—Class MRS

Reversing manual switches provide a compact means of starting, stopping and reversing AC motors where overload protection is not required or is provided separately. They are suitable for use with three phase squirrel cage motors and for single phase motors which can be reversed by reconnecting motor leads. Two switches are used, one to connect the motor forward rotation and one for reverse.

### Enclosures

Class MMS, MRS, NEMA Type 1 surface mounting enclosures are sheet steel with a thermo-plastic wrap-around cover for convenience in wiring. The NEMA Type 1 enclosure is also available in an oversized version which allows more wiring space. A zinc alloy die casting is used for NEMA Type 4 enclosures.

### Pilot Lights

Red or green neon pilot light units are available for flush mounting plates, NEMA Type 1 enclosures, and NEMA Type 4 enclosures. Pilot lights may be either factory or field installed. (For switches that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.)

### Terminals

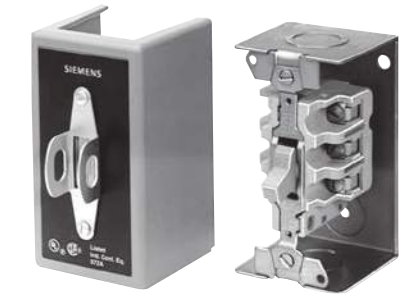
Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

### Mounting

Open types without a pilot light fit standard single gang switch boxes, and can be used with any cover plate having a standard toggle cutout. Single-unit flush mounting types, including those with pilot lights, are suitable for wall mounting in a standard switch box or for machine cavity mounting without a box.

### Operation

Available with toggle handle or with removable key type operator to discourage unauthorized operation.




Class MMS Switch in a NEMA Type 1 Enclosure

### Emergency Off Actuator

A toggle operator extender is available for Class MMS, MRS, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only for field installation.

### Handle Guard/Lock-Off

An optional handle guard on Class MMS, MRS, NEMA Type 1 enclosed switches prevents accidental operation of the toggle operator and also allows the toggle operator to be padlocked in either the "ON" or "OFF" position. This handle guard is available in kit form for field installation on NEMA Type 1 surface and flush mounting enclosures. Standard NEMA Type 4 metallic enclosures include provisions for padlocking the device in the OFF position.

Class MMS Switch in a NEMA Type 1 Enclosure

## Ordering Information

- Heater Elements not Required.
- Field Modification Kits see page 9/80.
- Dimensions see page 9/105.
- Wiring Diagrams see page 9/132.

## Horsepower Ratings

| Device | No of Poles | Motor Type AC | Maximum HP | | | DC Ratings | | |
|---|---|---|---|---|---|---|---|---|
| | | | 115V | 230V | 450–575V | 90V | 115V | 230V |
| Class MMS | 2 | Single Phase | 2 | 2 | 3 | 1 | 2 | 1½ |
| | 3 | 3-Phase | 2 | 7½ | 10 | 1 | 2 | 1½ |
| Class MRS Reversing | 2 | Single Phase | 2 | 2 | 3 | 1 | 2 | 1½ |
| | 3 | 3-Phase | 2 | 7½ | 10 | 1 | 2 | 1½ |
| Class MMS Two Speed | 2 | Single Phase | 2 | 2 | 3 | 1 | 2 | 1½ |
| | 3 | 3-Phase, Constant or Variable Torque | 2 | 7½ | 10 | 1 | 2 | 1½ |
| | 3 | 3-Phase, Constant Horsepower | 2 | 7½ | 10 | 1 | 2 | 1½ |

### Switch—Class MMS, Single Phase and 3-Phase

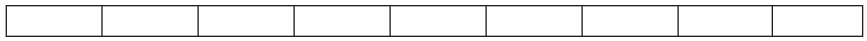
| Type of Operator | No. of Poles | Starter Features[1] | NEMA Type 1 General Purpose Enclosure, Surface Mounting | | NEMA Type 3R, 4 & 12 Watertight, Dust-tight, Metallic Enclosure with Clear Cover | NEMA Type 4[2] Watertight, Dust-tight, Metallic Enclosure |
|---|---|---|---|---|---|---|
| | | | Standard | Oversized | | |
| | | | Catalog No. | Catalog No. | Catalog No. | Catalog No. |
| Toggle | 2 | Standard | **MMSKG1** | — | — | **MMSKW1** |
| | | Red Pilot Light 115V AC | **MMSKG1A** | — | — | — |
| | | Red Pilot Light 230V AC | **MMSKG1B** | — | — | — |
| | 3 | Standard | **MMSKG2** | — | — | — |
| | | Red Pilot Light 208-240V AC | — | — | — | — |
| | | Red Pilot Light 440-600V AC | — | — | — | — |
| Key | 2 | Standard | — | — | — | — |
| | | Red Pilot Light 115V AC | — | — | — | — |
| | | Red Pilot Light 230V AC | — | — | — | — |
| | 3 | Standard | — | — | — | — |
| | | Red Pilot Light 208-240V AC | — | — | — | — |
| | | Red Pilot Light 440-600V AC | — | — | — | — |

[1] For switches that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.

[2] Furnished with (1) 3/4" NPT outlet in bottom (reversible for top feed). In order to obtain a ¾" NPT outlet in top and bottom, add suffix letter "H" to type number with List Price adder.

# Catalog Numbering System

## General



**Class**

**17** — Combination Starter (Non Fusible, Fusible)
**18** — Combination Starter (Circuit Breaker)
**25** — Reversing Combination Starter (Non Fusible, Fusible)
**26** — Reversing Combination Starter (Circuit Breaker)

**Size**

**B** — 00
**C** — 0
**D** — 1
**E** — 1¾
**F** — 2
**G** — 2½
**H** — 3
**I** — 3½
**J** — 4
**L** — 5
**M** — 6
**N** — 7
**P** — 8

**Model**

**U** — Solid-state OLR size 0–4 & size 7 & 8
**P** — Solid-state size 5 & 6

**Solid-state OLR Current Range**

**Three Phase**

**A** — 0.25–1
**B** — 0.75–3.4
**C** — 3–12
**D** — 5.5–22
**E** — 10–40
**F** — 13–52
**G** — 25–100
**H** — 50–200
**J** — 100–300 w/ CT's
**K** — 133–400 w/ CT's
**L** — 200–600 w/ CT's
**M** — 250–750 w/ CT's
**N** — 400–1200 w/ CT's

**Enclosure Size**

**92** — Standard Width
**82** — Extra Wide

**Enclosure Type**

**B** — NEMA 1
**F** — NEMA 4X Fiberglass
**N** — NEMA 3/3R/4/12
**W** — NEMA 4/4X 304 Stainless Steel
**X** — NEMA 4/4X 316 Stainless Steel

**Class**

**14** — Across the Line NEMA Motor Starter
**22** — Reversing NEMA Motor Starter
**40** — Across the Line NEMA Magnetic Contactor
**43** — Reversing NEMA Magnetic Contactor

**Size**

**B** — 00
**C** — 0
**D** — 1
**E** — 1¾
**F** — 2
**G** — 2½
**H** — 3
**I** — 3½
**J** — 4
**L** — 5
**M** — 6
**N** — 7
**P** — 8

**Model**

**U** — Solid-state OLR size 00–4, Size 7 & 8
**P** — Solid-state sizes 5 & 6

**Solid-state OLR Current Range**

**Three Phase**

**A** — 0.25–1
**B** — 0.75–3.4
**C** — 3–12
**D** — 5.5–22
**E** — 10–40
**F** — 13–52
**G** — 25–100
**H** — 50–200
**J** — 100–300 w/ CT's
**K** — 133–400 w/ CT's
**L** — 200–600 w/ CT's
**M** — 250–750 w/ CT's
**N** — 400–1200 w/ CT's

**Single Phase**①

**A** — 0.25–1
**B** — 0.75–3.4
**C** — 3–12
**D** — 5.5–22

**Pilot Control Circuit**

**2** — suitable for 3-wire control (NO aux. contact incl.)

**Enclosure Size**

**1** — 2 power poles,1-phase
**3** — 3 power poles, 3-phase
**8** — 3 power poles, 3-phase, extra wide enclosure

**Enclosure Type**

**A** — Open
**B** — NEMA 1
**F** — NEMA 4X Fiberglass
**0** — NEMA 3/3R/4/12
**W** — NEMA 4/4X 304 Stainless Steel
**X** — NEMA 4/4X 316 Stainless Steel

**Coil**

**A**②— 110–120V/220–240V@60Hz
110V/190–220V@50Hz
**C**②— 220–240V/440–480V@60Hz
190–220V/380–440V@50Hz
**D** — 200–208V@60Hz
**E** — 550–600V@60Hz
550V@50Hz
**F** — 120V@60Hz
110V@50Hz
**G** — 220–240V@60Hz
190–220V@50Hz
**H** — 440–480V@60Hz
380–440V@50Hz
**J**④— 24V@60Hz
24V@50Hz
**L** — 277V@60Hz
240V@50Hz

**Class**

**36** — Non Combination Reduced Voltage Starter
**37** — Combination Reduced Voltage Starter

**Size**

**C** — 0
**D** — 1
**E** — 1¾
**F** — 2
**G** — 2½
**H** — 3
**I** — 3½
**J** — 4
**L** — 5
**M** — 6
**N** — 7
**P** — 8

**Model**

**U** — Solid-state OLR size 0–4 & size 7 & 8
**P** — Solid-state size 5 & 6

**Solid-state OLR Current Range**

**Type**

**T** — Auto XFMR
**P** — Part Wind.
**0** — Wye Delta Open Trans.
**C** — Wye Delta Closed Trans.

**Line Volts**

**2** — 230
**3** — 380
**4** — 460
**5** — 575
**6** — 200/208

**Enclosure Type**

**A** — Open
**B** — NEMA 1
**W** — NEMA 4/4X Stainless Steel
**0** — NEMA 3/3R/4/12

**Coil**

**D**
**E**
**F**
**G**
**H**
**L**

**Disconnect Type**③

**D** — Non Fused Disc.
**F** — Fusible Disc.
**P** — MCP

① Single phase solid-state OLR available on Class 14 Starters only.

② Not available on sizes 5–8.
③ For Class 37 only.

④ Not available on sizes 7 and 8.

# Features and Benefit

Solid State Starter Class 14

## Standard Features

Size 00–4 magnetic starters include the following standard features:

- Rugged Industrial Design
- Half Sizes for Cost and Space Savings
- Dual Voltage, Dual Frequency Coils
- Solid State Overload Protection
- Wide Range of Accessories
- Easy Coil Access
- Overload Test Feature
- Straight Thru Wiring
- Gravity Dropout
- Large Silver Cadmium Contacts
- UL listed file #E14900 (class 14, 22, 30, 40 & 43)
- CSA certified file #LR 6535 (class 14, 22, 30, 40 & 43)

## Application

Heavy Duty starters are designed for across the line starting of single phase and polyphase motors.

These controls are available in NEMA Sizes 00 through 8. In addition to the usual NEMA Starter Sizes, Siemens offers three exclusive Half Sizes; 1¾, 2½ and 3½. These integral sizes offer the same rugged, industrial construction as our NEMA Sizes and ensure efficient operating performance. Half Sizes provide a real cost savings by cutting down on over capacity when NEMA Sizes exceed the motor ratings. All Siemens Heavy Duty controls, including our popular Half Sizes comply with applicable NEMA and UL tests.

All starters are supplied with a NO holding interlock that in conjunction with an appropriate pilot device will provide low voltage protection or release.

NEMA starters are ideal for applications requiring dependability and durability. Typical applications include use with machine tools, air conditioning equipment, material handling equipment, compressors, hoists and various production and industrial equipment as well as in demanding automotive applications.

Starters are available as an open type or in NEMA 1, 12/3/3R, 4 (painted), 4/4X (stainless), and 4X (fiberglass) enclosures.

### Gravity Dropout

For added reliability, the gravity dropout of the armature and contacts is assisted by stainless steel springs which help provide quick, precise opening of the contacts.

### 45 Degree, Wedge Action Contacts

The 45 degree, wedge action contacts reduce tracking and provide faster arc quenching. The resulting self-cleaning and reduced contact bounce mean cooler operation and longer life for the large silver cadmium oxide contacts.

### Terminal Design

Control terminals are self-rising pressure type.

### Molded Coil

Magnetic coils are carefully wound and then sealed in epoxy. Encapsulation helps seal out moisture, promotes heat transfer and resists electrical, mechanical and thermal stresses.

### Dual Voltage/Frequency Coil

Starters are available with dual voltage, dual frequency coils. They are designed to operate on either 50 or 60 Hertz.

### Molded Stationary Contact Block

Thermoset materials resist arc tracking and the stresses of heat and severe impact.

### Field Modification Kits

All starters can be modified in the field with a complete range of accessories. These include pushbuttons, selector switches, pilot lights, auxiliary contacts and surge suppressors.

### Auxiliary Equipment

- NEMA starters are available with built-in START-STOP push buttons for 3-wire control or a HAND-OFF-AUTO selector switch for 2-wire control
- Field modifications such as auxiliary contacts, pilot lights, push buttons, selector switches, and fuse blocks are available to meet particular application requirements
- Normally opened or normally closed auxiliary power pole kits are available for Sizes 00 through 1¾
- Transformers can be ordered as either factory or field modifications. In some cases these may require a larger enclosure
- A full line of replacement parts are available including contact kits, coils, and overload relays

### Size 5 & 6 Starters Additional Features

- Solid State Overload (3RB type) Standard
- Latest technology in arc quenching to extend contactor life
- Wide variety of enclosures in all starter configurations

### Size 7 & 8 Starters Additional Features

- New Compact Design
- Can be mounted in any position
- Same coil voltage is AC or DC

# Features and Benefits

## Selection

ESP200™ Solid State Starter

ESP200™ starters combine the rugged NEMA contactors with a state of the art solid state overload that provides phase loss, phase unbalance ground fault protection. It offers the user greater motor protection and extended life in heavy duty applications. The ESP200™ ultimately results in a cost savings to the user.

### ESP200™ Solid State Overload Relays

Standard features provide Improved Starter Performance:

- True phase loss protection; trips within 3 seconds
- Phase unbalanced prevents motor running inefficiently
- Ground fault trip when selected
- Selectable trip class 5, 10, 20 or 30
- Reset trip can be selected Auto/ Manual restart
- Easy to select and use, Dip Switch selectable
- Overload is self powered, no need for external power source

### Half Size Starters

Half-Size starters feature all the rugged performance characteristics of our NEMA rated starter sizes, but are fractionally sized to more closely match your exact motor rating. As a result, significant economic savings are made possible without sacrificing the reliability you expect from a heavy duty starter.

These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

Exclusive "half-sizes" save potentially hundreds, even thousands of dollars per project.

Using the table below, simply match the specific size starter to the horsepower rating of your motor. Every half-size starter saves you money—up to 31%.

All "half-sizes" comply to applicable NEMA and UL standards.

**ESP200® FLA Adjustment Dial—Set the adjustment dial on the overload to the FLA of the motor.**

Figure 1

Typical Solid-State Overload Adjustment Dial Markings

Each overload is precisely calibrated and labels are laser printed.

### DIP Switch Settings

Adjust DIP switch settings to the Trip Class desired 5, 10, 20, or 30.

- Set Phase Unbalance ON or OFF
- Set Phase Loss ON or OFF
- Set Reset to Manual or Automatic
- Set Ground Fault ON or OFF

**Savings for Siemens "Half-Size" Starters in NEMA 1 Enclosures, FVNR**

| Motor Size | | Starter Size | Half Size | "Half-Size" Savings Over Next Full Size |
|---|---|---|---|---|
| 230V | 460V | | | |
| 7½ | 10 | 1 | — | — |
| 10 | 15 | — | 1¾ | 31% |
| 15 | 25 | 2 | — | — |
| 20 | 30 | — | 2½ | 20% |
| 30 | 50 | 3 | — | — |
| 40 | 75 | — | 3½ | 13% |
| 50 | 100 | 4 | — | — |

**Standard Auxiliary Contacts**

| Type | Size (3rd Character) | Configuration | Internal / External |
|---|---|---|---|
| All FVNR Starters & Contactors | B Thru E | 1N.O. | Internal |
| | F Thru J | 1N.O. | External |
| | L Thru M | 2N.O., 2N.C. | External |
| | N Thru P | 1N.O., 1N.C. | External |

# Solid State Overload with Auto/Manual Reset, Class 14

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see pages 9/107 open and 9/119 enclosed.
- Wiring Diagrams see page 9/133.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | Overload | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Open Type** Standard Auxiliary Contacts⑦ | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ⅛ | ⅛ | ⅓ | ½ | 00 | — | 0.25–1 | A | **14BUA32A*** | **14BUA32B*** | Use Size 0 | Use Size 0 | Use Size 0 |
| ½ | ¾ | 1½ | 2 | 00 | — | 0.75–3.4 | A | **14BUB32A*** | **14BUB32B*** | Use Size 0 | Use Size 0 | Use Size 0 |
| 1½ | 1½ | 2 | — | 00 | — | 3–12 | A1 | **14BUC32A*** | **14BUC32B*** | Use Size 0 | Use Size 0 | Use Size 0 |
| ⅛ | ⅛ | ⅓ | ½ | 0 | — | 0.25–1 | A | **14CUA32A*** | **14CUA32B*** | **14CUA32@*** | **14CUA32F*** | **14CUA320*** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | **14CUB32A*** | **14CUB32B*** | **14CUB32@*** | **14CUB32F*** | **14CUB320*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | **14CUC32A*** | **14CUC32B*** | **14CUC32@*** | **14CUC32F*** | **14CUC320*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | **14CUD32A*** | **14CUD32B*** | **14CUD32@*** | **14CUD32F*** | **14CUD320*** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | **14DUA32A*** | **14DUA32B*** | **14DUA32@*** | **14DUA32F*** | **14DUA320*** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | **14DUB32A*** | **14DUB32B*** | **14DUB32@*** | **14DUB32F*** | **14DUB320*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | **14DUC32A*** | **14DUC32B*** | **14DUC32@*** | **14DUC32F*** | **14DUC320*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | **14DUD32A*** | **14DUD32B*** | **14DUD32@*** | **14DUD32F*** | **14DUD320*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | **14DUE32A*** | **14DUE32B*** | **14DUE32@*** | **14DUE32F*** | **14DUE320*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | **14EUE32A*** | **14EUE32B*** | **14EUE32@*** | **14EUE32F*** | **14EUE320*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | **14FUF32A*** | **14FUF32B*** | **14FUF32@*** | **14FUF32F*** | **14FUF320*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | **14GUG32A*** | **14GUG32B*** | **14GUG32@*** | **14GUG32F*** | **14GUG320*** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | **14HUG32A*** | **14HUG32B*** | **14HUG32@*** | **14HUG32F*** | **14HUG320*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | **14IUH32A*** | **14IUH32B*** | **14IUH32@*** | **14IUH32F*** | **14IUH320*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | **14JUH32A*** | **14JUH32B*** | **14JUH32@*** | **14JUH32F*** | **14JUH320*** |
| 75 | 100 | 200 | 200 | 5 | — | 55–250 | — | **14LPU32A*** | **14LPU32B*** | — | — | **14LPU320*** |
| 150 | 200 | 400 | 400 | 6 | — | 160–630 | — | **14MPX32A*** | **14MPX32B*** | — | — | **14MPX320*** |
| — | 300 | 600 | 600 | 7*③ | — | 400–1220 | A1+CT | **14NUN32A*** | **14NUN32B*** | — | — | **14NUN320*** |
| — | 450 | 900 | 900 | 8④ | — | 400–1220 | A1+CT | **14PUN32A*** | **14PUN32B*** | — | — | **14PUN320*** |

### Open Type & Standard Width Enclosure, Single Phase, 2-Pole②⑤

| Max Hp | | | Overload | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Open Type** Standard Auxiliary Contacts | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| 115 Volts | 208/230 Volts | NEMA Size | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ⅛ | ¼ | 0 | 0.75–3.4 | A | **14CUB12A*** | **14CUB12B*** | **14CUB12@*** | **14CUB12F*** | **14CUB120*** |
| ¼ | ½ | 0 | 3–12 | A1 | **14CUC12A*** | **14CUC12B*** | **14CUC12@*** | **14CUC12F*** | **14CUC120*** |
| 1 | 2 | 0 | 5.5–22 | A1 | **14CUD12A*** | **14CUD12B*** | **14CUD12@*** | **14CUD12F*** | **14CUD120*** |
| ⅛ | ¼ | 1 | 0.75–3.4 | A | **14DUB12A*** | **14DUB12B*** | **14DUB12@*** | **14DUB12F*** | **14DUB120*** |
| ¼ | ½ | 1 | 3–12 | A1 | **14DUC12A*** | **14DUC12B*** | **14DUC12@*** | **14DUC12F*** | **14DUC120*** |
| 1 | 2 | 1 | 5.5–22 | A1 | **14DUD12A*** | **14DUD12B*** | **14DUD12@*** | **14DUD12F*** | **14DUD120*** |
| 3 | 7½ | 2 | 25-100 | B | **14FUG12A*** | **14FUG12B*** | **14FUG12@*** | **14FUG12F*** | **14FUG120*** |
| 7½ | 15 | 3 | 25-100 | B | **14HUG12A*** | **14HUG12B*** | **14HUG12@*** | **14HUG12F*** | **14HUG120*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in size 5–8 starters.

② Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

③ F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC

④ Only available F coil100-250V AC 50/60Hz, or DC

⑤ To receive a single phase starter in an extra wide enclosure order an enclosure kit from pg 9/90 and the open style starter from pg 9/11 as separate items.

# Solid State Overload with Auto/Manual Reset, Class 14

## Selection

NEMA 1

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/93.
- Factory Modifications see page 9/93.
- Dimensions see page 9/119.
- Wiring Diagrams see page 9/133.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240 | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480 | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Extra Wide Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | Overload | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Amp Range** | **Frame Size** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ⅛ | ⅛ | ½ | ½ | 00 | — | 0.25–1 | A | **14BUA82B*** | **Use Size 0** | **Use Size 0** |
| ½ | ¾ | 1½ | 2 | 00 | — | 0.75–3.4 | A | **14BUB82B*** | **Use Size 0** | **Use Size 0** |
| 1½ | 1½ | 2 | — | 00 | — | 3–12 | A1 | **14BUC82B*** | **Use Size 0** | **Use Size 0** |
| ⅛ | ⅛ | ½ | ½ | 0 | — | 0.25–1 | A | **14CUA82B*** | **14CUA82@*** | **14CUA820*** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | **14CUB82B*** | **14CUB82@*** | **14CUB820*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | **14CUC82B*** | **14CUC82@*** | **14CUC820*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | **14CUD82B*** | **14CUD82@*** | **14CUD820*** |
| ⅛ | ⅛ | ½ | ½ | 1 | — | 0.25–1 | A | **14DUA82B*** | **14DUA82@*** | **14DUA820*** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | **14DUB82B*** | **14DUB82@*** | **14DUB820*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | **14DUC82B*** | **14DUC82@*** | **14DUC820*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | **14DUD82B*** | **14DUD82@*** | **14DUD820*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | **14DUE82B*** | **14DUE82@*** | **14DUE820*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | **14EUE82B*** | **14EUE82@*** | **14EUE820*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | **14FUF82B*** | **14FUF82@*** | **14FUF820*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | **14GUG82B*** | **14GUG82@*** | **14GUG820*** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | **14HUG82B*** | **14HUG82@*** | **14HUG820*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | **14IUH82B*** | **14IUH82@*** | **14IUH820*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

## Combination Starter Features

Combination starters include the following features:

- Manufactured with Cold Forming "TOX" Process
- Solid State Overloads Standard on Sizes 5–8
- Easy to Install
- Wide Range of Enclosure Types Available
- Heavy Duty Quarter Turns
- 100kA Short Circuit Current Rating when Protected with Class R Fuses to 600V or MCP to 480V
- Visible Blade Disconnect
- Industrial Type Disconnect Handle
- UL listed file #E185287 (class 17, 18, 25, 26 & 32)
- CSA certified file #LR 6535 (class 17, 18, 25, 26 & 32)

## Application

A combination starter meets National Electrical Code requirements for:

**1.** A means of providing short circuit motor protection with fused or breaker disconnection of line voltage.

**2.** A means of safeguarding personnel from contact with live parts and from accidental starting of machinery by disconnecting the motor and the controller.

**3.** A motor controller with overload protection.

Prewired combination starters eliminate the cost of wiring between separate disconnect and starter. Factory testing assures field performance. Combination starters also provide a more compact and attractive installation than separate units.

### Enclosure Types

Combination starters are available in NEMA 1, 12/3/3R/4 (painted), 4/4X (stainless), and 4X fiberglass enclosures. Enclosures protect personnel from contact with live parts and depending upon the construction, protect the control in varying degrees from physical damage and harmful atmospheres. All enclosures are supplied with corrosion resistant finishes.

### Heavy Duty Disconnect Switches

The disconnect switch that goes the distance in durability, performance and reliability has the following advantages:

- Visible blades for the highest level of safety
- Double break switching action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- More rugged positive action switch
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts
- Higher horsepower rating for design E high efficiency motors
- UL listed for Ilsco, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

Its rugged construction - with a high fault withstand rating of 100kA at 600 VAC when fused with class R rated fuses - meets the most stringent industry standards set forth by the automotive, petro-chemical, and pulp and paper industries. UL recognized and CSA certified, our disconnect switches are available either non-fusible or fusible with class R and class J fuse clips.

### Enclosure Kits for NEMA Combination Starters Description

You can assemble a non-stocked combination starter per your unanticipated needs in minutes. Say, for example, your customer needs a fusible combination starter that you don't have in stock. You need in now, but don't sweat it. Simply start with the enclosure kit which has the handle preinstalled. You install the required starter and fusible disconnect, connect the power wire and you are finished. Within minutes, you have the required combination starter in your hands. No more waiting on the factory. You need it, you got it!

### What Is In It For You!

- **Reduce Lead-time -** What used to take days to get now takes minutes
- **Reduced Inventory -** Instead of stocking scores of various combination starters, simply stock a few enclosure kits, disconnect kits, circuit breaker kits and open starters. With these basic "building blocks" you virtually have hundreds of products on-hand
- **Quality -** The same high level of quality you have been accustomed to with our products will also be found in these new enclosure kits
- **UL Listed -** By correctly following the instructions included with the kits, the product you build is UL/CSA Listed

Refer to page 9/91 for more details.

### Siemens Type ETI Circuit Breaker

The ETI circuit breaker is a device designed specifically for application in motor circuits. The ETI is a magnetic only protective device designed to provide protection against short circuit current.

The instantaneous-only type ETI circuit breaker employs adjustable magnetic trip settings to allow broader application ranges and a higher degree of motor short circuit protection.

### Heavy Duty Starters

These combination starters use the same starters described in the heavy duty starter section of this catalog.

# Non-Fusible with Solid State Overload, Class 17

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- For Fusible Styles see page 9/16.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/121.
- Wiring Diagrams see page 9/134.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Standard Width Enclosure, 3 Phase, 3-Pole

| Max Hp | | | | | | Overload | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Amp Range** | **Frame Size** | **Disc. Amp Range** | **Catalog Number** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ⅛ | ⅛ | ⅓ | ½ | 0 | — | 0.25–1 | A | 30 | **17CUA92B*** | **17CUA92@*** | **17CUA92F*** | **17CUA92N*** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | **17CUB92B*** | **17CUB92@*** | **17CUB92F*** | **17CUB92N*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 30 | **17CUC92B*** | **17CUC92@*** | **17CUC92F*** | **17CUC92N*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | **17CUD92B*** | **17CUD92@*** | **17CUD92F*** | **17CUD92N*** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | 30 | **17DUA92B*** | **17DUA92@*** | **17DUA92F*** | **17DUA92N*** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | 30 | **17DUB92B*** | **17DUB92@*** | **17DUB92F*** | **17DUB92N*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 30 | **17DUC92B*** | **17DUC92@*** | **17DUC92F*** | **17DUC92N*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | **17DUD92B*** | **17DUD92@*** | **17DUD92F*** | **17DUD92N*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | **17DUE92B*** | **17DUE92@*** | **17DUE92F*** | **17DUE92N*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | **17EUE92B*** | **17EUE92@*** | **17EUE92F*** | **17EUE92N*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 60 | **17FUF92B*** | **17FUF92@*** | **17FUF92F*** | **17FUF92N*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100② | **17GUG92B*** | **17GUG92@*** | **17GUG92F*** | **17GUG92N*** |
| 20③ | 25④ | 50 | 50 | 3 | — | 25–100 | B | 100 | **17HUG92B*** | **17HUG92@*** | **17HUG92F*** | **17HUG92N*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 200 | **17IUH92B*** | **17IUH92@*** | **17IUH92F*** | **17IUH92N*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 200 | **17JUH92B*** | **17JUH92@*** | **17JUH92F*** | **17JUH92N*** |
| 75 | 100 | 200 | 200 | 5 | — | 55–250 | — | 400⑤ | **17LPU92B*** | **—** | **—** | **17LPU92N*** |
| 150 | 200 | 400 | 400 | 6 | — | 160–630 | — | 600 | **17MPX92B*** | **—** | **—** | **17MPX92N*** |
| — | 300 | 600 | 600 | 7⑥ | — | 400–1220 | A1+CT | 1200 | **17NUN92B*** | **—** | **—** | **17NUN92N*** |
| — | 450 | 900 | 900 | 8⑦ | — | 400–1220 | A1+CT | 1600 | **17PUN92B*** | **—** | **—** | **17PUN92N*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5–8.
② For 60A disconnect, order fusible cat. no. page 9/16.
③ For 20 HP and 200A disconnect, order fusible cat. no. page 9/16.
④ For 25 HP and 200A disconnect, order fusible cat. no. page 9/16.
⑤ For 600A disconnect, order fusible cat. no. page 9/16.
⑥ F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC
⑦ Only available F coil 100-250V AC 50/60Hz, or DC

## Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- For Fusible Styles see page 9/17.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/121.
- Wiring Diagrams see page 9/134.
- Replacement Parts see page 9/99.

## Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Extra Wide Enclosure, 3-Phase, 3-Pole

| Hp | | | | | | Overload | | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Amp Range** | **Frame Size** | **Disc. Amp Range** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ⅛ | ⅛ | ⅓ | ½ | 0 | — | 0.25–1 | A | 30 | **17CUA82B*** | **17CUA82@*** | **17CUA82N*** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | **17CUB82B*** | **17CUB82@*** | **17CUB82N*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 30 | **17CUC82B*** | **17CUC82@*** | **17CUC82N*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | **17CUD82B*** | **17CUD82@*** | **17CUD82N*** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | 30 | **17DUA82B*** | **17DUA82@*** | **17DUA82N*** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | 30 | **17DUB82B*** | **17DUB82@*** | **17DUB82N*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 30 | **17DUC82B*** | **17DUC82@*** | **17DUC82N*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | **17DUD82B*** | **17DUD82@*** | **17DUD82N*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | **17DUE82B*** | **17DUE82@*** | **17DUE82N*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | **17EUE82B*** | **17EUE82@*** | **17EUE82N*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 60 | **17FUF82B*** | **17FUF82@*** | **17FUF82N*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100① | **17GUG82B*** | **17GUG82@*** | **17GUG82N*** |
| 20② | 25③ | 50 | 50 | 3 | — | 25–100 | B | 100 | **17HUG82B*** | **17HUG82@*** | **17HUG82N*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① For 60A disconnect, order fusible cat. no. page 9/17.
② For 20 HP and 200A disconnect, order fusible cat. no. page 9/17.
③ For 25 HP and 200A disconnect, order fusible cat. no. page 9/17.

# Fusible with Solid State Overload, Class 17

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/121.
- Wiring Diagrams see page 9/134.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

**Standard Width Enclosure, 3-Phase, 3-Pole③**

| Max Hp | | | | | | Overload | | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Range | Fuse Clip Amp/Volts | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ⅛ | ⅛ | — | — | 0 | — | 0.25–1 | A | 30 | 30A/250V | **17CUA92B*10** | **17CUA92@*10** | **17CUA92F*10** | **17CUA92N*10** |
| — | — | ⅓ | ½ | 0 | — | 0.25–1 | A | 30 | 30A/600V | **17CUA92B*11** | **17CUA92@*11** | **17CUA92F*11** | **17CUA92N*11** |
| ½ | ¾ | — | — | 0 | — | 0.75–3.4 | A | 30 | 30A/250V | **17CUB92B*10** | **17CUB92@*10** | **17CUB92F*10** | **17CUB92N*10** |
| — | — | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | 30A/600V | **17CUB92B*11** | **17CUB92@*11** | **17CUB92F*11** | **17CUB92N*11** |
| 2 | 2 | — | — | 0 | — | 3–12 | A1 | 30 | 30A/250V | **17CUC92B*10** | **17CUC92@*10** | **17CUC92F*10** | **17CUC92N*10** |
| — | — | 5 | 5 | 0 | — | 3–12 | A1 | 30 | 30A/600V | **17CUC92B*11** | **17CUC92@*11** | **17CUC92F*11** | **17CUC92N*11** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | 30A/250V | **17CUD92B*10** | **17CUD92@*10** | **17CUD92F*10** | **17CUD92N*10** |
| ⅛ | ⅛ | — | — | 1 | — | 0.25–1 | A | 30 | 30A/250V | **17DUA92B*10** | **17DUA92@*10** | **17DUA92F*10** | **17DUA92N*10** |
| — | — | ⅓ | ½ | 1 | — | 0.25–1 | A | 30 | 30A/600V | **17DUA92B*11** | **17DUA92@*11** | **17DUA92F*11** | **17DUA92N*11** |
| ½ | ¾ | — | — | 1 | — | 0.75–3.4 | A | 30 | 30A/250V | **17DUB92B*10** | **17DUB92@*10** | **17DUB92F*10** | **17DUB92N*10** |
| — | — | 1½ | 2 | 1 | — | 0.75–3.4 | A | 30 | 30A/600V | **17DUB92B*11** | **17DUB92@*11** | **17DUB92F*11** | **17DUB92N*11** |
| 2 | 2 | — | — | 1 | — | 3–12 | A1 | 30 | 30A/250V | **17DUC92B*10** | **17DUC92@*10** | **17DUC92F*10** | **17DUC92N*10** |
| — | — | 5 | 5 | 1 | — | 3–12 | A1 | 30 | 30A/600V | **17DUC92B*11** | **17DUC92@*11** | **17DUC92F*11** | **17DUC92N*11** |
| 3 | 3 | — | — | 1 | — | 5.5–22 | A1 | 30 | 30A/250V | **17DUD92B*10** | **17DUD92@*10** | **17DUD92F*10** | **17DUD92N*10** |
| — | — | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | 30A/600V | **17DUD92B*11** | **17DUD92@*11** | **17DUD92F*11** | **17DUD92N*11** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 30 | 30A/250V | **17DUE92B*10** | **17DUE92@*10** | **17DUE92F*10** | **17DUE92N*10** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | 60A/250V | **17DUE92B*12** | **17DUE92@*12** | **17DUE92F*12** | **17DUE92N*12** |
| — | — | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | 60A/600V | **17EUE92B*13** | **17EUE92@*13** | **17EUE92F*13** | **17EUE92N*13** |
| 10 | 10 | — | — | — | 1¾ | 10–40 | A1 | 60 | 60A/250V | **17EUE92B*12** | **17EUE92@*12** | **17EUE92F*12** | **17EUE92N*12** |
| 10 | 15 | — | — | 2 | — | 13–52 | B | 60 | 60A/250V | **17FUF92B*12** | **17FUF92@*12** | **17FUF92F*12** | **17FUF92N*12** |
| — | — | 25 | 25 | 2 | — | 13–52 | B | 60 | 60A/600V | **17FUF92B*13** | **17FUF92@*13** | **17FUF92F*13** | **17FUF92N*13** |
| — | — | — | 30 | — | 2½ | 25–100 | B | 60 | 60A/600V | **17GUG92B*13** | **17GUG92@*13** | **17GUG92F*13** | **17GUG92N*13** |
| — | — | 30 | — | — | 2½ | 25–100 | B | 100 | 100A/600V | **17GUG92B*15** | **17GUG92@*15** | **17GUG92F*15** | **17GUG92N*15** |
| 15 | 20 | — | — | — | 2½ | 25–100 | B | 100 | 100A/250V | **17GUG92B*14** | **17GUG92@*14** | **17GUG92F*14** | **17GUG92N*14** |
| 20 | 25 | — | — | 3 | — | 25–100 | B | 100 | 100A/250V | **17HUG92B*14** | **17HUG92@*14** | **17HUG92F*14** | **17HUG92N*14** |
| — | — | 50 | 50 | 3 | — | 25–100 | B | 100 | 100A/600V | **17HUG92B*15** | **17HUG92@*15** | **17HUG92F*15** | **17HUG92N*15** |
| 25 | 30 | — | — | 3 | — | 25–100 | B | 200 | 200A/250V | **17HUG92B*16** | **17HUG92@*16** | **17HUG92F*16** | **17HUG92N*16** |
| 30 | 40 | — | — | — | 3½ | 50–200 | B | 200 | 200A/250V | **17IUH92B*16** | **17IUH92@*16** | **17IUH92F*16** | **17IUH92N*16** |
| — | — | 75 | 75 | — | 3½ | 50–200 | B | 200 | 200A/600V | **17IUH92B*17** | **17IUH92@*17** | **17IUH92F*17** | **17IUH92N*17** |
| 40 | 50 | — | — | 4 | — | 50–200 | B | 200 | 200A/250V | **17JUH92B*16** | **17JUH92@*16** | **17JUH92F*16** | **17JUH92N*16** |
| — | — | 100 | 100 | 4 | — | 50–200 | B | 200 | 200A/600V | **17JUH92B*17** | **17JUH92@*17** | **17JUH92F*17** | **17JUH92N*17** |
| 75 | 100 | — | — | 5 | — | 55–250 | — | 400 | 400A/250V | **17LPU92B*18** | **—** | **—** | **17LPU92N*18** |
| — | 100 | — | — | 5 | — | 55–250 | — | 600 | 600A/250V② | **17LPU92B*20** | **—** | **—** | **17LPU92N*20** |
| — | — | — | 125 | 5 | — | 55–250 | — | 200 | 200A/600V | **17LPU92B*17** | **—** | **—** | **17LPU92N*17** |
| — | — | 200 | 200 | 5 | — | 55–250 | — | 400 | 400A/600V | **17LPU92B*19** | **—** | **—** | **17LPU92N*19** |
| — | — | 200 | — | 5 | — | 55–250 | — | 600 | 600A/600V② | **17LPU92B*21** | **—** | **—** | **17LPU92N*21** |
| 150 | 200 | — | — | 6 | — | 160–630 | — | 600 | 600A/250V | **17MPX92B*20** | **—** | **—** | **17MPX92N*20** |
| — | — | 400 | 400 | 6 | — | 160–630 | — | 600 | 600A/600V | **17MPX92B*21** | **—** | **—** | **17MPX92N*21** |
| — | — | 400 | 400 | 6 | — | 160–630 | — | 800 | 800A/600V | **17MPX92B*23** | **—** | **—** | **17MPX92N*23** |
| — | — | 600 | 600 | 7④ | — | 400–1220 | A1+CT | 1200 | 1200A/600V | **17NUN92B*24** | **—** | **—** | **17NUN92N*24** |
| — | — | 900 | 900 | 8⑤ | — | 400–1220 | A1+CT | 1600 | 1600A/600V | **17PUN92B*25** | **—** | **—** | **17PUN92N*25** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5–8.
② Use Class J fuses only.
③ Single phase wiring page 9/133.
④ F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC
⑤ Only available F coil 100-250V AC 50/60Hz, or DC

# Fusible with Solid State Overload, Class 17

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/121.
- Wiring Diagrams see page 9/134.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240 | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480 | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Extra Wide Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | Overload | | | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Range | Fuse Clip Amp/Volts | Catalog Number | Catalog Number | Catalog Number |
| ⅛ | ⅛ | — | — | 0 | — | 0.25–1 | A | 30 | 30A/250V | **17CUA82B*10** | **17CUA82@*10** | **17CUA82N*10** |
| — | — | ⅓ | ½ | 0 | — | 0.25–1 | A | 30 | 30A/600V | **17CUA82B*11** | **17CUA82@*11** | **17CUA82N*11** |
| ½ | ¾ | — | — | 0 | — | 0.75–3.4 | A | 30 | 30A/250V | **17CUB82B*10** | **17CUB82@*10** | **17CUB82N*10** |
| — | — | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | 30A/600V | **17CUB82B*11** | **17CUB82@*11** | **17CUB82N*11** |
| 2 | 2 | — | — | 0 | — | 3–12 | A1 | 30 | 30A/250V | **17CUC82B*10** | **17CUC82@*10** | **17CUC82N*10** |
| — | — | 5 | 5 | 0 | — | 3–12 | A1 | 30 | 30A/600V | **17CUC82B*11** | **17CUC82@*11** | **17CUC82N*11** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | 30A/250V | **17CUD82B*10** | **17CUD82@*10** | **17CUD82N*10** |
| ⅛ | ⅛ | — | — | 1 | — | 0.25–1 | A | 30 | 30A/250V | **17DUA82B*10** | **17DUA82@*10** | **17DUA82N*10** |
| — | — | ⅓ | ½ | 1 | — | 0.25–1 | A | 30 | 30A/600V | **17DUA82B*11** | **17DUA82@*11** | **17DUA82N*11** |
| ½ | ¾ | — | — | 1 | — | 0.75–3.4 | A | 30 | 30A/250V | **17DUB82B*10** | **17DUB82@*10** | **17DUB82N*10** |
| — | — | 1½ | 2 | 1 | — | 0.75–3.4 | A | 30 | 30A/600V | **17DUB82B*11** | **17DUB82@*11** | **17DUB82N*11** |
| 2 | 2 | — | — | 1 | — | 3–12 | A1 | 30 | 30A/250V | **17DUC82B*10** | **17DUC82@*10** | **17DUC82N*10** |
| — | — | 5 | 5 | 1 | — | 3–12 | A1 | 30 | 30A/600V | **17DUC82B*11** | **17DUC82@*11** | **17DUC82N*11** |
| 3 | 3 | — | — | 1 | — | 5.5–22 | A1 | 30 | 30A/250V | **17DUD82B*10** | **17DUD82@*10** | **17DUD82N*10** |
| — | — | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | 30A/600V | **17DUD82B*11** | **17DUD82@*11** | **17DUD82N*11** |
| 5 | 5 | — | — | 1 | — | 10–40 | A1 | 30 | 30A/250V | **17DUE82B*10** | **17DUE82@*10** | **17DUE82N*10** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | 60A/250V | **17DUE82B*12** | **17DUE82@*12** | **17DUE82N*12** |
| — | — | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | 60A/600V | **17EUE82B*13** | **17EUE82@*13** | **17EUE82N*13** |
| 10 | 10 | — | — | — | 1¾ | 10–40 | A1 | 60 | 60A/250V | **17EUE82B*12** | **17EUE82@*12** | **17EUE82N*12** |
| 10 | 15 | — | — | 2 | — | 13–52 | B | 60 | 60A/250V | **17FUF82B*12** | **17FUF82@*12** | **17FUF82N*12** |
| — | — | 25 | 25 | 2 | — | 13–52 | B | 60 | 60A/600V | **17FUF82B*13** | **17FUF82@*13** | **17FUF82N*13** |
| — | — | — | 30 | — | 2½ | 25–100 | B | 60 | 60A/600V | **17GUG82B*13** | **17GUG82@*13** | **17GUG82N*13** |
| — | — | 30 | — | — | 2½ | 25–100 | B | 100 | 100A/600V | **17GUG82B*15** | **17GUG82@*15** | **17GUG82N*15** |
| 15 | 20 | — | — | — | 2½ | 25–100 | B | 100 | 100A/250V | **17GUG82B*14** | **17GUG82@*14** | **17GUG82N*14** |
| 20 | 25 | — | — | 3 | — | 25–100 | B | 100 | 100A/250V | **17HUG82B*14** | **17HUG82@*14** | **17HUG82N*14** |
| — | — | 50 | 50 | 3 | — | 25–100 | B | 100 | 100A/600V | **17HUG82B*15** | **17HUG82@*15** | **17HUG82N*15** |
| 25 | 30 | — | — | 3 | — | 25–100 | B | 200 | 200A/250V | **17HUG82B*16** | **17HUG82@*16** | **17HUG82N*16** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

# MCP Type with Solid State Overload, Class 18

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/121.
- Wiring Diagrams see page 9/134.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Standard Width Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | | Overload | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Motor Circuit Interrupter ETI Amps** | **Amp Range** | **Frame Size** | **Catalog Number** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ½ | ½ | 1 | 1 | 0 | — | 3 | 0.75–3.4 | A | **18CUB92B*** | **18CUB92@*** | **18CUB92F*** | **18CUB92N*** |
| 2 | 2 | 5 | 5 | 0 | — | 10 | 3–12 | A1 | **18CUC92B*** | **18CUC92@*** | **18CUC92F*** | **18CUC92N*** |
| 3 | 3 | — | — | 0 | — | 25 | 5.5–22 | A1 | **18CUD92B*** | **18CUD92@*** | **18CUD92F*** | **18CUD92N*** |
| ½ | ½ | 1 | 1 | 1 | — | 3 | 0.75–3.4 | A | **18DUB92B*** | **18DUB92@*** | **18DUB92F*** | **18DUB92N*** |
| 2 | 2 | 5 | 5 | 1 | — | 10 | 3–12 | A1 | **18DUC92B*** | **18DUC92@*** | **18DUC92F*** | **18DUC92N*** |
| 3 | 3 | 7 ½ | 10 | 1 | — | 25 | 5.5–22 | A1 | **18DUD92B*** | **18DUD92@*** | **18DUD92F*** | **18DUD92N*** |
| 7 ½ | 7 ½ | 10 | — | 1 | — | 30 | 10–40 | A1 | **18DUE92B*** | **18DUE92@*** | **18DUE92F*** | **18DUE92N*** |
| — | — | 15 | 15 | — | 1¾ | 40 | 10–40 | A1 | **18EUE92B*** | **18EUE92@*** | **18EUE92F*** | **18EUE92N*** |
| 10 | 15 | 25 | 25 | 2 | — | 50 | 13–52 | B | **18FUF92B*** | **18FUF92@*** | **18FUF92F*** | **18FUF92N*** |
| 15 | 20 | 30 | 30 | — | 2 ½ | 100 | 25–100 | B | **18GUG92B*** | **18GUG92@*** | **18GUG92F*** | **18GUG92N*** |
| 25 | 30 | 50 | 50 | 3 | — | 125 | 25–100 | B | **18HUG92B*** | **18HUG92@*** | **18HUG92F*** | **18HUG92N*** |
| 30 | 40 | 75 | 75 | — | 3 ½ | 125 | 50–200 | B | **18IUH92B*** | **18IUH92@*** | **18IUH92F*** | **18IUH92N*** |
| 40 | 50 | 100 | 100 | 4 | — | 150 | 50–200 | B | **18JUH92B*** | **18JUH92@*** | **18JUH92F*** | **18JUH92N*** |
| 50 | 75 | 150 | 200 | 5 | — | 250 | 55–250 | — | **18LPT92B*** | — | — | **18LPT92N*** |
| 75 | 100 | 200 | — | 5 | — | 400 | 55–250 | — | **18LPU92B*** | — | — | **18LPU92N*** |
| 100 | 125 | 250 | 300 | 6 | — | 400 | 160–630 | — | **18MPW92B*** | — | — | **18MPW92N*** |
| 150 | 200 | 400 | 400 | 6 | — | 600 | 160–630 | — | **18MPX92B*** | — | — | **18MPX92N*** |
| — | 250 | 500 | 500 | 7② | — | 800 | 400–1220 | A1+CT | **18NUV92B*** | — | — | **18NUV92N*** |
| — | 300 | 600 | 600 | 7② | — | 1000 | 400–1220 | A1+CT | **18NUY92B*** | — | — | **18NUY92N*** |
| — | 400 | 800 | 800 | 8③ | — | 1200 | 400–1220 | A1+CT | **18PUW92B*** | — | — | **18PUW92N*** |
| — | 450 | 900 | 900 | 8③ | — | 1600 | 400–1220 | A1+CT | **18PUZ92B*** | — | — | **18PUZ92N*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5–8.

② F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC

③ Only available F coil 100-250V AC 50/60Hz, or DC

# MCP Type with Solid State Overload, Class 18

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/121.
- Wiring Diagrams see page 9/134.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240 | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480 | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Extra Wide Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | | Overload | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Motor Circuit Interrupter ETI Amps** | **Amp Range** | **Frame Size** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ½ | ½ | 1 | 1 | 0 | — | 3 | 0.75–3.4 | A | **18CUB82B*** | **18CUB82@*** | **18CUB82N*** |
| 2 | 2 | 5 | 5 | 0 | — | 10 | 3–12 | A1 | **18CUC82B*** | **18CUC82@*** | **18CUC82N*** |
| 3 | 3 | — | — | 0 | — | 25 | 5.5–22 | A1 | **18CUD82B*** | **18CUD82@*** | **18CUD82N*** |
| ½ | ½ | 1 | 1 | 1 | — | 3 | 0.75–3.4 | A | **18DUB82B*** | **18DUB82@*** | **18DUB82N*** |
| 2 | 2 | 5 | 5 | 1 | — | 10 | 3–12 | A1 | **18DUC82B*** | **18DUC82@*** | **18DUC82N*** |
| 3 | 3 | 7½ | 10 | 1 | — | 25 | 5.5–22 | A1 | **18DUD82B*** | **18DUD82@*** | **18DUD82N*** |
| 7½ | 7½ | 10 | — | 1 | — | 30 | 10–40 | A1 | **18DUE82B*** | **18DUE82@*** | **18DUE82N*** |
| — | — | 15 | 15 | — | 1¾ | 40 | 10–40 | A1 | **18EUE82B*** | **18EUE82@*** | **18EUE82N*** |
| 10 | 15 | 25 | 25 | 2 | — | 50 | 13–52 | B | **18FUF82B*** | **18FUF82@*** | **18FUF82N*** |
| 15 | 20 | 30 | 30 | — | 2½ | 100 | 25–100 | B | **18GUG82B*** | **18GUG82@*** | **18GUG82N*** |
| 25 | 30 | 50 | 50 | 3 | — | 125 | 25–100 | B | **18HUG82B*** | **18HUG82@*** | **18HUG82N*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

# Solid State Overload, Class 22

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/108 open and 9/123 enclosed.
- Wiring Diagrams see page 9/135.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | Overload | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Open Type** Standard Auxiliary Contacts④ | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Amp Range** | **Frame Size** | **Catalog Number** | **Catalog Number** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ⅛ | ⅛ | ⅓ | ½ | 00 | — | 0.25–1 | A | **22BUA32A*** | **22BUA32B*** | **Use Size 0** | **Use Size 0** | **Use Size 0** |
| ½ | ¾ | 1½ | 2 | 00 | — | 0.75–3.4 | A | **22BUB32A*** | **22BUB32B*** | **Use Size 0** | **Use Size 0** | **Use Size 0** |
| 1½ | 1½ | 2 | — | 00 | — | 3–12 | A1 | **22BUC32A*** | **22BUC32B*** | **Use Size 0** | **Use Size 0** | **Use Size 0** |
| ⅛ | ⅛ | ⅓ | 1/2 | 0 | — | 0.25–1 | A | **22CUA32A*** | **22CUA32B*** | **22CUA32W*** | **22CUA32F*** | **22CUA320*** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | **22CUB32A*** | **22CUB32B*** | **22CUB32W*** | **22CUB32F*** | **22CUB320*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | **22CUC32A*** | **22CUC32B*** | **22CUC32W*** | **22CUC32F*** | **22CUC320*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | **22CUD32A*** | **22CUD32B*** | **22CUD32W*** | **22CUD32F*** | **22CUD320*** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | **22DUA32A*** | **22DUA32B*** | **22DUA32W*** | **22DUA32F*** | **22DUA320*** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | **22DUB32A*** | **22DUB32B*** | **22DUB32W*** | **22DUB32F*** | **22DUB320*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | **22DUC32A*** | **22DUC32B*** | **22DUC32W*** | **22DUC32F*** | **22DUC320*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | **22DUD32A*** | **22DUD32B*** | **22DUD32W*** | **22DUD32F*** | **22DUD320*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | **22DUE32A*** | **22DUE32B*** | **22DUE32W*** | **22DUE32F*** | **22DUE320*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | **22EUE32A*** | **22EUE32B*** | **22EUE32W*** | **22EUE32F*** | **22EUE320*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | **22FUF32A*** | **22FUF32B*** | **22FUF32W*** | **22FUF32F*** | **22FUF320*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | **22GUG32A*** | **22GUG32B*** | **22GUG32W*** | **22GUG32F*** | **22GUG320*** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | **22HUG32A*** | **22HUG32B*** | **22HUG32W*** | **22HUG32F*** | **22HUG320*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | **22IUH32A*** | **22IUH32B*** | **22IUH32W*** | **22IUH32F*** | **22IUH320*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | **22JUH32A*** | **22JUH32B*** | **22JUH32W*** | **22JUH32F*** | **22JUH320*** |
| 75 | 100 | 200 | 200 | 5 | — | 55–250 | — | **22LPU32A*** | **22LPU32B*** | — | — | **22LPU320*** |
| 150 | 200 | 400 | 400 | 6 | — | 160–630 | — | **22MPX32A*** | **22MPX32B*** | — | — | **22MPX320*** |
| — | 300 | 600 | 600 | 7② | — | 400–1220 | A1+CT | **22NUN32A*** | **22NUN32B*** | — | — | **22NUN320*** |
| — | 450 | 900 | 900 | 8③ | — | 400–1220 | A1+CT | **22PUN32A*** | **22PUN32B*** | — | — | **22PUN320*** |

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in size 5–8 starters.

② Only available
F coil 100-250V AC 50/60Hz, or DC
H coil 150-500V AC 50/60Hz, or DC

③ Only available
F coil 100-250V AC 50/60Hz, or DC

④ Auxiliary contacts
22B-22E 4th pole built-in
22F-22J 2 NO & 2 NC

## Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Fuse clips see page 9/94.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/125.
- Wiring Diagrams see page 9/136.
- Replacement Parts see page 9/99.

## Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Standard Width Enclosure with Solid State Overload, 3-Phase, 3-Pole

| Max Hp | | | | | | Overload | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Rating | Catalog N—umber | Catalog Number | Catalog Number | Catalog Number |
| ⅛ | ⅛ | ⅓ | ½ | 0 | — | 0.25–1 | A | 30 | **25CUA92B*** | **25CUA92W*** | **25CUA92F*** | **25CUA92N*** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | **25CUB92B*** | **25CUB92W*** | **25CUB92F*** | **25CUB92N*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 30 | **25CUC92B*** | **25CUC92W*** | **25CUC92F*** | **25CUC92N*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | **25CUD92B*** | **25CUD92W*** | **25CUD92F*** | **25CUD92N*** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | 30 | **25DUA92B*** | **25DUA92W*** | **25DUA92F*** | **25DUA92N*** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | 30 | **25DUB92B*** | **25DUB92W*** | **25DUB92F*** | **25DUB92N*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 30 | **25DUC92B*** | **25DUC92W*** | **25DUC92F*** | **25DUC92N*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | **25DUD92B*** | **25DUD92W*** | **25DUD92F*** | **25DUD92N*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | **25DUE92B*** | **25DUE92W*** | **25DUE92F*** | **25DUE92N*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | **25EUE92B*** | **25EUE92W*** | **25EUE92F*** | **25EUE92N*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 60 | **25FUF92B*** | **25FUF92W*** | **25FUF92F*** | **25FUF92N*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100 | **25GUG92B*** | **25GUG92W*** | **25GUG92F*** | **25GUG92N*** |
| 20 | 25 | 50 | 50 | 3 | — | 25–100 | B | 100 | **25HUG92B*** | **25HUG92W*** | **25HUG92F*** | **25HUG92N*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 200 | **25IUH92B*** | **25IUH92W*** | **25IUH92F*** | **25IUH92N*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 200 | **25JUH92B*** | **25JUH92W*** | **25JUH92F*** | **25JUH92N*** |
| 75 | 100 | 200 | 200 | 5 | — | 55–250 | — | 400 | **25LPU92B*** | — | — | **25LPU92N*** |
| 150 | 200 | 400 | 400 | 6 | — | 160–630 | — | 600 | **25MPX92B*** | — | — | **25MPX92N*** |
| — | 300 | 600 | 600 | 7② | — | 400–1220 | A1+CT | 1200 | **25NUN92B*** | — | — | **25NUN92N*** |
| — | 450 | 900 | 900 | 8③ | — | 400–1220 | A1+CT | 1600 | **25PUN92B*** | — | — | **25PUN92N*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5–8.

② F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC

③ Only available F coil 100-250V AC 50/60Hz, or DC

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/125.
- Wiring Diagrams see page 9/136.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Standard Width Enclosure with Solid State Overload, 3-Phase, 3-Pole

| Max Hp | | | | | | | Overload | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Motor Circuit Interrupter ETI Amps | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ½ | 1 | 1 | 0 | — | 3 | 0.75–3.4 | A | **26CUB92B*** | **26CUB92W*** | **26CUB92F*** | **26CUB92N*** |
| 2 | 2 | 5 | 5 | 0 | — | 10 | 3–12 | A1 | **26CUC92B*** | **26CUC92W*** | **26CUC92F*** | **26CUC92N*** |
| 3 | 3 | — | — | 0 | — | 25 | 5.5–22 | A1 | **26CUD92B*** | **26CUD92W*** | **26CUD92F*** | **26CUD92N*** |
| ½ | ½ | 1 | 1 | 1 | — | 3 | 0.75–3.4 | A | **26DUB92B*** | **26DUB92W*** | **26DUB92F*** | **26DUB92N*** |
| 2 | 2 | 5 | 5 | 1 | — | 10 | 3–12 | A1 | **26DUC92B*** | **26DUC92W*** | **26DUC92F*** | **26DUC92N*** |
| 3 | 3 | 7½ | 10 | 1 | — | 25 | 5.5–22 | A1 | **26DUD92B*** | **26DUD92W*** | **26DUD92F*** | **26DUD92N*** |
| 7½ | 7½ | 10 | — | 1 | — | 30 | 10–40 | A1 | **26DUE92B*** | **26DUE92W*** | **26DUE92F*** | **26DUE92N*** |
| — | — | 15 | 15 | — | 1¾ | 40 | 10–40 | A1 | **26EUE92B*** | **26EUE92W*** | **26EUE92F*** | **26EUE92N*** |
| 10 | 15 | 25 | 25 | 2 | — | 50 | 13–52 | B | **26FUF92B*** | **26FUF92W*** | **26FUF92F*** | **26FUF92N*** |
| 15 | 20 | 30 | 30 | — | 2½ | 100 | 25–100 | B | **26GUG92B*** | **26GUG92W*** | **26GUG92F*** | **26GUG92N*** |
| 25 | 30 | 50 | 50 | 3 | — | 125 | 25–100 | B | **26HUG92B*** | **26HUG92W*** | **26HUG92F*** | **26HUG92N*** |
| 30 | 40 | 75 | 75 | — | 3½ | 125 | 50–200 | B | **26IUH92B*** | **26IUH92W*** | **26IUH92F*** | **26IUH92N*** |
| 40 | 50 | 100 | 100 | 4 | — | 150 | 50–200 | B | **26JUH92B*** | **26JUH92W*** | **26JUH92F*** | **26JUH92N*** |
| 50 | 75 | 150 | 200 | 5 | — | 250 | 55–250 | — | **26LPT92B*** | — | — | **26LPT92N*** |
| 75 | 100 | 200 | — | 5 | — | 400 | 55–250 | — | **26LPU92B*** | — | — | **26LPU92N*** |
| 100 | 125 | 250 | 300 | 6 | — | 400 | 160–630 | — | **26MPW92B*** | — | — | **26MPW92N*** |
| 150 | 200 | 400 | 400 | 6 | — | 600 | 160–630 | — | **26MPX92B*** | — | — | **26MPX92N*** |
| — | 250 | 500 | 500 | 7*② | — | 800 | 400–1220 | A1+CT | **26NUV92B*** | — | — | **26NUV92N*** |
| — | 300 | 600 | 600 | 7*② | — | 1000 | 400–1220 | A1+CT | **26NUY92B*** | — | — | **26NUY92N*** |
| — | 400 | 800 | 800 | 8③ | — | 1200 | 400–1220 | A1+CT | **26PUW92B*** | — | — | **26PUW92N*** |
| — | 450 | 900 | 900 | 8③ | — | 1600 | 400–1220 | A1+CT | **26PUZ92B*** | — | — | **26PUZ92N*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5–8.

② F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC

③ Only available F coil 100-250V AC 50/60Hz, or DC

# Features and Benefits



## Features

- Rugged Industrial Design
- Dual Voltage, Dual Frequency Coils
- Compact Design
- Snap-On Front Removable Auxiliary Contacts
- Electrical and Mechanical Interlocks
- Half Sizes — Space and Cost Savings
- Industrial Type Disconnect Operating Handle
- Visible Blade Disconnect Thru Size 4
- Adjustable Motor Circuit Protector
- 100,000 Amp Fault Protection with MCP or Class R Fuses
- Pilot Device Locations identified on All Enclosures
- UL Listed File #E14900
- CSA Certified File #LR6535

## Applications

Multi-speed magnetic starters automatically reconnect multi-speed motor windings for the desired speed in response to a signal received from push button stations or other pilot devices.

These starters are available for two speed motors.

**Consequent Pole** multi-speed motors having two speeds on a single winding (consequent pole) require a starter which reconnects the motor leads to half the number of effective motor poles at the high speed point. In this type of motor, **the low speed is one half the high speed.**

**Separate Windings** motors having separate windings for each speed provide more varied speed combinations in that the low speed need not be one half the high speed. **Starters for separate winding motors consist of a starter unit for each speed.**

Multi-speed motor starters are available for constant torque, variable torque and constant horsepower motors.

**Constant Torque** motors maintain constant torque at all speeds. Horsepower varies directly with speed. This type of motor is applicable to conveyors, mills and similar applications.

**Variable Torque** motors produce a torque characteristic which varies as the square of the speed. This type of motor is applicable to fans, blowers and centrifugal pumps.

**Constant Horsepower** motors maintain constant horsepower at all speeds and therefore torque varies inversely with speed. This type of motor is applicable where the same horsepower is required at all speeds. **The higher current required at low speed requires derating on starters for constant horsepower applications.** This type of motor is applicable to metal working machines such as drills, lathes, mills, bending machines, punch presses, and power wrenches.

### Operation

Magnetic starters for multi-speed applications select the desired speed in accordance with the pilot control.

The shock to machinery upon the reduction of speed is greater than when the speed is increased. Therefore, the pilot control should be wired so that the stop button must be depressed before dropping to a lower speed or time delays should be used for applications requiring full automatic operations. The multi-speed controls are available with the necessary interlocks or relays to provide this type of operation.

These controls may be modified for compelling or acceleration pilot control.

**Selective Control** permits the operator to start the motor at any speed and to change to a higher speed by merely pushing a button. To change to a lower speed it is necessary to first depress the stop button and to then press the proper speed button. Selective control is a function of the pilot control selected and requires no starter modifications.

**Compelling Control** requires that the motor always be started at the lower speed and that the push buttons be operated in speed sequence to go to the next higher speed. To change to a lower speed, the stop button must be depressed and then the push buttons operated in speed sequence until the desired speed is reached. Compelling control can be added from the factory modification section page 9/96.

**Acceleration Control** provides that the motor be accelerated automatically with timers by progressively energizing the controls from the push button station from the lowest to highest speed. To change to a lower speed the stop button is depressed and then it is necessary to proceed as if starting from rest. Acceleration control can be added from the factory modification section page 9/96.

**Deceleration Control** provides that the motor be decelerated automatically with a timer when going from high speed to low speed. The timer allows the motor to decelerate from high speed to a lower speed before automatically restarting the motor in low speed. Deceleration control can be added from the factory modification section page 9/96.

Open Style Two Speed Starter (ESP100 Overload)

# Constant or Variable Torque with Solid State Overload, Class 30

## Selection

2S2W Starter
(ESP200 Overload)

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.①
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/114.
- Wiring Diagrams see page 9/137.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240 | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480 | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Low Speed FLA Table

| Size | FLA | OLR Frame Size | † |
|---|---|---|---|
| 0,1 | 0.25–1 | A | A |
| 0,1 | 0.75–3.4 | A | B |
| 0,1 | 3–12 | A1 | C |
| 0,1 | 5.5–22 | A1 | D |
| 0-1 3/4 | 10–40 | A1 | E |
| 2-3 | 13–52 | B | F |
| 2-3 | 25–100 | B | G |
| 3 1/2-4 | 50–200 | B | H |

### One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

| Max Hp | | | | | | Overload | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Open Type** Standard Auxiliary Contacts② | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | **30CUB†32A2V*** | **30CUB†32B2V*** | **30CUB†32W2V*** | **30CUB†32F2V*** | **30CUB†3202V*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | **30CUC†32A2V*** | **30CUC†32B2V*** | **30CUC†32W2V*** | **30CUC†32F2V*** | **30CUC†3202V*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | **30CUD†32A2V*** | **30CUD†32B2V*** | **30CUD†32W2V*** | **30CUD†32F2V*** | **30CUD†3202V*** |
| ½ | ¾ | 1½ | 1½ | 1 | — | 0.75–3.4 | A | **30DUB†32A2V*** | **30DUB†32B2V*** | **30DUB†32W2V*** | **30DUB†32F2V*** | **30DUB†3202V*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | **30DUC†32A2V*** | **30DUC†32B2V*** | **30DUC†32W2V*** | **30DUC†32F2V*** | **30DUC†3202V*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | **30DUD†32A2V*** | **30DUD†32B2V*** | **30DUD†32W2V*** | **30DUD†32F2V*** | **30DUD†3202V*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | **30DUE†32A2V*** | **30DUE†32B2V*** | **30DUE†32W2V*** | **30DUE†32F2V*** | **30DUE†3202V*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | **30EUE†32A2V*** | **30EUE†32B2V*** | **30EUE†32W2V*** | **30EUE†32F2V*** | **30EUE†3202V*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | **30FUF†32A2V*** | **30FUF†32B2V*** | **30FUF†32W2V*** | **30FUF†32F2V*** | **30FUF†3202V*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | **30GUG†32A2V*** | **30GUG†32B2V*** | **30GUG†32W2V*** | **30GUG†32F2V*** | **30GUG†3202V*** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | **30HUG†32A2V*** | **30HUG†32B2V*** | **30HUG†32W2V*** | **30HUG†32F2V*** | **30HUG†3202V*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | **30IUH†32A2V*** | **30IUH†32B2V*** | **30IUH†32W2V*** | **30IUH†32F2V*** | **30IUH†3202V*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | **30JUH†32A2V*** | **30JUH†32B2V*** | **30JUH†32W2V*** | **30JUH†32F2V*** | **30JUH†3202V*** |

### Two Separate Windings, 3-Phase (Constant or Variable Torque)

| Max Hp | | | | | | Overload | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Open Type** Standard Auxiliary Contacts② | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (Optional) | **NEMA 4X Fiberglass** Watertight, Dust-tight Corrosion Resistant | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | **30CUB†32A1V*** | **30CUB†32B1V*** | **30CUB†32W1V*** | **30CUB†32F1V*** | **30CUB†3201V*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | **30CUC†32A1V*** | **30CUC†32B1V*** | **30CUC†32W1V*** | **30CUC†32F1V*** | **30CUC†3201V*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | **30CUD†32A1V*** | **30CUD†32B1V*** | **30CUD†32W1V*** | **30CUD†32F1V*** | **30CUD†3201V*** |
| ½ | ¾ | 1½ | 1½ | 1 | — | 0.75–3.4 | A | **30DUB†32A1V*** | **30DUB†32B1V*** | **30DUB†32W1V*** | **30DUB†32F1V*** | **30DUB†3201V*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | **30DUC†32A1V*** | **30DUC†32B1V*** | **30DUC†32W1V*** | **30DUC†32F1V*** | **30DUC†3201V*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | **30DUD†32A1V*** | **30DUD†32B1V*** | **30DUD†32W1V*** | **30DUD†32F1V*** | **30DUD†3201V*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | **30DUE†32A1V*** | **30DUE†32B1V*** | **30DUE†32W1V*** | **30DUE†32F1V*** | **30DUE†3201V*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | **30EUE†32A1V*** | **30EUE†32B1V*** | **30EUE†32W1V*** | **30EUE†32F1V*** | **30EUE†3201V*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | **30FUF†32A1V*** | **30FUF†32B1V*** | **30FUF†32W1V*** | **30FUF†32F1V*** | **30FUF†3201V*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | **30GUG†32A1V*** | **30GUG†32B1V*** | **30GUG†32W1V*** | **30GUG†32F1V*** | **30GUG†3201V*** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | **30HUG†32A1V*** | **30HUG†32B1V*** | **30HUG†32W1V*** | **30HUG†32F1V*** | **30HUG†3201V*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | **30IUH†32A1V*** | **30IUH†32B1V*** | **30IUH†32W1V*** | **30IUH†32F1V*** | **30IUH†3201V*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | **30JUH†32A1V*** | **30JUH†32B1V*** | **30JUH†32W1V*** | **30JUH†32F1V*** | **30JUH†3201V*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

② Auxiliary contacts 30C-30E 4th pole built-in 30F-30J 2 NO & 2 NC

# Constant HP with Solid State Overload, Class 30

## Selection

2S2W Starter
(ESP200 Overload)

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Replace the (†) with the letter that corresponds to the correct FLA in High/Low Speed FLA Table.①
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/114.
- Wiring Diagrams see page 9/137.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240 | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480 | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### High/Low Speed FLA Table①

| Size | FLA | OLR Frame Size | † |
|---|---|---|---|
| 0,1 | 0.25–1 | A | A |
| 0,1 | 0.75–3.4 | A | B |
| 0,1 | 3–12 | A1 | C |
| 0,1 | 5.5–22 | A1 | D |
| 0-1 3/4 | 10–40 | A1 | E |
| 2-3 | 13–52 | B | F |
| 2-3 | 25–100 | B | G |
| 3 1/2-4 | 50–200 | B | H |

* First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.

### One Winding Consequent Pole, 3-Phase (Constant Horsepower)

| Max Hp | | | | | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Open Type Standard Auxiliary Contacts② | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 2 | 2 | 3 | 3 | 0 | — | 30CU††32A2H* | 30CU††32B2H* | 30CU††32W2H* | 30CU††32F2H* | 30CU††3202H* |
| 5 | 5 | 7½ | 7½ | 1 | — | 30DU††32A2H* | 30DU††32B2H* | 30DU††32W2H* | 30DU††32F2H* | 30DU††3202H* |
| 7½ | 7½ | 10 | 10 | — | 1¾ | 30EU††32A2H* | 30EU††32B2H* | 30EU††32W2H* | 30EU††32F2H* | 30EU††3202H* |
| 7½ | 10 | 20 | 20 | 2 | — | 30FU††32A2H* | 30FU††32B2H* | 30FU††32W2H* | 30FU††32F2H* | 30FU††3202H* |
| 10 | 15 | 25 | 25 | — | 2½ | 30GU††32A2H* | 30GU††32B2H* | 30GU††32W2H* | 30GU††32F2H* | 30GU††3202H* |
| 20 | 25 | 40 | 40 | 3 | — | 30HU††32A2H* | 30HU††32B2H* | 30HU††32W2H* | 30HU††32F2H* | 30HU††3202H* |
| 25 | 30 | 50 | 50 | — | 3½ | 30IU††32A2H* | 30IU††32B2H* | 30IU††32W2H* | 30IU††32F2H* | 30IU††3202H* |
| 30 | 40 | 75 | 75 | 4 | — | 30JU††32A2H* | 30JU††32B2H* | 30JU††32W2H* | 30JU††32F2H* | 30JU††3202H* |

### Two Separate Windings, 3-Phase (Constant Horsepower)

| Max Hp | | | | | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Open Type Standard Auxiliary Contacts② | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 2 | 2 | 3 | 3 | 0 | — | 30CU††32A1H* | 30CU††32B1H* | 30CU††32W1H* | 30CU††32F1H* | 30CU††3201H* |
| 5 | 5 | 7½ | 7½ | 1 | — | 30DU††32A1H* | 30DU††32B1H* | 30DU††32W1H* | 30DU††32F1H* | 30DU††3201H* |
| 7½ | 7½ | 10 | 10 | — | 1¾ | 30EU††32A1H* | 30EU††32B1H* | 30EU††32W1H* | 30EU††32F1H* | 30EU††3201H* |
| 7½ | 10 | 20 | 20 | 2 | — | 30FU††32A1H* | 30FU††32B1H* | 30FU††32W1H* | 30FU††32F1H* | 30FU††3201H* |
| 10 | 15 | 25 | 25 | — | 2½ | 30GU††32A1H* | 30GU††32B1H* | 30GU††32W1H* | 30GU††32F1H* | 30GU††3201H* |
| 20 | 25 | 40 | 40 | 3 | — | 30HU††32A1H* | 30HU††32B1H* | 30HU††32W1H* | 30HU††32F1H* | 30HU††3201H* |
| 25 | 30 | 50 | 50 | — | 3½ | 30IU††32A1H* | 30IU††32B1H* | 30IU††32W1H* | 30IU††32F1H* | 30IU††3201H* |
| 30 | 40 | 75 | 75 | 4 | — | 30JU††32A1H* | 30JU††32B1H* | 30JU††32W1H* | 30JU††32F1H* | 30JU††3201H* |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① First (†) for high speed, second (†) for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

② Auxiliary contacts
30C-30E 4th pole built-in
30F-30J 2 NO & 2 NC

# Non-Fusible, Constant or Variable Torque with Solid State Overload, Class 32

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.②
- Fuse clips see page 9/94.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/127.
- Wiring Diagrams see page 9/137.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Low Speed FLA Table

| Size | FLA | OLR Frame Size | † |
|---|---|---|---|
| 0,1 | 0.25–1 | A | A |
| 0,1 | 0.75–3.4 | A | B |
| 0,1 | 3–12 | A1 | C |
| 0,1 | 5.5–22 | A1 | D |
| 0,1 | 0-1 3/4 | 10–40 | A1 | E |
| 2-3 | 13–52 | B | F |
| 2-3 | 25–100 | B | G |
| 3 1/2-4 | 50–200 | B | H |

### One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

| Max Hp | | | | | | Overload | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Range | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | **32CUB†92B2V2*** | **32CUB†92W2V2*** | **32CUB†92F2V2*** | **32CUB†92N2V2*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 30 | **32CUC†92B2V2*** | **32CUC†92W2V2*** | **32CUC†92F2V2*** | **32CUC†92N2V2*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | **32CUD†92B2V2*** | **32CUD†92W2V2*** | **32CUD†92F2V2*** | **32CUD†92N2V2*** |
| ½ | ¾ | 1½ | 1½ | 1 | — | 0.75–3.4 | A | 30 | **32DUB†92B2V2*** | **32DUB†92W2V2*** | **32DUB†92F2V2*** | **32DUB†92N2V2*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 30 | **32DUC†92B2V2*** | **32DUC†92W2V2*** | **32DUC†92F2V2*** | **32DUC†92N2V2*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | **32DUD†92B2V2*** | **32DUD†92W2V2*** | **32DUD†92F2V2*** | **32DUD†92N2V2*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | **32DUE†92B2V2*** | **32DUE†92W2V2*** | **32DUE†92F2V2*** | **32DUE†92N2V2*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | **32EUE†92B2V2*** | **32EUE†92W2V2*** | **32EUE†92F2V2*** | **32EUE†92N2V2*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 60 | **32FUF†92B2V2*** | **32FUF†92W2V2*** | **32FUF†92F2V2*** | **32FUF†92N2V2*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100 | **32GUG†92B2V2*** | **32GUG†92W2V2*** | **32GUG†92F2V2*** | **32GUG†92N2V2*** |
| 20 | 25 | 50 | 50 | 3 | — | 25–100 | B | 100 | **32HUG†92B2V2*** | **32HUG†92W2V2*** | **32HUG†92F2V2*** | **32HUG†92N2V2*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 200 | **32IUH†92B2V2*** | **32IUH†92W2V2*** | **32IUH†92F2V2*** | **32IUH†92N2V2*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 200 | **32JUH†92B2V2*** | **32JUH†92W2V2*** | **32JUH†92F2V2*** | **32JUH†92N2V2*** |

### Two Separate Windings, 3-Phase (Constant or Variable Torque)

| Max Hp | | | | | | Overload | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Range | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | **32CUB†92B1V2*** | **32CUB†92W1V2*** | **32CUB†92F1V2*** | **32CUB†92N1V2*** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 30 | **32CUC†92B1V2*** | **32CUC†92W1V2*** | **32CUC†92F1V2*** | **32CUC†92N1V2*** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | **32CUD†92B1V2*** | **32CUD†92W1V2*** | **32CUD†92F1V2*** | **32CUD†92N1V2*** |
| ½ | ¾ | 1½ | 1½ | 1 | — | 0.75–3.4 | A | 30 | **32DUB†92B1V2*** | **32DUB†92W1V2*** | **32DUB†92F1V2*** | **32DUB†92N1V2*** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 30 | **32DUC†92B1V2*** | **32DUC†92W1V2*** | **32DUC†92F1V2*** | **32DUC†92N1V2*** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | **32DUD†92B1V2*** | **32DUD†92W1V2*** | **32DUD†92F1V2*** | **32DUD†92N1V2*** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | **32DUE†92B1V2*** | **32DUE†92W1V2*** | **32DUE†92F1V2*** | **32DUE†92N1V2*** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | **32EUE†92B1V2*** | **32EUE†92W1V2*** | **32EUE†92F1V2*** | **32EUE†92N1V2*** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 60 | **32FUF†92B1V2*** | **32FUF†92W1V2*** | **32FUF†92F1V2*** | **32FUF†92N1V2*** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100 | **32GUG†92B1V2*** | **32GUG†92W1V2*** | **32GUG†92F1V2*** | **32GUG†92N1V2*** |
| 20 | 25 | 50 | 50 | 3 | — | 25–100 | B | 100 | **32HUG†92B1V2*** | **32HUG†92W1V2*** | **32HUG†92F1V2*** | **32HUG†92N1V2*** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 200 | **32IUH†92B1V2*** | **32IUH†92W1V2*** | **32IUH†92F1V2*** | **32IUH†92N1V2*** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 200 | **32JUH†92B1V2*** | **32JUH†92W1V2*** | **32JUH†92F1V2*** | **32JUH†92N1V2*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in modified starters.

② If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# Non-Fusible, Constant Horsepower with Solid State Overload, Class 32

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Replace the (†) with the letter that corresponds to the correct FLA in the High/Low Speed FLA Table.②
- Fuse clips see page 9/94.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/127.
- Wiring Diagrams see page 9/137.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies see Factory Modifications page 9/93.

### High/Low Speed FLA Table②

| Size | FLA | OLR Frame Size | † |
|---|---|---|---|
| 0,1 | 0.25–1 | A | A |
| 0,1 | 0.75–3.4 | A | B |
| 0,1 | 3–12 | A1 | C |
| 0,1 | 5.5–22 | A1 | D |
| 0-1 3/4 | 10–40 | A1 | E |
| 2-3 | 13–52 | B | F |
| 2-3 | 25–100 | B | G |
| 3 1/2-4 | 50–200 | B | H |

* First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.

### One Winding Consequent Pole, 3-Phase (Constant Horsepower)

| Max Hp | | | | | | Overload | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless, Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel | NEMA 4X Fiberglass, Watertight, Dust-tight, Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Range | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 2 | 2 | 3 | 3 | 0 | — | — | — | 30 | 32CU††92B2H2* | 32CU††92W2H2* | 32CU††92F2H2* | 32CU††92N2H2* |
| 5 | 5 | 7½ | 7½ | 1 | — | — | — | 30 | 32DU††92B2H2* | 32DU††92W2H2* | 32DU††92F2H2* | 32DU††92N2H2* |
| 7½ | 7½ | 10 | 10 | — | 1¾ | — | — | 60 | 32EU††92B2H2* | 32EU††92W2H2* | 32EU††92F2H2* | 32EU††92N2H2* |
| 7½ | 10 | 20 | 20 | 2 | — | — | — | 60 | 32FU††92B2H2* | 32FU††92W2H2* | 32FU††92F2H2* | 32FU††92N2H2* |
| 10 | 15 | 25 | 25 | — | 2½ | — | — | 100 | 32GU††92B2H2* | 32GU††92W2H2* | 32GU††92F2H2* | 32GU††92N2H2* |
| 20 | 25 | 40 | 40 | 3 | — | — | — | 100 | 32HU††92B2H2* | 32HU††92W2H2* | 32HU††92F2H2* | 32HU††92N2H2* |
| 25 | 30 | 50 | 50 | — | 3½ | — | — | 200 | 32IU††92B2H2* | 32IU††92W2H2* | 32IU††92F2H2* | 32IU††92N2H2* |
| 30 | 40 | 75 | 75 | 4 | — | — | — | 200 | 32JU††92B2H2* | 32JU††92W2H2* | 32JU††92F2H2* | 32JU††92N2H2* |

### Two Separate Windings, 3-Phase (Constant Horsepower)

| Max Hp | | | | | | Overload | | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless, Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel | NEMA 4X Fiberglass, Watertight, Dust-tight, Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Amp Range | Frame Size | Disc. Amp Range | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 2 | 2 | 3 | 3 | 0 | — | — | — | 30 | 32CU††92B1H2* | 32CU††92W1H2* | 32CU††92F1H2* | 32CU††92N1H2* |
| 5 | 5 | 7½ | 7½ | 1 | — | — | — | 30 | 32DU††92B1H2* | 32DU††92W1H2* | 32DU††92F1H2* | 32DU††92N1H2* |
| 7½ | 7½ | 10 | 10 | — | 1¾ | — | — | 60 | 32EU††92B1H2* | 32EU††92W1H2* | 32EU††92F1H2* | 32EU††92N1H2* |
| 7½ | 10 | 20 | 20 | 2 | — | — | — | 60 | 32FU††92B1H2* | 32FU††92W1H2* | 32FU††92F1H2* | 32FU††92N1H2* |
| 10 | 15 | 25 | 25 | — | 2½ | — | — | 100 | 32GU††92B1H2* | 32GU††92W1H2* | 32GU††92F1H2* | 32GU††92N1H2* |
| 20 | 25 | 40 | 40 | 3 | — | — | — | 100 | 32HU††92B1H2* | 32HU††92W1H2* | 32HU††92F1H2* | 32HU††92N1H2* |
| 25 | 30 | 50 | 50 | — | 3½ | — | — | 200 | 32IU††92B1H2* | 32IU††92W1H2* | 32IU††92F1H2* | 32IU††92N1H2* |
| 30 | 40 | 75 | 75 | 4 | — | — | — | 200 | 32JU††92B1H2* | 32JU††92W1H2* | 32JU††92F1H2* | 32JU††92N1H2* |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in modified starters.

② First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# MCP Type, Constant or Variable Torque with Solid State Overload, Class 32

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.②
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/127.
- Wiring Diagrams see page 9/137.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Low Speed FLA Table

| Size | FLA | OLR Frame Size | † |
|---|---|---|---|
| 0,1 | 0.25–1 | A | A |
| 0,1 | 0.75–3.4 | A | B |
| 0,1 | 3–12 | A1 | C |
| 0,1 | 5.5–22 | A1 | D |
| 0-1 3/4 | 10–40 | A1 | E |
| 2-3 | 13–52 | B | F |
| 2-3 | 25–100 | B | G |
| 3 1/2-4 | 50–200 | B | H |

### One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

| Max Hp | | | | | | | Overload | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Motor Circuit Interrupter ETI Amps | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ¾ | 1½ | 2 | 0 | — | 3 | 0.75–3.4 | A | **32CUB†92B2V*** | **32CUB†92W2V*** | **32CUB†92F2V*** | **32CUB†92N2V*** |
| 2 | 2 | 5 | 5 | 0 | — | 10 | 3–12 | A1 | **32CUC†92B2V*** | **32CUC†92W2V*** | **32CUC†92F2V*** | **32CUC†92N2V*** |
| 3 | 3 | — | — | 0 | — | 25 | 5.5–22 | A1 | **32CUD†92B2V*** | **32CUD†92W2V*** | **32CUD†92F2V*** | **32CUD†92N2V*** |
| ½ | ¾ | 1½ | 1½ | 1 | — | 3 | 0.75–3.4 | A | **32DUB†92B2V*** | **32DUB†92W2V*** | **32DUB†92F2V*** | **32DUB†92N2V*** |
| 2 | 2 | 5 | 5 | 1 | — | 10 | 3–12 | A1 | **32DUC†92B2V*** | **32DUC†92W2V*** | **32DUC†92F2V*** | **32DUC†92N2V*** |
| 3 | 3 | 10 | 10 | 1 | — | 25 | 5.5–22 | A1 | **32DUD†92B2V*** | **32DUD†92W2V*** | **32DUD†92F2V*** | **32DUD†92N2V*** |
| 7½ | 7½ | — | — | 1 | — | 30 | 10–40 | A1 | **32DUE†92B2V*** | **32DUE†92W2V*** | **32DUE†92F2V*** | **32DUE†92N2V*** |
| — | — | 15 | 15 | — | 1¾ | 40 | 10–40 | A1 | **32EUE†92B2V*** | **32EUE†92W2V*** | **32EUE†92F2V*** | **32EUE†92N2V*** |
| 10 | 15 | 25 | 25 | 2 | — | 50 | 13–52 | B | **32FUF†92B2V*** | **32FUF†92W2V*** | **32FUF†92F2V*** | **32FUF†92N2V*** |
| 15 | 20 | 30 | 30 | — | 2½ | 100 | 25–100 | B | **32GUG†92B2V*** | **32GUG†92W2V*** | **32GUG†92F2V*** | **32GUG†92N2V*** |
| 25 | 30 | 50 | 50 | 3 | — | 125 | 25–100 | B | **32HUG†92B2V*** | **32HUG†92W2V*** | **32HUG†92F2V*** | **32HUG†92N2V*** |
| 30 | 40 | 75 | 75 | — | 3½ | 125 | 50–200 | B | **32IUH†92B2V*** | **32IUH†92W2V*** | **32IUH†92F2V*** | **32IUH†92N2V*** |
| 40 | 50 | 100 | 100 | 4 | — | 150 | 50–200 | B | **32JUH†92B2V*** | **32JUH†92W2V*** | **32JUH†92F2V*** | **32JUH†92N2V*** |

### Two Separate Windings, 3-Phase (Constant or Variable Torque)

| Max Hp | | | | | | | Overload | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Motor Circuit Interrupter ETI Amps | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ¾ | 1½ | 2 | 0 | — | 3 | 0.75–3.4 | A | **32CUB†92B1V*** | **32CUB†92W1V*** | **32CUB†92F1V*** | **32CUB†92N1V*** |
| 2 | 2 | 5 | 5 | 0 | — | 10 | 3–12 | A1 | **32CUC†92B1V*** | **32CUC†92W1V*** | **32CUC†92F1V*** | **32CUC†92N1V*** |
| 3 | 3 | — | — | 0 | — | 25 | 5.5–22 | A1 | **32CUD†92B1V*** | **32CUD†92W1V*** | **32CUD†92F1V*** | **32CUD†92N1V*** |
| ½ | ¾ | 1½ | 1½ | 1 | — | 3 | 0.75–3.4 | A | **32DUB†92B1V*** | **32DUB†92W1V*** | **32DUB†92F1V*** | **32DUB†92N1V*** |
| 2 | 2 | 5 | 5 | 1 | — | 10 | 3–12 | A1 | **32DUC†92B1V*** | **32DUC†92W1V*** | **32DUC†92F1V*** | **32DUC†92N1V*** |
| 3 | 3 | 10 | 10 | 1 | — | 25 | 5.5–22 | A1 | **32DUD†92B1V*** | **32DUD†92W1V*** | **32DUD†92F1V*** | **32DUD†92N1V*** |
| 7½ | 7½ | — | — | 1 | — | 30 | 10–40 | A1 | **32DUE†92B1V*** | **32DUE†92W1V*** | **32DUE†92F1V*** | **32DUE†92N1V*** |
| — | — | 15 | 15 | — | 1¾ | 40 | 10–40 | A1 | **32EUE†92B1V*** | **32EUE†92W1V*** | **32EUE†92F1V*** | **32EUE†92N1V*** |
| 10 | 15 | 25 | 25 | 2 | — | 50 | 13–52 | B | **32FUF†92B1V*** | **32FUF†92W1V*** | **32FUF†92F1V*** | **32FUF†92N1V*** |
| 15 | 20 | 30 | 30 | — | 2½ | 100 | 25–100 | B | **32GUG†92B1V*** | **32GUG†92W1V*** | **32GUG†92F1V*** | **32GUG†92N1V*** |
| 25 | 30 | 50 | 50 | 3 | — | 125 | 25–100 | B | **32HUG†92B1V*** | **32HUG†92W1V*** | **32HUG†92F1V*** | **32HUG†92N1V*** |
| 30 | 40 | 75 | 75 | — | 3½ | 125 | 50–200 | B | **32IUH†92B1V*** | **32IUH†92W1V*** | **32IUH†92F1V*** | **32IUH†92N1V*** |
| 40 | 50 | 100 | 100 | 4 | — | 150 | 50–200 | B | **32JUH†92B1V*** | **32JUH†92W1V*** | **32JUH†92F1V*** | **32JUH†92N1V*** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in modified starters.

② If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# MCP Type, Constant Horsepower with Solid State Overload, Class 32

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Replace the (†) with the letter that corresponds to the correct FLA in the High/Low Speed FLA table.②
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/127.
- Wiring Diagrams see page 9/137.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies see Factory Modifications page 9/93.

### High/Low Speed FLA Table②

| Size | FLA | OLR Frame Size | † |
|---|---|---|---|
| 0,1 | 0.25–1 | A | A |
| 0,1 | 0.75–3.4 | A | B |
| 0,1 | 3–12 | A1 | C |
| 0,1 | 5.5–22 | A1 | D |
| 0-1 3/4 | 10–40 | A1 | E |
| 2-3 | 13–52 | B | F |
| 2-3 | 25–100 | B | G |
| 3 1/2-4 | 50–200 | B | H |

* First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.

### One Winding Consequent Pole, 3-Phase (Constant Horsepower)

| Max Hp | | | | | | | Overload | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Motor Circuit Interrupter ETI Amps | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 2 | 2 | 3 | 3 | 0 | — | 10 | — | A or A1 | **32CU††92B2H*** | **32CU††92W2H*** | **32CU††92F2H*** | **32CU††92N2H*** |
| 5 | 5 | 7½ | 7½ | 1 | — | 25 | — | A or A1 | **32DU††92B2H*** | **32DU††92W2H*** | **32DU††92F2H*** | **32DU††92N2H*** |
| 7½ | 7½ | 10 | 10 | — | 1¾ | 40 | — | A1 | **32EU††92B2H*** | **32EU††92W2H*** | **32EU††92F2H*** | **32EU††92N2H*** |
| 7½ | 10 | 20 | 20 | 2 | — | 50 | — | B | **32FU††92B2H*** | **32FU††92W2H*** | **32FU††92F2H*** | **32FU††92N2H*** |
| 10 | 15 | 25 | 25 | — | 2½ | 100 | — | B | **32GU††92B2H*** | **32GU††92W2H*** | **32GU††92F2H*** | **32GU††92N2H*** |
| 20 | 25 | 40 | 40 | 3 | — | 100 | — | B | **32HU††92B2H*** | **32HU††92W2H*** | **32HU††92F2H*** | **32HU††92N2H*** |
| 25 | 30 | 50 | 50 | — | 3½ | 125 | — | B | **32IU††92B2H*** | **32IU††92W2H*** | **32IU††92F2H*** | **32IU††92N2H*** |
| 30 | 40 | 75 | 75 | 4 | — | 150 | — | B | **32JU††92B2H*** | **32JU††92W2H*** | **32JU††92F2H*** | **32JU††92N2H*** |

### Two Separate Windings, 3-Phase (Constant Horsepower)

| Max Hp | | | | | | | Overload | | Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | NEMA Size | Half Size | Motor Circuit Interrupter ETI Amps | Amp Range | Frame Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 2 | 2 | 3 | 3 | 0 | — | 10 | — | A or A1 | **32CU††92B1H*** | **32CU††92W1H*** | **32CU††92F1H*** | **32CU††92N1H*** |
| 5 | 5 | 7½ | 7½ | 1 | — | 25 | — | A or A1 | **32DU††92B1H*** | **32DU††92W1H*** | **32DU††92F1H*** | **32DU††92N1H*** |
| 7½ | 7½ | 10 | 10 | — | 1¾ | 40 | — | A1 | **32EU††92B1H*** | **32EU††92W1H*** | **32EU††92F1H*** | **32EU††92N1H*** |
| 7½ | 10 | 20 | 20 | 2 | — | 50 | — | B | **32FU††92B1H*** | **32FU††92W1H*** | **32FU††92F1H*** | **32FU††92N1H*** |
| 10 | 15 | 25 | 25 | — | 2½ | 100 | — | B | **32GU††92B1H*** | **32GU††92W1H*** | **32GU††92F1H*** | **32GU††92N1H*** |
| 20 | 25 | 40 | 40 | 3 | — | 100 | — | B | **32HU††92B1H*** | **32HU††92W1H*** | **32HU††92F1H*** | **32HU††92N1H*** |
| 25 | 30 | 50 | 50 | — | 3½ | 125 | — | B | **32IU††92B1H*** | **32IU††92W1H*** | **32IU††92F1H*** | **32IU††92N1H*** |
| 30 | 40 | 75 | 75 | 4 | — | 150 | — | B | **32JU††92B1H*** | **32JU††92W1H*** | **32JU††92F1H*** | **32JU††92N1H*** |

**Note**: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in modified starters.

② First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

# Features and Benefits

## General

Siemens SIRIUS NEMA Rated Contactors; the right choice for applications that demand the best. Rugged, reliable, flexible,and safe performance. In an increasingly competitive marketplace, all these factors are essential to success, particularly when it comes to assuring reliable motor protection and control. Whether you're a consulting engineer, a contractor, or a plant manager, protecting the performance of your motors is a critical priority. And one of the best ways to do so is with world class Siemens contactors and overload relays. Our contactors and overload relays are engineered for rugged performance, manufactured to be dependable, designed to improve safety, easy and quick installation saves on downtime and installation costs. All contactors and overload relays are UL listed and CSA certified.

Siemens manufactures a broad range of contactors and overload relays designed to meet all of your most demanding applications. Contactor NEMA sizes range from 0 to 6. Siemens also offers a wide range of overload options such as the 3RU21 thermal for up to 100 amps and 3RB20/21 and the 3RB30/31 solid-state overloads up to 630 amps which are all coordinated with the dimensions, connections, and technical characteristics of SIRUIS NEMA rated contactors. Another solid state overload option is the ESP200 overload relay. Step 1 Choose contactor based on Full LoadAmps (FLA) and HP -> Step 2 choose coil for contactor -> Step 3 Choose overload relay based on FLA. Tip select an overload with motor FLA in middle of adjustment dial.

## Catalog Numbering System

**3RT2 SIRIUS NEMA Rated Contactor**

| 3RT2 | 0 | 18 | – | 1 | A | K | 6 | 1 | – | 0 | U | A | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Application**
**0** = 3 pole Standard

**NEMA Size**
**18** = Size 0
**27** = Size 1
**36** = Size 2
**46** = Size 3

**Terminal**
**1** = Screw

**Coil Type**
**A** = AC
**B** = DC

**Coil Voltage**
See Coil Selection tables on page 9/31

**Aux Contacts**
**0** = 1N0 = 1NO + 1NC (Sz. 1 to 3)
**1** = 1NO (Sz. 0)

**NEMA Rated**

**3RT1 SIRIUS NEMA Rated Contactor**

| 3RT1 | 0 | 56 | – | 6 | A | F | 3 | 6 | – | 0 | U | A | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Application**
**0** = 3 pole Standard

**NEMA Size**
**56** = Size 4
**66** = Size 5
**76** = Size 6

**Terminal**
**6** = Busbar Terminal

**Coil Type**
**A** = AC/DC

**Coil Voltage**
See Coil Selection tables on page 9/31

**Aux Contacts**
**6** = 2 NO + 2 NC (Sz. 4-6)

**NEMA Rated**

- Tested and certified at all NEMA standards
- Are suitable for use in any climate
- Touchsafe terminals
- Screw terminals
- Auxiliary contacts available
- Surge suppression available
- AC and DC coils available

## Ordering Information

- Replace the (**) with the letters from one of the coil tables.
- Field Modification Kits see Section 2, pages 68-85.
- Technical Data see Section 2, pages 123-153
- Dimensions see Section 2, pages 211-217.
- Wiring Diagrams see Section 2, pages 192-200.
- Replacement Parts see Section 2, pages 96-101.
- Selection of ESP200 solid state overload relays, see Section 9, page 59.
- Selection of IEC 3RU/3RB solid state overload relays, see Section 2.

See Industrial Controls Catalog for the sections mentioned above.

**AC Coil table (3RT201,202,203,204)**

| Coil code | Voltage |
|---|---|
| C2① | 24vac |
| K6 | 120vac |
| P6 | 240vac |
| U6 | 277vac |
| V6 | 480vac |
| T6 | 600vac |

**DC Coil table (3RT201,202)**

| Coil code | Voltage |
|---|---|
| A2 | 12vdc |
| B4 | 24vdc |
| W4 | 48vdc |
| G4 | 125vdc |

**UC Coil table (3RT203,204)**

| Coil code | Voltage |
|---|---|
| B3 | 20…33vac/dc |
| F3 | 83…155vac/dc |
| P3 | 175…280vac/dc |

**UC Coil table (3RT105,106,107)**

| Coil code | Voltage |
|---|---|
| B3 | 23…26vac/dc |
| D3 | 42…48vac/dc |
| F3 | 110…127vac/dc |
| M3 | 200…220vac/dc |
| P3 | 220…240vac/dc |
| U3 | 240…277vac/dc |
| R3 | 440…480vac/dc |
| S3 | 500…550vac/dc |
| T3 | 575…600vac/dc |

### Open Type 3-Phase, 3-Pole

| Max Hp | | | | Contactor | | Catalog Number | | Use the Coil Code from the tables above to fill in ** | |
|---|---|---|---|---|---|---|---|---|---|
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | Amp Rating | NEMA Size | Screw Terminal with AC Coils | Screw Terminals with 24vDC coils | | |
| 3 | 3 | 5 | 5 | 18 | 0 | 3RT2018-1A**1-0UA0 | 3RT2018-1BB41-0UA0 | AC | DC |
| 7 1/2 | 7 1/2 | 10 | 10 | 27 | 1 | 3RT2027-1A**0-0UA0 | 3RT2027-1BB40-0UA0 | AC | DC |
| 10 | 15 | 25 | 25 | 45 | 2 | 3RT2036-1A**0-0UA0 | 3RT2036-1NB30-0UA0 | AC | UC |
| 25 | 30 | 50 | 50 | 90 | 3 | 3RT2046-1A**0-0UA0 | 3RT2046-1NB30-0UA0 | AC | UC |
| | | | | | | Screw Terminals with UC Coils | | | |
| 40 | 50 | 100 | 100 | 135 | 4 | 3RT1056-6A**6-0UA0 | | UC | |
| 75 | 100 | 200 | 200 | 270 | 5 | 3RT1066-6A**6-0UA0 | | UC | |
| 150 | 200 | 400 | 400 | 540 | 6 | 3RT1076-6A**6-0UA0 | | UC | |

**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Use code B0 for 3RT201.

## Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see pages 9/109 open and 9/119 enclosed.
- Wiring Diagrams see page 9/139.
- Replacement Parts see page 9/99.

## Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Open Type④ | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | Contactor Amp Rating | NEMA Size | Half Size | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 1½ | 1½ | 2 | 2 | 9 | 00 | — | 40BP32A* | 40BP32B* | Use Size 0 | Use Size 0 | Use Size 0 |
| 3 | 3 | 5 | 5 | 18 | 0 | — | 40CP32A* | 40CP32B* | 40CP32W* | 40CP32F* | 40CP320* |
| 7½ | 7½ | 10 | 10 | 27 | 1 | — | 40DP32A* | 40DP32B* | 40DP32W* | 40DP32F* | 40DP320* |
| 10 | 10 | 15 | 15 | 40 | — | 1¾ | 40EP32A* | 40EP32B* | 40EP32W* | 40EP32F* | 40EP320* |
| 10 | 15 | 25 | 25 | 45 | 2 | — | 40FP32A* | 40FP32B* | 40FP32W* | 40FP32F* | 40FP320* |
| 15 | 20 | 30 | 30 | 60 | — | 2½ | 40GP32A* | 40GP32B* | 40GP32W* | 40GP32F* | 40GP320* |
| 25 | 30 | 50 | 50 | 90 | 3 | — | 40HP32A* | 40HP32B* | 40HP32W* | 40HP32F* | 40HP320* |
| 30 | 40 | 75 | 75 | 115 | — | 3½ | 40IP32A* | 40IP32B* | 40IP32W* | 40IP32F* | 40IP320* |
| 40 | 50 | 100 | 100 | 135 | 4 | — | 40JG32A* | 40JG32B* | 40JG32W* | 40JG32F* | 40JG320* |
| 75 | 100 | 200 | 200 | 270 | 5 | — | 40LP32A* | 40LP32B* | — | — | 40LP320* |
| 150 | 200 | 400 | 400 | 540 | 6 | — | 40MP32A* | 40MP32B* | — | — | 40MP320* |
| — | 300 | 600 | 600 | 810 | 7②⑤ | — | 40NH32A* | 40NH32B* | — | — | 40NH320* |
| — | 450 | 900 | 900 | 1215 | 8③⑤ | — | 40PH32A* | 40PH32B* | — | — | 40PH320* |

### Extra Wide Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | | | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | NEMA 1④ General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | Contactor Amp Rating | NEMA Size | Half Size | Catalog Number | Catalog Number | Catalog Number |
| 1 ½ | 1 ½ | 2 | 2 | 9 | 00 | — | 40BP82B* | Use Size 0 | Use Size 0 |
| 3 | 3 | 5 | 5 | 18 | 0 | — | 40CP82B* | 40CP82W* | 40CP820* |
| 7 ½ | 7 ½ | 10 | 10 | 27 | 1 | — | 40DP82B* | 40DP82W* | 40DP820* |
| 10 | 10 | 15 | 15 | 40 | — | 1¾ | 40EP82B* | 40EP82W* | 40EP820* |
| 10 | 15 | 25 | 25 | 45 | 2 | — | 40FP82B* | 40FP82W* | 40FP820* |
| 15 | 20 | 30 | 30 | 60 | — | 2½ | 40GP82B* | 40GP82W* | 40GP820* |
| 25 | 30 | 50 | 50 | 90 | 3 | — | 40HP82B* | 40HP82W* | 40HP820* |
| 30 | 40 | 75 | 75 | 115 | — | 3½ | 40IP82B* | 40IP82W* | 40IP820* |
| 40 | 50 | 100 | 100 | 135 | 4 | — | 40JG82B* | 40JG82W* | 40JG820* |

**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available in size 5-8 starters.

② Only available
F coil 100-250V AC 50/60Hz, or DC
H coil 150-500V AC 50/60Hz, or DC

③ Only available
F coil100-250V AC 50/60Hz, or DC

④

| Standard Auxiliary Contacts | | | |
|---|---|---|---|
| Type | Size (3rd Character) | Configuration | Internal / External |
| All FVNR Starters & Contactors | B Thru E | 1N.O. | Internal |
| | F Thru J | 1N.O. | External |
| | L Thru M | 2N.O., 2N.C. | External |
| | N Thru P | 1N.O., 1N.C. | External |

⑤ Lugs are not included, refer to page 9/85.

# Single Phase, 4-Pole & Vacuum, Class 40

## Selection

### Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see pages 9/109 open and 9/119 enclosed.
- Wiring Diagrams see page 9/139.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Open Type & Standard Width Enclosure, Single Phase, 2-Pole②③

| Max Hp | | Contactor Amp Rating | NEMA Size | Half Size | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Open Type④ | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 115 Volts | 208/230 Volts | | | | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ⅓ | 1 | 9 | 00 | — | **40BP12A*** | **40BP12B*** | **Use Size 0** | **Use Size 0** | **Use Size 0** |
| 1 | 2 | 18 | 0 | — | **40CP12A*** | **40CP12B*** | **40CP12W*** | **40CP12F*** | **40CP120*** |
| 2 | 3 | 27 | 1 | — | **40DP12A*** | **40DP12B*** | **40DP12W*** | **40DP12F*** | **40DP120*** |
| 3 | 5 | 35 | 1P | — | **40EP12A*** | **40EP12B*** | **40EP12W*** | **40EP12F*** | **40EP120*** |
| 3 | 7½ | 45 | 2 | — | **40FP12A*** | **40FP12B*** | **40FP12W*** | **40FP12F*** | **40FP120*** |
| 5 | 10 | 60 | — | 2½ | **40GP12A*** | **40GP12B*** | **40GP12W*** | **40GP12F*** | **40GP120*** |
| 7½ | 15 | 90 | 3 | — | **40HP12A*** | **40HP12B*** | **40HP12W*** | **40HP12F*** | **40HP120*** |

### Open Type & Standard Width Enclosure, 4-Pole

| Max Hp | | | | Cont-actor Amp Rating | NEMA Size | Half Size | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Open Type | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ⅓ | 1½ | 2 | 2 | 9 | 00 | — | **40BP22A*** | **40BP22B*** | **Use Size 0** | **Use Size 0** | **Use Size 0** |
| 2 | 3 | 5 | 5 | 18 | 0 | — | **40CP22A*** | **40CP22B*** | **40CP22W*** | **40CP22F*** | **40CP220*** |
| 3 | 7½ | 10 | 10 | 27 | 1 | — | **40DP22A*** | **40DP22B*** | **40DP22W*** | **40DP22F*** | **40DP220*** |
| 5 | 10 | 15 | 15 | 40 | — | 1¾ | **40EP22A*** | **40EP22B*** | **40EP22W*** | **40EP22F*** | **40EP220*** |

### Vacuum Contactors, 3-Phase, 3-Pole①

| Max Hp | | | | Contactor Amp Rating | NEMA Size | Open Type |
|---|---|---|---|---|---|---|
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | Catalog Number |
| 40 | 50 | 100 | 100 | 135 | 4 | **40JV32A*** |
| 75 | 100 | 200 | 200 | 270 | 5 | **40LV32A*** |
| 150 | 200 | 400 | 400 | 540 | 6 | **40MV32A*** |

**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available for vacuum contactors. Refer to Page 9/93 for a complete list of available coil voltages.

② To order single phase contactor in an extra wide enclosure, order the enclosure kit from Page 17-92 and the open style contactor as separate items.

③ Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

④ 1 NO Auxiliary.

## Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see pages 9/110 open and 9/123 enclosed.
- Wiring Diagrams see page 9/139.
- Replacement Parts see page 9/99.

## Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240① | A |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 220–240/440–480① | C |
| 440–480 | H |
| 575–600 | E |

For other voltages and frequencies, see Factory Modifications page 9/93.

### Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

| Max Hp | | | | Contactor Amp Rating | NEMA Size | Half Size | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Open Type⑤ | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ½ | ½ | 2 | 2 | 9 | 00 | — | **43BP32A*** | **43BP32B*** | Use Size 0 | Use Size 0 | Use Size 0 |
| 3 | 3 | 5 | 5 | 18 | 0 | — | **43CP32A*** | **43CP32B*** | **43CP32W*** | **43CP32F*** | **43CP320*** |
| 7½ | 7½ | 10 | 10 | 27 | 1 | — | **43DP32A*** | **43DP32B*** | **43DP32W*** | **43DP32F*** | **43DP320*** |
| 10 | 10 | 15 | 15 | 40 | — | 1¾ | **43EP32A*** | **43EP32B*** | **43EP32W*** | **43EP32F*** | **43EP320*** |
| 10 | 15 | 25 | 25 | 45 | 2 | — | **43FP32A*** | **43FP32B*** | **43FP32W*** | **43FP32F*** | **43FP320*** |
| 15 | 20 | 30 | 30 | 60 | — | 2½ | **43GP32A*** | **43GP32B*** | **43GP32W*** | **43GP32F*** | **43GP320*** |
| 25 | 30 | 50 | 50 | 90 | 3 | — | **43HP32A*** | **43HP32B*** | **43HP32W*** | **43HP32F*** | **43HP320*** |
| 30 | 40 | 75 | 75 | 115 | — | 3½ | **43IP32A*** | **43IP32B*** | **43IP32W*** | **43IP32F*** | **43IP320*** |
| 40 | 50 | 100 | 100 | 135 | 4 | — | **43JG32A*** | **43JG32B*** | **43JG32W*** | **43JG32F*** | **43JG320*** |
| 75 | 100 | 200 | 200 | 270 | 5 | — | **43LP32A*** | **43LP32B*** | — | — | **43LP320*** |
| 100 | 200 | 400 | 400 | 540 | 6 | — | **43MP32A*** | **43MP32B*** | — | — | **43MP320*** |
| — | 300 | 600 | 600 | 810 | 7③ | — | **43NH32A*** | **43NH32B*** | — | — | **43NH320*** |
| — | 450 | 900 | 900 | 1215 | 8④ | — | **43PH32A*** | — | | — | — |

### Open Type & Standard Width Enclosure, Single Phase, 3-Wire, 2-Pole②

| Max Hp | | Contactor Amp Rating | NEMA Size | Enclosure | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Open Type | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant | NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 115 Volts | 208/ 230 Volts | | | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| ⅓ | 1 | 9 | 00 | **43BP12A*** | **43BP12B*** | Use Size 0 | Use Size 0 | Use Size 0 |
| 1 | 2 | 18 | 0 | **43CP12A*** | **43CP12B*** | **43CP12W*** | **43CP12F*** | **43CP120*** |
| 2 | 3 | 27 | 1 | **43DP12A*** | **43DP12B*** | **43DP12W*** | **43DP12F*** | **43DP120*** |
| 3 | 5 | 35 | 1P | **43EP12A*** | **43EP12B*** | **43EP12W*** | **43EP12F*** | **43EP120*** |



**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available in size 5–8 starters.

② Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

③ Only available
F coil 100-250V AC 50/60Hz, or DC
H coil 150-500V AC 50/60Hz, or DC

④ Only available
F coil 100-250V AC 50/60Hz, or DC

⑤ Auxiliary contacts
43B-43E 4th pole built-in
43F-43J 2 NO & 2 NC

# Class 42 & 45 Product Nomenclature

**Class 45**
**DP Contactor**

Information shown on nomenclature sheets is for reference only to identify devices from existing catalog numbers. This information is not to be used for the creation of new catalog numbers.

| 45 | C | G | 2 | 0 | A | J | A |
|---|---|---|---|---|---|---|---|
| **CLASS** | **AMP RATING** | **MODEL** | **POWER POLES** | **NC POWER POLES** | **ENCLOSURE** | **COIL** | **STD FEATURES** |
| **45** DP Contactor | **E** 30<br>**G** 40 | **G** | **1** 1 power pole<br>**2** 2 power poles | **0** None | **A** Open | **F** 120V, 60 HZ<br>110V, 50 HZ<br>**G** 208-240V, 60 HZ<br>190-220V, 50 HZ<br>**H** 440-480V, 60 HZ<br>380-440V, 50 HZ<br>**J** 24V, 60 HZ<br>24V, 50 HZ<br>**L** 277V, 60 HZ | **A** Jumper Bar<br><br>* Class F coil standard. Binding head screws (30A)/ lugs (40A) and quad quick connect standard.<br><br>* Contact cover comes standard. |

**Class 42**
**DP Contactor**

Information shown on nomenclature sheets is for reference only to identify devices from existing catalog numbers. This information is not to be used for the creation of new catalog numbers.

| 42 | B | F | 3 | 5 | A | J |
|---|---|---|---|---|---|---|
| **CLASS** | **AMP RATING** | **MODEL** | **POWER POLES** | **CONTROL CIRCUIT** | **ENCLOSURE** | **COIL** |
| **42** DP Contactor | **B** 30<br>**C** 40<br>**D** 50<br>**E** 60<br>**F** 75<br>**G** 90 | **F**<br>**E***<br><br>*75-90 amp only | **1** 2 power poles<br>**3** 3 power poles | **5** Without auxiliary contact | **A** Open | **F** 110V, 50 HZ<br>120V, 60 HZ<br>**G** 190-220V, 50 HZ<br>208-240V, 60 HZ<br>**J** 24V, 50 HZ<br>24V, 60 HZ<br>**H** 380-440V, 50 HZ<br>440-480V, 60 HZ<br>**L** 277V, 60 HZ |

## Class 45

45EG10AJA

45GG10AJA

45EG20AJ

45GG20AJ

### Features

- Power Terminations:
  - Quad Quick Connects
  - 30A: Screws
  - ≥40A: Box Lugs
- Compact Size
- Durable Metal Back Plate
- Enclosed Body and Coil
- One Pole Version Includes Shunt Bar
- Quiet Operation
- Weld-Resistant Silver Cadmium Oxide Contacts
- Visual Contact Position Indication
- Class F Coil Insulation

## Class 42

42BF35AJ

42CF35AJ

42CF15AJ

42FE35AJ

### Features

- Power Terminations:
  - Quick Connects
  - 30A: Screws
  - ≥40A: Box Lugs
- Compact Size
- Durable Metal Back Plate
- Quiet Operation
- Weld-Resistant Silver Cadmium Oxide Contacts
- Visual Contact Position Indication
- Class F Coil Insulation
- Snap-On Auxiliary Contacts
- Replacement Coils Available

Approvals & Standards:

- c UL us
- ARI 780 & 790
- Canadian Heater Rated
- SCCR 600 VAC
- UL File E14900

## Ordering Information

- Use complete catalog number. Replace the (●) with letter from the coil table on this page
- For additional information see www.usa.siemens.com/controls

## Coil Selection (●)

| 60Hz Voltage | 50Hz Voltage | Letter |
|---|---|---|
| 24 | 24 | J |
| 110–120 | 110 | F |
| 208–240 | 190–220 | G |
| 277 | 240 | L |
| 440–480 | 380–440 | H① |

① Not available on Class 42 2-pole units

# Contactors

### Class 45 Contactors

| FLA | Locked Rotor Amps 240V | 277V | 480V | 600V | Non Inductive Amps | Poles | Catalog Number |
|---|---|---|---|---|---|---|---|
| 30 | 180 | 180 | — | — | 40 | 1 | **45EG10A●A** |
| 40 | 240 | 240 | — | — | 50 | 1 | **45GG10A●A** |
| 30 | 180 | — | 150 | 120 | 40 | 2 | **45EG20A●** |
| 40 | 240 | — | 200 | 160 | 50 | 2 | **45GG20A●** |

### Class 42 Contactors

| FLA | Locked Rotor Amps 240V | 480V | 600V | Non Inductive Amps | Horsepower 1 PH 120 V | 1 PH 240 V | 3 PH 240V | 3 PH 480V | 3 PH 600V | Poles | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 180 | 150 | 120 | 40 | 2 | 3 | 7.5 | — | — | 2 | **42BF15A●** |
| 40 | 240 | 200 | 160 | 50 | 3 | 5 | 10 | — | — | 2 | **42CF15A●** |
| 30 | 180 | 150 | 120 | 40 | — | 3 | 7.5 | 10 | 15 | 3 | **42BF35A●** |
| 40 | 240 | 200 | 160 | 50 | — | 5 | 10 | 15 | 20 | 3 | **42CF35A●** |
| 50 | 300 | 250 | 200 | 63 | — | 5 | 15 | 20 | 25 | 3 | **42DF35A●** |
| 60 | 360 | 300 | 240 | 75 | — | 7.5 | 20 | 25 | 30 | 3 | **42EF35A●** |
| 75 | 450 | 375 | 300 | 94 | — | 15 | 25 | 40 | 40 | 3 | **42FE35A●** |
| 90 | 540 | 450 | 360 | 120 | — | 15 | 30 | 50 | 50 | 3 | **42GE35A●** |

# Accessories

### Auxiliary Contacts

| Description | Class | Contactor FLA | Auxiliary Contact Ratings | Auxiliary Contacts | Catalog Number |
|---|---|---|---|---|---|
| Snap-on Side Mounted Auxiliary Contacts **49ACR0** | 42 | 30-60 | NEMA A600 10A 600VAC | 1 NO | **49ACR0** |
| | | | | 1 NC | **49ACRC** |
| | | | | 1 NO & 1 NC | **49ACR6** |
| | | | | 2 NO | **49ACR7** |
| | | | | 2 NC | **49ACR8** |
| | | | 11A 1/2HP 125-250VAC, 0.6A 125VDC, 0.3A 250VDC | 1 SPDT | **49D36098001** |
| | | | | 2 SPDT | **49D36098003** |
| | 42 | 75-90 | NEMA A600 10A 600V | 1 NO | **49D22125001** |
| | | | | 1 NC | **49D22125002** |
| | | | 11A 1/2HP 125-250VAC, 0.6A 125VDC, 0.3A 250VDC | 1 SPDT | **49CE42SPDT** |

## Replacement Coils

**Class 42**

| Description | Third Character of Cat. No. | Fourth Character of Cat. No. | Volts 60 Hz | Volts 50 Hz | Catalog Number |
|---|---|---|---|---|---|
| **75D70646AF** | B, C | F | 24 | 24 | **75D70646AJ** |
| | | | 110-120 | 110 | **75D70646AF** |
| | | | 208-240 | 190-220 | **75D70646AG** |
| | | | 277 | 240 | **75D70646AL** |
| | | | 440-480 | 380-440 | **75D70646AH** |
| **75D70550AF** | D, E | F | 24 | 24 | **75D70550AJ** |
| | | | 110-120 | 110 | **75D70550AF** |
| | | | 208-240 | 190-220 | **75D70550AG** |
| | | | 277 | 240 | **75D70550AL** |
| | | | 440-480 | 380-440 | **75D70550AH** |
| **75D54772AF** | F, G | E | 24 | 24 | **75D54772AJ** |
| | | | 110-120 | 110 | **75D54772AF** |
| | | | 208-240 | 190-220 | **75D54772AG** |
| | | | 277 | 240 | **75D54772AL** |
| | | | 440-480 | 380-440 | **75D54772AH** |

## Catalog Numbers

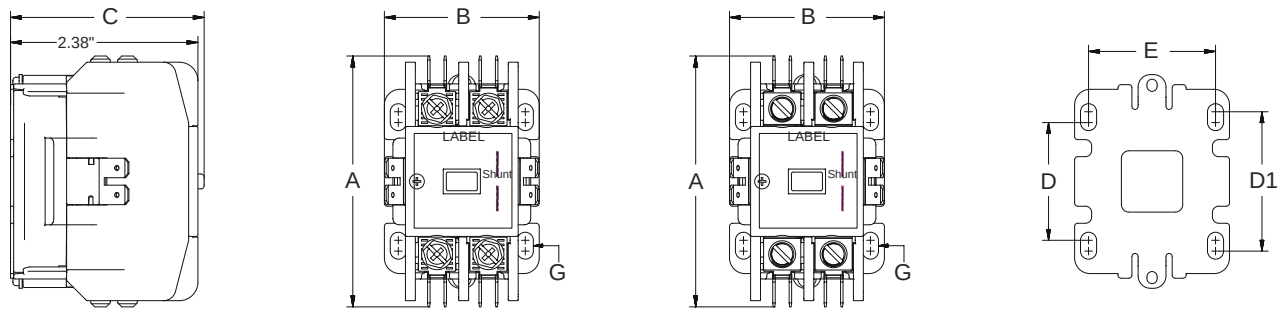
| Poles | Amps | Coil Volts | SIEMENS | ABB | Allen Bradley | Arrow Hart | Eaton Cutler Hammer | Fasco | General Electric | Joslyn Clark | Products Unlimited | Square D | Steveco |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | 24 | **45EG10AJA** | DP30C1P-F | 400-DP30NJ1 | C301NU10 | C25CNB130T | 1S30-A | CR453CC3HAA | A77-306653A-3 | 3100-15Q2 | 8910DP31V14 | 94388 |
| | | 120 | **45EG10AFA** | DP30C1P-1 | 400-DP30ND1 | C301NU20 | C25CNB130A | 1S30-B | CR453CC3AAA | A77-306653A-1 | 3100-15T2 | 8910DP31V02 | 94389 |
| | | 208/240 | **45EG10AGA** | DP30C1P-2 | 400-DP30NA1 | C301NU30 | C25CNB130B | 1S30-C | CR453CC3BAA | A77-3066531-2 | 3100-15U2 | 8910DP31V09 | 94390 |
| | 40 | 24 | **45GG10AJA** | — | — | — | C25CNB140T | — | — | — | 3100-15Q19 | 8910DP41V14 | — |
| | | 120 | **45GG10AFA** | — | — | — | C25CNB140A | — | — | — | 3100-15T19 | 8910DP41V02 | — |
| | | 208/240 | **45GG10AGA** | — | — | — | C25CNB140B | — | — | — | 3100-15U19 | 8910DP41V09 | — |
| 2 | 30 | 24 | **45EG20AJ** | — | 400-DP30NJ2 | C302U10 | C25BNB230T | 2S30-A | CR453CC2HAA | A77-306657A-3 | 3100-20Q6 | 8910DPA32V14 | 90244 |
| | | 120 | **45EG20AF** | — | 400-DP30ND2 | C302U20 | C25BNB230A | 2S30-B | CR453CC2AAA | A77-306657A-1 | 3100-20T6 | 8910DPA32V02 | 90245 |
| | | 208/240 | **45EG20AG** | — | 400-DP30NA2 | C302U30 | C25BNB230B | 2S30-C | CR453CC2BAA | A77-306657A-2 | 3100-20U6 | 8910DPA32V09 | 90246 |
| | | 277 | **45EG20AL** | — | 400-DP30NF2 | C302050 | C25BNB230H | — | CR453CC2FAA | — | 3100-20V6 | 8910DPA32V04 | — |
| | 40 | 24 | **45GG20AJ** | — | — | CA01NU10 | C25BNB240T | — | CR453CE2HBB | — | 3100-20Q18 | 8910DP42V14 | — |
| | | 120 | **45GG20AF** | — | — | CA01NU20 | C25BNB240A | — | CR453CE2ABB | — | 3100-20T18 | 8910DP42V02 | — |
| | | 208/240 | **45GG20AG** | — | — | CA01NU30 | C25BNB240B | — | CR453CE2BBB | — | 3100-20U18 | 8910DP42V09 | — |
| 3 | 30 | 24 | **42BF35AJ** | DP30C3P-F | 400-DP30NJ3 | ACC330UM10 | C25DND330T | 3M30-A | CR453AC3HAA | A77-309044A-3 | 3100-30Q9 | 8910DPA33V14 | 90163 |
| | | 120 | **42BF35AF** | DP30C3P-1 | 400-DP30ND3 | ACC330UM20 | C25DND330A | 3M30-B | CR453AC3AAA | A77-309044A-1 | 3100-30T99 | 8910DPA33V02 | 90164 |
| | | 208/240 | **42BF35AG** | DP30C3P-2 | 400-DP30NA3 | ACC330UM30 | C25DND330B | 3M30-C | CR453AC3BAA | A77-309044A-2 | 3100-30U9 | 8910DPA33V03 | 90165 |
| | 40 | 24 | **42CF35AJ** | DP40C4P-F | 400-DP40NJ3 | ACC430UM10 | C25DNF340T | 3M40-A | CR453AD3HBB | A77-309046A-3 | 3100-30Q10 | 8910DPA43V14 | 90170 |
| | | 120 | **42CF35AF** | DP40C4P-1 | 400-DP40ND3 | ACC430UM20 | C25DNF340A | 3M40-B | CR453AD3ABB | A77-309046A-1 | 3100-30T10 | 8910DPA43V02 | 90171 |
| | | 208/240 | **42CF35AG** | DP40C4P-2 | 400-DP40NA3 | ACC430UM30 | C25DNF340B | 3M40-C | CR453AD3BBB | A77-309046A-2 | 3100-30U10 | 8910DPA43V09 | 90172 |
| | 50 | 24 | **42DF35AJ** | — | 400-DP50NJ3 | ACC530U10 | C25FNF350T | 3L50-A | CR353FE3BH1 | A77-288514A-3 | 3100-30Q16 | 8910DPA53V14 | 92459 |
| | | 120 | **42DF35AF** | — | 400-DP50ND3 | ACC530U20 | C25FNF350A | 3L50-B | CR353FE3BA1 | A77-288514A-1 | 3100-30T16 | 8910DPA53V02 | 92460 |
| | | 208/240 | **42DF35AG** | — | 400-DP50NA3 | ACC530U30 | C25FNF350B | 3L50-C | CR353FE3BB1 | A77-288514A-2 | 3100-30U16 | 8910DPA53V09 | 92461 |
| | 60 | 24 | **42EF35AJ** | DP60C3P-F | 400-DP60NJ3 | ACC630U10 | C25FNF360T | 3L60-A | CR353FF3BH1 | A77-288517A-3 | 3100-30Q17 | 8910DPA63V14 | 92462 |
| | | 120 | **42EF35AF** | DP60C3P-1 | 400-DP60ND3 | ACC630U20 | C25FNF360A | 3L60-B | CR353FF3BA1 | A77-288517A-1 | 3100-30T17 | 8910DPA63V02 | 92463 |
| | | 208/240 | **42EF35AG** | DP60C3P-2 | 400-DP60NA3 | ACC630U30 | C25FNF360B | 3L60-C | CR353FF3BB1 | A77-288517A-2 | 3100-30U17 | 8910DPA63V09 | 92464 |
| | 75 | 24 | **42FE35AJ** | — | 400-DP75NJ3 | ACC730U10 | C25FNF375T | — | CR353EG3BH1 | A77-288520A-3 | 3186-30I75 | 8910DPA73V14 | 92465 |
| | | 120 | **42FE35AF** | — | 400-DP75ND3 | ACC730U20 | C25FNF375A | — | CR353EG3BA1 | A77-288520A-1 | 3186-30J75 | 8910DPA73V02 | 92467 |
| | | 208/240 | **42FE35AG** | — | 400-DP75NA3 | ACC730U30 | C25FNF375B | — | CR353EG3BB1 | A77-288520A-2 | 3186-30K75 | 8910DPA73V09 | 92468 |
| | 90 | 24 | **42GE35AJ** | — | — | — | C25GNF390T | — | CR353EH3BH1 | — | 3186-30I90 | 8910DPA93V14 | 92469 |
| | | 120 | **42GE35AF** | — | — | ACC930U20 | C25GNF390A | — | CR353EH3BA1 | — | 3186-30J90 | 8910DPA93V02 | — |
| | | 208/240 | **42GE35AG** | — | — | ACC930U30 | C25GNF390B | — | CR353EH3BB1 | — | 3186-30K90 | 8910DPA93V09 | — |



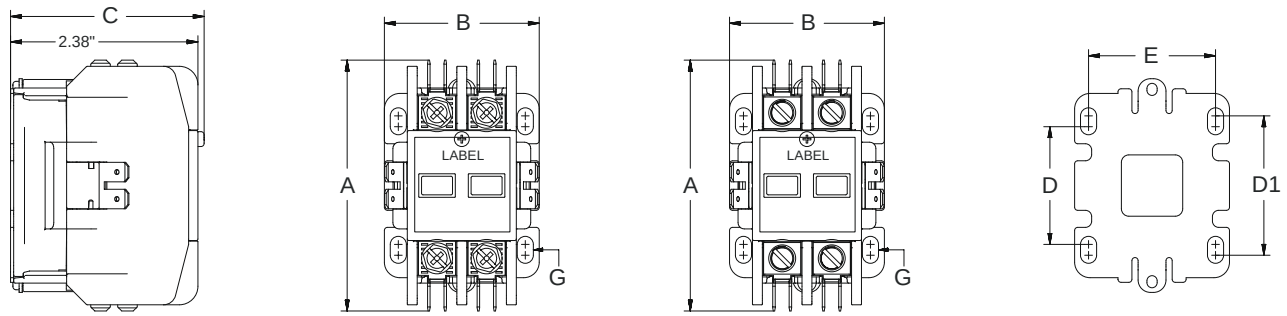
This cross reference does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Siemens Industry, Inc. sales office.

The contents of this cross reference shall not become part or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens Industry, Inc. The warranty contained in the contract between the parties is the sole warranty of Siemens Industry, Inc. Any statements contained herein do not create new warranties or modify the existing warranty.

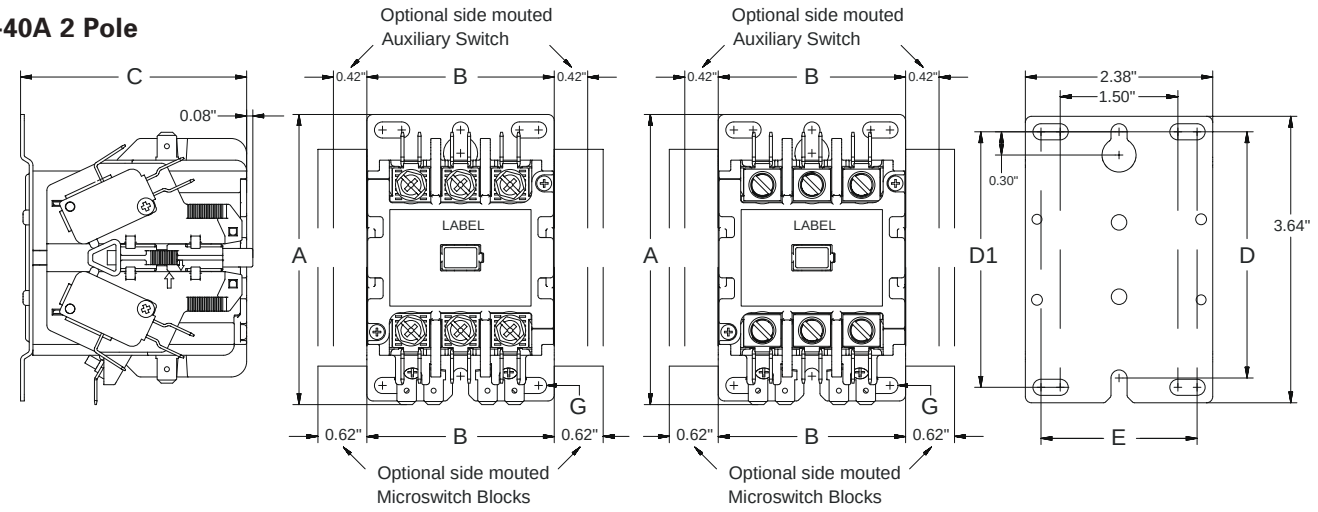
## 30-40A 1 Pole with Shunt




## 30-40A 2 Pole



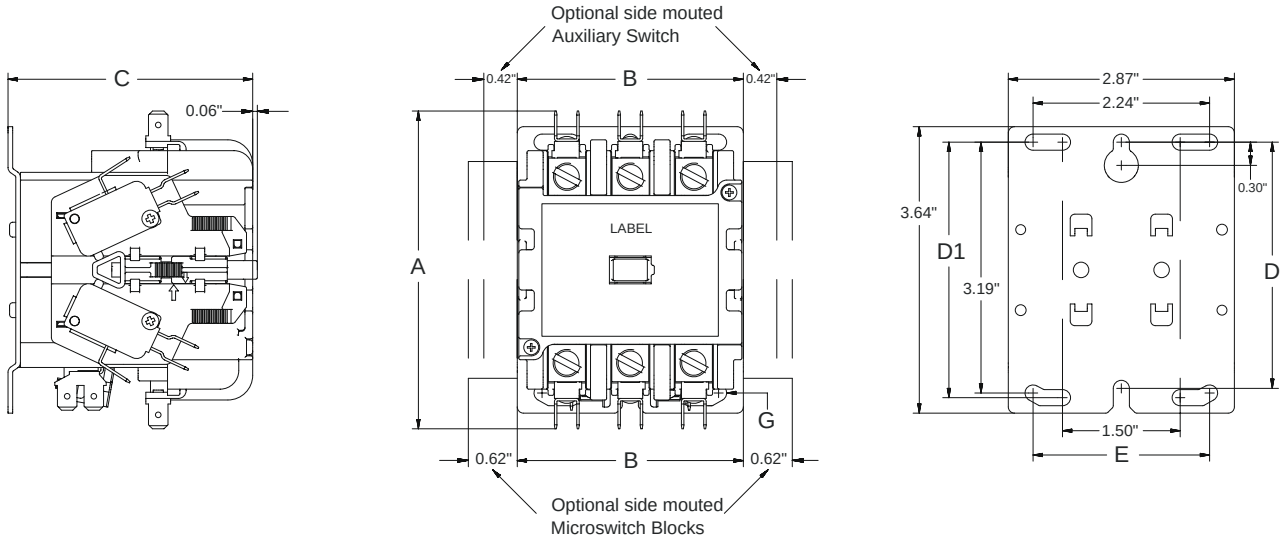

## 30-40A 2 Pole



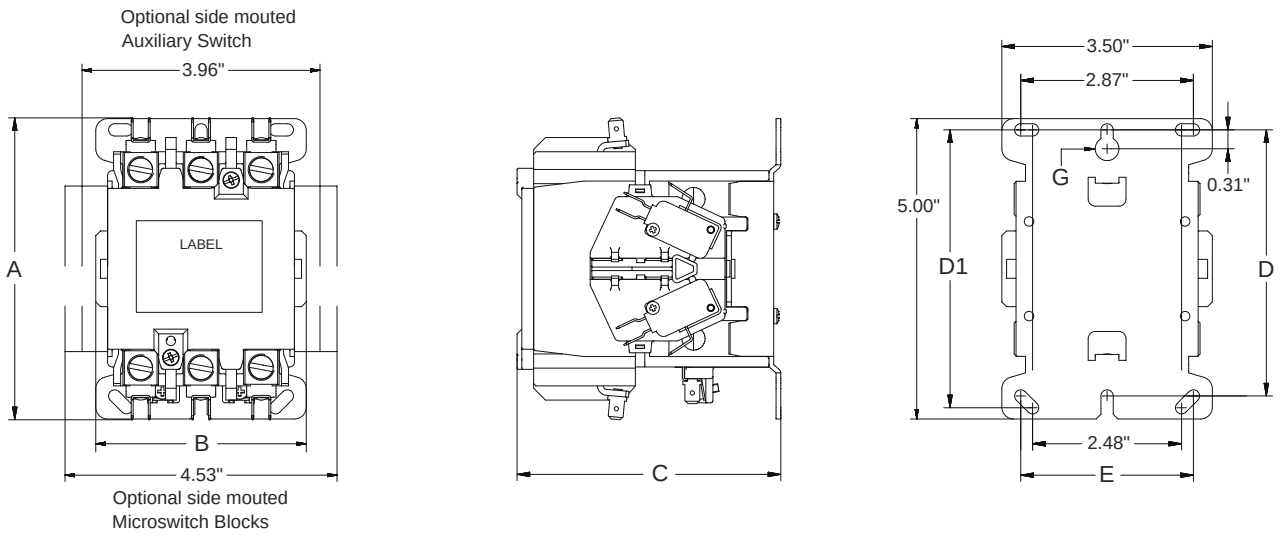

| Catalog No. | FLA | Poles | Dimensions | | | | | | Mounting Screw G | Max Wire Size |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | D1 | E | | |
| **45EG10A*A** | 30 | 1 | 3.19 | 1.97 | 2.46 | 1.5 | 1.77 | 1.61 | 10 | 8 |
| **45GG10A*A** | 40 | 1 | 3.19 | 1.97 | 2.46 | 1.5 | 1.77 | 1.61 | 10 | 4 |
| **45EG20A*A** | 30 | 2 | 3.19 | 1.97 | 2.46 | 1.5 | 1.77 | 1.61 | 10 | 8 |
| **45GG20A*A** | 40 | 2 | 3.19 | 1.97 | 2.46 | 1.5 | 1.77 | 1.61 | 10 | 4 |
| **42BF35A*** | 30 | 3 | 3.69 | 2.38 | 2.87 | 3.13 | 3.25 | 1.98 | 10 | 8 |
| **42CF35A*** | 40 | 3 | 3.69 | 2.38 | 2.87 | 3.13 | 3.25 | 1.98 | 10 | 4 |
| **42BF15A*** **42CF15A*** | 30-40 | 2(at 3P)* | 3.69 | 2.38 | 2.87 | 3.13 | 3.25 | 1.98 | 10 | 4 |

Note - 2* Pole is a 3 pole body with center contacts removed.

## 50-60A 3 Pole




## 75-90A 3 Pole




| Catalog No. | FLA | Poles | Dimensions | | | | | | Mounting Screw G | Max Wire Size |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | D1 | E | | |
| **42DF35A*<br>42EF35A*** | 50-60 | 3 | 4.04 | 2.87 | 3.11 | 3.13 | 3.25 | 2.24 | 10 | 2 |
| **42FE35A*<br>42GE35A*** | 75-90 | 3 | 5.02 | 3.5 | 4.39 | 4.43 | 4.63 | 2.87 | 10 | 1/10 |

# Catalog Numbering System

## General

**Class**
**48** — Overload

**Size**
**A** — Frame A
**B** — Frame B

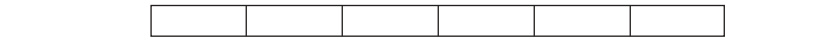
**Model**
**T** — ESP200

**Current Range**
**A** — 0.25–1①
**B** — 0.75–3.4①
**C** — 3–12①
**D** — 5.5–22①
**E** — 10–40
**F** — 13–52
**G** — 25–100
**H** — 50–200
**J** — 100–300 (3.33-10 current range with 300:5 CT and 1 loop with frame A1 (3-12A)-device)
**K** — 133–400 (3.33-10 current range with 400:5 CT and 1 loop with frame A1 (3-12A)-device)
**L** — 200–600 (3.33-10 current range with 600:5 CT and 1 loop with frame A1 (3-12A)-device)
**M** — 250–750 (3.33-10 current range with 750:5 CT and 1 loop with frame A1 (3-12A)-device)
**N** — 400–1200 (3.33-10.17 currant range with 1200:5 CT and 1 loop with frame A1 (3-12A)-device)

**No. of Poles**
**3** — 3 Phase
**1** — Single Phase

**Reset**
**S** — Selectable (Man/Auto)

**Trip Curve**
**00** — Class 5, 10, 20 or 30 Selectable



**Class**
**958** — Overload

**Amp Range**
**E** — 10–40
**G** — 25–100
**H** — 50–200

**Model**
**B** — ESP200

**No. of Poles**
**3** — 3 phase

**Type**
**S** — Selectable (Man/Auto)

**Trip Curve**
**A** — 958

**Class**
**958L** — Overload

**Amp Range**
**D** — 5.5–22
**E** — 10–40
**F** — 13–52
**G** — 25–100
**H** — 50–200

**Model**
**B** — ESP200

**No. of Poles**
**3** — 3 phase

**Type**
**S** — Selectable (Man/Auto)

**Trip Curve**
**A** — 958L

① Ranges available in Single or 3-phase.

# Solid State ESP200, Class 48, 958 and 958L

## General

| Features | Benefits |
|---|---|
| ▪ Trip Classes - 5, 10, 20, or 30 Selectable by DIP-switches | ▪ Field changeable reduces time and inventory. Suitable for light, normal and heavy starting conditions |
| ▪ Phase Loss Protection - Trips in less than 3 Seconds | ▪ Protects motor burn out and minimizes motor heating up |
| ▪ Phase Unbalance - Trips based on Trip Class selected | ▪ Minimizes temperature rise of the motor on a asymmetrical three-phase-system |
| ▪ Ground Fault - Trips 60% of Motor Current | ▪ Provides optimum system protection of motors against high-resistance short-circuits or ground faults due to moisture, condensation, damage of insulation or any other reason |
| ▪ Trip Indicator - Visible | ▪ Save time, faster to identify overload Trip |
| ▪ Ambient Insensitive | ▪ Prevents nuisance tripping |
| ▪ No Heaters Required | ▪ Saves cost and eliminates time for installation of heaters |
| ▪ Self-Powered - No outside source required | ▪ Reduce cost for external power supply |
| ▪ FLA dial with wide Adjustment - 4:1 ratio | ▪ Provides wide range, reduces inventory |
| ▪ Self Protected in short circuit condition (when used with proper fuses or motor starter protector) | ▪ Unlike bimetal overloads, this eliminates replacement of the overload heaters after short circuit |
| ▪ Test Button - Tests Electronics | ▪ Tests the complete electronic functions including the trip mechanism. Increases up time |
| ▪ Thermal Memory | ▪ Prevents re-starting motor when it is still hot |
| ▪ Conformally coated circuit board | ▪ Resists against environmental conditions |
| ▪ 1 NO and 1NC Contacts Standard. B600, R300 | ▪ Makes it easier for user to wire local contacts |
| ▪ Operating Temperature: -25 °C - 65 °C | ▪ Wide operating temperature range prevents nuisance tripping with temperature changes |
| ▪ Repeat Accuracy <1%. | ▪ For more precise settings and reduced nuisance tripping |
| ▪ Removable Terminal Block | ▪ Terminal Block can be removed without removing wires. Saves time for replacements |
| ▪ Automatic reset | ▪ Auto. Reset is 3 minutes after tripping, allowing motor to cool down before re-start. If Manual Reset is selected, overload can be reset immediately |
| ▪ Remote reset | ▪ As an alternative to the mechanical RESET options, an electrical remote RESET can be used by applying 24 V DC to terminals A3 and A4 |
| ▪ DIN Rail Mounted | ▪ Reduces installation time |
| ▪ Touch - Safe Terminals | ▪ Protects against accidental touching of live circuits |
| ▪ UL listed CSA certified | ▪ Third party approval standard |

ESP200 Solid State Overload

958 or 958L Solid State Overload

## Applications

### ESP200 Solid State Overloads

Designed for a wide variety of applications. The field selectable Trip Class 5, 10, 20 or 30 can easily be set by 2 DIP switches. This eliminates the guess factor of an application requirements and provides reduced inventory for multiple applications. The inherent benefits of the ESP200 ultimately results in cost savings for the user.

ESP200 has a 4:1 current adjustment range with a fine adjustment dial labeled in full load amps. The heaterless overload minimizes the heat trapped in the enclosures, reduces cost for ventilation or cooling. Easily accessible Reset button, provides visible and audible indications to ensure the tripped overload is ready to re-start.

Designed to replace thermal, or ESP100 overload relays for any application. It has the same dimensions and footprint of the ESP100 overload relays. It can be directly coupled to the contactors or remotely mounted. In addition to the NEMA contactor applications, it also can be used with other types of controllers for applications requiring DP or IEC contactors. As a retrofit for other brands, it is used with a plate available for retrofitting competitive products.

### 958 ESP200 Special Use Solid State Overloads

This overload is specifically designed for special applications, to provide excellent protection of hermetically sealed and artificially cooled motors that require ambient insensitive and quick trip response times. Combined with a series lockout relay, it provides unsurpassed protection for hermetically sealed compressor motors in air conditioning applications. The combination of high trip speed, current adjustment, and ease of installation makes it suitable for these applications. The trip curves are customized to provide proper overload protection for these loads without causing nuisance tripping.

It has selectable manual or automatic reset mode, and provides ground fault selection to protect equipment from damage in case of a fault.

### 958L ESP200 Oil Field Solid State Overloads

Specifically designed for the oil market and the cycling loads experienced with these types of pumping applications. These overload relays provide protection for standard motors, oil well pump motors, multi-torque connections, and ultra-high slip motors.

Rotors can be damaged in less than 15 seconds during motor stall conditions if electrical power is not removed. To prevent damage during motor stall, the 958L solid state overload removes the power in 7 seconds at 250% lock rotor current. Therefore, the motor casing and the rotor will be protected from being damage saving the user money and time.

3-Phase, 48ATC3S00

## Ordering Information

- For CT's see Accessories page 9/46.
- Dimensions see page 9/111.
- To retrofit or direct mount to a contactor, order 49ASMP1, 2, or 3 separately. See Retrofit Plates below.
- For remote mounting of frame size A order 49ASMS1 terminals separately, see page 9/85.

### Solid State—Class 48

| Current Adjustment Range | Phase | Frame Size | Catalog Number | MRPD/MLFB |
|---|---|---|---|---|
| 0.25–1 | 3 | "A" | **48ATA3S00** | **3UB81134AB2** |
| 0.75–3.4 | 3 | "A" | **48ATB3S00** | **3UB81134BB2** |
| 3–12 | 3 | "A1" | **48ATC3S00** | **3UB81234CW2** |
| 5.5–22 | 3 | "A1" | **48ATD3S00** | **3UB81234DW2** |
| 10–40 | 3 | "A1" | **48ATE3S00** | **3UB81234EW2** |
| 13–52 | 3 | "B" | **48BTF3S00** | **3UB81334FW2** |
| 25–100 | 3 | "B" | **48BTG3S00** | **3UB81334GW2** |
| 50–200 | 3 | "B" | **48BTH3S00** | **3UB81334HW2** |
| 100–300 | 3 | "A1"② | **48ATJ3S00** | **3UB81234JW2** |
| 133–400 | 3 | "A1"⑧ | **48ATK3S00** | **3UB81234KW2** |
| 200–600 | 3 | "A1"④ | **48ATL3S00** | **3UB81234LW2** |
| 250–750 | 3 | "A1"⑦ | **48ATM3S00** | **3UB81234MW2** |
| 400–1220 | 3 | "A1"⑤ | **48ATN3S00** | **3UB81234NW2** |
| 0.25–1 | 1 | "A" | **48ATA1S00** | **3UB88134AB2** |
| 0.75–3.4 | 1 | "A" | **48ATB1S00** | **3UB88134BB2** |
| 3–12 | 1 | "A1" | **48ATC1S00** | **3UB88234CW2** |
| 5.5–22 | 1 | "A1" | **48ATD1S00** | **3UB88234DW2** |
| 25-100 | 1 | "B" | **48BTG1S00** | **3UB88334GW2** |

### Solid State—3RB206③⑥, 3-Phase, Manual/Auto Reset

| For Contactor Size | Setting Range Amps | Class 10 Catalog Number | Class 20 Catalog Number |
|---|---|---|---|
| 5 | 55 - 250 | **3RB2066-1GC2** | **3RB2066-2GC2** |
| 6 | 160 - 630 | **3RB2066-1MC2** | **3RB2066-2MC2** |

### Retrofit Plates for Contactors, Class 48

| Replacement for Starter Sizes | ESP200 Overload Frame Size① | Retrofit Plate Suffix | Plate Kit Separate Catalog Number |
|---|---|---|---|
| Size 00–1¾ | A or A1 | 1P | **49ASMP1** |
| Size 2, 2½ | B | 2P | **49ASMP2** |
| Size 3, 3½ | B | 3P | **49ASMP3** |
| Size 4 | B | 4P | **49ASMP3** |

① To determine frame size of replacement solid state overload, refer to retrofit plates table above.
② Requires use of 300:5 Current Transformers–3 of **97CT005**.
③ Product Category: IEC.
④ Requires use of 600:5 Current Transformers–3 of **97CT008**.
⑤ Requires use of 1200:5 Current Transformers–3 of **97CT012**.
⑥ Overload has busbar connections.
⑦ Requires use of 750:5 Current Transformers–3 of **97CT009**.
⑧ Requires use of 400:5 Current Transformers–3 of **97CT006**.

# Special Use Solid State Overloads, Class 958 and 958L

## Selection

Class 958, 958L

### Ordering Information

► Dimensions see page 9/111.

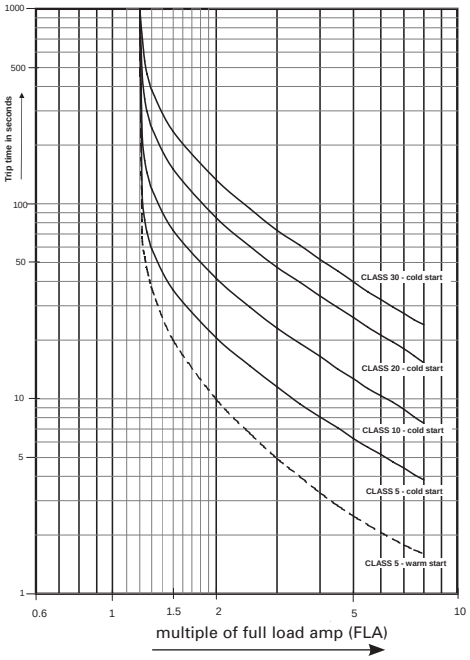
### Current Transformers

| Rating | Catalog No |
|---|---|
| 150:5 | **97CT002** |
| 200:5 | **97CT003** |
| 250:5 | **97CT004** |
| 300:5 | **97CT005** |
| 400:5 | **97CT006** |
| 600:5 | **97CT008** |
| 750:5 | **97CT009** |
| 1200:5 | **97CT012** |

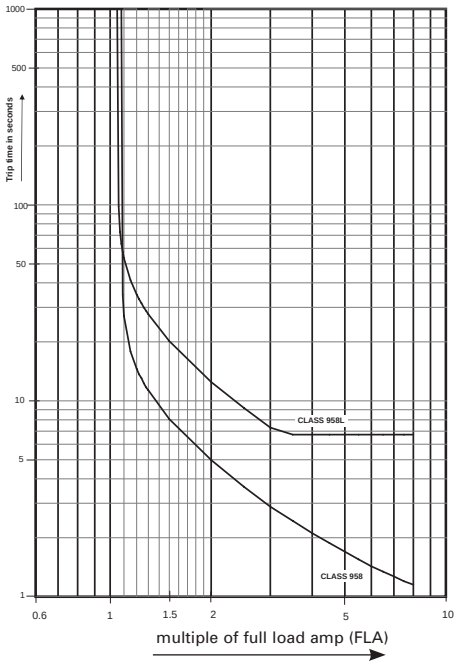
### Solid State—Class 958 and 958L

| Current Adjustment Range | Phase | Frame Size | Catalog Number | MRPD/MLFB |
|---|---|---|---|---|
| 10–40 | 3 | "A1" | **958EB3SA** | **3UB85235EW2** |
| 25–100 | 3 | "B" | **958GB3SA** | **3UB85335GW2** |
| 50–200 | 3 | "B" | **958HB3SA** | **3UB85335HW2** |
| 5.5–22 | 3 | "A1" | **958LDB3SA** | **3UB85236DW2** |
| 10–40 | 3 | "A1" | **958LEB3SA** | **3UB85236EW2** |
| 13–52 | 3 | "B" | **958LFB3SA** | **3UB85336FW2** |
| 25–100 | 3 | "B" | **958LGB3SA** | **3UB85336GW2** |
| 50–200 | 3 | "B" | **958LHB3SA** | **3UB85336HW2** |

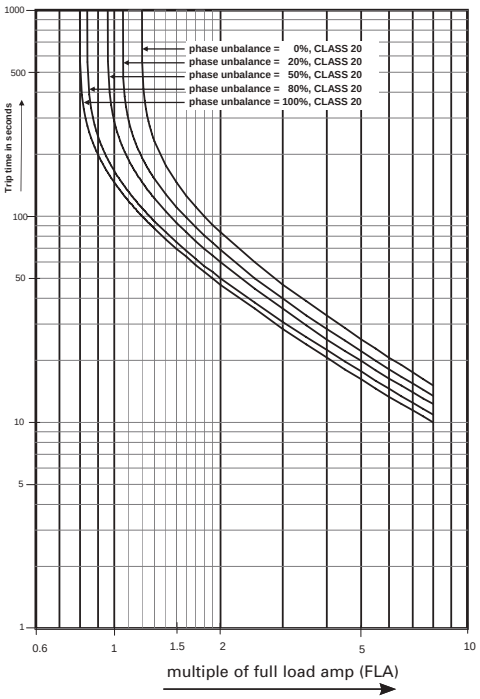
**Time - Current - Characteristics CLASS 48**




**Time - Current - Characteristics CLASS 958, 958L**




**Trip - curve depending on unbalance CLASS 20**




① Temperature rating −25° to +60°C.

## Features

- Heavy Duty NEMA Starters
- Solid State Overload Relays
- Fusible or MCP
- Heavy Duty Disconnect Handle
- Flexibility with Field Modifications
- Alternator Transfer on De-energization
- UL Listed for Outdoor Use
- UL Listed file #E14900 (class 83); file #E185287 (class 84)
- CSA certified file #LR 6535 (class 83 & 84)

## Application

Duplex pump controls are designed to perform one or both of two distinct functions: duplexing and alternation. The duplexing function provides capacity for system peaking or above normal demand without having the full motor capacity spinning at all times. It also provides standby capacity for use when one of the motors or pumps is disabled. The duplexing function is also referred to as lead/lag or main/standby. When two pumps or compressors are controlled by a duplex controller, they are started in sequence as necessary to attain preset values of pressure, flow or liquid level.

Two field devices such as pressure switches or float switches provide electrical signals to the duplex controller. One remote device is set to initiate the starting of the lead motor. This motor is rated to handle normal system demand. The second motor is usually the same rating and is referred to as the lag motor. It is only energized when the system demand is greater than the capacity of the lead motor. The lag motor is started when the second remote device is signalling for more output than the lead motor can produce.

The alternation function reverses the lead and lag mode for the two motors in a duplex system. Upon alternation the first motor as described above becomes the lag motor and the second motor assumes the lead function. The alternation is usually programmed to occur at any time both pumps come to rest. The alternation function equalizes wear on the two machines and extends the life of seals and bearings.

### Enclosure Types

Duplex controllers are available in NEMA 1, 3R/4/12 and 4/4X (stainless) enclosures. Enclosures protect personnel from contact with live parts and depending upon the construction, protect the control in varying degrees from physical damage and harmful atmospheres. All enclosures are supplied with corrosion resistant finishes.

### Heavy Duty Starters

These Duplex controllers use the same starters described in the heavy duty starter section of this catalog.

### Siemens Type ETI Circuit Breaker

The ETI circuit breaker is a device designed specifically for application in motor circuits. The ETI is a magnetic only protective device designed to provide protection against short circuit current.

The instantaneous-only type ETI circuit breaker employs adjustable magnetic trip settings to allow broader application ranges and a higher degree of motor short circuit protection.

## Features

Two control transformers may be provided for low voltage control to safeguard personnel from high voltage. One transformer is required for each starter to provide independent control circuits.

A Hand-Off-Auto selector switch for each starter may be mounted in the enclosure door or furnished separately for remote control. Test push buttons or pilot lights may also be installed on the enclosure.

Solid-state Overload Relays are supplied as standard.

### Heavy Duty Disconnect Switches

The disconnect switch that goes the distance in durability, performance and reliability has the following advantages:

- Visible blades for the highest level of safety
- Double break switching action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- More rugged positive action switch
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts
- Higher horsepower rating for design E high efficiency motors
- UL listed for Ilsco, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

Its rugged construction - with a high fault withstand rating of 100kA at 600 VAC when fused with class R rated fuses - meets the most stringent industry standards set forth by the automotive, petro-chemical, and pulp and paper industries. UL recognized and CSA certified, our disconnect switches are available either non-fusible or fusible with class R and class J fuse clips.

## Ordering Information

- Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.
- To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.
- To change the coil voltage for non-alternator controllers, change the 9th character in the catalog number with a letter shown in the coil table.
- Field Modification Kits see page
- Factory Modifications see page 9/93.
- Dimensions see page 9/128.
- Wiring Diagrams see page 9/140.
- Replacement Parts see page 9/99.

## Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24① | J |
| 120 | F |
| 200–208① | D |
| 220–240① | G |
| 277① | L |
| 440–480① | H |
| 550–600① | E |

### Non-Combination (with Solid-State Overload)

| Max Hp | | | | | | Overload | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Amp Range** | **Frame Size** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ⅛ | ⅛ | ⅓ | ½ | 0 | — | 0.25–1 | A | **83CUA92BF** | **83CUA92WF** | **83CUA920F** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | **83CUB92BF** | **83CUB92WF** | **83CUB920F** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | **83CUC92BF** | **83CUC92WF** | **83CUC920F** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | **83CUD92BF** | **83CUD92WF** | **83CUD920F** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | **83DUA92BF** | **83DUA92WF** | **83DUA920F** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | **83DUB92BF** | **83DUB92WF** | **83DUB920F** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | **83DUC92BF** | **83DUC92WF** | **83DUC920F** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | **83DUD92BF** | **83DUD92WF** | **83DUD920F** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | **83DUE92BF** | **83DUE92WF** | **83DUE920F** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | **83EUE92BF** | **83EUE92WF** | **83EUE920F** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | **83FUF92BF** | **83FUF92WF** | **83FUF920F** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | **83GUG92BF** | **83GUG92WF** | **83GUG920F** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | **83HUG92BF** | **83HUG92WF** | **83HUG920F** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | **83IUH92BF** | **83IUH92WF** | **83IUH920F** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | **83JUH92BF** | **83JUH92WF** | **83JUH920F** |

**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Not available on standard alternator style ('92' in the catalog number).

## Ordering Information

- Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.
- To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.
- To change the coil voltage for non-alternator controllers, change the 10th character in the catalog number with a letter shown in the coil table.
- For factory installed fusible disconnect, see page 9/94.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/128.
- Wiring Diagrams see page 9/140.
- Replacement Parts see page 9/99.

## Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24① | J |
| 120 | F |
| 200–208① | D |
| 220–240① | G |
| 277① | L |
| 440–480① | H |
| 550–600① | E |

### Two Disconnect Switches with Solid-State Overload

| Max Hp | | | | | | Overload | | | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | **NEMA 1** General Purpose | **NEMA 4/4X Stainless** Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | **NEMA 3R/4/12** Watertight, Dust-tight, Weatherproof |
| **200 Volts** | **230 Volts** | **460 Volts** | **575 Volts** | **NEMA Size** | **Half Size** | **Amp Range** | **Frame Size** | **Disc. Amp Range** | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| ⅛ | ⅛ | ⅓ | ½ | 0 | — | 0.25–1 | A | 30 | **84CUA92BDF** | **84CUA92WDF** | **84CUA920DF** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 30 | **84CUB92BDF** | **84CUB92WDF** | **84CUB920DF** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 30 | **84CUC92BDF** | **84CUC92WDF** | **84CUC920DF** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 30 | **84CUD92BDF** | **84CUD92WDF** | **84CUD920DF** |
| ⅛ | ⅛ | ⅓ | ½ | 1 | — | 0.25–1 | A | 30 | **84DUA92BDF** | **84DUA92WDF** | **84DUA920DF** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | 30 | **84DUB92BDF** | **84DUB92WDF** | **84DUB920DF** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 30 | **84DUC92BDF** | **84DUC92WDF** | **84DUC920DF** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | **84DUD92BDF** | **84DUD92WDF** | **84DUD920DF** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 30 | **84DUE92BDF** | **84DUE92WDF** | **84DUE920DF** |
| 10 | 10 | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | **84EUE92BDF** | **84EUE92WDF** | **84EUE920DF** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 60 | **84FUF92BDF** | **84FUF92WDF** | **84FUF920DF** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100 | **84GUG92BDF** | **84GUG92WDF** | **84GUG920DF** |
| 20 | 25 | 50 | 50 | 3 | — | 25–100 | B | 100 | **84HUG92BDF** | **84HUG92WDF** | **84HUG920DF** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 200 | **84IUH92BDF** | **84IUH92WDF** | **84IUH920DF** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 200 | **84JUH92BDF** | **84JUH92WDF** | **84JUH920DF** |

**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Not available on standard alternator style ('92' in the catalog number).

# Combination Circuit Breaker, Class 84

## Selection

### Ordering Information

- Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.
- To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.
- To change the coil voltage for non-alternator controllers, change the 10th character in the catalog number with a letter shown in the coil table.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/128.
- Wiring Diagrams see page 9/140.
- Replacement Parts see page 9/99.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24① | J |
| 120 | F |
| 200–208① | D |
| 220–240① | G |
| 277① | L |
| 440–480① | H |
| 550–600① | E |

**2 Motor Circuit Protectors (with Solid-State Overload)**

| Max Hp | | | | NEMA Size | Half Size | Overload | | Motor Circuit Interrupter ETI | Enclosure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | NEMA 1 General Purpose | NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof |
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | Amp Range | Frame Size | | Catalog Number | Catalog Number | Catalog Number |
| ⅛ | ⅛ | ⅛ | ½ | 0 | — | 0.25–1 | A | 3 | **84CUA92BMF** | **84CUA92WMF** | **84CUA920MF** |
| ½ | ¾ | 1½ | 2 | 0 | — | 0.75–3.4 | A | 3 | **84CUB92BMF** | **84CUB92WMF** | **84CUB920MF** |
| 2 | 2 | 5 | 5 | 0 | — | 3–12 | A1 | 10 | **84CUC92BMF** | **84CUC92WMF** | **84CUC920MF** |
| 3 | 3 | — | — | 0 | — | 5.5–22 | A1 | 25 | **84CUD92BMF** | **84CUD92WMF** | **84CUD920MF** |
| ⅛ | ⅛ | ⅛ | ½ | 1 | — | 0.25–1 | A | 3 | **84DUA92BMF** | **84DUA92WMF** | **84DUA920MF** |
| ½ | ¾ | 1½ | 2 | 1 | — | 0.75–3.4 | A | 3 | **84DUB92BMF** | **84DUB92WMF** | **84DUB920MF** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 10 | **84DUC92BMF** | **84DUC92WMF** | **84DUC920MF** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 25 | **84DUD92BMF** | **84DUD92WMF** | **84DUD920MF** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 30 | **84DUE92BMF** | **84DUE92WMF** | **84DUE920MF** |
| — | — | 15 | 15 | — | 1¾ | 10–40 | A1 | 40 | **84EUE92BMF** | **84EUE92WMF** | **84EUE920MF** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 50 | **84FUF92BMF** | **84FUF92WMF** | **84FUF920MF** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100 | **84GUG92BMF** | **84GUG92WMF** | **84GUG920MF** |
| 20 | 25 | 50 | 50 | 3 | — | 25–100 | B | 100 | **84HUG92BMF** | **84HUG92WMF** | **84HUG920MF** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 125 | **84IUH92BMF** | **84IUH92WMF** | **84IUH920MF** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 150 | **84JUH92BMF** | **84JUH92WMF** | **84JUH920MF** |



**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Not available on standard alternator style ('92' in the catalog number).

# Advanced Technology Pump Panel with Solid State Overload Relay, 3RE48

## General

3RE48

The 3RE48 NEMA rated pump panel panels is well suited for irrigation, oil fields and similar pumping applications and is built to withstand the harsh elements of the outdoors. It sports the latest and more advanced contactor technology with the SIRIUS NEMA rated contactor. The contactor is it designed, constructed, tested and certified per the same NEMA requirements as that of the Class 87 NEMA contactor.

### Typical applications:

- Crop irrigation
- Oil fields
- Wastewater treatment
- Dewatering

### Features and benefits:

- Utilizes the latest and more advanced contactor technology with the SIRIUS NEMA rated contactor size 1 - 4. The contactor is designed, constructed, tested, and certified per the same NEMA requirements as that of the Class 40 NEMA rated contactor
- Priced lower than the Class 87
- Reduced risk of investment via a 3-year limited warranty on the SIRIUS NEMA rated contactor and coil
- Heavy-duty NEMA starters to provide reliable motor control and protection expected in the most demanding applications
- The ESP200 solid-state overload relay has a protective coating on the circuit board which gives it superior protection against high humidity, condensation and corrosive environments
- Heavy-duty disconnect switch with visible blades for safety and double break switch action to reduce arcing and increase lifetime (also available with circuit breaker)
- Line side shield on disconnect switch to help guard personnel from contact with live parts
- Type 3R enclosure fabricated with galvannealed steel versus conventional cold rolled steel for superior corrosion resistance
- Rugged 3SU 30 mm H-O-A switch and Start push button, which are standard features, rated NEMA Type 3, 4, 12, and 13 are oil and dust tight and provide superior resistance to outdoor environmental elements
- Full gasketed door to ensure a dust tight and watertight seal
- Mounting flanges at top and bottom of enclosure for easy mounting on poles or flat surfaces using keyhole slots
- Oversized mounting panel for field mounting additional controls or for use as a wire way for large power conductors
- Heavy-duty quarter-turns for fast entry and proper sealing of enclosure
- Door is removable for ease of installation and maintenance
- Accessories for field modifications
- 100% factory testing of assembled pump panel
- High fault interrupting ratings up to 100kA at 600V
- UL rated as Service Entrance Equipment permitting equipment to be pole mounted and installed directly off of utility power lines
- cULus listed

### Key Values the 3RE48

1. **Cost savings:** It is priced lower than that of the Class 87 pump panel.
2. **Reliability:** Superior protection against high humidity, condensation, and corrosive environments thanks to the protective coating on the circuit board of the ESP200 overload relay.
3. **Extended product life:** Superior corrosion resistance due to enclosure fabricated with galvannealed steel versus conventional cold rolled steel.
4. **Safety:** High fault interrupting ratings up to 100kA at 600V.
5. **Ease of Installation:** Oversized enclosure to pull and terminate large power conductors and for field installing additional components.
6. **Assurance:** Reduced risk of investment via a 3-year limited warranty on the SIRIUS 3RT NEMA rated contactor and coil packaged in the 3RE48 pump panel.

## Catalog Numbering System

**3RE4 8 0 1 – 0 G H 7 6 – 4 D A 0**

### Controller type

**80** = Pump panel, NEMA rated, full-voltage, standard contactor, heavy-duty, with disconnect
**81** = Pump panel, NEMA rated, full-voltage, standard contactor, heavy-duty, with motor circuit protector

### NEMA Size

**1**
**2**
**3**
**4**

### Enclosure type and size

**G** = NEMA Type 3R, standard size

### Disconnect type and rating

**Controller type 80**

**G** = 30A disconnect switch with 30A/250V fuse clips
**H** = 30A disconnect switch with 30A/600V fuse clips
**J** = 60A disconnect switch with 60A/250V fuse clips
**K** = 60A disconnect switch with 60A/600V fuse clips
**L** = 100A disconnect switch with 100A/250V fuse clips
**M** = 100A disconnect switch with 100A/600V fuse clips
**N** = 200A disconnect switch with 200A/250V fuse clips
**P** = 200A disconnect switch with 200A/600V fuse clips

**Controller type 81**

**G** = 3A MCP
**H** = 10A MCP
**J** = 25A MCP
**K** = 30A MCP
**L** = 40A MCP
**M** = 50A MCP
**N** = 100A MCP
**P** = 125A MCP
**Q** = 150A MCP

### Nominal coil voltage

**3** = 110/120 V AC 50/60Hz
**4** = 208 V AC 50/60Hz
**5** = 220/240 V AC 50/60Hz
**7** = 480 V AC 60Hz
**8** = 600 V AC 60Hz

### Overload relay type

**6** = ESP200 solid state with selectable Trip Class 5-10-20-30 (factory set at 10)

### Overload relay amp range

**B** = 0.75-3.4
**C** = 3-12
**D** = 5.5-22
**E** = 10-40
**F** = 13-52
**G** = 25-100
**H** = 50-200

### Series / Generation

**0** = 2022

# Advanced Technology Pump Panel with Solid State Overload Relay, 3RE48

## Selection

### Ordering Information

- ► Field Modification Kits see page 9/82.
- ► Factory Modifications (NA)
- ► Dimensions see page 9/129.
- ► Wiring Diagram see page 9/142.
- ► For Replacement Parts visit our Online support site at https://support.industry.siemens.com
- ► Replace the (●) with the code from the coil table.

### Coil Table

**Coil Selection (●)①**

| Nominal voltage | Code |
|---|---|
| 110/120 VAC 50/60 Hz | **3** |
| 208 VAC 50/60 Hz | **4** |
| 220/240 VAC 50/60 Hz | **5** |
| 480 VAC 60 Hz | **7** |
| 600 VAC 60 Hz | **8** |

①208 - 600V coils will be wired for incoming voltage.120V coils will be wired as separate source or control transformer secondary (if ordered).

### Fusible disconnect

| Max Hp rating | | | | NEMA size | Overload relay amp range | Disc. amp rating | Fuse clip amp/volts | Catalog number |
|---|---|---|---|---|---|---|---|---|
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | | | |
| — | — | 1 | 1 | 1 | 0.75-3.4 | 30 | 30A/600V | **3RE4801–0GH●6–4BA0** |
| — | — | 5 | 5 | 1 | 3-12 | 30 | 30A/600V | **3RE4801–0GH●6–4CA0** |
| — | — | 10 | 10 | 1 | 5.5-22 | 30 | 30A/600V | **3RE4801–0GH●6–4DA0** |
| — | — | 10 | 10 | 1 | 5.5-22 | 60 | 60A/600V | **3RE4801–0GK●6–4DA0** |
| — | — | 25 | 25 | 2 | 13-52 | 60 | 60A/600V | **3RE4802–0GK●6–4FA0** |
| — | — | 25 | 25 | 2 | 13-52 | 100 | 100A/600V | **3RE4802–0GM●6–4FA0** |
| — | — | 50 | 50 | 3 | 25-100 | 100 | 100A/600V | **3RE4803–0GM●6–4GA0** |
| — | — | 50 | 50 | 3 | 25-100 | 200 | 200A600V | **3RE4803–0GP●6–4GA0** |
| — | — | 100 | 100 | 4 | 50-200 | 200 | 200A/600V | **3RE4804–0GP●6–4HA0** |
| 2 | 2 | — | — | 1 | 3-12 | 30 | 30A/250V | **3RE4801–0GG●6–4CA0** |
| 3 | 3 | — | — | 1 | 5.5-22 | 30 | 30A/250V | **3RE4801–0GG●6–4DA0** |
| 7½ | 7½ | — | — | 1 | 10-40 | 30 | 30A/250V | **3RE4801–0GG●6–4EA0** |
| 7½ | 7½ | — | — | 1 | 10-40 | 60 | 60A/250V | **3RE4801–0GJ●6–4EA0** |
| 10 | 15 | — | — | 2 | 13-52 | 60 | 60A/250V | **3RE4802–0GJ●6–4FA0** |
| 10 | 15 | — | — | 2 | 13-52 | 100 | 100A/250V | **3RE4802–0GL●6–4FA0** |
| 20 | 30 | — | — | 3 | 25-100 | 100 | 100A/250V | **3RE4803–0GL●6–4GA0** |
| 25 | 30 | — | — | 3 | 25-100 | 200 | 200A/250V | **3RE4803–0GN●6–4GA0** |
| 40 | 50 | — | — | 4 | 50-200 | 200 | 200A/250V | **3RE4804–0GN●6–4HA0** |

### Motor circuit protector

| Max Hp rating | | | | NEMA size | Overload relay amp range | MCP amp rating | Catalog number |
|---|---|---|---|---|---|---|---|
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | | |
| ½ | ½ | 1 | 1 | 1 | 0.75-3.4 | 3 | **3RE4811–0GG●6–4BA0** |
| 2 | 2 | 5 | 5 | 1 | 3-12 | 10 | **3RE4811–0GH●6–4CA0** |
| 3 | 3 | 10 | 10 | 1 | 5.5-22 | 25 | **3RE4811–0GJ●6–4DA0** |
| 7½ | 7½ | 10 | — | 1 | 10-40 | 30 | **3RE4811–0GK●6–4EA0** |
| 10 | 15 | 25 | 25 | 2 | 13-52 | 50 | **3RE4812–0GM●6–4FA0** |
| 25 | 25 | 50 | 50 | 3 | 25-100 | 100 | **3RE4813–0GN●6–4GA0** |
| 40 | 50 | 100 | 100 | 4 | 50-200 | 150 | **3RE4814–0GQ●6–4HA0** |

Replace the (●) with the code from the coil table.

## Features

- Fully Gasketed NEMA 3R Rainproof Enclosures
- 100,000 Amp Interrupting Capacity with Class R Fuses
- Heavy Duty NEMA Starters
- Solid State Overload Relays
- Heavy Duty Disconnect Handle
- Available in Reduced Voltage Versions
- Bold Pilot Legend on Front
- Generous Accessory Space
- Three point ground bar
- UL Listed for Outdoor Use and Service Equipment File #E185287

## Application

Heavy duty pump control panels are designed to withstand the most demanding environments. Typical applications include irrigation, agriculture, petrochemical, wastewater treatment and wherever motor control is challenged by harsh elements.

Installation is easy. Panels are factory wired to provide flexible control and protect against short circuits and overloads. Ample space is provided for field modifications and installation of accessories.

The pump control panels feature a full sized panel for mounting of accessories.

Class 87 pump panels become jockey pump panels with the addition of a pressure switch. The jockey pump's primary function is to maintain water pressure at a preset level and thus compensate for possible shortage of water in the pumping system. When the water pressure drops below the preset level, the pressure switch energizes the starter which in turn activates the jockey pump. The water pressure is then brought back up to the desired level. This insures the maintenance of proper water pressure at all times.

## Features

Specified by Fortune 500 companies, Siemens NEMA starters offer prolonged service under severe duty conditions. NEMA rated, these starters utilize large silver cadmium oxide contacts and wide copper heat sinks to ensure rapid heat dissipation and maximum electrical life.

**ESP200 solid state overload relay**
Refer to the section on Class 48 overload relays for features and benefits. Pump panels are factory set at trip Class 10.

**HOA and Start Pushbutton**

Every pump panel comes with an HOA and a start pushbutton.

**Half Size Starters**

Siemens motor matched starters feature all the rugged performance characteristics of our NEMA rated starter sizes, but are fractionally sized to more closely match your exact motor rating. As a result, significant economic savings are made possible without sacrificing the reliability you expect from a heavy duty starter.

These additional starter sizes have the reserve capacity to handle occasional plugging and jogging without de-rating the device.

Siemens motor matched can save hundreds, even thousands of dollars per project.

Siemens motor matched starters comply with NEMA, UL and CSA standards.

Panels are predrilled for easy repositioning of the fuse trailer block to accommodate 250 and 600 volt fuses and full sized RK or compact J fuses. Circuit breakers are also available.

### Heavy Duty Fusible Disconnect Switch

The disconnect switch has the following advantages:

- Visible blades for the highest level of safety
- Double Break Switching Action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts

### Motor Circuit Protector

The motor circuit protector provides fast, accurate fault clearing that will minimize damage to the motor and control apparatus and protect branch circuit conductors. Continuous current ratings and adjustable trip ranges meet NEC requirements for full load and locked rotor currents. The adjustable instantaneous trip point can be set precisely to assure fault protection and eliminate nuisance tripping.

### Removable Door

Enclosure door may be lifted off to make wiring easier.

### Mounting Flanges

Convenient flanges at top and bottom of the enclosure provide easy mounting. They fit pole or flat surfaces using keyhole slots.

### Quarter Turn Latches

Quarter turns are utilized to secure the door.

### Wind Catches

A wind catch is provided to prevent the door from slamming shut (or open) due to high wind conditions.

### Safety Disconnect Handle

Up to three padlocks can be used to lock the disconnect in the OFF position. Maintenance work can be performed without hazard to personnel.

### External Reset

The overload relay may be quickly reset by means of a button on the front of the enclosure.

### Ground Bar

Insures proper connecting of ground wires and lightning arresters.

### UL Listed

Assures proper construction throughout control panel.

### Reduced Voltage

Available in part winding, wye delta and auto transformer types, these controls may be necessary where the power company limits the amount of current drawn from its lines, or where starting torque must be reduced.

**Fully gasketed NEMA 3/12 weatherproof enclosures are supplied with Class 88 reduced voltage starters.**

**Part Winding Starters** apply starting current in timed steps to minimize voltage fluctuations.

**Auto Transformer Starters** maintain a closed circuit during transition and eliminate voltage or current surges. They draw less current than part winding starters and are well suited for starting motors over 20 Hp.

**Wye Delta starters** and motors are used in areas where the power supply is inadequate to supply full starting current without objectionable voltage drop or for applications where low starting torque is required. Centrifugal pumps and similar apparatus requiring a low starting torque are typical applications. Both ends of all three windings of the wye delta motor are brought out so that they may be accessible for reconnecting from wye to delta.

### Auxiliary Equipment

**Pilot Lights** are easily installed on the enclosure. Oil Tight and Heavy Duty, they meet NEMA A600 requirements.

**Lightning Arresters** protect the control panel from lightning induced surges.

**Undervoltage and Phase Sensing Relays** protect the pump against low voltage, voltage imbalance, loss of phase and phase reversal.

**Anti-Backspin Timers** prevent the motor from starting during motor/shaft backspin.

### Class 87 NEMA Vacuum Starter Pump Control Panels

The Siemens vacuum starter pump controllers are designed for the harshest environments. Typical environments include chemical, petrochemical, waste water treatment and mining. Contaminations present in these severe environments are detrimental to conventional air-break contacts decreasing their life expectancy and reliability. The Siemens vacuum starter pump controllers are well suited for these environments because the contacts are contained in hermetically sealed contact tubes. This prevents contaminates in the atmosphere from affecting the operation of the contacts. Additionally, neither arcs nor arcing gases are produced which dramatically increases the electrical endurance of the contacts.

# Standard Pump Panel with Solid State Overload Relay, Class 87

## Selection

### Ordering Information

- ▶ Field Modification Kits see page 9/81.
- ▶ Factory Modifications see page 9/93.
- ▶ Dimensions see page 9/129.
- ▶ Wiring Diagrams see page 9/142.
- ▶ Replacement Parts see page 9/99.
- ▶ Sizes 1-4 will be supplied standard with a 240/480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table.
- ▶ Sizes 5 & 6 will be supplied standard with a 480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 110–120/220–240 | A① |
| 200–208 | D |
| 220–240 | G |
| 220–240/440–480 | C① |
| 277 | L |
| 440–480 | H |
| 550–600 | E |

### Fusible Disconnect

| Max Hp | | | | NEMA Size | Half Size | Overload | | Disc. Amp Range | Fuse Clip Amp / Volts | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | Amp Range | Frame Size | | | |
| — | — | 1 | 1 | 1 | — | 0.75–3.4② | A | 30 | 30A/600V | **87DUB6FC** |
| — | — | 5 | 5 | 1 | — | 3–12 | A1 | 30 | 30A/600V | **87DUC6FC** |
| — | — | 10 | 10 | 1 | — | 5.5–22 | A1 | 30 | 30A/600V | **87DUD6FC** |
| — | — | 10 | 10 | 1 | — | 5.5–22 | A1 | 60 | 60A/600V | **87DUD60C** |
| — | — | 15 | 15 | — | 1¾ | 10–40 | A1 | 30 | 30A/600V | **87EUE6FC** |
| — | — | 15 | 15 | — | 1¾ | 10–40 | A1 | 60 | 60A/600V | **87EUE60C** |
| — | — | 25 | 25 | 2 | — | 13–52 | B | 60 | 60A/600V | **87FUF6FC** |
| — | — | 25 | 25 | 2 | — | 13–52 | B | 100 | 100A/600V | **87FUF60C** |
| — | — | 30 | 30 | — | 2½ | 25–100 | B | 60 | 60A/600V | **87GUG6FC** |
| — | — | 30 | 30 | — | 2½ | 25–100 | B | 100 | 100A/600V | **87GUG60C** |
| — | — | 50 | 50 | 3 | — | 25–100 | B | 100 | 100A/600V | **87HUG6FC** |
| — | — | 50 | 50 | 3 | — | 25–100 | B | 200 | 200A/600V | **87HUG60C** |
| — | — | 75 | 75 | — | 3½ | 50–200 | B | 200 | 200A/600V | **87IUH6FC** |
| — | — | 100 | 100 | 4 | — | 50–200 | B | 200 | 200A/600V | **87JUH6FC** |
| — | — | 200 | 200 | 5 | — | 55–250 | — | 400 | 400A/600V | **87LPU6FH** |
| — | — | 250 | — | 6 | — | 160–630 | — | 600 | 600A/600V | **87MSW6FH** |
| 2 | 2 | — | — | 1 | — | 3–12 | A1 | 30 | 30A/250V | **87DUC6LC** |
| 3 | 3 | — | — | 1 | — | 5.5–22 | A1 | 30 | 30A/250V | **87DUD6LC** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 30 | 30A/250V | **87DUE6LC** |
| 7½ | 7½ | — | — | 1 | — | 10–40 | A1 | 60 | 60A/250V | **87DUE6PC** |
| 10 | 10 | — | — | — | 1¾ | 10–40 | A1 | 60 | 60A/250V | **87EUE6LC** |
| 10 | 15 | — | — | 2 | — | 13–52 | B | 60 | 60A/250V | **87FUF6LC** |
| 10 | 15 | — | — | 2 | — | 13–52 | B | 100 | 100A/250V | **87FUF6PC** |
| 15 | 20 | — | — | — | 2½ | 25–100 | B | 60 | 60A/250V | **87GUG6LC** |
| 15 | 20 | — | — | — | 2½ | 25–100 | B | 100 | 100A/250V | **87GUG6PC** |
| 20 | 30 | — | — | 3 | — | 25–100 | B | 100 | 100A/250V | **87HUG6LC** |
| 25 | 30 | — | — | 3 | — | 25–100 | B | 200 | 200A/250V | **87HUG6PC** |
| 30 | 40 | — | — | — | 3½ | 50–200 | B | 200 | 200A/250V | **87IUH6LC** |
| 40 | 50 | — | — | 4 | — | 50–200 | B | 200 | 200A/250V | **87JUH6LC** |
| 75 | 100 | — | — | 5 | — | 55–250 | — | 400 | 400A/250V | **87LPU6LG** |

### Circuit Breaker

| Max Hp | | | | NEMA Size | Half Size | Overload | | Motor Circuit Interrupter ETI Amps | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|
| 200 Volts | 230 Volts | 460 Volts | 575 Volts | | | Amp Range | Frame Size | | |
| ½ | ½ | 1 | 1 | 1 | — | 0.75–3.4② | A | 3 | **87DUB6MC** |
| 2 | 2 | 5 | 5 | 1 | — | 3–12 | A1 | 10 | **87DUC6MC** |
| 3 | 3 | 10 | 10 | 1 | — | 5.5–22 | A1 | 25 | **87DUD6MC** |
| 7½ | 7½ | 10 | — | 1 | — | 10–40 | A1 | 30 | **87DUE6MC** |
| — | — | 15 | 15 | — | 1¾ | 10–40 | A1 | 40 | **87EUE6MC** |
| 10 | 15 | 25 | 25 | 2 | — | 13–52 | B | 50 | **87FUF6MC** |
| 15 | 20 | 30 | 30 | — | 2½ | 25–100 | B | 100 | **87GUG6MC** |
| 25 | 30 | 50 | 50 | 3 | — | 25–100 | B | 100 | **87HUG6MC** |
| 30 | 40 | 75 | 75 | — | 3½ | 50–200 | B | 125 | **87IUH6MC** |
| 40 | 50 | 100 | 100 | 4 | — | 50–200 | B | 150 | **87JUH6MC** |
| 50 | 75 | 150 | 200 | 5 | — | 55–250 | — | 250 | **87LPT6MH** |
| 75 | 100 | 200 | 200 | 5 | — | 55–250 | — | 400 | **87LPU6MH** |
| 100 | 125 | 250 | 300 | 6 | — | 160–630 | — | 400 | **87MSW6MH** |
| 150 | 200 | 400 | 400 | 6 | — | 160–630 | — | 600 | **87MSX6MH** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Not available on Size 5 and larger.
② For an overload amp range of 0.25-1A, change the 5th character from a 'B' to an 'A'.
③ A version with coil code A is also stocked via Controls Express.

# Vacuum Break Pump Control Panels, Class 87

## Selection

### Ordering Information

- ► Field Modification Kits see page 9/81.
- ► Factory Modifications see page 9/93.
- ► Dimensions see page 9/129.
- ► Wiring Diagrams see page 9/142.
- ► Replacement Parts see page 9/99.
- ► Replace the (*) in the catalog number with a letter from the coil table.

### Coil Table

| 60Hz Voltage | Letter |
|---|---|
| 24 | J |
| 120 | F |
| 200–208 | D |
| 220–240 | G |
| 277 | L |
| 440–480 | H |
| 550–600 | E |

### Vacuum Break Pump Control Panels (Vacuum Contactor with Trip Class 10 Solid-State Overload Relay)

| Max Hp | | NEMA Size | Overload Relay Range | Fusible Disconnect | | Circuit Breaker | |
|---|---|---|---|---|---|---|---|
| 480 Volts | 575 Volts | | | Fuse Clip Amps/Volts | Catalog Number | MCI Amps | Catalog Number |
| 100 | 100 | 4 | 50-200A① | 200A/600V | **87JCN6F*** | 250A | **87JCN6M*** |
| 100 | 100 | 4 | 55-250A | 200A/600V | **87JCM6F*** | 250A | **87JCM6M*** |
| 200 | 200 | 5 | 55-250A | 400A/600V | **87LCU6F*** | 400A | **87LCT6M*** |
| 250 | 300 | 6 | 160-630A | — | — | 400A | **87MCW6M*** |
| 400 | 400 | 6 | 160-630A | — | — | 600A | **87MCX6M*** |

**Note:** Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① ESP200 overload relay.

# Auto Transformer & Part winding (2 Step) with Solid State Overload, Class 88

## Selection

Auto Transformer

Part Winding

### Ordering Information

- ► Field Modification Kits see page 9/81.
- ► Factory Modifications see page 9/93.
- ► Dimensions see page 9/129.
- ► Wiring Diagrams see pages 9/143 and 9/144.
- ► Replacement Parts see page 9/99.

### Coil & Control Voltage

The coil voltage on the contactors will be the motor voltage. A CPT will be supplied to provide the control voltage. The control voltage will be 120V.

To change the control voltage to customer supplied (no CPT included), change the 9th character to the following:

for 24V , use "**J**"

for 120V, use "**F**"

### Auto Transformer Type

| Motor Voltage | Max Hp | Overload | | NEMA Size | Half Size | Fusible Disconnect | | Circuit Breaker | |
|---|---|---|---|---|---|---|---|---|---|
| | | Amp Range | Frame Size | | | Fuse Clip Size Amps/Volts | Catalog Number | Circuit Breaker Amps | Catalog Number |
| 230 | 15 | 13–52 | B | 2 | — | 60A/250V | **88FUFT2FG** | 50 | **88FUFT2MG** |
| | 20 | 25–100 | B | — | 2½ | 100A/250V | **88GUGT2FG** | 100 | **88GUGT2MG** |
| | 30 | 25–100 | B | 3 | — | 100A/250V | **88HUGT2FG** | 100 | **88HUGT2MG** |
| | 40 | 50–200 | B | — | 3½ | 200A/250V | **88IUHT2FG** | 125 | **88IUHT2MG** |
| | 50 | 50–200 | B | 4 | — | 200A/250V | **88JUHT2FG** | 150 | **88JUHT2MG** |
| | 75 | 55–250 | — | 5 | — | — | **—** | 250 | **88LPST2MG** |
| | 100 | 55–250 | — | 5 | — | 400A/250V | **88LPUT2FG** | 400 | **88LPUT2MG** |
| | 200 | 160–630 | — | 6 | — | — | **—** | 600 | **88MSXT2MG** |
| 460 | 25 | 13–52 | B | 2 | — | 60A/600V | **88FUFT4FH** | 50 | **88FUFT4MH** |
| | 30 | 25–100 | B | — | 2½ | 60A/600V | **88GUGT4FH** | 50 | **88GUGT4MH** |
| | 50 | 25–100 | B | 3 | — | 100A/600V | **88HUGT4FH** | 100 | **88HUGT4MH** |
| | 75 | 50–200 | B | — | 3½ | 200A/600V | **88IUHT4FH** | 125 | **88IUHT4MH** |
| | 100 | 50–200 | B | 4 | — | 200A/600V | **88JUHT4FH** | 150 | **88JUHT4MH** |
| | 150 | 55–250 | — | 5 | — | — | **—** | 250 | **88LPST4MH** |
| | 200 | 55–250 | — | 5 | — | 400A/600V | **88LPST4FH** | 400 | **88LPUT4MH** |
| | 250 | 160–630 | — | 6 | — | — | **—** | 400 | **88MSVT4MH** |
| | 400 | 160–630 | — | 6 | — | 600A/600V | **88MSXT4FH** | 600 | **88MSXT4MH** |

### Part Winding 2 Step

| Motor Voltage | Max Hp | Overload | | NEMA Size | Half Size | Fusible Disconnect | | Circuit Breaker | |
|---|---|---|---|---|---|---|---|---|---|
| | | Amp Range | Frame Size | | | Fuse Clip Size Amps/Volts | Catalog Number | Circuit Breaker Amps | Catalog Number |
| 230 | 20 | 10–40 | A1 | — | 1¾ | 100A/250V | **88EUEP2FG** | 100 | **88EUEP2MG** |
| | 25 | 13–52 | B | 2 | — | 100A/250V | **88FUFP2FG** | 100 | **88FUFP2MG** |
| | 40 | 25–100 | B | — | 2½ | 200A/250V | **88GUGP2FG** | 100 | **88GUGP2MG** |
| | 50 | 25–100 | B | 3 | — | 200A/250V | **88HUGP2FG** | 150 | **88HUGP2MG** |
| | 60 | 50–200 | B | — | 3½ | 200A/250V | **88IUHP2FG** | 250 | **88IUHP2MG** |
| | 75 | 50–200 | B | 4 | — | 400A/250V | **88JUHP2FG** | 250 | **88JUHP2MG** |
| | 125 | 55–250 | — | 5 | — | — | **—** | 400 | **88LPSP2MG** |
| | 150 | 55–250 | — | 5 | — | 600A/250V | **88LPUP2FG** | 600 | **88LPUP2MG** |
| 460 | 30 | 10–40 | A1 | — | 1¾ | 100A/600V | **88EUEP4FH** | 100 | **88EUEP4MH** |
| | 40 | 13–52 | B | 2 | — | 100A/600V | **88FUFP4FH** | 100 | **88FUFP4MH** |
| | 60 | 25–100 | B | — | 2½ | 200A/600V | **88GUGP4FH** | 100 | **88GUGP4MH** |
| | 75 | 25–100 | B | 3 | — | 200A/600V | **88HUGP4FH** | 150 | **88HUGP4MH** |
| | 100 | 50–200 | B | — | 3½ | 200A/600V | **88IUHP4FH** | 250 | **88IUHP4MH** |
| | 150 | 50–200 | B | 4 | — | 400A/600V | **88JUHP4FH** | 250 | **88JUHP4MH** |
| | 250 | 55–250 | — | 5 | — | — | **—** | 400 | **88LPSP4MH** |
| | 350 | 55–250 | — | 5 | — | 600A/600V | **88LPUP4FH** | 600 | **88LPUP4MH** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

# Wye Delta with Solid State Overload, Class 88

## Selection

### Ordering Information

- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/129.
- Wiring Diagrams see pages 9/145 and 9/146.
- Replacement Parts see page 9/99.

### Coil & Control Voltage

The coil voltage on the contactors will be the motor voltage. A CPT will be supplied to provide the control voltage. The control voltage will be 120V.

To change the control voltage to customer supplied (no CPT included), change the 9th character to the following:

for 24V , use "**J**"

for 120V, use "**F**"

### Wye Delta

| Motor Voltage | Max Hp | Overload | | NEMA Size | Half Size | Fuse Clip Size Amps/Volts | Motor Circuit Interrupter ETI Amps | Open Transition | | Closed Transition | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Fusible Disconnect | Circuit Breaker | Fusible Disconnect | Circuit Breaker |
| | | Amp Range | Frame Size | | | | | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 200 | 10 | 10–40 | A1 | 1 | — | 60A/250V | 50 | **88DUE06FD** | **88DUE06MD** | **88DUEC6FD** | **88DUEC6MD** |
| | 15 | 10–40 | A1 | — | 1¾ | 100A/250V | 100 | **88EUE06FD** | **88EUE06MD** | **88EUEC6FD** | **88EUEC6MD** |
| | 20 | 13–52 | B | 2 | — | 100A/250V | 100 | **88FUF06FD** | **88FUF06MD** | **88FUFC6FD** | **88FUFC6MD** |
| | 30 | 25–100 | B | — | 2½ | 200A/250V | 125 | **88GUG06FD** | **88GUG06MD** | **88GUGC6FD** | **88GUGC6MD** |
| | 40 | 25–100 | B | 3 | — | 200A/250V | 150 | **88HUG06FD** | **88HUG06MD** | **88HUGC6FD** | **88HUGC6MD** |
| | 50 | 50–200 | B | — | 3½ | 200A/250V | 250 | **88IUH06FD** | **88IUH06MD** | **88IUHC6FD** | **88IUHC6MD** |
| | 60 | 50–200 | B | 4 | — | 400A/250V | 250 | **88JUH06FD** | **88JUH06MD** | **88JUHC6FD** | **88JUHC6MD** |
| | 75 | 55–250 | — | 5 | — | 400A/250V | 400 | **88LPS06FD** | **88LPS06MD** | **88LPSC6FD** | **88LPSC6MD** |
| | 150 | 55–250 | — | 5 | — | 600A/250V | 600 | **88LPU06FD** | **88LPU06MD** | **88LPUC6FD** | **88LPUC6MD** |
| | 300 | 160–630 | — | 6 | — | — | 800 | — | **88MSX06MD** | — | **88MSXC6MD** |
| 230 | 10 | 10–40 | A1 | 1 | — | 60A/250V | 50 | **88DUE02FG** | **88DUE02MG** | **88DUEC2FG** | **88DUEC2MG** |
| | 15 | 10–40 | A1 | — | 1¾ | 60A/250V | 50 | **88EUE02FG** | **88EUE02MG** | **88EUEC2FG** | **88EUEC2MG** |
| | 25 | 13–52 | B | 2 | — | 100A/250V | 100 | **88FUF02FG** | **88FUF02MG** | **88FUFC2FG** | **88FUFC2MG** |
| | 30 | 25–100 | B | — | 2½ | 200A/250V | 100 | **88GUG02FG** | **88GUG02MG** | **88GUGC2FG** | **88GUGC2MG** |
| | 50 | 25–100 | B | 3 | — | 200A/250V | 150 | **88HUG02FG** | **88HUG02MG** | **88HUGC2FG** | **88HUGC2MG** |
| | 60 | 50–200 | B | — | 3½ | 200A/250V | 250 | **88IUH02FG** | **88IUH02MG** | **88IUHC2FG** | **88IUHC2MG** |
| | 75 | 50–200 | B | 4 | — | 400A/250V | 250 | **88JUH02FG** | **88JUH02MG** | **88JUHC2FG** | **88JUHC2MG** |
| | 100 | 55–250 | — | 5 | — | 400A/250V | 400 | **88LPS02FG** | **88LPS02MG** | **88LPSC2FG** | **88LPSC2MG** |
| | 150 | 55–250 | — | 5 | — | 600A/250V | 600 | **88LPU02FG** | **88LPU02MG** | **88LPUC2FG** | **88LPUC2MG** |
| | 350 | 160–630 | — | 6 | — | — | 1200 | — | **88MSX02MG** | — | **88MSXC2MG** |
| 460 | 15 | 5.5-22 | A1 | 1 | — | 30A/600V | 30 | **88DUD04FH** | **88DUD04MH** | **88DUDC4FH** | **88DUDC4MH** |
| | 30 | 10–40 | A1 | — | 1¾ | 60A/600V | 50 | **88EUE04FH** | **88EUE04MH** | **88EUEC4FH** | **88EUEC4MH** |
| | 40 | 13–52 | B | 2 | — | 100A/600V | 100 | **88FUF04FH** | **88FUF04MH** | **88FUFC4FH** | **88FUFC4MH** |
| | 60 | 25–100 | B | — | 2½ | 200A/600V | 100 | **88GUG04FH** | **88GUG04MH** | **88GUGC4FH** | **88GUGC4MH** |
| | 75 | 25–100 | B | 3 | — | 200A/600V | 125 | **88HUG04FH** | **88HUG04MH** | **88HUGC4FH** | **88HUGC4MH** |
| | 100 | 50–200 | B | — | 3½ | 200A/600V | 150 | **88IUH04FH** | **88IUH04MH** | **88IUHC4FH** | **88IUHC4MH** |
| | 150 | 50–200 | B | 4 | — | 400A/600V | 250 | **88JUH04FH** | **88JUH04MH** | **88JUHC4FH** | **88JUHC4MH** |
| | 200 | 55–250 | — | 5 | — | 400A/600V | 400 | **88LPS04FH** | **88LPS04MH** | **88LPSC4FH** | **88LPSC4MH** |
| | 300 | 55–250 | — | 5 | — | 600A/600V | 600 | **88LPU04FH** | **88LPU04MH** | **88LPUC4FH** | **88LPUC4MH** |
| | 700 | 160–630 | — | 6 | — | — | 1200 | — | **88MSX04MH** | — | **88MSXC4MH** |
| 575 | 15 | 5.5-22 | A1 | 1 | — | 30A/600V | 30 | **88DUD05FE** | **88DUD05ME** | **88DUDC5FE** | **88DUDC5ME** |
| | 30 | 10–40 | A1 | — | 1¾ | 60A/600V | 50 | **88EUE05FE** | **88EUE05ME** | **88EUEC5FE** | **88EUEC5ME** |
| | 40 | 13–52 | B | 2 | — | 100A/600V | 50 | **88FUF05FE** | **88FUF05ME** | **88FUFC5FE** | **88FUFC5ME** |
| | 60 | 25–100 | B | — | 2½ | 200A/600V | 100 | **88GUG05FE** | **88GUG05ME** | **88GUGC5FE** | **88GUGC5ME** |
| | 75 | 25–100 | B | 3 | — | 200A/600V | 125 | **88HUG05FE** | **88HUG05ME** | **88HUGC5FE** | **88HUGC5ME** |
| | 100 | 50–200 | B | — | 3½ | 200A/600V | 150 | **88IUH05FE** | **88IUH05ME** | **88IUHC5FE** | **88IUHC5ME** |
| | 150 | 50–200 | B | 4 | — | 400A/600V | 250 | **88JUH05FE** | **88JUH05ME** | **88JUHC5FE** | **88JUHC5ME** |
| | 200 | 55–250 | — | 5 | — | 400A/600V | 400 | **88LPS05FE** | **88LPU05ME** | **88LPSC5FE** | **88LPSC5ME** |
| | 300 | 55–250 | — | 5 | — | 600A/600V | 400 | **88LPU05FE** | **88LPU05ME** | **88LPUC5FE** | **88LPUC5ME** |
| | 700 | 160–630 | — | 6 | — | — | 1200 | — | **88MSX05ME** | — | **88MSXC5ME** |

**Note:** All starter sizes carry one maximum Hp rating (per the National Electric Code).

## Notes

# Electrically Held Lighting Contactors, Class LE

## Features

Simplicity and compact lightweight design makes Class LE lighting contactors an attractive solution to your budgeting challenges.

- Used in applications where it is not critical that contacts remain closed if control power is lost
- Rated for electronic ballast / LED drivers, tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are rated 20 - 400 amps at 600 volts
- 3 and 4 pole (up to 12 pole for 30 and 60 amp contactors)
- Most contactors have built-in auxiliary contacts for convenient 3-wire control
- Combination lighting contactors are UL Listed for Service Entrance
- Wide range of coil voltages from 24 to 600 VAC 50/60Hz
- Compact design allows for smaller panels and more wiring room
- Finger and back-of-hand safe terminals
- Panel and DIN rail mounting
- Full line of enclosures including NEMA 1, 3R/4/12 and 4/4X stainless steel
- Available in combination form with choice of non-fusible disconnect, fusible disconnect or circuit breaker
- Full line of factory and field modifications

# Electrically Held Lighting Contactors, Class LE

## Features

### Catalog Numbering System

LE [ ] [ ] [ ] [ ] 0 [ ] [ ] [ ]

**Disconnect Type**
**B** = Combination Circuit Breaker
**D** = Combination Non-Fused Disconnect
**F** = Combination Fusible Disconnect
**N** = Non-Combination

**Disconnect Rating**
**0** = N/A
**A** = 30A/250V Disconnect
**B** = 30A/600V Disconnect
**C** = 60A/250V Disconnect
**D** = 60A/600V Disconnect
**E** = 100A/250V Disconnect
**F** = 100A/600V Disconnect
**G** = 200A/250V Disconnect
**H** = 200A/600V Disconnect
**J** = 400A/250V Disconnect
**K** = 400A/600V Disconnect
**T** = 20A Circuit Breaker
**V** = 30A Circuit Breaker
**Y** = 60A Circuit Breaker
**Z** = 100A Circuit Breaker

**Enclosure Type**
**0** = Open
**1** = NEMA 1
**2** = NEMA 3R/4/12
**4** = NEMA 4/4X SS

**Contactor Rating (Amp)**
**B** = 20
**C** = 30
**D** = 60
**E** = 100
**F** = 200
**G** = 300
**H** = 400

**N.C. Poles**
**0** = None

**N.O. Poles**
**03** = Three
**04** = Four
**06** = Six
**09** = Nine
**12** = Twelve

**Coil Voltage (AC 60Hz)**
**024** = 24
**120** = 120
**208** = 208
**240** = 240
**277** = 277
**347** = 347
**480** = 480
**600** = 600

**Series**
**A** = 200 – 400A Contactors
**B** = 20 & 30A Contactors
**C** = 60 & 100A Contactors

# Electrically Held Lighting Contactors, Class LE

## Selection

### Ordering Information

- Replace *** with a number from the coil table.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/113 for open, page 9/130 for enclosed.
- Wiring Diagram see page 9/147.
- Replacement Parts see page 9/102.

### Coil Table

| VAC 60Hz | *** |
|---|---|
| 24 | 024 |
| 120 | 120 |
| 208 | 208 |
| 240 | 240 |
| 277 | 277 |
| 347 ① | 347 |
| 480 | 480 |
| 600 | 600 |

Replace the (***) with a number from the coil table.

### Non-Combination Contactor

| Max. Amp Rating | Number of Poles | Normally Closed Contacts | Normally Open Contacts | Enclosure Type | | | |
|---|---|---|---|---|---|---|---|
| | | | | Open | 1 | 3R/4/12 | 4/4X 304 S.S. |
| | | | | Catalog Number | | | |
| 20 | 3 | 0 | 3 | LEN00B003***B | LEN01B003***B | LEN02B003***B | LEN04B003***B |
| | 4 | 0 | 4 | LEN00B004***B | LEN01B004***B | LEN02B004***B | LEN04B004***B |
| 30 | 3 | 0 | 3 | LEN00C003***B | LEN01C003***B | LEN02C003***B | LEN04C003***B |
| | 4 | 0 | 4 | LEN00C004***B | LEN01C004***B | LEN02C004***B | LEN04C004***B |
| | 6 | 0 | 6 | LEN00C006***B | LEN01C006***B | LEN02C006***B | LEN04C006***B |
| | 9 | 0 | 9 | LEN00C009***B | LEN01C009***B | LEN02C009***B | LEN04C009***B |
| | 12 | 0 | 12 | LEN00C012***B | LEN01C012***B | LEN02C012***B | LEN04C012***B |
| 60 | 3 | 0 | 3 | LEN00D003***C | LEN01D003***C | LEN02D003***C | LEN04D003***C |
| | 6 | 0 | 6 | LEN00D006***C | LEN01D006***C | LEN02D006***C | LEN04D006***C |
| | 9 | 0 | 9 | LEN00D009***C | LEN01D009***C | LEN02D009***C | LEN04D009***C |
| | 12 | 0 | 12 | LEN00D012***C | LEN01D012***C | LEN02D012***C | LEN04D012***C |
| 100 | 3 | 0 | 3 | LEN00E003***C | LEN01E003***C | LEN02E003***C | LEN04E003***C |
| 200 | 3 | 0 | 3 | LEN00F003***A | LEN01F003***A | LEN02F003***A | LEN04F003***A |
| 300 | 3 | 0 | 3 | LEN00G003***A | LEN01G003***A | LEN02G003***A | LEN04G003***A |
| 400 | 3 | 0 | 3 | LEN00H003***A | LEN01H003***A | LEN02H003***A | LEN04H003***A |

① Not available on 60 - 400A contactors.

# Electrically Held Lighting Contactors, Class LE

## Technical

| Contactor | LEN00B003 | LEN00B004 | LEN00C003 | LEN00C004 |
|---|---|---|---|---|
| **General technical data:** | | | | |
| Finger-safe (main circuit / control circuit) | yes / yes | yes / yes | yes / yes | yes / yes |
| Altitude (m) | 2,000 | 2,000 | 2,000 | 2,000 |
| Ambient storage temperature (°C) | -55 to 80 | -55 to 80 | -55 to 80 | -55 to 80 |
| Ambient operating temperature (°C) | 0 to 40 | 0 to 40 | 0 to 40 | 0 to 40 |
| **Mechanical operating cycles as operating time:** | | | | |
| of contactor | 30,000,000 | 30,000,000 | 10,000,000 | 10,000,000 |
| of contactor with additional aux contacts | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 |
| **Main circuit:** | | | | |
| Number of NC / NO main contacts | 0NC / 3NO | 0NC / 4NO | 0NC / 3NO | 0NC / 4NO |
| Typical power loss per conductor (W) | 0.7 | 0.7 | 0.9 | 0.9 |
| Off-load operating frequency (cycles per hour) | 10,000 | 10,000 | 5,000 | 5,000 |
| **Current ratings:** | | | | |
| **Electronic ballast / LED driver (poles per phase)** | **8A @120V 1p 1ph<br>3A @277V 1p 1ph** | **8A @120V 1p 1ph<br>3A @277V 1p 1ph** | **16A @120V 1p 1ph<br>8A @277V 1p 1ph** | **16A @120V 1p 1ph<br>8A @277V 1p 1ph** |
| **Tungsten (poles per phase)** | **20A @277V 1p 1ph<br>20A @480V 2p 1ph<br>20A @480V 3p 3ph** | **20A @277V 1p 1ph<br>20A @480V 2p 1ph<br>20A @480V 3p 3ph** | **30A @277V 1p 1ph<br>30A @480V 2p 1ph<br>30A @480V 3p 3ph** | **30A @277V 1p 1ph<br>30A @480V 2p 1ph<br>30A @480V 3p 3ph** |
| **Ballast (poles per phase)** | **20A @347V 1p 1ph<br>20A @600V 2p 1ph<br>20A @600V 3p 3ph** | **20A @347V 1p 1ph<br>20A @600V 2p 1ph<br>20A @600V 3p 3ph** | **30A @347V 1p 1ph<br>30A @600V 2p 1ph<br>30A @660V 3p 3ph** | **30A @347V 1p 1ph<br>30A @600V 2p 1ph<br>30A @600V 3p 3ph** |
| **General and resistive (poles per phase)** | **20A @600V 1p 1ph<br>20A @600V 2p 1ph<br>20A @600V 3p 3ph** | **20A @600V 1p 1ph<br>20A @600V 2p 1ph<br>20A @600V 3p 3ph** | **30A @600V 1p 1ph<br>30A @600V 2p 1ph<br>30A @600V 3p 3ph** | **30A @600V 1p 1ph<br>30A @600V 2p 1ph<br>30A @600V 3p 3ph** |
| **Coil ratings:** | | | | |
| Nominal voltage | ① | ①| | ①| | ①| |
| Inrush / sealed power (VA) | 31.7 / 4.8 | 31.7 / 4.8 | 87 / 9.4 | 87 / 9.4 |
| Coil voltage tolerance factor | 0.8 - 1.1 | 0.8 - 1.1 | 0.8 - 1.1 | 0.8 - 1.1 |
| **Internal/standard auxiliary contact:** | | | | |
| Number of NC / NO auxiliary contacts | 0NC / 1NO | NA② | 1NC / 1NO | 1NC / 1NO |
| Rating | A600 / Q600 | NA | A600 / Q600 | A600 / Q600 |
| **Installation/mounting/dimensions:** | | | | |
| Mounting orientation | vertical | vertical | vertical | vertical |
| Type of mounting: screw / DIN rail | yes / yes | yes / yes | yes / yes | yes / yes |
| Height x Width x Depth (mm) | 57.5 x 45 x 73 | 57.5 x 45 x 73 | 85 x 45 x 97 | 85 x 60 x 97 |
| Minimum clearance to sides (mm) | 0 | 0 | 0 | 0 |
| Minimum clearance to earthed parts (mm) | 6 | 6 | 6 | 6 |
| Connection type / torque for main circuit terminals | screw / 7-10 lb in | screw / 7-10 lb in | screw / 18-22 lb in | screw / 18-22 lb in |
| Connection type / torque for control circuit terminals | screw / 7-10 lb in | screw / 7-10 lb in | screw / 7-10 lb in | screw / 7-10 lb in |
| Solid and stranded conductors for main contacts (AWG) | 2x(20-16), 2x(18-14), 2x(12) | 2x(20-16), 2x(18-14), 2x(12) | 2x(6-12), 2x(14-8) | 2x(6-12), 2x(14-8) |
| Solid and stranded conductors for control circuit (AWG) | 2x(20-16), 2x(18-14) | 2x(20-16), 2x(18-14) | 2x(20-16), 2x(18-14) | 2x(20-16), 2x(18-14) |
| Conductor type for main and control circuits | 75°C CU | 75°C CU | 75°C CU | 75°C CU |
| **Short circuit current rating of main circuit:** | | | | |
| Short circuit current rating | ③ | ③ | ③ | ③ |
| **Certificates:** | **cULus** | **cULus** | **cULus** | **cULus** |

① Refer to catalog selection tables for coil voltages.
② Must use an external (optional) auxiliary contact.
③ Refer to product data sheet via Industry Mall at https://mall.industry.siemens.com.

| LEN00D003 | LEN00E003 | LEN00F003 | LEN00G003 | LEN00H003 |
|---|---|---|---|---|
| | | | | |
| no / yes | no / yes | no / yes | no / yes | no / yes |
| 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| -55 to 80 | -55 to 80 | -55 to 80 | -55 to 80 | -55 to 80 |
| 0 to 40 | 0 to 40 | 0 to 40 | 0 to 40 | 0 to 40 |
| **Mechanical operating cycles as operating time:** | | | | |
| 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 |
| 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 |
| **Main circuit:** | | | | |
| 0NC / 3NO | 0NC / 3NO | 0NC / 3NO | 0NC / 3NO | 0NC / 3NO |
| 3.8 | 5.3 | 13 | 18 | 35 |
| 5,000 | 5,000 | 2,000 | 2,000 | 2,000 |
| **Current ratings:** | | | | |
| **16A @120V 1p 1ph<br>8A @277V 1p 1ph** | **16A @120V 1p 1ph<br>8A @277V 1p 1ph** | **N/A** | **N/A** | **N/A** |
| **60A @277V 1p 1ph<br>60A @480V 2p 1ph<br>60A @480V 3p 3ph** | **100A @277V 1p 1ph<br>100A @480V 2p 1ph<br>100A @480V 3p 3ph** | **200A @277V 1p 1ph<br>200A @480V 2p 1ph<br>200A @480V 3p 3ph** | **300A @277V 1p 1ph<br>300A @480V 2p 1ph<br>300A @480V 3p 3ph** | **400A @277V 1p 1ph<br>400A @480V 2p 1ph<br>400A @480V 3p 3ph** |
| **60A @347V 1p 1ph<br>60A @600V 2p 1ph<br>60A @600V 3p 3ph** | **100A @347V 1p 1ph<br>100A @600V 2p 1ph<br>100A @600V 3p 3ph** | **200A @600V 1p 1ph<br>200A @600V 2p 1ph<br>200A @600V 3p 3ph** | **300A @600V 1p 1ph<br>300A @600V 2p 1ph<br>300A @600V 3p 3ph** | **400A @600V 1p 1ph<br>400A @600V 2p 1ph<br>400A @600V 3p 3ph** |
| **60A @347V 1p 1ph<br>60A @600V 2p 1ph<br>60A @600V 3p 3ph** | **100A @347V 1p 1ph<br>100A @600V 2p 1ph<br>100A @600V 3p 3ph** | **200A @600V 1p 1ph<br>200A @600V 2p 1ph<br>200A @600V 3p 3ph** | **300A @600V 1p 1ph<br>300A @600V 2p 1ph<br>300A @600V 3p 3ph** | **400A@600V 1p 1ph<br>400A @600V 2p 1ph<br>400A @600V 3p 3ph** |
| **Coil ratings:** | | | | |
| ① | ① | ① | ① | ① |
| 188 / 16.5 | 326 / 22 | 300 / 5.8 | 590 / 6.7 | 830 / 9.2 |
| 0.8 - 1.1 | 0.8 - 1.1 | 0.8 - 1.1 | 0.8 - 1.1 | 0.8 - 1.1 |
| **Internal/standard auxiliary contact:** | | | | |
| 1NC / 1NO | 1NC / 1NO | 2NC / 2NO | 2NC / 2NO | 2NC / 2NO |
| A600 / P600 | A600 / P600 | A300 / Q300 | A300 / Q300 | A300 / Q300 |
| **Installation/mounting/dimensions:** | | | | |
| vertical | vertical | vertical | vertical | vertical |
| yes / yes | yes / yes | yes / no | yes / no | yes / no |
| 113 x 55 x 130 | 140 x 70 x 152 | 172 x 120 x 180 | 210 x 145 x 202 | 214 x 160 x 225 |
| 6 | 6 | 10 | 10 | 10 |
| 6 | 6 | 10 | 10 | 10 |
| screw / 26-39 lb in | screw / 26-39 lb in | screw / 90-110 lb in | screw / 180-195 lb in | screw / 180-195 lb in |
| screw / 7-10 lb in | screw / 7-10 lb in | screw / 7-10 lb in | screw / 7-10 lb in | screw / 7-10 lb in |
| 2 x (18 ... 2),<br>1 x (18 ... 1) | 2 x (18 ... 2),<br>1 x (18 ... 1) | 2x(6-3/0) | 2x(2/0-500MCM) | 2x(2/0-500MCM) |
| 2x (20 ... 16),<br>2x (18 ... 14) | 2 x (18 ... 2),<br>1 x (18 ... 1) | 2x(18-14) | 2x(18-14) | 2x(18-14) |
| 75°C CU | 75°C CU | 75°C CU | 75°C CU | 75°C CU |
| **Short circuit current rating of main circuit:** | | | | |
| ③ | ③ | ③ | ③ | ③ |
| **cULus** | **cULus** | **cULus** | **cULus** | **cULus** |

① Refer to catalog selection tables for coil voltages.
② Must use an external (optional) auxiliary contact.
③ Refer to product data sheet via Industry Mall at https://mall.industry.siemens.com.

# Electrically Held Lighting Contactors, Class LE

## Selection

### Ordering Information

- Replace *** with a number from the coil table.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/130.
- Wiring Diagram see page 9/147.
- Replacement Parts see page 9/102.

### Coil Table

| VAC 60Hz | *** |
|---|---|
| 24 | 024 |
| 120 | 120 |
| 208 | 208 |
| 240 | 240 |
| 277 | 277 |
| 347① | 347 |
| 480 | 480 |
| 600 | 600 |

Replace the (***) with a number from the coil table.

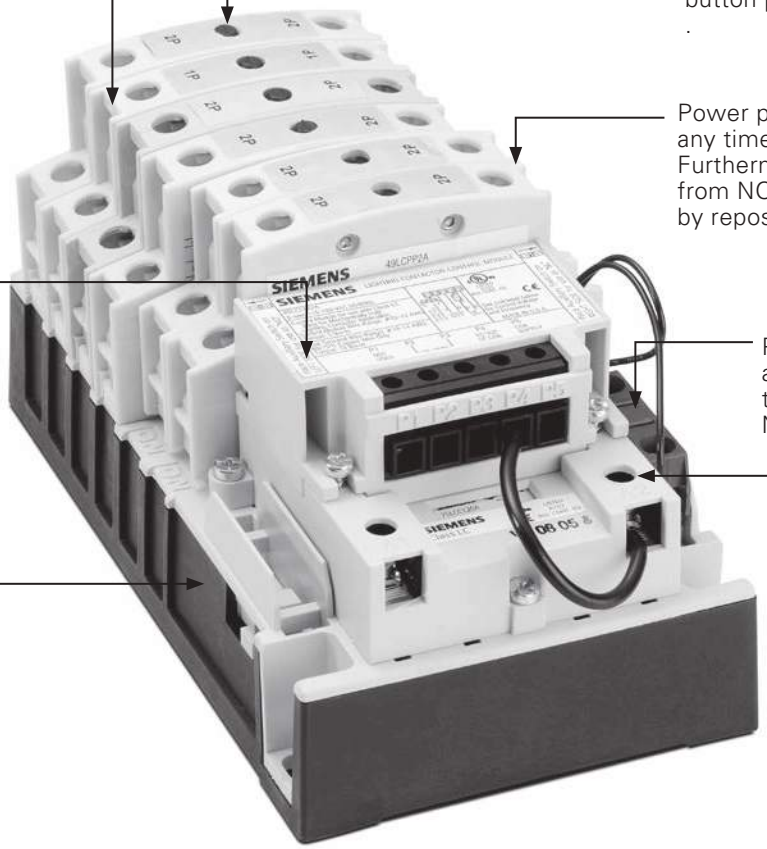
### Combination Contactor

| Disconnect Type | Max. Amp Rating | Number of NO Poles | Disc. Amp Rating | Disc Amp/ Fuse Clip Rating | Circuit Breaker Rating | Enclosure Type | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 3R/4/12 | 4/4X 304 S.S. |
| | | | | | | Catalog Number | | |
| Non-Fusible | 20 | 3 | 30A | — | — | LEDB1B003***B | LEDB2B003***B | LEDB4B003***B |
| | 30 | 3 | 30A | — | — | LEDB1C003***B | LEDB2C003***B | LEDB4C003***B |
| | 60 | 3 | 60A | — | — | LEDD1D003***C | LEDD2D003***C | LEDD4D003***C |
| | 100 | 3 | 100A | — | — | LEDF1E003***C | LEDF2E003***C | LEDF4E003***C |
| | 200 | 3 | 200A | — | — | LEDH1F003***A | LEDH2F003***A | LEDH4F003***A |
| | 300 | 3 | 400A | — | — | LEDK1G003***A | LEDK2G003***A | LEDK4G003***A |
| Fusible | 20 | 3 | — | 30A/250V | — | LEFA1B003***B | LEFA2B003***B | LEFA4B003***B |
| | | 3 | — | 30A/600V | — | LEFB1B003***B | LEFB2B003***B | LEFB4B003***B |
| | 30 | 3 | — | 30A/250V | — | LEFA1C003***B | LEFA2C003***B | LEFA4C003***B |
| | | 3 | — | 30A/600V | — | LEFB1C003***B | LEFB2C003***B | LEFB4C003***B |
| | 60 | 3 | — | 60A/250V | — | LEFC1D003***C | LEFC2D003***C | LEFC4D003***C |
| | | 3 | — | 60A/600V | — | LEFD1D003***C | LEFD2D003***C | LEFD4D003***C |
| | 100 | 3 | — | 100A/250V | — | LEFE1E003***C | LEFE2E003***C | LEFE4E003***C |
| | | 3 | — | 100A/600V | — | LEFF1E003***C | LEFF2E003***C | LEFF4E003***C |
| | 200 | 3 | — | 200A/250V | — | LEFG1F003***A | LEFG2F003***A | LEFG4F003***A |
| | | 3 | — | 200A/600V | — | LEFH1F003***A | LEFH2F003***A | LEFH4F003***A |
| | 300 | 3 | — | 400A/250V | — | LEFJ1G003***A | LEFJ2G003***A | LEFJ4G003***A |
| | | 3 | — | 400A/600V | — | LEFK1G003***A | LEFK2G003***A | LEFK4G003***A |
| Circuit Breaker | 20 | 3 | — | — | 20A | LEBT1B003***B | LEBT2B003***B | LEBT4B003***B |
| | 30 | 3 | — | — | 30A | LEBV1C003***B | LEBV2C003***B | LEBV4C003***B |
| | 60 | 3 | — | — | 60A | LEBY1D003***C | LEBY2D003***C | LEBY4D003***C |
| | 100 | 3 | — | — | 100A | LEBZ1E003***C | LEBZ2E003***C | LEBZ4E003***C |

# Electrically Held Lighting Contactors, Class LC

## Features

Class LC lighting contactors deliver unprecedented versatility in application, simplicity in configuration and performance in operation. Ingenious design, rugged construction and a host of truly useful features make them uniquely appealing to all those who use them.




- Used in all applications where either electrically or mechanically held contactors are specifically suited and also ideal for maximum flexibility and future expansion
- Rated for electronic ballast / LED drivers, tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are rated up to 30 amps at 600 volts
- Up to 12 poles (maximum of 8 normally closed)
- Wide range of coil voltages from 24 to 600 VAC 50/60Hz
- Can be ordered as either electrically or mechanically held and can also be converted from electrically to mechanically held in the field with a simple conversion kit
- Modular design enables you to stock the building block components to assemble all configurations of both the electrically and mechanically held contactors thus dramatically reducing inventory
- Full line of enclosures including NEMA 1, 3R, 4, 4/4X stainless steel and 12
- Full line of factory and field modifications

# Electrically Held Lighting Contactors, Class LC

## Features

### Catalog Numbering System

**Controller Type**
**E0** = Electrically Held (Convertible to Mechanically Held)

**Enclosure Type**
**0** = Open
**1** = NEMA 1
**2** = NEMA 3R/4/12
4 = NEMA 4/4X Stainless Steel

**Contactor Rating (Amp)**
**C** = 30

**N.C. Poles**
0 = None
**1** = One
**2** = Two
**3** = Three
**4** = Four
5 = Five
**6** = Six
**7** = Seven
8 = Eight

**N.O. Poles**
**00** = None
**01** = One
**02** = Two
**03** = Three
**04** = Four
**05** = Five
**06** = Six
**07** = Seven
**08** = Eight
**09** = Nine
**10** = Ten
**11** = Eleven
**12** = Twelve

**Coil Voltage**
**024** = 24V 60Hz / 20V 50Hz
**120** = 115-120V 60Hz / 110V 50Hz
**208** = 200-208V 60Hz
**240** = 230-240V 60Hz / 220V 50Hz
**277** = 277V 60Hz / 240V 50Hz
**347** = 347V 60Hz
**480** = 460-480V 60Hz / 440V 50Hz
**600** = 575-600V 60Hz / 550V 50Hz

# Electrically Held Lighting Contactors, Class LC

## Selection

### Ordering Information

- To order standard electrically held contactor, simply select catalog number from tables below.
- To order mechanically held contactor, select catalog number from tables below and specify conversion module from factory modification section from page 9/96.
- To convert standard electrically held contactor to mechanically held in the field, select catalog number from tables below and select conversion module kit from field modification section on page 9/83.
- Replace *** with a number from the coil table.
- Field Modification Kits see page 9/81.
- Factory Modifications see page 9/93.
- Dimensions see page 9/112 open, page 9/130 enclosed.
- Wiring Diagrams see page 9/147.
- Replacement Parts see page 9/102.

### Coil Table

| VAC 60Hz | *** |
|---|---|
| 24 | 024 |
| 120 | 120 |
| 208 | 208 |
| 240 | 240 |
| 277 | 277 |
| 347 | 347 |
| 480 | 480 |
| 600 | 600 |

Replace the (***) with a number from the coil table.

### Non-Combination Contactor (30 Amp max.)

| No. of Poles | | Enclosure Type | | | |
|---|---|---|---|---|---|
| | | Open | 1 | 3R/4/12 | 4/4X 304 S.S. |
| N.C. | N.O. | Catalog Number | | | |
| 2 | 0 | LCE00C200***A | LCE01C200***A | LCE02C200***A | LCE04C200***A |
| 3 | | LCE00C300***A | LCE01C300***A | LCE02C300***A | LCE04C300***A |
| 4 | | LCE00C400***A | LCE01C400***A | LCE02C400***A | LCE04C400***A |
| 5 | | LCE00C500***A | LCE01C500***A | LCE02C500***A | LCE04C500***A |
| 6 | | LCE00C600***A | LCE01C600***A | LCE02C600***A | LCE04C600***A |
| 7 | | LCE00C700***A | LCE01C700***A | LCE02C700***A | LCE04C700***A |
| 8 | | LCE00C800***A | LCE01C800***A | LCE02C800***A | LCE04C800***A |
| 1 | 1 | LCE00C101***A | LCE01C101***A | LCE02C101***A | LCE04C101***A |
| 2 | | LCE00C201***A | LCE01C201***A | LCE02C201***A | LCE04C201***A |
| 3 | | LCE00C301***A | LCE01C301***A | LCE02C301***A | LCE04C301***A |
| 4 | | LCE00C401***A | LCE01C401***A | LCE02C401***A | LCE04C401***A |
| 5 | | LCE00C501***A | LCE01C501***A | LCE02C501***A | LCE04C501***A |
| 6 | | LCE00C601***A | LCE01C601***A | LCE02C601***A | LCE04C601***A |
| 7 | | LCE00C701***A | LCE01C701***A | LCE02C701***A | LCE04C701***A |
| 8 | | LCE00C801***A | LCE01C801***A | LCE02C801***A | LCE04C801***A |
| 0 | 2 | LCE00C002***A | LCE01C002***A | LCE02C002***A | LCE04C002***A |
| 1 | | LCE00C102***A | LCE01C102***A | LCE02C102***A | LCE04C102***A |
| 2 | | LCE00C202***A | LCE01C202***A | LCE02C202***A | LCE04C202***A |
| 3 | | LCE00C302***A | LCE01C302***A | LCE02C302***A | LCE04C302***A |
| 4 | | LCE00C402***A | LCE01C402***A | LCE02C402***A | LCE04C402***A |
| 5 | | LCE00C502***A | LCE01C502***A | LCE02C502***A | LCE04C502***A |
| 6 | | LCE00C602***A | LCE01C602***A | LCE02C602***A | LCE04C602***A |
| 7 | | LCE00C702***A | LCE01C702***A | LCE02C702***A | LCE04C702***A |
| 8 | | LCE00C802***A | LCE01C802***A | LCE02C802***A | LCE04C802***A |
| 0 | 3 | LCE00C003***A | LCE01C003***A | LCE02C003***A | LCE04C003***A |
| 1 | | LCE00C103***A | LCE01C103***A | LCE02C103***A | LCE04C103***A |
| 2 | | LCE00C203***A | LCE01C203***A | LCE02C203***A | LCE04C203***A |
| 3 | | LCE00C303***A | LCE01C303***A | LCE02C303***A | LCE04C303***A |
| 4 | | LCE00C403***A | LCE01C403***A | LCE02C403***A | LCE04C403***A |
| 5 | | LCE00C503***A | LCE01C503***A | LCE02C503***A | LCE04C503***A |
| 6 | | LCE00C603***A | LCE01C603***A | LCE02C603***A | LCE04C603***A |
| 7 | | LCE00C703***A | LCE01C703***A | LCE02C703***A | LCE04C703***A |
| 8 | | LCE00C803***A | LCE01C803***A | LCE02C803***A | LCE04C803***A |

# Electrically Held Lighting Contactors, Class LC

## Selection

### Non-Combination Contactor (30 Amp max.)

| No. of Poles | | Enclosure Type | | | |
|---|---|---|---|---|---|
| | | Open | 1 | 3R/4/12 | 4/4X 304 S.S. |
| N.C. | N.O. | Catalog Number | | | |
| 0 | 4 | LCE00C004***A | LCE01C004***A | LCE02C004***A | LCE04C004***A |
| 1 | | LCE00C104***A | LCE01C104***A | LCE02C104***A | LCE04C104***A |
| 2 | | LCE00C204***A | LCE01C204***A | LCE02C204***A | LCE04C204***A |
| 3 | | LCE00C304***A | LCE01C304***A | LCE02C304***A | LCE04C304***A |
| 4 | | LCE00C404***A | LCE01C404***A | LCE02C404***A | LCE04C404***A |
| 5 | | LCE00C504***A | LCE01C504***A | LCE02C504***A | LCE04C504***A |
| 6 | | LCE00C604***A | LCE01C604***A | LCE02C604***A | LCE04C604***A |
| 7 | | LCE00C704***A | LCE01C704***A | LCE02C704***A | LCE04C704***A |
| 8 | | LCE00C804***A | LCE01C804***A | LCE02C804***A | LCE04C804***A |
| 0 | 5 | LCE00C005***A | LCE01C005***A | LCE02C005***A | LCE04C005***A |
| 1 | | LCE00C105***A | LCE01C105***A | LCE02C105***A | LCE04C105***A |
| 2 | | LCE00C205***A | LCE01C205***A | LCE02C205***A | LCE04C205***A |
| 3 | | LCE00C305***A | LCE01C305***A | LCE02C305***A | LCE04C305***A |
| 4 | | LCE00C405***A | LCE01C405***A | LCE02C405***A | LCE04C405***A |
| 5 | | LCE00C505***A | LCE01C505***A | LCE02C505***A | LCE04C505***A |
| 6 | | LCE00C605***A | LCE01C605***A | LCE02C605***A | LCE04C605***A |
| 0 | 6 | LCE00C006***A | LCE01C006***A | LCE02C006***A | LCE04C006***A |
| 1 | | LCE00C106***A | LCE01C106***A | LCE02C106***A | LCE04C106***A |
| 2 | | LCE00C206***A | LCE01C206***A | LCE02C206***A | LCE04C206***A |
| 3 | | LCE00C306***A | LCE01C306***A | LCE02C306***A | LCE04C306***A |
| 4 | | LCE00C406***A | LCE01C406***A | LCE02C406***A | LCE04C406***A |
| 5 | | LCE00C506***A | LCE01C506***A | LCE02C506***A | LCE04C506***A |
| 6 | | LCE00C606***A | LCE01C606***A | LCE02C606***A | LCE04C606***A |
| 0 | 7 | LCE00C007***A | LCE01C007***A | LCE02C007***A | LCE04C007***A |
| 1 | | LCE00C107***A | LCE01C107***A | LCE02C107***A | LCE04C107***A |
| 2 | | LCE00C207***A | LCE01C207***A | LCE02C207***A | LCE04C207***A |
| 3 | | LCE00C307***A | LCE01C307***A | LCE02C307***A | LCE04C307***A |
| 4 | | LCE00C407***A | LCE01C407***A | LCE02C407***A | LCE04C407***A |
| 0 | 8 | LCE00C008***A | LCE01C008***A | LCE02C008***A | LCE04C008***A |
| 1 | | LCE00C108***A | LCE01C108***A | LCE02C108***A | LCE04C108***A |
| 2 | | LCE00C208***A | LCE01C208***A | LCE02C208***A | LCE04C208***A |
| 3 | | LCE00C308***A | LCE01C308***A | LCE02C308***A | LCE04C308***A |
| 4 | | LCE00C408***A | LCE01C408***A | LCE02C408***A | LCE04C408***A |
| 0 | 9 | LCE00C009***A | LCE01C009***A | LCE02C009***A | LCE04C009***A |
| 1 | | LCE00C109***A | LCE01C109***A | LCE02C109***A | LCE04C109***A |
| 2 | | LCE00C209***A | LCE01C209***A | LCE02C209***A | LCE04C209***A |
| 0 | 10 | LCE00C010***A | LCE01C010***A | LCE02C010***A | LCE04C010***A |
| 1 | | LCE00C110***A | LCE01C110***A | LCE02C110***A | LCE04C110***A |
| 2 | | LCE00C210***A | LCE01C210***A | LCE02C210***A | LCE04C210***A |
| 0 | 11 | LCE00C011***A | LCE01C011***A | LCE02C011***A | LCE04C011***A |
| 0 | 12 | LCE00C012***A | LCE01C012***A | LCE02C012***A | LCE04C012***A |

# Electrically Held Lighting Contactors, Class LC

## Technical

| General technical data: | |
|---|---|
| Finger-safe (main circuit / control circuit) | yes / yes |
| Altitude (m) | 2,000 |
| Ambient storage temperature (°C) | -30 to 65 |
| Ambient operating temperature (°C) | -25 to 40 |
| Rated insulation voltage (V) | 600 |
| **Mechanical operating cycles as operating time:** | |
| of contactor | 100,000 |
| of contactor with additional aux contacts | 100,000 |
| **Main circuit:** | |
| Number of main contacts | 2 - 12 (maximum of 8 NC) |
| Typical power loss per conductor (W) | no data |
| Off-load operating frequency (cycles per hour) | 60 for continued operation |
| **Current ratings:** | |
| Electronic ballast / LED driver (poles per phase) | 10A @120V 1p 1ph<br>3A @277V 2p 1ph |
| Tungsten (poles per phase) | 20A @277V 1p 1ph<br>20A @480V 2p 1ph<br>20A @480V 3p 3ph |
| Ballast (poles per phase) | 30A @347V 1p 1ph<br>30A @600V 2p 1ph<br>30A @600V 3p 3ph |
| General and resistive (poles per phase) | 30A @600V 1p 1ph<br>30A @600V 2p 1ph<br>30A @600V 3p 3ph |
| **Coil ratings:** | |
| Nominal voltage | (refer to coil voltage table) |
| Inrush / sealed power (VA) | 248 / 28 |
| Coil voltage tolerance factor | 0.85 - 1.1 |
| **External/optional auxiliary contact:** | |
| Number of NC / NO auxiliary contacts | 2NC / 2NO max |
| Rating | A600, 24VDC, 24VAC |
| **Installation/mounting/dimensions:** | |
| Mounting orientation | vertical |
| Type of mounting: screw / DIN rail | yes / no |
| Height x Width x Depth (mm) | 188 x 106 x 98 |
| Minimum clearance to sides (mm) | 12.7 |
| Minimum clearance to earthed parts (mm) | 12.7 |
| **Connection type / torque:** | |
| Main contact terminals | screw / 35 lb in |
| Coil terminals | screw / 15 lb in |
| Auxiliary contact terminals | screw / 7-12 lb in |
| Control module terminals | screw / 5 lb in |
| **Solid and stranded conductors (AWG):** | |
| Main contact terminals | 1x(14-8), #8 solid or stranded<br>2x(14-8), #8 stranded only |
| Coil terminals | 2x(18-14) |
| Auxiliary contact terminals | 2x(22-12) |
| Control module terminals | 1x(22-12) |
| Conductor type for main / control circuits | 75°C CU / 60-75°C CU |
| **Short circuit current rating of main circuit:** | |
| Short circuit current rating | (see SCCR tables) |
| **Certificates:** | **cUL** |

| Coil voltages: |
|---|
| 24V 60Hz / 20V 50Hz |
| 115-120V 60Hz / 110V 50Hz |
| 200-208V 60Hz |
| 230-240V 60Hz / 220V 50Hz |
| 277V 60Hz / 240V 50Hz |
| 347V 60Hz |
| 460-480V 60Hz / 440V 50Hz |
| 575-600V 60Hz / 550V 50Hz |

| Short circuit current rating of main circuit: |
|---|
| ① |

| Conversion module: | | |
|---|---|---|
| **Input Volt. (AC)** | **Steady State Current @ Rated Volts (mA)** | **Max. VA** |
| 24 | 80 | 5 |
| 115-120 | 83 | 12 |
| 200-277 | 91 | 30 |

| Conversion module: | |
|---|---|
| Min. pulse duration (3-wire module) | 250ms |
| Max. allowable leakage current | 1.8 mA |
| EMI | 35 V/m |
| Surge transient peak | 6 kV |
| Frequency range | 40-70 Hz |

① Refer to product data sheet via Industry Mall at https://mall.industry.siemens.com.

# Mechanically and Magnetically Held Lighting Contactors, Class CLM

## Selection

### Mechanically Latched Lighting and Heating Contactor

The CLM Lighting Contactors can be used with metal halide, mercury vapor, quartz halogen, tungsten and fluorescent lighting. They provide reliable and convenient lighting control in numerous applications, such as industrial plants, schools, hospitals, office buildings, shopping centers, airports, stadiums . . . literally everywhere lighting is required.

The CLMs are listed under UL 508 with no derating when used open or enclosed. Combination lighting contactors are listed for UL service entrance.
UL listed File #E60310
CSA Certified File LR 6535

### Operation

**(Magnetic Latch)**

A permanent magnet is built into the contactor structure of the 30A, 60A, 100A, and 200A contactors that will maintain the contactor in its energized state indefinitely without using control power. When energized, a DC current is applied that produces a magnetic field that reinforces the polarity of the permanent magnet, and the contactor pulls in immediately. The current to the coil is disconnected by the coil clearing interlock. In order to drop out the contactor, it is necessary to apply a field through the OFF coil in the reverse direction to the permanent magnet. This momentarily cancels the magnetic attraction and the contactor drops out. Coil and module failures are possible when used with solid state relays and PLC outputs. 24-volt systems are ok to use, but 120 volts and above should be discouraged. If higher values cannot be avoided, an interposing relay should be used.

**(Mechanically Latched)**

The 300 & 400A lighting and heating contactors operate using a latching mechanism.

**Closing –** When the "close" pushbutton is operated, the closing coil is energized, closing the contactor. As the contactor closes, the latch lever hooks over the latch pin to mechanically latch the contactor closed. The coil-clearing auxiliary contact de-energizes the closing coil.

**Opening –** When the "Trip" pushbutton is operated, the trip solenoid coil is energized, unhooking the latch lever from the latch pin, which allows the contactor to open. As the contactor opens, the coil-clearing auxiliary contact de-energizes the trip solenoid coil.

# Mechanically and Magnetically Held Lighting Contactors, Class CLM

## Selection

### Ordering Information

- Replace *** with a number from the coil table.
- Field modification kits see page 9/81.
- Factory modifications see page 9/93.
- Dimensions see page 9/117 open page 9/130 enclosed.
- Wiring Diagrams see page 9/150.
- Replacement parts see page 9/102.

### Coil Table

| 60Hz Voltage | Number |
|---|---|
| 24① | 024 |
| 120 | 120 |
| 208 | 208 |
| 240 | 240 |
| 277 | 277 |
| 480 | 480 |
| 600 | 600 |

### Open and Non-combination Enclosed Contactors

| Max Amp Rating | Number of Poles | Open Type② | Enclosure | | |
|---|---|---|---|---|---|
| | | | NEMA 1 | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof | NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel |
| | | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 30 | 2 | CLM0C02*** | CLM1C02*** | CLM2C02*** | CLMSC02*** |
| | 3 | CLM0C03*** | CLM1C03*** | CLM2C03*** | CLMSC03*** |
| | 4 | CLM0C04*** | CLM1C04*** | CLM2C04*** | CLMSC04*** |
| | 5 | CLM0C05*** | CLM1C05*** | CLM2C05*** | CLMSC05*** |
| | 6 | CLM0C06*** | CLM1C06*** | CLM2C06*** | — |
| | 8 | CLM0C08*** | CLM1C08*** | CLM2C08*** | — |
| | 9 | CLM0C09*** | CLM1C09*** | CLM2C09*** | — |
| | 10 | CLM0C10*** | CLM1C10*** | CLM2C10*** | — |
| | 12 | CLM0C12*** | CLM1C12*** | CLM2C12*** | — |
| 60 | 2 | CLM0D02*** | CLM1D02*** | CLM2D02*** | CLMSD02*** |
| | 3 | CLM0D03*** | CLM1D03*** | CLM2D03*** | CLMSD03*** |
| | 4 | CLM0D04*** | CLM1D04*** | CLM2D04*** | CLMSD04*** |
| | 5 | CLM0D05*** | CLM1D05*** | CLM2D05*** | CLMSD05*** |
| | 6 | CLM0D06*** | CLM1D06*** | CLM2D06*** | — |
| | 8 | CLM0D08*** | CLM1D08*** | CLM2D08*** | — |
| | 9 | CLM0D09*** | CLM1D09*** | CLM2D09*** | — |
| | 10 | CLM0D10*** | CLM1D10*** | CLM2D10*** | — |
| | 12 | CLM0D12*** | CLM1D12*** | CLM2D12*** | — |
| 100 | 2 | CLM0E02*** | CLM1E02*** | CLM2E02*** | CLMSE02*** |
| | 3 | CLM0E03*** | CLM1E03*** | CLM2E03*** | CLMSE03*** |
| | 4 | CLM0E04*** | CLM1E04*** | CLM2E04*** | CLMSE04*** |
| | 5 | CLM0E05*** | CLM1E05*** | CLM2E05*** | CLMSE05*** |
| 200 | 2 | CLM0F02*** | CLM1F02*** | CLM2F02*** | CLMSF02*** |
| | 3 | CLM0F03*** | CLM1F03*** | CLM2F03*** | CLMSF03*** |
| | 4 | CLM0F04*** | CLM1F04*** | CLM2F04*** | CLMSF04*** |
| | 5 | CLM0F05*** | CLM1F05*** | CLM2F05*** | CLMSF05*** |
| 300 | 2 | CLM0G02*** | CLM1G02*** | CLM2G02*** | — |
| | 3 | CLM0G03*** | CLM1G03*** | CLM2G03*** | — |
| 400 | 2 | CLM0H02*** | CLM1H02*** | CLM2H02*** | — |
| | 3 | CLM0H03*** | CLM1H03*** | CLM2H03*** | — |

① 24 volt coils are not available on 300 and 400 amp contactor sizes.

② CLM 30 & 60A 6-12-pole can be field assembled. Order mounting kit **49MCMPMA** and the appropriate number of 2-5 pole contactors.

# Combination Mechanically and Magnetically Held Lighting Contactors, Class CM

## Selection

### Ordering Information

- Replace *** with a number from the coil table.
- Field modification kits see page 9/81.
- Factory modifications see page 9/93.
- Dimensions see page 9/130.
- Wiring Diagrams see page 9/131.
- Replacement parts see page 9/102.

### Coil Table

| 60Hz Voltage | Number |
|---|---|
| 24① | 024 |
| 120 | 120 |
| 208 | 208 |
| 240 | 240 |
| 277 | 277 |
| 480 | 480 |
| 600 | 600 |

### Combination Lighting Contactors

| Disconnect Type | Contactor Amp Rating | Number of NO Poles | Disc Amp Rating | Disc Amp/ Fuse Clip Rating | Circuit Breaker Rating | Enclosure | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | NEMA 1 | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof | NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel |
| | | | | | | Catalog Number | Catalog Number | Catalog Number |
| Non-Fusible | 30 | 3 | 30A | — | — | CMNC14*** | CMNC24*** | CMNCS4*** |
| | 60 | 3 | 60A | — | — | CMND15*** | CMND25*** | CMNDS5*** |
| | 100 | 3 | 100A | — | — | CMNE16*** | CMNE26*** | CMNES6*** |
| | 200 | 3 | 200A | — | — | CMNF17*** | CMNF27*** | CMNFS7*** |
| | 300 | 3 | 400A | — | — | CMNG18*** | CMNG28*** | CMNGS8*** |
| Fusible | 30 | 3 | — | 30A/250V | — | CMFC10*** | CMFC20*** | CMFCS0*** |
| | | 3 | — | 30A/600V | — | CMFC11*** | CMFC21*** | CMFCS1*** |
| | 60 | 3 | — | 60A/250V | — | CMFD12*** | CMFD22*** | CMFDS2*** |
| | | 3 | — | 60A/600V | — | CMFD13*** | CMFD23*** | CMFDS3*** |
| | 100 | 3 | — | 100A/250V | — | CMFE14*** | CMFE24*** | CMFES4*** |
| | | 3 | — | 100A/600V | — | CMFE15*** | CMFE25*** | CMFES5*** |
| | 200 | 3 | — | 200A/250V | — | CMFF16*** | CMFF26*** | CMFFS6*** |
| | | 3 | — | 200A/600V | — | CMFF17*** | CMFF27*** | CMFFS7*** |
| | 300 | 3 | — | 400A/250V | — | CMFG18*** | CMFG28*** | CMFGS8*** |
| | | 3 | — | 400A/600V | — | CMFG19*** | CMFG29*** | CMFGS9*** |
| Circuit Breaker | 30 | 3 | — | — | 30A | CMBC15*** | CMBC25*** | CMBCS5*** |
| | 60 | 3 | — | — | 60A | CMBD18*** | CMBD28*** | CMBDS8*** |
| | 100 | 3 | — | — | 100A | CMBE18*** | CMBE28*** | CMBES8*** |
| | 200 | 3 | — | — | 200A | CMBF10*** | CMBF20*** | CMBFS0*** |
| | 300 | 3 | — | — | 300A | CMBG11*** | CMBG21*** | CMBGS1*** |

## Lighting Contactor Ratings CLM

| Contactor Ratings | | | |
|---|---|---|---|
| Load Type | Amperes Continuous | Max Volts Line to Line | Max Volts Line to Neutral |
| Tungsten | 30-400 | 480 | 277 |
| Ballast | 30-400 | 600 | 346 |
| Heating | 30-400 | 600 | 346 |

| AC Coil Data | | | |
|---|---|---|---|
| Contactor Amperes | No. Poles | Inrush VA | Dropout VA |
| 30 | 2-5 | 410 | 40 |
| 60 | 2-3 | 410 | 40 |
| 60 | 4-5 | 600 | 40 |
| 100/200 | 2-3 | 900 | 200 |
| 100/200 | 4-5 | 1300 | 130 |
| 300/400 | 2-3 | 1600 | 550 |



① 24 volt coils are not available on 300 amp contactors.

## Features

- Enclosed coils (50-5000VA); Completely encloses the transformer coils against moisture, dust, dirt and industrial contaminants for maximum protection in hostile and industrial environments.
- Fuse clips (most models). Factory mounted for integral fusing on the secondary side to save panel space, save wiring time and save the cost of buying an add-on fuse block or kit
- Integrally finger safe terminals. Between terminals and transformer, protect against electrical creepage. Up to 30% greater terminal contact area permits low-loss connections. Extra-deep barriers reduce the chance of shorts from frayed leads or careless wiring
- Terminals. Molded into the transformer, are difficult to break during wiring. A full quarter-inch of thread on the 8-32 terminal screws prevents stripping and pullout
- Jumpers supplied. Two jumper links are standard with all transformers which can be wired for dual primary voltages

### Operation

Industrial control circuits and motor control loads typically require more current when they are initially energized than under normal operating conditions. This period of high current demand, referred to as inrush, may be as great as ten times the current required under steady state (normal) operating conditions, and can last up to 40 milliseconds. A transformer in a circuit subject to inrush will typically attempt to provide the load with the required current during the inrush period. However, it will be at the expense of the secondary voltage stability by allowing the voltage to the load to decrease as the current increases. This period of secondary voltage instability, resulting from increased current, can be of such magnitude that the transformer is unable to supply sufficient voltage to energize the load. The transformer must therefore be designed and constructed to accommodate the high inrush current, while maintaining secondary voltage stability. According to NEMA standards, the secondary voltage would typically be at 85% of the rated voltage.

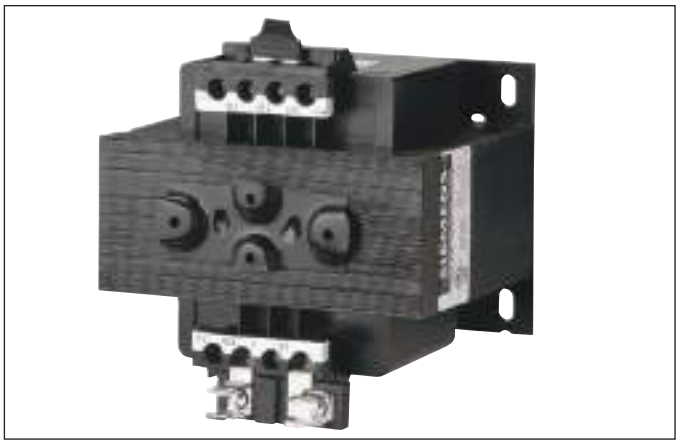
Industrial Control Power Transformers are specifically designed and built to provide adequate voltage to the load while accommodating the high current levels present at inrush. These transformers deliver excellent secondary voltage regulation and meet or exceed the standards established by NEMA, ANSI, UL and cUL. Their rugged construction and excellent electrical characteristics ensure reliable operation of electromagnetic devices and trouble-free performance.

### Specifications

- Laminations are built with silicon steel to minimize core losses and to increase optimum performance and efficiency
- Copper magnet wire of the highest quality assures efficient operation
- Factory mounted type "K" fuse clips are standard on all secondary transformers where possible
- Two jumper links are standard with all transformers which can be wired for dual primary voltages
- cUL Listed and CSA certified
- 50/60 Hz rated
- Insulation materials are of the highest rating available for the temperature class
- Mounting plate is heavy gauge steel to add strength to core construction and provide stable mounting. Slotted mounting feet permit easy installation
- Attractive black finish; easy-to-read nameplate with complete rating data and wiring diagram
- Class 130°C (226°F) insulation system. 80°C (176°F) temperature rise. (50-750VA typical)
- Class 180°C (356°F) insulation system. 120°C (248°F) temperature rise. (1000–5000VA typical)
- Optional field mounted 2-pole primary Class CC fuse block is available

# Class MTG

## General



## Features

- Class MTG Industrial Control Transformers are 100% certified for all domestic and International Applications
- The MTG line has full compliance with IEC Safety standards EN 61 558
- CE Mark in accordance with requirements for EN 61 558
- Meets IP-20 specifications per IEC 529 for finger-safe protection because all of our CPTs come standard with touchsafe terminals, both primary and secondary sides. There is no need to buy any terminal cover accessories.
- UL Listed
- Exceeds applicable requirements for control transformers as determined by NEMA and ANSI
- Insulation requirements is twice that of UL5085
- Class 130°C (226°F) insulation system. 80°C (176°F) temperature rise. (50-750VA typical)
- Class 180°C (356°F) insulation system. 120°C (248°F) temperature rise. (1000–5000VA typical)
- Primary and secondary fusing capability available as field installed kits for domestic or international fusing
- Integrally-molded terminals and barriers between terminals make breakage virtually impossible during wiring. The MTG transformer construction is the same as our high quality Class MT transformers

### Optional Field Installed Fuse Clip Kits For Panel Mounting

- 2-Pole primary Class CC fuse block
- 1-Pole secondary midget fuse block for 13⁄32 × 1½ fuses
- 2-Pole primary international type fuse blocks
- 1-Pole secondary international type fuse blocks

### Touch safe terminals are standard on all CPTs

The Touch-Safe terminals are designed to comply with IEC 742 and IP 20 requirements. The international fuse block kits have inherent touch safe terminals and fuse clips.

### Siemens Meets International Standards

CSA (Canadian Standards Association) was utilized as a Competent Body in reviewing, interpreting and properly complying with the requirements of IEC-742 to place a CE mark on its MTG Series product. As a National Certification Body, CSA also has the proper documentation and reports on file for MTG Series to utilize the CB Scheme ensuring acceptance throughout the world.

The standard Siemens MTG product is available with terminal covers which meets the requirements of IEC-529, IP20 degree of protection and meets the applicable requirements for covers per IEC-742.

### IEC-742

The requirements for industrial control circuit transformers to be used in the European Common Market are identified by the International Electrotechnical Commission (IEC) and specified under IEC-742, Non-Short Circuit Proof Isolating Transformers, under the Low Voltage Directive 73/23/EEC. Manufacturers of control transformers indicate compliance with these requirements by placing a CE mark on the product.

- Winding to winding insulation requirements may be twice that for IEC-742 compared to UL506
- The electrical clearances between current carrying parts are one-third greater to comply with IEC-742 requirements for units up to 250VA with voltages up to 440 volts ac
- Transformers manufactured to IEC-742 requirements will have a minimum of 10% higher overload capacity than those manufactured only to UL506 requirements

While no requirement exists in IEC-742 for the electrical connections to be either finger safe or touch proof, the specification does state that IF a transformer is supplied with a cover to prevent incidental contact with current carrying parts, that cover must utilize two separate methods or places of securing it to the component, with neither being dependent upon the other. Additionally, one of these methods MUST require a tool to remove it.

### IEC-529

The requirements for finger-safe or touch-proof electrical connections are identified by the International Electrotechnical Commission (IEC) under specification 529, Classification of Degrees of Protection Provided by Enclosures. These various degrees of protection are identified and differentiated by IP ratings.

The IP specification which most closely approximates protection to a human finger is IP20. This IP rating would be the most common degree of touch-proof connection for electrical components such as transformers.

### EN 61 558

The requirements for industrial control transformers to be used in the European Common Market are identified by the IEC and specified in EN 61 558, Safety of Power Control Transformers, under Low Voltage Directive 73/23/EEC. CE mark on the product indicates compliance.

## Transformer Selection Process

Selecting a transformer for industrial control circuit applications requires knowledge of the following terms:

**Inrush VA** is the product of load voltage (V) multiplied by the current (A) that is required during circuit start-up. It is calculated by adding the inrush VA requirements of all devices (contactors, timers, relays, pilot lights, solenoids, etc.), which will be energized together. Inrush VA requirements are best obtained from the component manufacturer.

**Sealed VA** is the product of load voltage (V) multiplied by the current (A) that is required to operate the circuit after initial start-up or under normal operating conditions. It is calculated by adding the sealed VA requirements of all electrical components of the circuit that will be energized at any given time. Sealed VA requirements are best obtained from the component manufacturer. Sealed VA is also referred to as steady state VA.

**Primary Voltage** is the voltage available from the electrical distribution system and its operational frequency, which is connected to the transformer supply voltage terminals.

**Secondary Voltage** is the voltage required for load operation which is connected to the transformer load voltage terminals.

Fuse Clip Kit KCCFPX2R

### Primary Fuse Kit

In addition to factory installed secondary fusing, Siemens offers a primary fuse kit for class MT transformers size 50–1500 VA for field installation. The primary fuse kit includes a 2-pole Class CC fuse block, instructions and all associated mounting and wiring hardware. Additionally, this fuse kit will fit most competitors' units. To order this kit, use catalog number **KCCFPX2R**. The primary fuse kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension.

Once the circuit variables have been determined, transformer selection is a simple 5-step process as follows:

1. Determine the Application Inrush VA by using the following industry accepted formula:
   Application Inrush VA = $\sqrt{(\text{Inrush VA})^2 + (\text{Sealed VA})^2}$
2. Refer to the Regulation Data Chart. If the primary voltage is basically stable and does not vary by more than 5% from nominal, the 90% secondary voltage column should be used. If the primary voltage varies between 5% and 10% of nominal, the 95% secondary voltage column should be used.
3. After determining the proper secondary voltage column, read down until a value equal to or greater than the Application Inrush VA is found. In no case should a figure less than the Application Inrush VA be used.
4. Read left to the Transformer VA Rating column to determine the proper transformer for this application. As a final check, make sure that the Transformer VA Rating is equal to or greater than the total sealed requirements. If not, select a transformer with a VA rating equal to or greater than the total sealed VA.
5. Refer to the following pages to determine the proper catalog number based on the transformer VA, and primary and secondary voltage requirements.

**Regulation Data Chart**

| Transformer VA Ratings | Inrush VA At 20% Power Factor | | |
|---|---|---|---|
| | NEMA/IEC 95% Sec Voltage | NEMA/IEC 90% Sec Voltage | NEMA/IEC 85% Sec Voltage |
| 25 | 100/—— | 130/—— | 150/—— |
| 50 | 170/190 | 200/220 | 240/270 |
| 75 | 310/350 | 410/460 | 540/600 |
| 100 | 370/410 | 540/600 | 730/810 |
| 150 | 780/860 | 930/1030 | 1150/1270 |
| 200 | 810/900 | 1150/1270 | 1450/1600 |
| 250 | 1400/1540 | 1900/2090 | 2300/2530 |
| 300 | 1900/2090 | 2700/2970 | 3850/4240 |
| 350 | 3100/3410 | 3650/4020 | 4800/5280 |
| 500 | 4000/4400 | 5300/5830 | 7000/7700 |
| 750 | 8300/9130 | 11000/12100 | 14000/15400 |
| 1000① | 15000/—— | 21000/—— | 27000/—— |
| 1000② | 9000/—— | 13000/—— | 18500/—— |
| 1500 | 10500/—— | 15000/—— | 205000/—— |
| 2000 | 17000/—— | 25500/—— | 34000/—— |
| 3000 | 24000/—— | 36000/—— | 47500/—— |
| 5000 | 55000/—— | 92500/—— | 115000/—— |

To comply with NEMA standards, which require all magnetic devices to operate successfully at 85% of rated voltage, the 90% secondary voltage column is most often used in selecting a transformer.

① For units with Class 105°C insulation systems.
② For units with Class 180°C insulation systems.

Primary Fuse Kit Installation—Class MT Transformer with Primary Fuse Kit, KCCFPX2R

## Selection

### Ordering Information

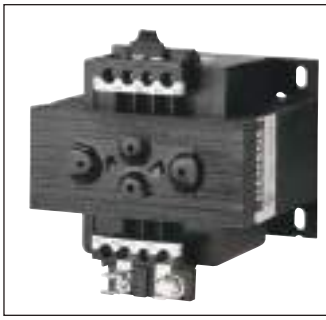
- Use the Voltage Table to determine the primary and secondary voltage required.
- Field Modifications see page 9/89.
- Dimension and wiring diagrams are available in CAD and PDF format on SIOS.
- All MT and MTG CPTs come standard with touch safe terminals.

### Voltage Table

| Primary Volts 50/60 Hz | Secondary Volts | Letter |
|---|---|---|
| 240 X 480, 230 X 460, 220 X 440 | 120/115/110 | A |
| 240 X 480 | 24 | B |
| 120 X 240 | 24 | C |
| 115 X 230 | 24 | D |
| 550/575/600 | 110/115/120 | E |
| 208/277 | 120 | F |
| 208/230/460 | 115 | G |
| 230/460/575 | 95/115 | H |
| 380/400/415 | 110 X 220 | I |
| 208/230/460, 200/220/440,240/480 | 24 X 115, 23 X 110, 25 X 120 | J |
| 240/416/480/600, 230/400/460/575, 220/380/440/550, 208/500 | 99/120/130, 95/115/125, 91/110/120, 85/100/110 | L |
| 240 X 480 | 120 X 240 | M |

| VA Rating | Voltage Letter A<br>Catalog Number | Voltage Letter B<br>Catalog Number | Voltage Letter C<br>Catalog Number | Voltage Letter D<br>Catalog Number | Voltage Letter E<br>Catalog Number | Voltage Letter F<br>Catalog Number |
|---|---|---|---|---|---|---|
| 50 | MT0050A | MT0050B | MT0050C | MT0050D | MT0050E | MT0050F |
| 75 | MT0075A | MT0075B | MT0075C | MT0075D | MT0075E | MT0075F |
| 100 | MT0100A | MT0100B | MT0100C | MT0100D | MT0100E | MT0100F |
| 150 | MT0150A | MT0150B | MT0150C | MT0150D | MT0150E | MT0150F |
| 200 | MT0200A | MT0200B | MT0200C | MT0200D | MT0200E | MT0200F |
| 250 | MT0250A | MT0250B | MT0250C | MT0250D | MT0250E | MT0250F |
| 300 | MT0300A | MT0300B | MT0300C | MT0300D | MT0300E | MT0300F |
| 350 | MT0350A | MT0350B | MT0350C | MT0350D | MT0350E | MT0350F |
| 500 | MT0500A | MT0500B | MT0500C | MT0500D | MT0500E | MT0500F |
| 750 | MT0750A | MT0750B | MT0750C | — | MT0750E | MT0750F |
| 1000 | MT1000A | MT1000B | — | — | MT1000E | MT1000F |
| 1500 | MT1500A | — | — | — | MT1500E | MT1500F |
| 2000 | MT2000A | — | — | — | MT2000E | MT2000F |
| 3000 | MT3000A | — | — | — | MT3000E | MT3000F |
| 5000 | MT5000A | — | — | — | MT5000E | — |

| VA Rating | Voltage Letter G<br>Catalog Number | Voltage Letter H<br>Catalog Number | Voltage Letter I<br>Catalog Number | Voltage Letter J<br>Catalog Number | Voltage Letter L<br>Catalog Number | Voltage Letter M<br>Catalog Number |
|---|---|---|---|---|---|---|
| 50 | MT0050G | MT0050H | MT0050I | MT0050J | MT0050L | MT0050M |
| 75 | MT0075G | MT0075H | MT0075I | MT0075J | — | MT0075M |
| 100 | MT0100G | MT0100H | MT0100I | MT0100J | MT0100L | MT0100M |
| 150 | MT0150G | MT0150H | MT0150I | MT0150J | MT0150L | MT0150M |
| 200 | MT0200G | MT0200H | MT0200I | MT0200J | — | MT0200M |
| 250 | MT0250G | MT0250H | MT0250I | MT0250J | MT0250L | MT0250M |
| 300 | MT0300G | MT0300H | MT0300I | MT0300J | — | MT0300M |
| 350 | MT0350G | MT0350H | MT0350I | MT0350J | MT0350L | MT0350M |
| 500 | MT0500G | MT0500H | MT0500I | MT0500J | MT0500L | MT0500M |
| 750 | MT0750G | MT0750H | MT0750I | — | MT0750L | MT0750M |
| 1000 | MT1000G | MT1000H | MT1000I | — | — | MT1000M |
| 1500 | MT1500G | MT1500H | MT1500I | — | — | MT1500M |
| 2000 | MT2000G | MT2000H | MT2000I | — | — | MT2000M |
| 3000 | MT3000G | MT3000H | MT3000I | — | — | MT3000M |
| 5000 | MT5000G | MT5000H | MT5000I | — | — | MT5000M |



## Ordering Information

- Use the Voltage Table to determine the primary and secondary voltage required.
- Field Modifications see page 9/89.
- Dimension and wiring diagrams are available in CAD and PDF format on SIOS.
- All MT and MTG CPTs come standard with touch safe terminals.

## Voltage Table

| Primary Volts 50/60 Hz | Secondary Volts | Letter |
|---|---|---|
| 240 X 480, 230 X 460, 220 X 440 | 120/115/110 | A |
| 240 X 480 | 24 | B |
| 120 X 240 | 24 | C |
| 550/575/600 | 110/115/120 | E |
| 380/400/415 | 110 X 220 | I |
| 208/230/460, 200/220/440, 240/480 | 24 X 115, 23 X 110, 25 X 120 | J |
| 380 | 24 | P |

| VA Rating | Voltage Letter A<br>Catalog Number | Voltage Letter B<br>Catalog Number | Voltage Letter C<br>Catalog Number | Voltage Letter E<br>Catalog Number | Voltage Letter I<br>Catalog Number | Voltage Letter J<br>Catalog Number | Voltage Letter P<br>Catalog Number |
|---|---|---|---|---|---|---|---|
| 50 | MTG0050A | MTG0050B | MTG0050C | MTG0050E | MTG0050I | MTG0050J | MTG0050P |
| 75 | MTG0075A | MTG0075B | MTG0075C | MTG0075E | MTG0075I | MTG0075J | MTG0075P |
| 100 | MTG0100A | MTG0100B | MTG0100C | MTG0100E | MTG0100I | MTG0100J | MTG0100P |
| 150 | MTG0150A | MTG0150B | MTG0150C | MTG0150E | MTG0150I | MTG0150J | MTG0150P |
| 200 | MTG0200A | MTG0200B | MTG0200C | MTG0200E | MTG0200I | MTG0200J | MTG0200P |
| 250 | MTG0250A | MTG0250B | MTG0250C | MTG0250E | MTG0250I | MTG0250J | MTG0250P |
| 300 | MTG0300A | MTG0300B | MTG0300C | MTG0300E | MTG0300I | MTG0300J | MTG0300P |
| 350 | MTG0350A | MTG0350B | MTG0350C | MTG0350E | MTG0350I | MTG0350J | MTG0350P |
| 500 | MTG0500A | MTG0500B | MTG0500C | MTG0500E | MTG0500I | MTG0500J | MTG0500P |
| 750 | MTG0750A | MTG0750B | MTG0750C | MTG0750E | MTG0750I | MTG0750J | MTG0750P |
| 1000 | MTG1000A | MTG1000B | MTG1000C | MTG1000E | MTG1000I | MTG1000J | — |
| 1500 | MTG1500A | — | — | MTG1500E | MTG1500I | MTG1500J | — |
| 2000 | MTG2000A | — | — | MTG2000E | MTG2000I | — | — |
| 3000 | MTG3000A | — | — | MTG3000E | MTG3000I | — | — |
| 5000 | MTG5000A | — | — | MTG5000E | MTG5000I | — | — |

### Pilot Light Kits—Class MMS, MRS①

| Device | Voltage Rating | Green Pilot Light Catalog Number |
|---|---|---|
| Class SMF | 115–277V AC | **SMFPL10G** |

### Replacement Parts—Class SMF, MMS

| Description | Catalog Number |
|---|---|
| Replacement Toggle Kits:Type FW and KW (NEMA 4 Metallic Enclosure) | **SMFHW1** |



① Pilot lights can be field installed on standard NEMA 1 general purpose surface mount enclosures, and NEMA 3R, 4 and 12 enclosures only. For flush mounting units a complete switch unit with pilot light must be ordered.

| Push Buttons and Selector Switches | Class | Enclosure Type | Controller Size or (Lighting Rating) | Type | Catalog Number |
|---|---|---|---|---|---|
| **49SDPB5** | 14, 40, LC, LEN, CLM① | Open | 00-4 | Start, Stop Push Buttons | **49SAPB5** |
| | | | | Hand-Off-Auto Selector Switch | **49SASB1** |
| | | | | Off-On Selector Switch | **49SASB4** |
| | | 1 | 00-4 or (20–100A) | Start, Stop Push Buttons | **49SDPB5** |
| | | | | Hand-Off-Auto Selector Switch | **49SDSBJ** |
| | | | | Off-On Selector Switch | **49SDSB4** |
| | | | 5-8 or (200–400A) | Start, Stop Push Buttons | **49SAP05** |
| | | | | Hand-Off-Auto Selector Switch | **49SAS01** |
| | | | | Keyed Hand-Off-Auto (key removable in all positions) | **49SAS09** |
| | | | | Off-On Selector Switch | **49SAS04** |
| | | 12, 4/4X | 00-8 or (20–400A) | Start, Stop Push Buttons | **49SAP05** |
| | | | | Hand-Off-Auto Selector Switch | **49SAS01** |
| | | | | Keyed Hand-Off-Auto (key removable in all positions) | **49SAS09** |
| | | | | Off-On Selector Switch | **49SAS04** |
| **49SDSB1** | 22, 43 | Open | 00-4 | Forward-Off-Reverse Selector Switch | **49SASB2** |
| | | 1 | 00-4 | Forward-Off-Reverse Selector Switch | **49SDSBJ** |
| | | | 5-8 | Forward, Reverse, Stop Push Buttons | **49SAP02** |
| | | | | Forward-Off-Reverse Selector Switch | **49SAS02** |
| | | 12, 4/4X | 0-8 | Forward, Reverse, Stop Push Buttons | **49SAP02** |
| | | | | Forward-Off-Reverse Selector Switch | **49SAS02** |
| **49SAP05** | 30 (2S1W) | Open | 0-4 | High-Off-Low Selector Switch | **49SASB3** |
| | | 1 | 0-1 ¾ | High-Off-Low Selector Switch | **49SDSBJ** |
| | | | 2-4 | High, Low, Stop Push Buttons | **49SAP03** |
| | | | | High-Off-Low Selector Switch | **49SAS03** |
| | | 12, 4/4X | 0-4 | High, Low, Stop Push Buttons | **49SAP03** |
| | | | | High-Off-Low Selector Switch | **49SAS03** |
| | 30 (2S2W) | Open | 0-4 | High-Off-Low Selector Switch | **49SASB3** |
| | | 1 | 0-4 | High-Off-Low Selector Switch | **49SDSBJ** |
| | | 12, 4/4X | 0-4 | High, Low, Stop Push Buttons | **49SAP03** |
| | | | | High-Off-Low Selector Switch | **49SAS03** |
| **49SAS01** | 17, 18, 83, 84, LED,LEF, LEB, CMN①, CMF①, CMB① | 1, 12, 4/4X | 0-8 (20-400A) | Start, Stop Push Buttons | **49SAP05** |
| | | | | Hand-Off-Auto Selector Switch | **49SAS01** |
| | | | | Keyed Hand-Off-Auto (key removable in all positions) | **49SAS09** |
| | | | | Off-On Selector Switch | **49SAS04** |
| | 25, 26 | 1, 12, 4/4X | 0-8 | Forward, Reverse, Stop Push Buttons | **49SAP02** |
| | | | | Forward-Off-Reverse Selector Switch | **49SAS02** |
| | 32 | 1, 12, 4/4X | 0-4 | High, Low, Stop Push Buttons | **49SAP03** |
| | | | | High-Off-Low Selector Switch | **49SAS03** |

① To be used for replacement of switch only. Does not include relay or extra contact block on 30-400A CLM and CM Lighting Contactors.

# Pilot Lights

## Selection

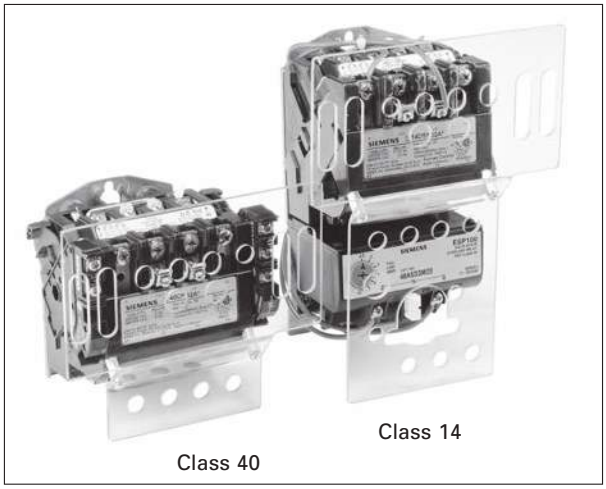
| | Description | | | Lens Color (Lamp Type) | Legend(s) | Voltage | Catalog Number |
|---|---|---|---|---|---|---|---|
| | Class | Enclosure Type | Controller Size or (Lighting Rating) | | | | |
| 49SDLBU | 14, 40, LC, LEN, CLM | 1 (with lift-off cover) | 00–4 or (30–100A) | Red, Green, Amber (LED lamp) | ON, RUN, OFF①, OLR TRIPPED | 24 to 240 V AC/DC | 49SDLBU |
| | | | | | | 277 V AC | 49SDLBL |
| | 3RE48, 14, 17, 18, 40, 83④, 84④, 88, CLM, CM, LE, LEN, LC | 1 (with hinged cover), 3/3R, 4, 4X, 12 | 00–8 or (30–400A) | Red (Transformer Type incandecent lamp)③ | ON | (Refer to voltage table) | 49SPL0BR* |
| | | | | | OFF①② | (Refer to voltage table) | 49SPL0AR* |
| | | | | Green (Transformer Type incandecent lamp)③ | ON | (Refer to voltage table) | 49SPL0BG* |
| | | | | | OFF①② | (Refer to voltage table) | 49SPL0AG* |
| 49SPL0BRF | 3RE48, 82, 87 | 3/3R | 1-6 | Red (LED lamp) | ON | 24 to 240 V AC/DC | 49SFL0BRU |
| | | | | | | 277 V AC | 49SFL0BRL |
| | | | | | OFF① | 24 to 240 V AC/DC | 49SFL0ARU |
| | | | | | | 277 V AC | 49SFL0ARL |
| | | | | Green (LED lamp) | ON | 24 to 240 V AC/DC | 49SFL0BGU |
| | | | | | | 277 V AC | 49SFL0BGL |
| | | | | | OFF① | 24 to 240 V AC/DC | 49SFL0AGU |
| | | | | | | 277 V AC | 49SFL0AGL |
| 49SPL0JRF | 22, 43 | 1 (with lift-off cover) | 00–4 | Red, Red (LED lamp) | FORWARD, REVERSE | 24 to 240 V AC/DC | 49SDLB7RU |
| | | | | | | 277 V AC | 49SDLB7RL |
| | | | | Green, Green (LED lamp) | FORWARD, REVERSE | 24 to 240 V AC/DC | 49SDLB7GU |
| | | | | | | 277 V AC | 49SDLB7GL |
| | 22, 25, 26, 43 | 1 (with hinged cover), 3/3R, 4, 4X, 12 | 00-8 | Red, Red (Transformer Type incandecent lamp)③ | FORWARD, REVERSE | (Refer to voltage table) | 49SPL0JR* |
| | | | | Green, Green (Transformer Type incandecent lamp)③ | FORWARD, REVERSE | (Refer to voltage table) | 49SPL0JG* |
| 49SFL0BGU | 30 | 1 (with lift-off cover) | 0-1 3/4 (1-winding) 0-4 (2-winding) | Red, Red (LED lamp) | HIGH, LOW | 24 to 240 V AC/DC | 49SDLB7RU |
| | | | | | | 277 V AC | 49SDLB7RL |
| | | | | Green, Green (LED lamp) | HIGH, LOW | 24 to 240 V AC/DC | 49SDLB7GU |
| | | | | | | 277 V AC | 49SDLB7GL |
| | 30, 32 | 1 (with hinged cover), 3/3R, 4, 4X, 12 | 0-4 (1- or 2-winding) | Red, Red (Transformer Type incandecent lamp)③ | HIGH, LOW | (Refer to voltage table) | 49SPL0KR* |
| | | | | Green, Green (Transformer Type incandecent lamp)③ | HIGH, LOW | (Refer to voltage table) | 49SPL0KG* |
| 49SBLBL | Lens Kit for pilot light kits 49SDLB* | | | Red, Green, Amber | — | — | 49SBLBL |
| 52AED2 | LED lamp BA9s type used to replace incandecsent or LED lamps. Applies only to 49SP* pilot light kits. | | | Red | — | 24 V AC/DC | 52AED2 |
| | | | | Green | | | 52AED3 |
| | | | | Amber | | | 52AED4 |
| | | | | White | | | 52AEDB |
| | | | | Red | — | 120 - 600 V AC/DC | 52AEB2 |
| | | | | Green | | | 52AEB3 |
| | | | | Amber | | | 52AEB4 |
| | | | | White | | | 52AEBB |

### Voltage Table

| Voltage | Code (*) |
|---|---|
| 24 V AC (Full voltage) | J |
| 120 V AC | F |
| 240 V AC | G |
| 480 V AC | H |
| 600 V AC | E |

① To use as an OFF indicator, the contactor must have a normally closed (NC) auxiliary contact available for the circuit. Order separately as needed.
② Includes a nomally closed (NC) auxiliary contact for NEMA controller sizes 0–4.
③ Incandecsent lamps may be replaced with 52AE* LED lamps listed on this page.
④ Class 83 and 84 requires a quantity of two pilot light kits.

## Protective Shielding for NEMA Products



Class 14

Class 40

### Class 14, 22, 30, 40, 43

| Contactor or Starter Size | 00–1¾ | 2–2½ | 3–3½ | 4 |
|---|---|---|---|---|
| Contactor Shield Catalog Number | 49PSC1 | 49PSC2 | 49PSC3 | 49PSC4 |
| Starter Shield Catalog Number | 49PSS1 | 49PSS2 | 49PSS3 | 49PSS4 |

| Power Pole Kits | Class | Enclosure type | Contactor Size (Amp) | Description | Field Kit Catalog No. |
|---|---|---|---|---|---|
| | LC | Open, 1, 12, 4/4X | 30 | Single power pole<br>Double power pole | 49LCPP1A<br>49LCPP2A |

| Electrically Held to Mechanically Held Conversion Modules | Class | Enclosure type | Contactor Size (Amp) | Description | Field Kit Catalog No. |
|---|---|---|---|---|---|
| | LC | Open, 1, 12, 4/4X | 30 | 2-wire, 24VAC<br>2-wire, 110-120VAC<br>2-wire, 200-277VAC<br>3-wire, 24VAC<br>3-wire, 110-120VAC<br>3-wire, 200-277VAC | 49LCCM1A<br>49LCCM2A<br>49LCCM3A<br>49LCCM4A<br>49LCCM5A<br>49LCCM6A |

## Starter/Contactor Auxiliary Contact Kits

| Description | Class | Size | Type | Catalog Number |
|---|---|---|---|---|
| | 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83, 84, 87, 88 | 00-4 | 1 NO | **49AB10** |
| | | | 1 NC | **49AB01** |
| | | | 1 NC Early Break | **49AB01EB** |
| | | | 1 NC Late Break | **49AB01LB** |
| | | | 1 NC Extra Late Break | **49AB01XLB** |
| | | | 1 NO Extra Late Make | **49AB10XLM** |
| | | | 1 NO & 1 NC | **49AB11** |
| | | | 2 NO | **49AB20** |
| | | | 4 NO | **49AB40** |
| | | | 3 NO & 1 NC | **49AB31** |
| | | | 2 NO & 2 NC | **49AB22** |
| | 3RE48 | 1 - 3 | 1 NO & 1 NC laterally mounted | **3RH2921-1DA11** |
| | | 4 | | **3RH1921-1JA11** |
| | | 1 - 3 | 2 NO laterally mounted | **3RH2921-1DA20** |
| | | 4 | | — |
| | | 1 - 3 | 2 NC laterally mounted | **3RH2921-1DA02** |
| | | 4 | | — |
| **3RH** **49C** | 14, 17, 18, 22, 25, 26, 40, 43, 87, 88 | 5, 6 | 2 NO | **3RH1921-1EA20** |
| | | | 1 NO & 1 NC | **3RH1921-1DA11** |
| | | | 2 NC | **3RH1921-1EA02** |
| | 14, 17, 18, 22, 25, 26, 40, 43 | 7, 8 | 1 NO & 1 NC (Inside L or R) | **49CAL18-11** |
| | | | 1 NO & 1 NC (Outside L or R) | **49CAL18-11B** |
| **LC** **LE** | LC | 30 | 1 NO/NC | **49LCAC1PA** |
| | | | 2 NO/NC | **49LCAC2PA** |
| | LE | 20<br>30-100<br>200-400 | Front Mounted 1 NO/NC | **3RH2911-1HA11** |
| | | | Side Mounted 1 NO/NC | **3RH2911-1DA11** |
| | | | Side Mounted 1 NO/NC | **3RH1921-1EA11** |
| | | 30-200 Amps | 1 NO & 1 NC | **CLMFCAK11** |
| | | | 2 NC | **CLMFCAK02** |
| | | | 2 NO | **CLMFCAK20** |
| | | | 1 Coil Clearing NO & NC | **CLMFCCK11** |
| | | 300-400 Amps | 1 NO & 1 NC | **CLMHCAK11** |
| | | | 2 NC | **CLMHCAK02** |
| | | | 2 NO | **CLMHCAK20** |
| | | | 1 Coil Clearing NO & NC | **CLMHCCK11** |

## Control Power Transformer Kits①③

| Description | Recommended Transformer Size | | VA Rating | Catalog Number | Transformer Table | | |
|---|---|---|---|---|---|---|---|
| | Product Class and Size | Transformer VA | | | Primary Volts | Secondary Volts | Code |
| **Transformer 50/60HZ** | **Class 14,17,18,22,25,26,30,32,40,43,83,84,87** | | 45 VA | **KT*050②③** | 120 | 24 | **1** |
| | 00–2½ | 45 or 50③ | 50 VA | **KT*050P③** | 208 | 24 | **G** |
| | 3–3½ | 75 | 100 VA | **KT*100** | 208 | 120 | **H** |
| | 4 | 150 | 150 VA | **KT*150** | 240/480 | 24 | **4** |
| | 5-6 | 150 | 200 VA | **KT*200** | 240/480 | 120 | **8** |
| | 7-8 | 300 | 300 VA | **KT*300** | 277 | 24 | **5** |
| | **Class CLM** | | 500 VA | **KT*500** | 277 | 120 | **7** |
| | 30A, 3P | 100 | Replace * with code from Transformer table. Kits used with NEMA 1 general purpose lift-off cover type require extra wide enclosure.<br>Class 14 Sizes 0-2½<br>Class 30 (2S2W) Sizes 0-2½<br>Class 30 (2S1W) Sizes 0-1¾ | | 600 | 24 | **6** |
| | 30A, 6 - 12P | 200 | | | 600 | 120 | **9** |
| | 60A, 3P | 100 | | | | | |
| | 60A, 4 - 6P | 150 | | | | | |
| | 60A, 8 - 12P | 250 | | | | | |
| | 100/200A, 3P | 200 | | | | | |
| | 100/200A, 5P | 250 | | | | | |
| | 300/400A, 3P | 250 | | | | | |
| | **Class LC & LE** | | | | | | |
| | LC 30A, 2-12P | 100 | | | | | |
| | LE 20, 30, 60A, 3 & 4P | 45 or 50③ | | | | | |
| | LE 30A, 6P | 45 or 50③ | | | | | |
| | LE 30A, 9-12P | 100 | | | | | |
| | LE 60A, 6-12P | 150 | | | | | |
| | LE 100, 200A, 3P | 100 | | | | | |
| | LE 300, 400A, 3P | 150 | | | | | |
| | **3RE48** | | | | | | |
| | 1 | 45 or 50③ | | | | | |
| | 2–4 | 100 | | | | | |

① Installation of CPTs may require a larger enclosure.

② 45VA transformer kits will include secondary but not primary fusing. Sizes 50VA and higher include 2-pole primary fusing and 1-pole secondary fusing.

③ For 24VAC control a minimum of 100VA CPT is required.

## Accessories

| Description | | | | Catalog Number |
|---|---|---|---|---|
| | ESP200 Tamper Resistance Cover | | | **49ASTC1**<br>**3UB89848** |
| | ESP100/200 Mounting Plate | **Frame Size** | **Controller Size** | |
| | | A or A1 | 00 - 1 3/4 | **49ASMP1** |
| | | B | 2 -2 1/2 | **49ASMP2** |
| | | B | 3-4 | **49ASMP3** |
| | Mounting Kit | | | **49ASMS1** |
| | Universal Reset Operator<br>8" for class 3RE48 and 87<br>in NEMA 1, 12 and 3R | | | **49MARB** |
| | Overload Relay Reset Operator<br>for Class 14, 22, 30 and 83 non-combination starters<br>in NEMA type 1, 12 and 4/4X enclosures | | | **49MBRS** |
| | Overload Relay Reset Operator<br>for Class 17, 18, 25, 26, 32 and 84 combination starters<br>in NEMA type 1 enclosures | | | **49MBRS1** |
| | Overload Relay Reset Operator<br>for Class 17, 18, 25, 26, 32 and 84 combination starters<br>in NEMA type 12 and 4/4X enclosures | | | **49MBRS2** |
| | Overload Relay Reset Operator with red button<br>for any Class in NEMA type 1, 3R, 4/4X and 12 enclosures<br>with a 30mm hole | | | **49MARSR** |
| | ESP200 Reset Extender | | | **49ASRE** |
| | Protective Boot<br>Offers protection from ice and foreign substances<br>from interfering with button operation.<br>For use with 49MARSR reset. | | | **52AABA** |
| | Current Transformer 300:5 use with **3UB81234JW2** | | | **97CT005** |
| | Current Transformer 400:5 use with **3UB81234KW2** | | | **97CT006** |
| | Current Transformer 600:5 use with **3UB81234LW2** | | | **97CT008** |
| | Current Transformer 750:5 use with **3UB81234MW2** | | | **97CT009** |
| | Current Transformer 1200:5 use with **3UB81234NW2** | | | **97CT012** |

## Miscellaneous Kits

| | Description | | Class | Encl Type | Controller Size | Catalog Number |
|---|---|---|---|---|---|---|
| | Mechanical Interlock for Horizontally Mounted Contactors | Includes wire | 14, 40 | Open | 00–1<br>1¾<br>2, 2½<br>3, 3½<br>4 | **49CCF22H**<br>**49EEF22H**<br>**49GGF22H**<br>**49HHP22H**<br>**49JJG22H** |
| | | Interlock Only | 14, 40 | Open | 5, 6 | **3RA1954-2A** |
| | | Wire Kit Only | | | 5<br>6 | **3RA1963-2A**<br>**3RA1973-2A** |
| | | Base Plate Only | | | 5<br>6 | **3RA1962-2A**<br>**3RA1972-2A** |
| | | Mechanical Interlock | 14, 40 | Open | 7<br>8 | **49VM750H**<br>**49VM1650H** |
| | | Includes wire & mounting plate | 14, 40 | Open | 00–1<br>1¾<br>2, 2½<br>3, 3½<br>4 | **49CCF22HP**<br>**49EEF22HP**<br>**49GGF22HP**<br>**49HHP22HP**<br>**49JJG22HP** |
| | | Includes mounting plate (Different Frame Sizes) | 14, 40 | Open | Left / Right<br>2, 2½ / 3, 3½<br>3, 3½ / 2, 2½ | **49L107944**<br>**49L107945** |
| | Surge Suppressor | Surge Suppressor for 120V AC coil. Limits transient voltage produced by the coil to 220% maximum peak line volts. | All but Class LC, LE, CLM | All | 00–4① | **49D26344** |
| | Auxiliary Power Pole | NC 25A at 600V AC Max<br>NC 25A at 600V AC Max | All but Class LC, LE, CLM | All | 00–1¾ | **49SAF0**<br>**49SAFC** |
| | Load Side Power Take Off Kit | Includes 3 power lugs for making extra connections to the load side of the contactor | All but Class LC, LE, CLM | All | 00–1¾ | **49SAE** |
| | Lug Kit for Contactors<br>Item / Wire Range<br>49SAAF / 2-14<br>49SAAH / 2/0-14<br>75D35994001 / 250MCM-6 | For AL/CU Wire | 14, 40 | All | 2-2½<br>3-3½<br>4 Line 4 Load | **49SAAF**③<br>**49SAAH**③<br>**75D35994002**③ |
| | | For AL/CU Wire | 14, 40 | All | 5, 6 | **3RT1966-4G**② |
| | | Use CU Only | 14, 40 | All | 7<br>8 | **49ZATK750-3**②<br>**49ZATK1650-6**② |
| | Three Conductor Ground Lug | 2-14 AWG AL/CU Wire<br>Kit Meets UL 508 and CSA Standard 22.2 No 14-1973 | All | All | All | **75D28182001** |
| | Lightning Arrestor | | All | All | All | **49D45584002** |
| | Backspin Timer | On delay timer that reduces risk of starting into a backspin | 3RE48, 87, 88 | All | All | **3RP2025-1AQ30**<br>**3RP2025-1AP30** |
| | Hole Plug | Covers the hole in the enclosure door/cover normally filled by overload reset 49MBRS. Hole plug is used for enclosed contactors. | 40, 43, LC, LE, CLM & CM | 1 | All | **49MZPB2** |

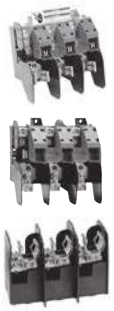
| | Description | Contactor | Encl Type | Catalog Number |
|---|---|---|---|---|
| | Lug Kit<br>1 Kit = 1 Terminal block. 1 kit necessary for each line and load. | NEMA size 4 (Vacuum)<br>NEMA size 5<br>NEMA size 6 | 2/0 to 600 MCM, max. one 500MCM & one 600MCM | **3RT1966-4G** |

① Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil. For size 4 panel mount.

② Only 3 lugs are suplied for line or load. If lugs for line and load are required order 2 kits.

③ Lug Kit for contactors include 3 lugs for line or load.
**75D35994001** for line side.
**75D35994002** for load side.

### Fused and Non-Fused Disconnect Switch Kits②



| Basic Switch Ampere Rating | Switch Catalog No. Non-Fused | Switch Catalog No. Fused | Kit Description | Load Base Catalog No. Class J | Load Base Catalog No. Class H③ | Lug Wire Size |
|---|---|---|---|---|---|---|
| 30 | **HNB612** | **HFB21** | 30A, 250V | — | **HBB21** | #14-2 AWG (Cu/Al) |
| | | **HFB612** | 30A, 600V | **HBB612** | **HBB612** | |
| 60 | **HNB623** | **HFB22** | 60A, 250V | — | **HBB22** | #14-2 AWG (Cu/Al) |
| | | **HFB62** | 60A, 600V | **HBB62** | **HBB62** | |
| 100 | **HNB623** | **HFB63** | 100A, 250V | — | **HBB63** | #14-1/0 AWG (Cu/Al) |
| | | | 100A, 600V | **HBB63** | | |
| 200 | **HNB64** | **HFB64** | 200A, 250V | — | **HBB64** | #6-300 AWG (Cu/Al) |
| | | | 200A, 600V | **HBB64** | | |

### Class R Fuse Conversion Kits

| Catalog No. | Description |
|---|---|
| **HR21** | 30A, 240V |
| **HR612** | 30A, 600V |
| **HR612** | 60A, 240V |
| **HR62** | 60A, 600V |
| **HR63** | 100A, 240/600V |
| **HR64** | 200A, 240/600V |

### Disconnect Auxiliary Switch Kits

| | Description | Class | CB Rating | Type | Catalog No. |
|---|---|---|---|---|---|
| | Non-fusible or Fusible Type | 3RE48, 17, 25, 32, 83, 84, 87, 88, LED, LEF, CMN, CMF | 30 - 200A | 2 NO/2 NC DPDT (NEMA A600) | **HA261234** |
| | MCP | 3RE48, 18, 26, 32, 83, 84, 87, 88, LEB, CMB | 3A–125A | 1 NO/1 NC 15A @240VAC | **A02ED62** |
| | | | 250A | 1 NO/1 NC 480V | **A02FD64** |
| | | | 400A-600A | (2) 1 NO/1 NC SPDT-480V | **A02JLD64** |

① Product Category: PILO.
② Product Category: HDSS.

③ For Class R fuses order Class H kit from this table and the Class R conversion kit.

### Sirius 3RB20

| Illustration | Reset mechanisms<br>Description | | For Overload Type | Catalog Number |
|---|---|---|---|---|
| <br>Reset plunger with reset button | **Reset plunger**<br>Mounts directly to overload relay.<br>Requires 3RB206 3RU1900-1A<br>separate reset operator in enclosure door.<br>Kit includes reset plunger, holder and funnel. | | 3RB206 | **3RU1900-1A** |
| <br>Flexible reset | **Flexible cable reset mechanism**<br>Requires a 6.5 mm hole in the 3RB206 enclosure with a maximum enclosure thickness of 8 mm. | Cable length<br>15.75 in (400mm) | 3RB206 | **3RU1900-1B** |
| | | Cable length<br>23.62 in (600mm) | | **3RU1900-1C** |
| | **Covers**<br>Tamper resistant cover for current setting and manual/automatic reset button. | | 3RB206 | **3RB2984-0** |

### Competitive Retrofit Overload Plates

| Manufacturer | NEMA Size | Plate<br>Part Number |
|---|---|---|
| A-B | 0, 1 | **49D57090** |
| A-B | 2 | **49D57161** |
| Sq. D | 0, 1 | **49D57091** |

### Electronic Coil System with Remaining Lifetime Indication and 24VDC PLC Output

| Class | Size | Model Type | 21 - 27V<br>Catalog Number | 96 - 127V<br>Catalog Number | 200 - 277V<br>Catalog Number |
|---|---|---|---|---|---|
| All | 5 | P | — | **3RT1965-5PF31** | **3RT1965-5PP31** |
| | | V | — | **3RT1966-5PF31** | **3RT1966-5PP31** |
| | 6 | P | — | **3RT1975-5PF31** | **3RT1975-5PP31** |
| | | V | — | **3RT1976-5PF31** | **3RT1976-5PP31** |

### Fuse Blocks, Touch-Safe Terminal Covers

| Catalog Number | Description |
|---|---|
| KCCF1G | Secondary Fuse Block,1P,250V Max |
| KCCFBCK | Single Pole Fuse Block Cover Kit |
| KCCFP2RG | 2 Pole Primary Fuse Block,2P,600V Max (Block Only) |
| KCCFPX2R | 2 Pole Primary Fuse Block Kit With Wire Leads |
| US2:SECFUBLK | Secondary Fuse Block Assy 50va to 750va |
| US2:SECFUBLK2 | 2nd fuse blk assy. genII 1kva to 5kva |
| US2:49JUCPT2 | Terminal Jumper 750VA and below |
| US2:49JUCPT3 | Terminal Jumper 1kVA and above |
| US2:KCCSECFCVR | Touch safe cover for secondary fuse clips |
| US2:KCCFP3POLE | 3 pole fuse blk (2 pole primary and 1 pole secondary) |

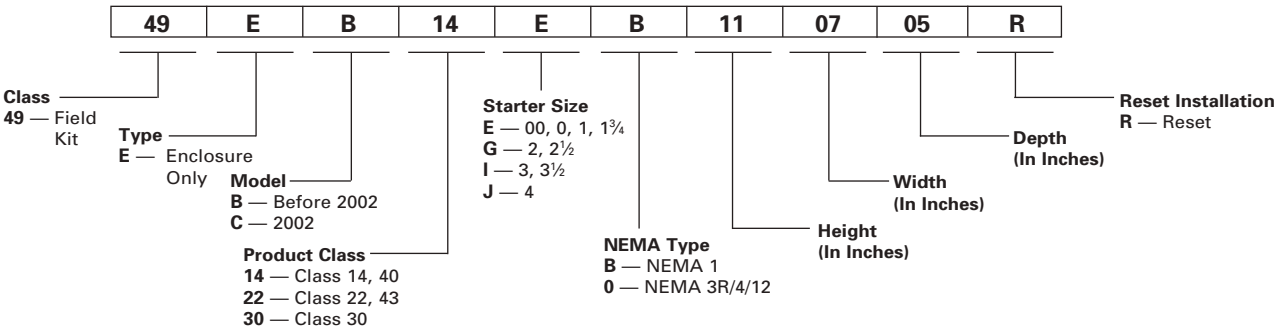
### International Fusing①

| Catalog Number | Description |
|---|---|
| 8WA1011-1SF12 | 1-Pole Fuse Block, Touch-Safe. Up to 6.3A for 5 mm x 20 mm or 5 mm x 25 mm (Requires DIN Rail Mounting) |
| 3NW7013 | 1-Pole Fuse Block, Touch-Safe 32A, for 10 x 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.) |
| 3NW7023 | 2-Pole Fuse Block, Touch-Safe 32A, for 10 x 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.) |
| 3NW7111 | 1-Pole Fuse Block, Touch-Safe 4-50A, for 14 x 51 mm Cylindrical Fuses. (Requires DIN Rail Mounting.) |
| 8WA1815 | Fuse Block DIN Rail Mounting for separate screw mounting to panel. (Max 2-pole 2-25A size per rail.) (Max 1-pole 4-50A size per rail.) |

① Product Category: IEC.

# Non-Combination Enclosure Kits, Class 49

## Selection




### Non-Reversing Starters & Contactors Class 14, 40

| | NEMA 1 General Purpose (Clamshell)①③ | | | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof②④ | |
|---|---|---|---|---|---|
| | Without CPT | With CPT (Extra Wide) | Max. CPT VA | Without CPT | With CPT (Extra Wide) |
| Size | Catalog Number | Catalog Number | | Catalog Number | Catalog Number |
| 00–1¾ | **49EC14EB110705R** | **49EC14IB201208R** | 200 | **49EB14E0130806R** | **49EB22E0131306R** |
| 2, 2½ | **49EC14GB140807R** | **49EC14IB201208R** | 200 | **49EB14G0160907R** | **49EB22G0161406R** |
| 3, 3½ | **49EC14IB201208R** | **49EC14IB201208R** | 100 | **49EB14J0261408R** | **49EB14J0261408R** |
| 3, 3½ | — | **49EC14JB251409R** | 250 | — | — |
| 4 | **49EC14JB251409R** | **49EC14JB251409R** | 300 | **49EB14J0261408R** | — |

### Reversing Starters & Reversing Contactors Class 22, 43

| | NEMA 1 General Purpose (Clamshell)①③ | | | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof②④ | |
|---|---|---|---|---|---|
| | Without CPT | With CPT (Extra Wide) | Max. CPT VA | Without CPT | With CPT (Extra Wide) |
| Size | Catalog Number | Catalog Number | | Catalog Number | Catalog Number |
| 00–1¾ | **49EC14IB201208R** | **49EC14IB201208R** | 200 | **49EB22E0131306R** | **49EB22E0131306R** |
| 2, 2½ | **49EC14IB201208R** | **49EC14IB201208R** | 200 | **49EB22G0161406R** | **49EB22G0161406R** |
| 3, 3½ | **49EC14JB251409R** | **49EC14JB251409R** | 250 | — | — |
| 4 | **49EC14JB251409R** | **49EC14JB251409R** | 300 | — | — |

### Lighting Contactors Class LC and LE

| | | | NEMA 1 General Purpose (Clamshell)①③ | | | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof ②④ | |
|---|---|---|---|---|---|---|---|
| | | | Without CPT | With CPT (Extra Wide) | Max. CPT VA | Without CPT | With CPT (Extra Wide) |
| Class | Size | Pole | Catalog Number | Catalog Number | | Catalog Number | Catalog Number |
| LC | 30A | 2-12 | **49EC14GB140807R** | **49EC14IB201208R** | 200 | **49EB22G0161406R** | **49EB30G0161808R** |
| LE | 20A, 30A | 3-4 | **49EC14EB110705R** | **49EC14IB201208R** | 200 | **49EB22G0161406R** | **49EB22G0161406R** |
| LE | 30A | 6-9 | **49EC14IB201208R** | **49EC14IB201208R** | 200 | **49EB22G0161406R** | **49EB14J0261408R** |
| LE | 30A | 12 | **49EC14IB201208R** | **49EC14JB251409R** | 250 | **49EB22G0161406R** | **49EB14J0261408R** |
| LE | 60A | 3-6 | **49EC14GB140807R** | **49EC14IB201208R** | 200 | **49EB22G0161406R** | **49EB22G0161406R** |
| LE | 60A | 9-12 | **49EC14IB201208R** | **49EC14IB201209R** | 250 | **49EB22G0161406R** | **49EB14J0261408R** |
| LE | 100A | 3 | **49EC14IB201208R** | **49EC14IB201208R** | 200 | **49EB14J0261408R** | **49EB14J0261408R** |

### Lighting Contactors Class CLM

| | | NEMA 1 General Purpose (Clamshell)①③ | | | NEMA 3R/4/12 Watertight, Dust-tight, Weatherproof ②④ | |
|---|---|---|---|---|---|---|
| | | Without CPT | With CPT (Extra Wide) | Max. CPT VA | Without CPT | With CPT (Extra Wide) |
| Size | Pole | Catalog Number | Catalog Number | | Catalog Number | Catalog Number |
| 30A | 2-5 | **49EC14EB110705R** | **49EC14IB201208R** | 200 | **49EB22G0161406R** | **49EB22G0161406R** |
| 30A | 6-12 | **49EB30G0161808R** | **49EB30G0161808R** | 200 | **49EB22G0161406R** | **49EB30G0161808R** |
| 60A | 2-5 | **49EC14GB140807R** | **49EC14IB201208R** | 250 | — | — |
| 100A | 2-5 | **49EC14IB201208R** | **49EC14IB201208R** | 200 | — | — |

① Clamshell enclosure suitable for two operating devices and two pilot lights. See Field Mods page 9/81.
② Hinged cover enclosures, except for **49EB14E0130806R**, are suitable for one or more class 52 operating devices and one or more class 52 pilot lights. See Field Mods page 9/74.
③ Install NEMA 1 hole plug cat. no. **3SB1902-0AR** (included) when the cover OL reset is not needed.
④ Install NEMA 12 hole plug cat. no. 52ABH6 (not included) when the cover OL reset is not needed.

# Features and Benefits

## Features

- 100kA short circuit rating when protected with class R fuses to 600V or MCP to 480V and when installing listed components from the instruction guide
- Enclosure types available, NEMA 1, 12, 3R, 4, and 4X stainless steel NEMA 12 field convertible to 3R/4 with the appropriate conduit hub and drain hole
- Pre-Drilled mounting panels
- Heavy duty quarter turns
- Industrial type disconnect handle

### Disconnect Type Enclosure Kit

- Used to assemble both non-fusible and fusible combination starters
- Accommodates Class 14 full voltage non-reversing (FVNR) NEMA starters 00 – 4 including Siemens exclusive half sizes
- Handle mechanism, mounting panel, reset assembly, and instruction guide included. Power wire, hardware for panel mounted devices and disconnect switch are not included.

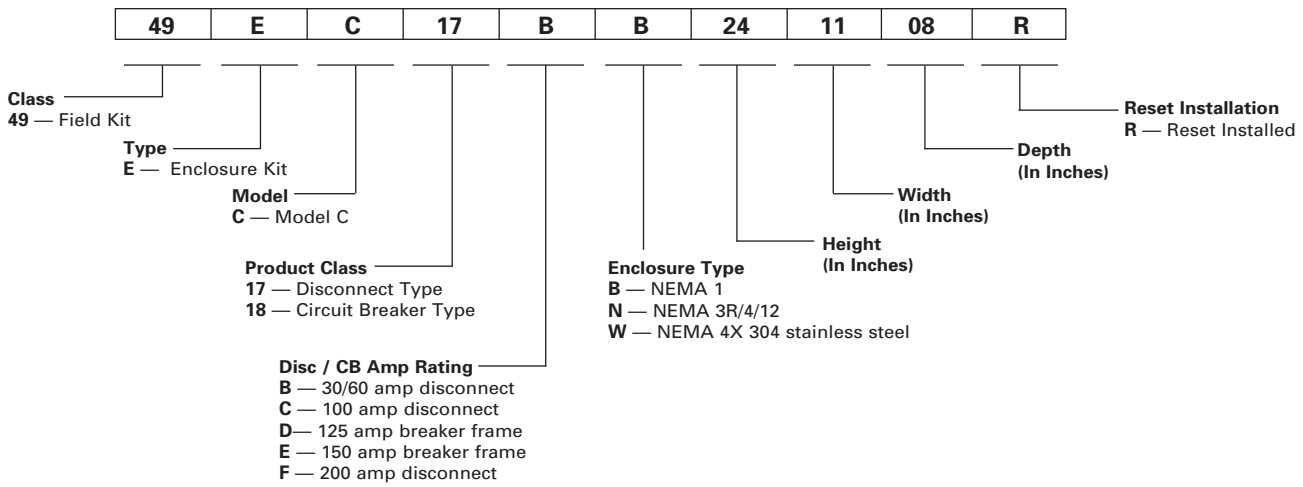
### MCP Type Enclosure Kit

- Used to assemble combination starters with circuit breakers
- Accommodates Class 14 full voltage non-reversing (FVNR) NEMA starters 00 – 4 including Siemens exclusive half sizes
- Handle mechanism, mounting panel, reset assembly and instruction guide included. Power wire and hardware for panel mounted devices are not included. Circuit breaker not included however, mounting hardware for the circuit breaker is included.

### How to Select the Required Kits to Assemble a Combination Starter

1. From the catalog, select a class 14 open type starter.
2. Based on the starter size, select the enclosure kit from table 1a for fusible or non-fusible combination starters or select from table 1b for combination starters with an MCP.
3. For a non-fusible combination starter, select the disconnect switch kit from table 2a. For a fusible combination starter, select the appropriate disconnect switch, fuse clip kit, and class R rejection kit from table 2b (for H fusing, class R rejection kit not required). For combination starters with MCP, select the appropriate circuit breaker kit from table 3.

## Nomenclature for Combination Enclosure Kits



## Selection

### Table 1a - FVNR Combination Starter Kits for use with Disconnect Devices

| Starter Size | Disc. Amp Rating | NEMA 1 General Purpose | NEMA 3R/4/12 Painted Industrial Use, Weatherproof, Watertight, Dust-tight | NEMA 4/4X 304 Stainless Steel Watertight, Dust-tight, Corrosion Resistant |
|---|---|---|---|---|
| | | Catalog Number | Catalog Number | Catalog Number |
| 0 - 2 | 60 | 49EC17BB241108R | 49EC17BN241108R | 49EC17BW241108R |
| 2 ½ - 3 | 100 | 49EC17CB242008R | 49EC17CN242008R | 49EC17CW242008R |
| 3 ½ - 4 | 200 | 49EC17FB362408R | 49EC17FN362408R | 49EC17FW362408R |

### Table 1b. – FVNR Combination Starter Kits for use with MCP Devices

| Starter Size | Max MCP Amps | NEMA 1 General Purpose | NEMA 3R/4/12 Painted Industrial Use, Weatherproof, Watertight, Dust-tight | NEMA 4/4X 304 Stainless Steel Watertight, Dust-tight, Corrosion Resistant |
|---|---|---|---|---|
| | | Catalog Number | Catalog Number | Catalog Number |
| 0 - 2 | 50 | 49EC18DB241108R | 49EC18DN241108R | 49EC18DW241108R |
| 2 ½ - 3 | 125 | 49EC18DB242008R | 49EC18DN242008R | 49EC18DW242008R |
| 3 ½ | 125 | 49EC18DB362408R | 49EC18DN362408R | 49EC18DW362408R |
| 4 | 150 | 49EC18EB362408R | 49EC18EN362408R | 49EC18EW362408R |

### Table 2a – Non-Fusible Disconnect Kits

| Disconnect Switch | |
|---|---|
| Switch Rating | Catalog Number |
| 30A | HNB612 |
| 60A | HNB623 |
| 100A | HNB623 |
| 200A | HNB64 |

### Table 2b – Fusible Disconnect Kits

| Fuse Clip Ratings | Class | Disconnect Switch | Load Base for Fuse | Rejection Clips for Class R Fusing |
|---|---|---|---|---|
| | | Catalog Number | Catalog Number | Catalog Number |
| 30A-250V | H | HFB21 | HBB21 | HR21 |
| 30A-600V | H | HFB612 | HBB612 | HR612 |
| 60A-250V | H | HFB22 | HBB22 | HR612 |
| 60A-600V | H | HFB62 | HBB62 | HR62 |
| 100A-250V | H | HFB63 | HBB63 | HR63 |
| 100A-600V | H | HFB63 | HBB63 | HR63 |
| 200A-250V | H | HFB64 | HBB64 | HR64 |
| 200A-600V | H | HFB64 | HBB64 | HR64 |

### Table 3 – Circuit Breaker Kits

| | MCP Type Used with Solid State Overload Relay | | |
|---|---|---|---|
| Starter Size | Overload Amp Range | Motor Circuit Interrupter Amps | Circuit Breaker Kit |
| | 0.75-3.4 | 3 | ED63A003 |
| 0 | 3-12 | 10 | ED63A010 |
| | 5.5-22 | 25 | ED63A025 |
| | 0.75-3.4 | 3 | ED63A003 |
| 1 | 3-12 | 10 | ED63A010 |
| | 5.5-22 | 25 | ED63A025 |
| | 10-40 | 30 | ED63A030 |
| 1 ¾ | 10-40 | 40 | ED63A040 |
| 2 | 13-52 | 50 | ED63A050 |
| 2 ½ | 25-100 | 100 | ED63A100 |
| 3 | 25-100 | 100 | ED63A100 |
| 3 ½ | 50-200 | 125 | ED63A125 |
| 4 | 50-200 | 150 | FXD63A150L |

## Selection

### Ordering Information

► All modifications will consist of Siemens standard components as available. Standard equipment dimensions and enclosure construction may not apply when certain modifications and special features are added.

**Pilot Devices**

| Description | Modification | Class | Enclosure Type | Modification Code |
|---|---|---|---|---|
| Push Buttons | Start, Stop | 14, 17, 18, 40, 83③, 84③, CLM, CM, LC, LE | All | **A1** |
| | Forward, Reverse, Stop | 22, 25, 26, 43 | All | **A2** |
| | High, Low , Stop | 30, 32 | All | |
| | E-Stop | 14, 17, 18, 22, 25, 26, 30, 32, 40, 43 | All | **ES** |
| Selector Switches | Hand-Off-Auto | 14, 17, 18, 40, 83③, 84③, LC, LE | All | **A3** |
| | | CM, CLM | All | **A3** |
| | For 24 volt HOA control, 20 Amp contactor only | CM, CLM | 1 | **EM** |
| | Off-On | 14, 17,18, 22, 25, 26, 30, 32, 40, 43, 83③, 84③, CLM, CM, LC, LE | All | **A4** |
| | Auto-Off | 14, 17, 18, 40, 83③, 84③, CM, CLM, LC, LE | All | **A6** |
| | Forward-Off-Reverse | 22, 25, 26, 43 | All | **A5** |
| | High-Off-Low | 30, 32 | All | |
| | Hand-Off-Auto (Keyed) | 14, 17, 18, 40, 83③, 84③, LC, LE, CLM, CM | All | **A9** |
| | Auto-Off-Low-High | 30, 32 | All | **A0** |

**Pilot Lights**

| **Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83③, 84③, 87, 88, LC, LE, CLM, CM** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lens Color →** | Red | Green | Red | Green | Red | Green | Amber | White | Red Push-To-Test | Green Push-To-Test | Green Push-To-Test | LED Bulb Upgrade |
| **Legend →** | On For/Rev Low/High | On For/Rev Low/High | Run | Run | Off | Off | Overload Relay Tripped | Control Power On | On For/Rev Low/High | On For/Rev Low/High | Off | |
| **Mod Code →** | **FA** | **FB** | **FC** | **FD** | **FJ** | **FK** | **FL** | **FW** | **FS** | **FT** | **FU** | **FE**① |

**Coil Options**

| **Class 14, 17, 18, 22, 25, 26, 40, 43, 87, 88** | | |
|---|---|---|
| **Controller Size 00 – 4** | | |
| **Volts 60 HZ** | **Volts 50 HZ** | **Coil Letter Change** |
| 24 | 24 | **J** |
| 120 | 110 | **F** |
| 110–120/220–240 | 110/190–220 | **A** |
| 200–208 | — | **D** |
| 220–240 | 190–220 | **G** |
| 277 | 240 | **L** |
| 220–240/440–480 | 190–220/380–440 | **C** |
| 440–480 | 380–440 | **H** |
| 575–600 | 550 | **E** |
| DC Coil② | 24V | **S**⑤ |
| | 48V | **U** |
| | 125V | **V** |
| | 250V | **W** |

**Coil Options**

| **Class 14, 17, 18, 22, 25, 26, 40, 43, 87, 88** | |
|---|---|
| **Controller Size 4 (Vacuum Only), 5 and 6** | |
| **AC (50–60 HZ) or DC** | **Coil Letter Change** |
| 23–26V | **J** |
| 42–48V | **U** |
| 110–127V | **F** |
| 200–220V | **D** |
| 220–240V | **G** |
| 240–277V | **L** |
| 380–420V | **K** |
| 440–480V | **H** |
| 575–600V | **E** |

① Pilot lights are transformer type as standard. For LED type bulbs, order suffix FE in addition to the standard device suffix(es). For example, to order red "ON" and green "OFF" pilot lights with LED bulbs, order FA, FK and FE.

② DC coils include 1 NC, late break aux. contact. This aux. contact takes up one side of the starter (00–4 only).

③ For Class 83 and 84, two devices are included.

④ For Class 83, 84 standard enclosure (92) alternating relay available in 24V or 120V control only.

⑤ S coil is not available for size 4 contactors or starters.

## Selection

| Ordering Information |
|---|
| ► Replace (*) with letter from Transformer Table. |

**Transformer Table**

| Primary Volts | Secondary Volts | Letter |
|---|---|---|
| 120 | 24 | B |
| 208 | 24 | S |
| 208 | 120 | T |
| 240 | 24 | J |
| 240 | 120 | F |
| 277 | 24 | N |
| 277 | 120 | P |
| 380 | 110 | U |
| 415 | 100 | W |
| 480 | 240 | R |
| 480/240 | 24 | D |
| 480/240 | 120 | A |
| 600 | 24 | E |
| 600 | 120 | C |

### Control Power Transformers

| Description | Modification Code | Product Class③ |
|---|---|---|
| Standard Capacity① with 1-Secondary Fuse | B* | All |
| Standard Capacity with 2-Primary and 1-Secondary Fuse | D* | |
| 100VA Extra Capacity with 2-Primary and 1-Secondary Fuse | C* | |
| 150VA Extra Capacity with 2-Primary and 1-Secondary Fuse | C*1 | |

### Factory Assembled Fuse Clips—Class 25, 32, 84④

| Fuse Clip Amps | Volts | Modification Code |
|---|---|---|
| 30 | 250 | 10 |
| 30 | 600 | 11 |
| 60 | 250 | 12 |
| 60 | 600 | 13 |
| 100 | 250 | 14 |
| 100 | 600 | 15 |
| 200 | 250 | 16 |
| 200 | 600 | 17 |
| 400 | 250 | 18 |
| 400 | 600 | 19 |
| 600 | 250 | 20 |
| 600 | 600 | 21 |
| 800 | 600 | 23 |
| 1200 | 600 | 24 |
| 1600 | 600 | 25 |



**Note:** Factory will furnish the same voltage coils as transformer secondary voltage (except with class 36,37).

① The standard control transformer supplied for starter sizes 0 through 2½ will be rated 45VA and have the appropriate secondary fuse. Primary fuses will not be supplied as standard. For primary fuse option select appropriate suffix from table.

③ Class 83 and 84 duplex controllers requires two CPTs.
④ Class 84 Duplex Controllers require two fusible disconnects.

## Selection

### Additional Auxiliary Contacts

| Class | NO Contacts | NC Contacts | Modification Code | Controller Size — List Price $ | | | |
|---|---|---|---|---|---|---|---|
| | | | | 00–1¾ | 2–4 | 5–6 | 7–8 |
| 14, 17, 18, 40, 83③, 84③, 87 | — | 1 | G01 | | | — | — |
| | — | 2 | G02 | | | | — |
| | 1 | — | G10 | | | — | — |
| | 1 | 1 | G11 | | | | |
| | 1 | 2 | G12 | | | — | — |
| | 2 | — | G20 | | | | — |
| | 2 | 1 | G21 | | | — | — |
| | 2 | 2 | G22 | | | | — |
| | 2 | 3 | G23 | | | — | — |
| | 3 | 1 | G31 | | | | — |
| | 3 | 2 | G32 | | | — | — |
| | 3 | 3 | G33 | | — | — | — |
| | 4 | — | G40 | | | | — |
| | 4 | 1 | G41 | | | — | — |
| | 4 | 2 | G42 | | — | — | — |
| | 4 | 4 | G44 | | — | — | — |
| | 5 | — | G50 | | | — | — |
| | 5 | 1 | G51 | | — | — | — |
| | 5 | 3 | G53 | | — | — | — |
| | 6 | — | G60 | | — | — | — |
| | 6 | 2 | G62 | | — | — | — |
| | 7 | 1 | G71 | | — | — | — |
| | 8 | — | G80 | | — | — | — |
| 22, 25, 26, 43 & 30, 32 (2-winding) | — | 2 | G02①② | | | — | — |
| | 2 | — | G20①② | | | — | — |
| | 2 | 2 | G22①② | | | | — |
| | 4 | 0 | G40①② | | | | — |
| | 4 | 4 | G44①② | | | — | — |
| | 6 | 2 | G62①② | | | — | — |
| | 8 | 0 | G80①② | | | — | — |
| 30, 32 (1-winding) | 0 | 2 | G02② | — | | — | — |
| | 2 | — | G20② | — | | — | — |
| | 2 | 2 | G22② | | | — | — |
| | 4 | — | G40② | | | — | — |
| | 4 | 4 | G44② | — | | — | — |
| | 6 | 2 | G62② | — | | — | — |
| | 8 | — | G80② | — | | — | — |
| LE, CLM, CM | 1 | 1 | G11 | | — | — | — |
| LC | 0 | 1 | G01 | | | | |
| | 1 | 0 | G10 | | | | |
| | 1 | 1 | G11 | | | | |
| | 0 | 2 | G02 | | | | |
| | 2 | 0 | G20 | | | | |
| LE, CLM, CM | 0 | 2 | G02 | | — | — | — |
| | 2 | 0 | G20 | | — | — | — |
| | 2 | 2 | G22 | | — | — | — |

| Description | Class | Modification Code | Controller Size - Price Deduction $ | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 0, 1 | 1¼ - 2½ | 3 | 3½, 4 | 5, 6 | 7, 8 |
| Omit Overload Relay and Reset Button | 17, 18, 25, 26 | EX1 | | | | | | |

① Auxiliary contacts will be added evenly across contactors. (i.e. Class 22, G02 suffix will add 2 NC contacts (one per contactor).

② Double the price addition for Class 30 and 32.
③ For class 83 and 84 contacts will be added to both starters. Price x 2.

## Selection

### Control Options

| Description | Class | Modification Code |
|---|---|---|
| Surge Suppression for 120V AC Coil② | 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87, 88 | **SS** |
| Disconnect Switch Interlock 2 NO/2 NC DPDT | 17, 25, 32, 84, CM, LE | **GY** |
| Motor Circuit Protector Interlock NO/NC SPDT | 18, 26, 32, 84, CM, LE | **GY** |
| Lightning Arrestor | All | **L** |
| Circuit Breaker Shunt Trip | 18, 26, 32, 84, 87, 88, CM, LE | **L6** |
| Circuit Breaker Undervoltage Trip | 18, 26, 32, 84, 87, 88, CM, LE | **L7** |
| Circuit Breaker Alarm Switch Trip | 18, 26, 32, 84, 87, 88, CM, LE | **L8** |
| Ground Lug – 3 Conductor | All | **L10** |
| Control Circuit Fuse and Holder (For transformer primary fusing, select mod DA) | All | **F1 (1 fuse)** **F2 (2 fuses)** |
| Control Circuit Circuit Breaker Internally Operated | All | **F4** |
| Space Heater (120V separate control) | All | **SH** |
| Space Heater with Thermostat (120V separate control) | All | **ST** |
| Alarm Package (includes horn, light, relay & push-button) | 83, 84, 87, 88 | **M7** |
| Backspin Protection | 87, 88 | **T5** |
| Blown Control Fuse Indicator Light | 17, 25, 32, 84, 87, 88, CM, LC, LE | **L11** |
| Minimum Run Timer 0.2 sec. - 3 mins. | 87, 88 | **T6** |
| Single Phase 120VAC Combination Starter | 17, 18, 25, 26 | **SP1** |
| Single Phase 240VAC Combination Starter | 17, 18, 25, 26 | **SP2** |

### SIMOCODE Motor Management with Communications③

| | Basic Unit | Class | Mod. Code |
|---|---|---|---|
| | pro S General Performance PROFIBUS DP interface 1.5 Mbit/s | 14, 17, 18, 22, 25, 26, 87 | **Z1** |
| | pro V General Performance Ethernet / PROFINET IO with One Bus Connection | | |
| | pro V General Performance Ethernet / PROFINET IO with Two Bus Connections | | |
| | pro V High Performance PROFIBUS DP interface 12 Mbit/s | | |
| | pro V High Performance Modbus RTU interface | | |
| | pro V High Performance Ethernet / PROFINET IO with Two Bus Connections | | |
| | pro V High Performance Ethernet / IP interface | | |
| | Factory Parameterization of SIMOCODE | | |

### Current Measuring Module

| | Current Range (Amps) |
|---|---|
| | 0.3 - 3 |
| | 2.4 - 25 |
| | 10 - 100 |
| | 20 - 200 |
| | 63 - 630 |

### Current/Voltage Measuring Module

| | Current Range (Amps) |
|---|---|
| | 0.3 - 4 |
| | 3 - 40 |
| | 10 - 115 |
| | 20 - 200 |
| | 63 - 630 |

### Electrically Held to Mechanically Held Conversion Modules

| | Class | Contactor Size (Amp) | Description | Modification Code |
|---|---|---|---|---|
| | **LC** | **30** | **2-wire, 24VAC**<br>**2-wire, 110-120VAC**<br>**2-wire, 200-277VAC**<br>**3-wire, 24VAC**<br>**3-wire, 110-120VAC**<br>**3-wire, 200-277VAC** | **2W1**<br>**2W2**<br>**2W3**<br>**3W1**<br>**3W2**<br>**3W3** |

① Supplied as NEMA 12, field convertible to NEMA 3R.
② Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil.
③ To order, select modification code Z1. Specify within the order notes the basic unit and measuring module. Also indicate if factory parameterization is needed.

A CPT must also be ordered to power the motor management device.

## Selection

### Control Relays

| Description | | Class | Modification Code |
|---|---|---|---|
| Control Relay 4-Poles Max | 4 NO | All | R40 |
| | 2 NO/2 NC | | R22 |
| Under/Over Voltage, Phase Failure, Phase Sequence, Phase Unbalance | | All | R1 |
| Ground Fault Relay | | | R5 |
| Electronic On Delay Relay (.15s–100h) 24 V AC/DC, 100-127 VAC | | | T1 |
| Electronic On Delay Relay (.15s–100h) 24 V AC/DC, 200-240 VAC | | | T2 |
| Electronic Off Delay Relay (.15s–100s) 100-127 V AC/DC | | | T3 |
| Electronic Off Delay Relay (.15s–100s) 200-240 V AC/DC | | | T4 |
| 24 hour time clock<br>24 hour time clock with day omission<br>7 day time clock | | LC, LE, CLM, CM | T7<br>T8<br>T9 |
| Compelling Relay | | 30, 32 | A6 |
| Acceleration Control | | | A7 |
| Deceleration Control | | | A8 |

### Meters—Mounted on Enclosure

| Description | Class | Enclosure Type | Modification Code |
|---|---|---|---|
| Ammeter (includes a C.T. if necessary) | 14, 17, 18, 22, 25, 26, 30①, 32①, 40, 43, 83, 84, 87, 88 | 1, 3, 4, 4X, 12 | M1 |
| Ammeter and Switch (3-Phase with 3 C.T.'s) | | 1, 12 | M2 |
| Voltmeter | | 1, 3, 4, 4X, 12 | M3 |
| Voltmeter and Switch (3-Phase) | | 1, 12 | M4 |
| Elapsed Time Meter② | | 1, 3, 4, 4X, 12 | M5 |

### Function Identification Plates

| Description | Class | Modification Code |
|---|---|---|
| Function identification plate, with marking as specified | All | N1 |

### Terminal Blocks

| Description | Class | Modification Code |
|---|---|---|
| 3 Point Terminal unwired | All | TC3 |
| 6 Point Terminal unwired | | TC6 |
| 9 Point Terminal unwired | | TC9 |
| 3 Point Terminal wired per customer furnished diagram | All | TW3 |
| 6 Point Terminal wired per customer furnished diagram | | TW6 |
| 9 Point Terminal wired per customer furnished diagram | | TW9 |

### Special Ratings

| Description | Class | Modification Code |
|---|---|---|
| Service Entrance Rating<br>*Please note* Class 87, 88, CM and LE (combination type) are UL Listed for Service Entrance as standard and thus does not need to be modified for such. | 17, 18, 25, 26, 32, 84 | N3 |

### Drawings

| Description | Class | Catalog Number |
|---|---|---|
| Approval/submittal and as-built drawings for factory modified product may be ordered. The drawing set includes an enclosure outline, a panel layout and a schematic. When entering the order, use the line item notes to reference a product and modifications or an existing order that the drawings are to be engineered for. Specify the contact information and an email address in the ship to address field. Attach any reference drawings to the order or forward to National Customer Support. Once completed, the drawing set will emailed. | All | CONTROLDRAWING |

① Class 30 and 32 can be modified with only an elapsed time meter. No other meters apply to class 30 or 32.

② ETM available with 120V coil only.

# Heater Elements, Class SMF

## General

Heater Elements Class SMF

### Ordering Information

1. Determine number of heater elements required from Table A.
2. Determine motor full load current and service factor.
3. If the motor and controller are in the same ambient temperature:
   a. For 1.15 to 1.25 service factor motors use 100% of motor full load current for heater element selection.
   b. For 1.0 service factor motors use 90% of motor full load current for heater element selection.
   c. Heater elements are class 20.
4. If the motor and controller are in different ambient temperatures multiply motor full load current by the multiplier in Table B. Use the resultant full load current for heater element selection.
5. Select proper heater element from table below.
6. All tables are based on the operation of the motor and controller in the same ambient temperature, 40°C (104°F) or less. Always be certain the correct heater element is installed in the starter before operating the motor.

| Heater Catalog Number | Motor Full-Load Current (Amps) |
|---|---|
| **SMFH03** | 0.193–0.212 |
| **SMFH06** | 0.262–0.289 |
| **SMFH09** | 0.356–0.399 |
| **SMFH10** | 0.41–0.44 |
| **SMFH11** | 0.45–0.49 |
| **SMFH12** | 0.50–0.53 |
| **SMFH17** | 0.79–0.85 |
| **SMFH18** | 0.86–0.96 |
| **SMFH20** | 1.05–1.16 |
| **SMFH21** | 1.17–1.25 |

**Table A**
**Number of Heater Elements**

| Device | Number of Heater Elements | Notes |
|---|---|---|
| SMFF*1<br>SMFF*2<br>SMFF*3<br>SMFF*4<br>SMFF*5<br>SMFF*6 | 1 | All single pole and two pole SMF starters require only 1 Heater Element. |
| SMFF*22<br>SMFF*44 | 2 | Duplex Unit. One Heater Element per starter. |
| SMFF*11<br>SMFF*22 | 2 | Two Speed Starter. One Heater Element per speed. |

**Table B—Special Applications**
**Heater Element Selection**

| Continuous Duty Motor Service Factor | Ambient Temperature of Motor | | |
|---|---|---|---|
| | Same as Controller Ambient | Constant 10°C (18°F) Higher Than Controller Ambient | Constant 10°C (18°F) Lower Than Controller Ambient |
| | Full Load Current Multiplier | | |
| 1.15 to 1.25 | 1.0 | 0.9 | 1.05 |
| 1.0 | 0.9 | 0.8 | 0.95 |

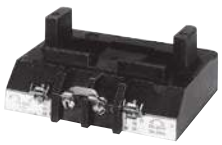
# Starters and Contactors – AC Coils

## Selection

### Ordering Information

► 4th character of starter or contactor catalog number indicates model.

### AC Coils — For Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83, 84, 87, 88

| | Size | Model | Volts | | Catalog Number |
|---|---|---|---|---|---|
| | | | 60Hz | 50Hz | |
| | 00–2½ | P<br>U (ESP200) | 24<br>120<br>110–120/220–240<br>208<br>220–240<br>277<br>220–240/440–480<br>440–480<br>575–600 | 24<br>110<br>110/190–220<br>—<br>190–220<br>240<br>190–220/380–440<br>380–440<br>550 | **75D73070J**<br>**75D73070F**<br>**75D73070A**<br>**75D73070D**<br>**75D73070G**<br>**75D73070L**<br>**75D73070C**<br>**75D73070H**<br>**75D73070E** |
| | 3 , 3½ | P<br>U (ESP200) | 24<br>120<br>110–120/220–240<br>208<br>220–240<br>277<br>220–240/440–480<br>440–480<br>575–600 | 24<br>110<br>110/190–220<br>—<br>190–220<br>240<br>190–220/380–440<br>380–440<br>550 | **75D73251J**<br>**75D73251F**<br>**75D73251A**<br>**75D73251D**<br>**75D73251G**<br>**75D73251L**<br>**75D73251C**<br>**75D73251H**<br>**75D73251E** |
|  | 4 | G<br>U (ESP200) | 24<br>120<br>120/220–240<br>208<br>220–240<br>277<br>220–240/440–480<br>440–480<br>575–600 | 24<br>110<br>110/190–220<br>—<br>190–220<br>240<br>190–220/380–440<br>380–440<br>550 | **75D70131J**<br>**75D70131F**<br>**75D70131A**<br>**75D70131D**<br>**75D70131G**<br>**75D70131L**<br>**75D70131C**<br>**75D70131H**<br>**75D70131E** |
| | 4, 5 | V (Vacuum) | 23-26<br>110-127<br>200-220<br>220-240<br>240-277<br>380-420<br>440-480<br>575-600 | 23-26<br>110-127<br>200-220<br>220-240<br>240-277<br>380-420<br>440-480<br>575-600 | **3RT1966-5AB31**<br>**3RT1966-5AF31**<br>**3RT1966-5AM31**<br>**3RT1966-5AP31**<br>**3RT1966-5AU31**<br>**3RT1966-5AV31**<br>**3RT1966-5AR31**<br>**3RT1966-5AT31** |
| | 5 | P | 23-26<br>110-127<br>200-220<br>220-240<br>240-277<br>380-420<br>440-480<br>575-600 | 23-26<br>110-127<br>200-220<br>220-240<br>240-277<br>380-420<br>440-480<br>575-600 | **3RT1965-5AB31**<br>**3RT1965-5AF31**<br>**3RT1965-5AM31**<br>**3RT1965-5AP31**<br>**3RT1965-5AU31**<br>**3RT1965-5AV31**<br>**3RT1965-5AR31**<br>**3RT1965-5AT31** |
| | 6 | P<br>V (Vacuum) | 23-26<br>110-127<br>200-220<br>220-240<br>240-277<br>380-420<br>440-480<br>575-600 | 23-26<br>110-127<br>200-220<br>220-240<br>240-277<br>380-420<br>440-480<br>575-600 | **3RT1975-5AB31**<br>**3RT1975-5AF31**<br>**3RT1975-5AM31**<br>**3RT1975-5AP31**<br>**3RT1975-5AU31**<br>**3RT1975-5AV31**<br>**3RT1975-5AR31**<br>**3RT1975-5AT31** |
| | 7 | H | 100-250<br>150-500 | 100-250<br>150-500 | **75ZAF750-70**<br>**75ZAF750-71** |
| | 8 | H | 100-250 | 100-250 | **75ZAF1650-70**① |

① Set of 2 coils. Recommend to change printed circuit board when changing coils. **49ZP1650** see page 9/100.

# Starters and Contactors – DC Coils, Late Break Aux Contacts, Rectifiers, Contact Kits

## Selection

### Ordering Information

- ► 4th character of starter or contactor catalog number indicates model.
- ► DC Coils for Size 00-4 require Late Break Interlock.

### DC Coils — For Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43

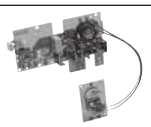
| | Size | Model | Volts DC | Catalog Number |
|---|---|---|---|---|
| | 00–2½ | P<br>U (ESP200) | 12<br>24<br>32<br>48<br>125<br>250 | **75D73070R**<br>**75D73070S**<br>**75D73070T**<br>**75D73070U**<br>**75D73070V**<br>**75D73070W** |
| | 3, 3½ | P<br>U (ESP200) | 12<br>24<br>32<br>48<br>125<br>250 | **75D73251R**<br>**75D73251S**<br>**75D73251T**<br>**75D73251U**<br>**75D73251V**<br>**75D73251W** |
| | 4 | G<br>U (ESP200) | 48<br>125<br>250 | **75D70131U**<br>**75D70131V**<br>**75D70131W** |
| | 4, 5 | V (Vacuum) | 23-26<br>42-48<br>110-127<br>240-277 | **3RT1966-5AB31**<br>**3RT1966-5AD31**<br>**3RT1966-5AF31**<br>**3RT1966-5AU31** |

**Note:** For sizes 7 & 8 contactors the AC coils are used for DC see page 9/95.

### Late Break Auxiliary Contacts

| | Control Size | Model | Catalog No. |
|---|---|---|---|
| | 00–4 | P, G, S, T | **49AB01LB** |

### Board for Size 8 Contacts

| | Control Size | Model | Catalog No. |
|---|---|---|---|
|  | 8 | H | **49ZP1650** |

### Contact Kits – Single Pole Stationary and Movable Contacts, Contact Spring①

| Description | Size | Number of Poles in Kit | Model (4th position in part number) | Catalog Number |
|---|---|---|---|---|
| <br>Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83, 84, 87, 88 | Internal Aux Contact (00-1-¾)<br>00<br>0 | | P, U<br>P, U<br>P, U | **75AF14**<br>**75BF14**<br>**75CF14** |
| | 1<br>1¾–1P | 1 | P, U<br>P, U | **75DF14**<br>**75EF14** |
| | 2<br>2½ | 1<br>1 | P, U<br>P, U | **75FP14**<br>**75GP14** |
| | 3<br>3½ | 1 | P, U<br>P, U | **75HF14**<br>**75IF14** |
| | 4<br>4 (Vacuum) | 1<br>3 (Bottles) | G, T<br>V, C | **75JG14**<br>**3RT1964-6V** |
| | 5<br>5 (Vacuum) | 3<br>3 (Bottles) | P<br>V, C | **3RT1966-6A**<br>**3RT1966-6V** |
| | 6<br>6 (Vacuum) | 3<br>3 (Bottles) | P<br>V, C | **3RT1976-6A**<br>**3RT1976-6V** |
| 14, 40 | 7<br>8 | 3<br>3 | H<br>H | **49ZL750**<br>**49ZL1650** |

### Armature and Magnet Kits

| Size | Catalog Number |
|---|---|
| 00–2½ | **49AMSA2** |
| 3–3½ | **49AMSA3** |
| 4 | **49AMSA4** |

① On 3-phase controls, all 3-poles should be replaced - 3 kits required.

### Power Pole Kits

| | Class | Enclosure type | Contactor Size (Amp) | Description | Catalog No. |
|---|---|---|---|---|---|
| | LC | Open, 1, 12, 4/4X | 30 | Single power pole<br>Double power pole | **49LCPP1A**<br>**49LCPP2A** |

### Replacement Contact Kits

| | Class | Contactor Size (Amp) | Description | Catalog No. |
|---|---|---|---|---|
| | LC | 30 | NA | **NA** |
| | LE | 20, 30 | NA | **NA** |
| | | 60<br>100<br>200<br>300<br>400 | 1 contact kit includes 3 moving and 6 fixed contacts. | **3RT2937-6A**<br>**3RT1945-6A**<br>**3RT1956-6A**<br>**3RT1965-6A**<br>**3RT1975-6A** |

## Replacement Coil Kits

| | Class | Contactor Size (Amp) | Description | Catalog No. |
|---|---|---|---|---|
| | LC | 30 | 24V 60Hz / 20V 50Hz<br>115-120V 60Hz / 110V 50Hz<br>200-208V 60Hz<br>230-240V 60Hz / 220V 50Hz<br>277V 60Hz / 240V 50Hz<br>347V 60Hz<br>460-480V 60Hz / 440V 50Hz<br>575-600V 60Hz / 550V 50Hz | **75LCC024A**<br>**75LCC120A**<br>**75LCC208A**<br>**75LCC240A**<br>**75LCC277A**<br>**75LCC347A**<br>**75LCC480A**<br>**75LCC600A** |
| | LE | 20, 30 | NA | **NA** |
| | | 60 | 24VAC 50/60Hz<br>110VAC 50Hz / 120VAC 60Hz<br>208VAC 50/60Hz<br>220VAC 50Hz / 240VAC 60Hz<br>277VAC 60Hz<br>480VAC 60Hz<br>600VAC 60Hz | **3RT29345AC21**<br>**3RT29345AK61**<br>**3RT29345AM21**<br>**3RT29345AP61**<br>**3RT29345AU61**<br>**3RT29345AV61**<br>**3RT29345AT61** |
| | | 100 | 24VAC 50/60Hz<br>110VAC 50Hz / 120VAC 60Hz<br>208VAC 50/60Hz<br>220VAC 50Hz / 240VAC 60Hz<br>277VAC 60Hz<br>480VAC 60Hz<br>600VAC 60Hz | **3RT29445AC21**<br>**3RT29445AK61**<br>**3RT29445AM21**<br>**3RT29445AP61**<br>**3RT29445AU61**<br>**3RT29445AV61**<br>**3RT29445AT61** |
| | | 200 | 23 - 26 V AC 50-60Hz / DC<br>110 - 127 V AC 50-60Hz / DC<br>200 - 220 V AC 50-60Hz / DC<br>220 - 240 V AC 50-60Hz / DC<br>240 - 277 V AC 50-60Hz / DC<br>440 - 480 V AC 50-60Hz / DC<br>575 - 600 V AC 50-60Hz / DC | **3RT19555AB31**<br>**3RT19555AF31**<br>**3RT19555AM31**<br>**3RT19555AP31**<br>**3RT19555AU31**<br>**3RT19555AR31**<br>**3RT19555AT31** |
| | | 300 | 23 - 26 V AC 50-60Hz / DC<br>110 - 127 V AC 50-60Hz / DC<br>200 - 220 V AC 50-60Hz / DC<br>220 - 240 V AC 50-60Hz / DC<br>240 - 277 V AC 50-60Hz / DC<br>440 - 480 V AC 50-60Hz / DC<br>575 - 600 V AC 50-60Hz / DC | **3RT19655AB31**<br>**3RT19655AF31**<br>**3RT19655AM31**<br>**3RT19655AP31**<br>**3RT19655AU31**<br>**3RT19655AR31**<br>**3RT19655AT31** |
| | | 400 | 23 - 26 V AC 50-60Hz / DC<br>110 - 127 V AC 50-60Hz / DC<br>200 - 220 V AC 50-60Hz / DC<br>220 - 240 V AC 50-60Hz / DC<br>240 - 277 V AC 50-60Hz / DC<br>440 - 480 V AC 50-60Hz / DC<br>575 - 600 V AC 50-60Hz / DC | **3RT19755AB31**<br>**3RT19755AF31**<br>**3RT19755AM31**<br>**3RT19755AP31**<br>**3RT19755AU31**<br>**3RT19755AR31**<br>**3RT19755AT31** |

## AC Coils 30–400 Amps②

| | Type | Contactor Size | Number of Poles | Catalog Number | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 24V AC | 120V AC | 208V AC | 220/240V AC | 277V AC | 480V AC | 600V AC |
| **CLMC4C120** | CLM†C | 30 Amp | 2–3-Pole | **CLMC4C024** | **CLMC4C120** | **CLMC4C208** | **CLMC4C240** | **CLMC4C277** | **CLMC4C480** | **CLMC4C600** |
| | | | 4-Pole | **CLMC4C024** | **CLMC4C120** | **CLMC4C208** | **CLMC4C240** | **CLMC4C277** | **CLMC4C480** | **CLMC4C600** |
| | | | 5-Pole | **CLMC5C024** | **CLMC5C120** | **CLMC5C208** | **CLMC5C240** | **CLMC5C277** | **CLMC5C480** | **CLMC5C600** |
| | CLM†D | 60 Amp | 2–3-Pole | **CLMD3C024** | **CLMD3C120** | **CLMD3C208** | **CLMD3C240** | **CLMD3C277** | **CLMD3C480** | **CLMD3C600** |
| | | | 4-Pole | **CLMD5C024** | **CLMD5C120** | **CLMD5C208** | **CLMD5C240** | **CLMD5C277** | **CLMD5C480** | **CLMD5C600** |
| | | | 5-Pole | **CLMD5C024** | **CLMD5C120** | **CLMD5C208** | **CLMD5C240** | **CLMD5C277** | **CLMD5C480** | **CLMD5C600** |
| | CLM†E | 100, 200 Amp | 2–3-Pole | **CLME3C024** | **CLME3C120** | **CLME3C208** | **CLME3C240** | **CLME3C277** | **CLME3C480** | **CLME3C600** |
| | | | 4-Pole | **CLME5C024** | **CLME5C120** | **CLME5C208** | **CLME5C240** | **CLME5C277** | **CLME5C480** | **CLME5C600** |
| | | | 5-Pole | **CLME5C024** | **CLME5C120** | **CLME5C208** | **CLME5C240** | **CLME5C277** | **CLME5C480** | **CLME5C600** |
| | CLM†G Latching Coil | 300/400 Amp | 2–3-Pole | — | **CLMGL3C120** | **CLMGL3C208** | **CLMGL3C240** | **CLMGL3C277** | **CLMGL3C480** | **CLMGL3C600** |
| **CLMGU3C120** | Unlatch Coil | | 2–3-Pole | — | **CLMGU3C120** | **CLMGU3C208** | **CLMGU3C240** | **CLMGU3C277** | **CLMGU3C480** | **CLMGU3C600** |

① Product Category: IEC.

② For 30–200 amp CLM contactors, in the event that either the coil or the control module fails, it is recommended that both be replaced.

## Ordering Information

- **For CLM:** 5th character of contactor catalog number indicates Frame Size.
- **For CMB, CMF, CMN:** 4th character of contactor catalog number indicates Frame Size.

### Main Contacts 30–400 Amp Lighting Contactors

| Type | Frame Size | Contactor Size | Number of Poles | Catalog Number |
|---|---|---|---|---|
| CLM | C | 30 Amp | 2 | **CLMCCK02** |
| | | | 3 | **CLMCCK03** |
| | | | 4 | **CLMCCK04** |
| | | | 5 | **CLMCCK05** |
| | D | 60 Amp | 2 | **CLMDCK02** |
| | | | 3 | **CLMDCK03** |
| | | | 4 | **CLMDCK04** |
| | | | 5 | **CLMDCK05** |
| | E | 100 Amp | 2 | **CLMECK02** |
| | | | 3 | **CLMECK03** |
| | | | 4 | **CLMECK04** |
| | | | 5 | **CLMECK05** |
| | F | 200 Amp | 2 | **CLMFCK02** |
| | | | 3 | **CLMFCK03** |
| | | | 4 | **CLMFCK04** |
| | | | 5 | **CLMFCK05** |
| | G | 300 Amp | 2 | **CLMGCK02** |
| | | | 3 | **CLMGCK03** |
| | H | 400 Amp | 2 | **CLMHCK02** |
| | | | 3 | **CLMHCK03** |

### Auxiliary Contact Blocks 30–400 Amp Lighting Contactors

**CLMFCAK11**

| Type | Frame Size | Contactor Size | Contact Configuration | Catalog Number |
|---|---|---|---|---|
| CLM | C to F② | 30–200 Amps | 1 NO and 1 NC<br>2 NC<br>2 NO<br>1 Coil Clearing NO and NC | **CLMFCAK11**<br>**CLMFCAK02**<br>**CLMFCAK20**<br>**CLMFCCK11** |
| | G to H① | 300–400 Amps | 1 NO and 1 NC<br>2 NC<br>2 NO<br>1 Coil Clearing NO and NC | **CLMHCAK11**<br>**CLMHCAK02**<br>**CLMHCAK20**<br>**CLMHCCK11** |

### Control Module Rectifier③

| Type | Device | Contactor Size | Number of Poles | Catalog Number |
|---|---|---|---|---|
| CLM | CLM†C to CLM†F | 30–200 Amps | All | **CLMKCMR** |

① Maximum 1 block per contactor.
② Maximum 2 blocks per contactor.

③ For 30–200 amp CLM contactors, in the event that either the coil or the control module fails, it is recommended that both be replaced.

## Replacement Handle Assemblies and Disconnect Mechanisms
## Enclosure Types 1, 3R, 4, 4X Stainless Steel & 12

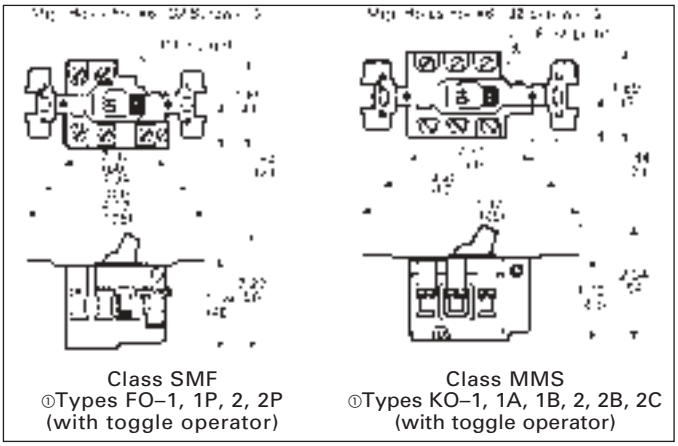
| Class | Disconnect (Amps) | Enclosure Size | Handle Assembly Only (Except Where Otherwise Noted) Catalog Number | Handle Assembly and Disconnect Mechanism Catalog Number |
|---|---|---|---|---|
| 3RE48, 17, 25, 32, 84, 87, CM, LE | 30, 60 & 100 | All Standard and Extra-wide Sizes | **75D73944015** | **75D68257103** |
| 88 | 30 & 60 | | Consult with Technical Support | Consult with Technical Support |
| 17, 25, 32, 84 | 200 | | **75D73944015** | **75D68257105** |
| 88, CM, LE | 200 | | **75D73944015** | **75D68257063** |
| 3RE48, 87 | 200 | | **75D73944023** | **75D68257068** |
| 17, 25, 87, 88, CM, LE | 400 & 600 | | **75D73944027** | **75D68257078** |
| **Class** | **Motor Circuit Interrupter (Amps)** | **Enclosure Size** | **Handle Assembly Only (Except Where Otherwise Noted) Catalog Number** | **Handle Assembly and Disconnect Mechanism Catalog Number** |
| 18, 26, 32, CM, LE | 3 - 125 | (24″H x 11″W x 8″D), (24″H x 20″W x 8″D) | **75D73944025** | **75D68257080** |
| 18, 26, 32 | 100 - 125 | (36″H x 24″W x 8″D) | **75D73944025** | **75D68257073** |
| 18, 26, 32 | 150 & 250 | All Standard Sizes | **75D73944028** | **75D68257089** |
| 18, 26, 87, 88, CM | 300 - 600 | | **75D73944027** | **75D68257078** |
| 3RE48, 87 | 3 - 125 | | **75D73944025** | **75D68257080** |
| 3RE48, 87 | 150 | | **75D73944028** | **75D68257089** |
| 87 | 250 | | **75D68257077**① | **75D68257077** |
| 88 | 30 - 125 | | **75D73944025** | **75D68257073** |
| 84, 88, CM | 150 - 250 | | **75D68257077**① | **75D68257077** |
| 84 | 3 - 125 | | **75D73944025** | **75D68257074** |

## Quarter Turn Assemblies

| Description | | Class | Enclosure Type | Catalog Number |
|---|---|---|---|---|
| | Quarter-Turn Latch | 3RE48, 17, 18, 25, 26, 32, 87 & 88 | 1, 3R & 12 | **75D46260004** |
| | | | 4 & 4X | **75D46260005** |

① Includes both handle assembly and disconnect mechanism.

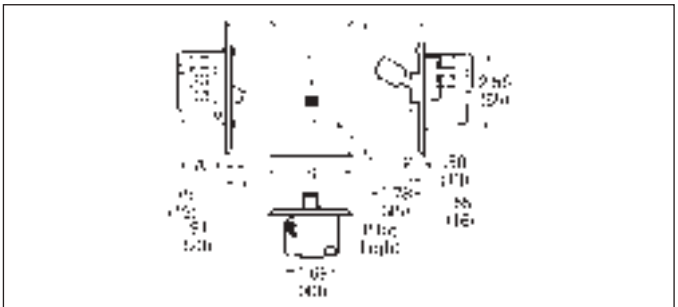
### Class SMF and MMS Open Type



Class SMF
①Types FO–1, 1P, 2, 2P
(with toggle operator)

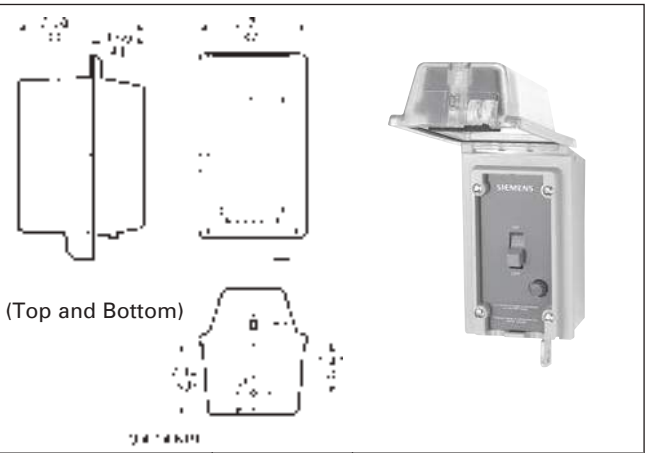
Class MMS
①Types KO–1, 1A, 1B, 2, 2B, 2C
(with toggle operator)

### NEMA Type 1B General Purpose Flush Mounting



| Device | Type of Operator | Type | Dimensions in Inches (mm) A | B | C |
|---|---|---|---|---|---|
| Class SMF Fractional HP Starter | Toggle | **FF1, 1P, 2, 2P**<br>**FS1, 1P, 2, 2P** | 1.44 (37) | 2.75 (70) | 4.50 (114) |
| | | **FSJ1P, 2P** | 1.44 (37) | 3.50 (89) | 5.25 (133) |
| | Key | **FF3, 3P, 4, 4P**<br>**FS3, 3P, 4, 4P** | 1.44 (37) | 2.75 (70) | 4.50 (114) |
| | | **FSJ3P, 4P** | 1.44 (37) | 3.50 (89) | 5.25 (133) |
| Class MMS Motor Starting Switch | Toggle | **KF1, 1A, 1B, 2, 2B, 2C**<br>**KS1, 1A, 1B, 2, 2B, 2C** | 1.75 (44) | 2.75 (70) | 4.50 (114) |
| | | **KSJ1A, 1B, 2B, 2C** | 1.75 (44) | 3.50 (89) | 5.25 (133) |
| | Key | **KF3, 3A, 3B, 4, 4B, 4C**<br>**KS3, 3A, 3B, 4, 4B, 4C** | 1.75 (44) | 2.75 (70) | 4.50 (114) |
| | | **KSJ3A, 3B, 4B, 4C** | 1.75 (44) | 3.50 (89) | 5.25 (133) |

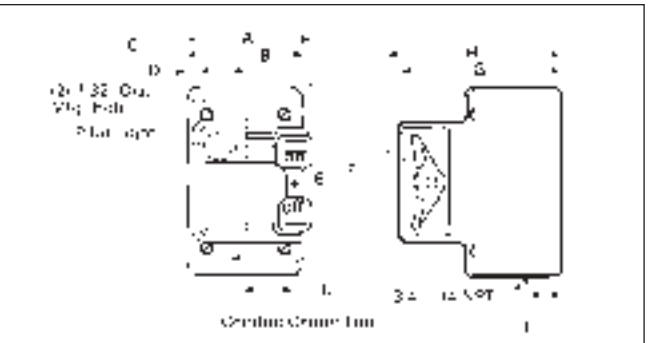
### NEMA Type 3R, 4 and 12



(Top and Bottom)

| Device | Class | Type |
|---|---|---|
| Fractional HP Starter | SMF | **FWN1, 1P, FWN2, 2P**<br>**FWN3, 3P, FW4, 4P** |
| Motor Starting Switch | MMS | **KWN1, 1A, 1B, KWN2, 2B, 2C**<br>**KWN3, 3A, 3B, KWN4, 4B, 4C** |

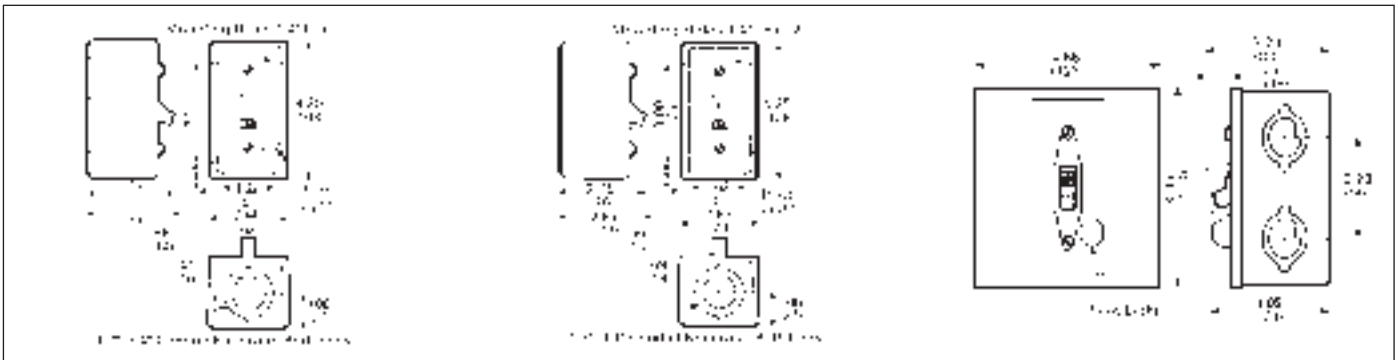
### NEMA Type 4 Watertight Die Cast Zinc Enclosure



| Dimensions in Inches (mm) A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|
| 3.00 (76) | 2.75 (70) | 1.13 (28) | 0.25 (6) | 3.75 (95) | 4.69 (119) | 4.25 (108) | 4.56 (116) | 0.78 (20) |

| Device | Class | Type |
|---|---|---|
| Fractional HP Starter | SMF | **FW1, 1P, 2, 2P** |
| Motor Starting Switch | MMS | **KW1, 1A, 1B, 2, 2B, 2C** |

### NEMA Type 1 General Purpose Surface Mounting Enclosures



Standard Size—Class SMF and MMS
Types FG & KG (Single-Unit)

Oversized—Class SMF and MMS
Types FGJ & KGJ (Single-Unit)

Jumbo MMSKE2
½″–¾″ Knock-Out On Back and Sides

**Note:** Dimensions for reference, not for construction. Dimensions are in inches (mm).

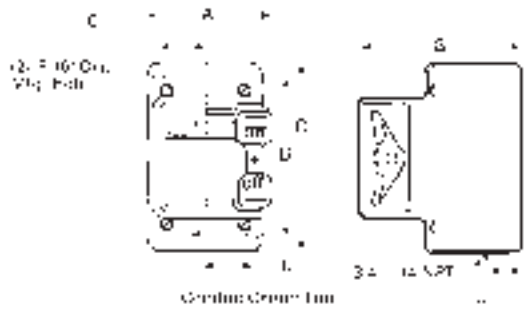
① Dimensions typical for key operator devices.

## Dimensions

### NEMA Type 7 and 9 Cast Aluminum Enclosure

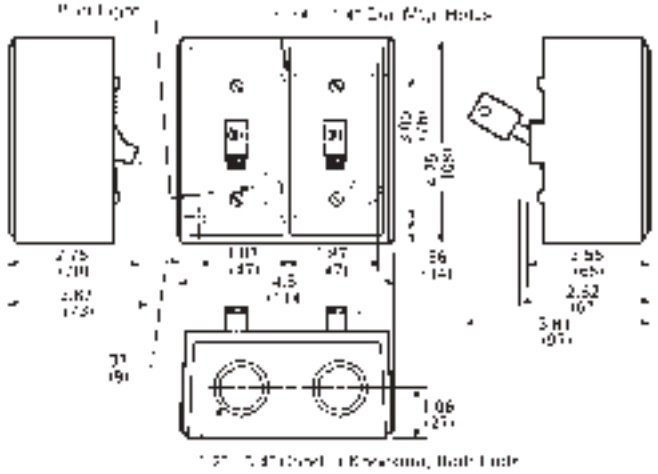
| Dimensions in Inches (mm) | | | | | |
|---|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **G** | **H** |
| 4.00 (101) | 5.75 (146) | 1.38 (35) | 6.36 (161) | 4.38 (111) | 1.20 (30) |

| Device | Class | Type |
|---|---|---|
| Fractional HP Starter | SMF | **FR1, FR2** |
| Motor Starting Switch | MMS | **KR1, KR2** |



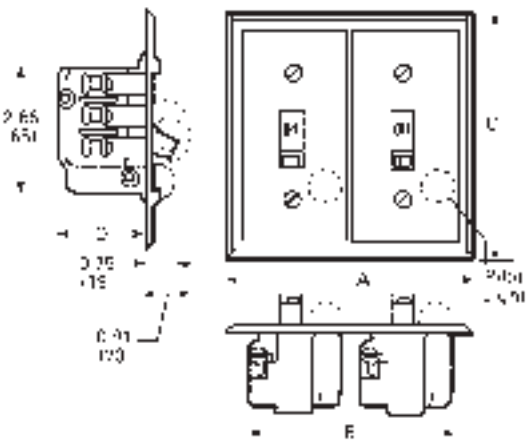
### NEMA Type 1 General Purpose Enclosure For Two Unit Devices

| Device | Type of Operator | Class | Type |
|---|---|---|---|
| One Starter | Toggle | SMF | **FG02, 02P** |
| | Key | SMF | **FG04P** |
| Two Starters | Toggle | SMF | **FG222, 222P** |
| | Key | SMF | **FG44P** |
| One Starter and One Sel. Switch① | Toggle | SMF | **FG71, 71P, 72, 72P** |
| | Key | SMF | **FG74P** |
| Reversing Switch② | Toggle | MRS | **KG11, 11A, 11B, 22, 22A, 22B, 22C** |
| Two Speed Starter | Toggle | SMF | **FG11, 11P, 22, 22P** |
| Two Speed Switch | Toggle | MMS | **KG11, 11A, 11B, 22, 22B, 22C** |



### NEMA Type 1B General Purpose Flush Mounting For Two Unit Devices

| Device③ | Type of Operator | Class | Type | A | B | C | D |
|---|---|---|---|---|---|---|---|
| Two Starters | Toggle | SMF | **FF22, 22P** | 5.25 (133) | 3.75 (95) | 5.25 (133) | 1.44 (37) |
| | | | **FS22P** | 4.56 (116) | 3.50 (89) | 4.50 (114) | 1.44 (37) |
| | Key | SMF | **FF44P** | 5.25 (133) | 3.75 (95) | 5.25 (133) | 1.44 (37) |
| | | | **FS44P** | 4.56 (116) | 3.50 (89) | 4.50 (114) | 1.44 (37) |
| One Starter and One Selector Switch④ | Toggle | SMF | **FF71, 71P, 72, 72P** | 5.25 (133) | 0.75 (19) | 5.25 (133) | 2.00 (51) |
| | | | **FS71P, 72P** | 4.56 (116) | 3.50 (89) | 4.50 (114) | 2.00 (51) |
| | Key | SMF | **FF74P** | 5.25 (133) | 3.75 (95) | 5.25 (133) | 2.00 (51) |
| | | | **FS74P** | 4.56 (116) | 3.50 (89) | 4.50 (114) | 2.00 (51) |
| Reversing Switch | Toggle | MRS | **KF11, 11A, 11B KF22, 22A 22B, 22C** | 5.25 (133) | 3.75 (95) | 5.25 (133) | 1.75 (44) |
| Two Speed Switch | Toggle | SMF | **FF11, 11P, 22, 22P** | 5.25 (133) | 3.75 (95) | 5.25 (133) | 1.44 (37) |
| Two Speed Switch | Toggle | MMS | **KF11, 11A, 11B 22, 22B, 22C** | 5.25 (133) | 3.75 (95) | 5.25 (133) | 1.44 (37) |



**Note**: Dimensions for reference, not for construction. Dimensions are in inches (mm).

① Selector switch is on the left, increases overall depth to 3.50 in. (89 mm).
② Only one pilot light (located on right) is used on MRS switches.
③ Dimensions include factory wired power connections.
④ Selector switch is on the left, extends 1.62 in. (41 mm) from mounting surface.

# Solid State Overload, Class 14

## Dimensions

Figure 1

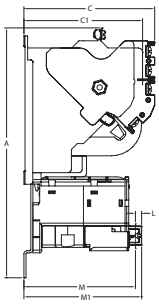


Figure 2

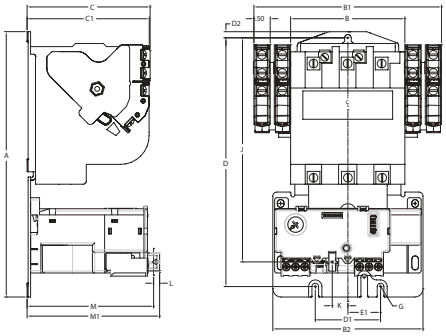


Figure 3

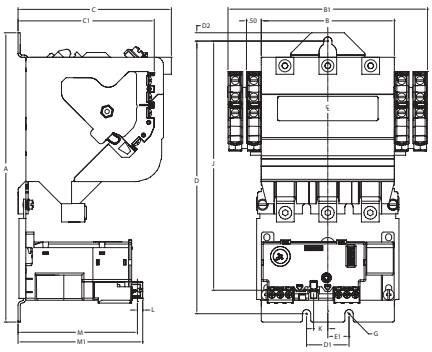


Figure 4

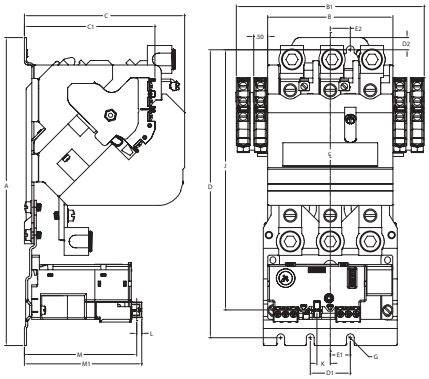


Figure 5

### Open Type Solid State Overload

| Size | Figure | Outline Dimensions | | | | | | Mounting Dimensions | | | | | | Mounting Screw | Reset Dimensions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | B1 | B2 | C | C1 | D | D1 | D2 | E | E1 | E2 | G | J | K | L | M | M1 |
| 00–1¾ | 1 | 7.44 (189) | 3.50 (89) | 5.75 (146) | — | 3.75 (95) | 3.50 (89) | 6.50 (165) | 2.00 (51) | 0.19 (5) | 6.27 (159) | 1.00 (25) | — | #10 | 5.60 (142) | — | 0.18 (5) | 3.23 (82) | 3.41 (87) |
| 2–2½ | 2 | 8.13 (207) | 3.50 (89) | 5.75 (146) | 4.60 (117) | 4.00 (102) | 3.77 (96) | 7.62 (194) | 2.00 (51) | 0.19 (5) | — | 1.00 (25) | — | #10 | 6.87 (174) | 0.48 (12) | 0.18 (5) | 3.88 (99) | 4.06 (103) |
| 3–3½ | 3 | 9.78 (248) | 4.50 (114) | 6.75 (171) | — | 5.19 (132) | 4.66 (118) | 9.22 (234) | 1.44 (37) | 0.28 (7) | — | 0.72 (18) | — | 0.25 (6) | 8.43 (214) | 0.48 (12) | 0.18 (5) | 4.04 (103) | 4.22 (107) |
| 4 | 4 | 11.06 (281) | 4.50 (114) | 6.75 (171) | — | 5.75 (146) | 4.66 (118) | 10.34 (263) | 1.44 (37) | 0.44 (11) | — | 0.72 (18) | 0.72 (18) | 0.25 (6) | 9.35 (237) | 0.48 (12) | 0.18 (5) | 4.04 (103) | 4.22 (107) |
| 5 | 5 | 12.76 (324) | 5.71 (145) | 6.89 (175) | — | 8.54 (217) | — | 7.09 (180) | 4.72 (120) | — | — | — | — | 0.35 (9) | — | — | — | — | — |
| 6 | 6 | 13.03 (331) | 6.30 (160) | 7.48 (190) | — | 9.29 (236) | — | 7.09 (180) | 5.12 (130) | — | — | — | — | 0.35 (9) | — | — | — | — | — |

**Note:** Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

## Dimensions

Figure 1

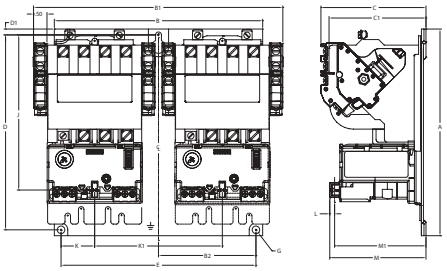


Figure 2

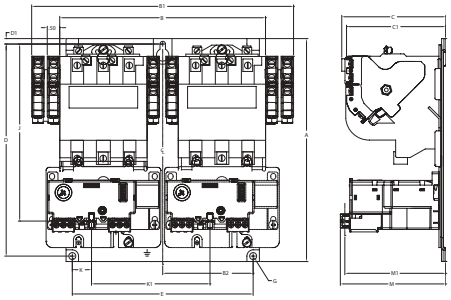


Figure 3

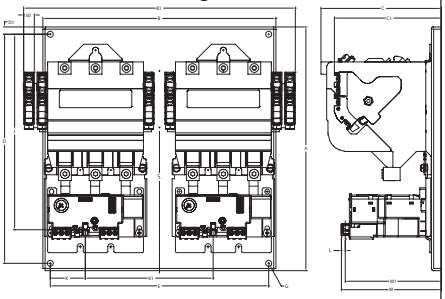


Figure 4

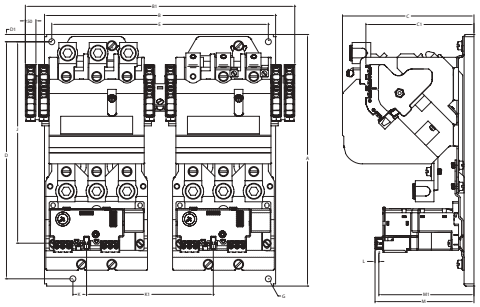


Figure 5

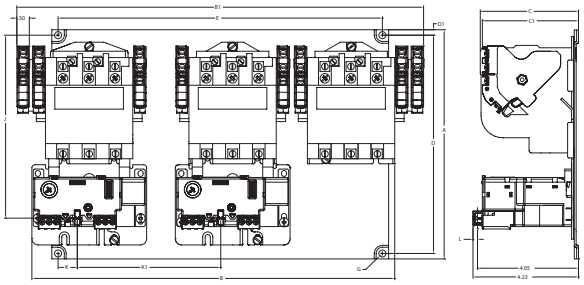


Figure 6

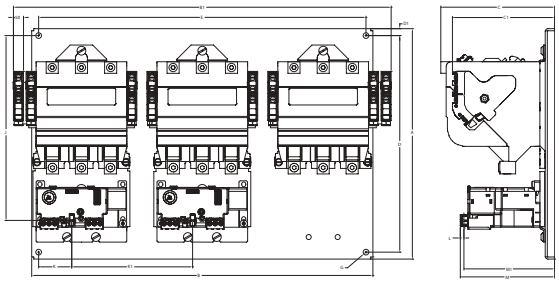
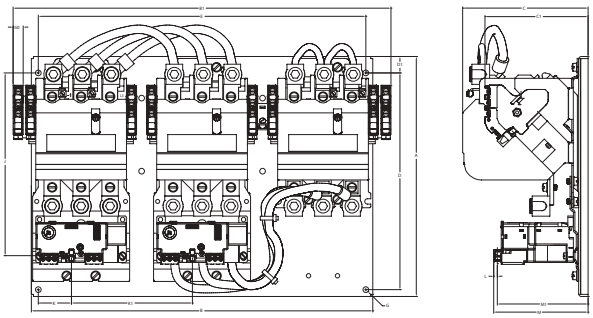


Figure 7



### Class 22 Reversing & Class 30 2 Speed/2 Winding

| Size | Figure | Outline Dimensions | | | | | | Mounting Dimensions | | | Mounting Screw | Reset Dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | B1 | B2 | C | C1 | D | D1 | E | G | J | K | K1 | L | M | M1 |
| 00–1¾ | 1 | 7.69 | 7.75 | 10.50 | 3.62 | 3.92 | 3.61 | 7.25 | 0.22 | 7.25 | #10 | 5.77 | 1.25 | 4.75 | 0.18 | 3.58 | 3.40 |
| 2–2½ | 2 | 8.94 | 8.25 | 10.50 | 3.62 | 4.17 | 3.98 | 8.50 | 0.22 | 7.25 | #10 | 7.10 | 0.77 | 4.75 | 0.18 | 4.23 | 4.05 |
| 3– 3½ | 3 | 11.44 | 10.94 | 12.75 | — | 5.65 | 5.03 | 10.75 | 0.34 | 10.25 | #10 | 9.18 | 1.64 | 6.00 | 0.18 | 4.69 | 4.51 |
| 4 | 4 | 11.91 | 10.94 | 12.75 | — | 6.22 | 5.12 | 11.22 | 0.34 | 10.25 | 0.25 | 9.53 | 0.65 | 6.00 | 0.18 | 4.68 | 4.50 |

### Class 30 2 Speed/1 Winding

| Size | Figure | Outline Dimensions | | | | | | Mounting Dimensions | | | Mounting Screw | Reset Dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | B1 | B2 | C | C1 | D | D1 | E | G | J | K | K1 | L | M | M1 |
| 00–1¾ | 1 | 7.69 | 7.75 | 10.50 | 3.62 | 3.92 | 3.61 | 7.25 | 0.22 | 7.25 | #10 | 5.77 | 1.25 | 4.75 | 0.18 | 3.58 | 3.40 |
| 2–2½ | 5 | 9.19 | 14.55 | 16.30 | — | 3.94 | 3.85 | 8.75 | 0.22 | 13.00 | #10 | 7.33 | 0.77 | 5.75 | 0.18 | 4.23 | 4.05 |
| 3–3½ | 6 | 11.44 | 16.94 | 18.75 | — | 5.65 | 5.07 | 10.75 | 0.34 | 16.25 | #10 | 9.18 | 1.64 | 6.00 | 0.18 | 4.68 | 4.50 |
| 4 | 7 | 11.91 | 16.94 | 17.75 | — | 6.22 | 5.12 | 10.75 | 0.82 | 16.25 | #10 | 9.06 | 1.64 | 6.00 | 0.18 | 4.68 | 4.50 |

**Note:** Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.
Dimensions are in inches (mm).

## Full Voltage Open Type NEMA Contactor Size 00-8

Figure 1

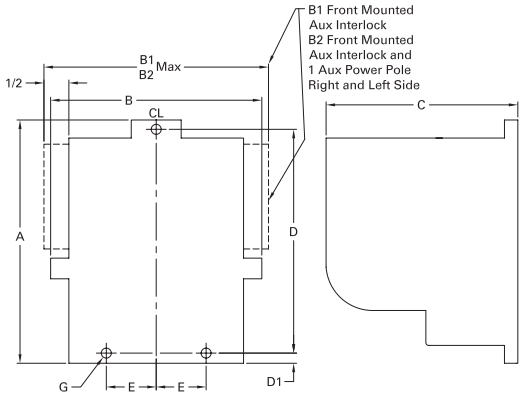



Figure 2

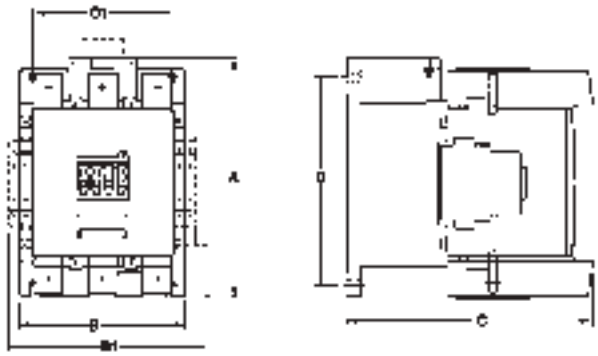


Figure 3

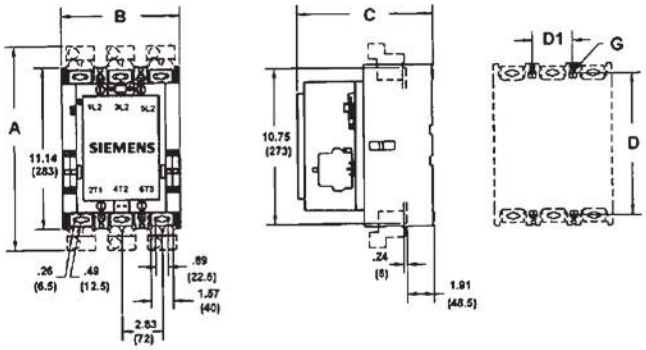
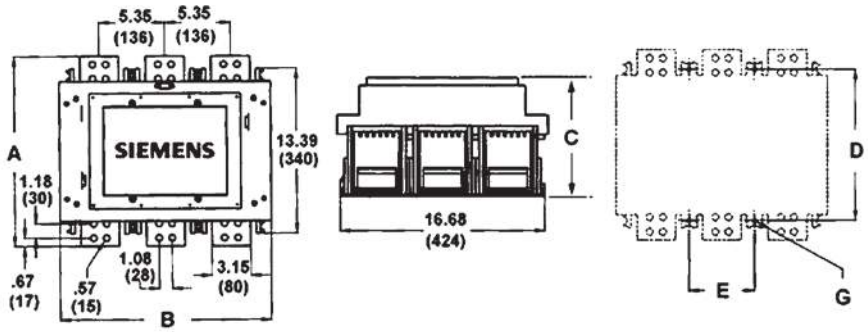



Figure 4




### Open Type

| Size | 3rd Character of Catalog No.① | Outline Dimensions | | | | | | Mounting Dimensions | | | Mounting Screw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Fig | A | B | B1 | B2 | C | D | D1 | E | G |
| 00–1¾ | C, D, E | 1 | 4.31 (110) | 3.94 (100) | 4.25 (108) | 4.75 (121) | 3.75 (70) | 3.94 (100) | 0.19 (5) | 1.00 (25) | #10 |
| 2–2½ | F,G | 1 | 4.88 (124) | 3.94 (100) | 4.25 (108) | — | 4.00 (102) | 4.50 (114) | 0.19 (5) | 1.00 (25) | #10 |
| 3–3½ | H, I | 1 | 6.13 (156) | 5.13 (130) | 5.50 (140) | — | 5.06 (129) | 5.63 (143) | 0.25 (6) | 0.75 (19) | 0.25 (6) |
| 4 | J | 1 | 7.81 (198) | 5.19 (132) | 5.50 (140) | — | 5.75 (146) | 6.56 (167) | 0.81 (21) | 0.75 (19) | 0.5 (13) |
| 5 | L | 2 | 8.27 (210) | 5.71 (145) | 6.89 (175) | — | 8.54 (217) | 7.09 (180) | 4.72 (120) | — | 0.35 (9) |
| 6 | M | 2 | 8.43 (214) | 6.3 (160) | 7.48 (190) | — | 9.29 (236) | 7.09 (180) | 5.12 (130) | — | 0.35 (9) |
| 7 | N | 3 | 14.05 (357) | 8.27 (210) | — | — | 9.53 (242) | 9.80 (249) | 2.83 (72) | — | 0.25 (6) |
| 8 | P | 4 | 15.41 (392) | 17.23 (438) | — | — | 10.56 (268) | 12.28 (312) | — | 5.35 (136) | 0.35 (9) |

**Note:** Dimensions for reference, not for construction. Contact sales office for dimensions not listed. Dimensions are in inches (mm).

① 3rd character of catalog number identifies contactor rating.

## Dimensions

Figure 1

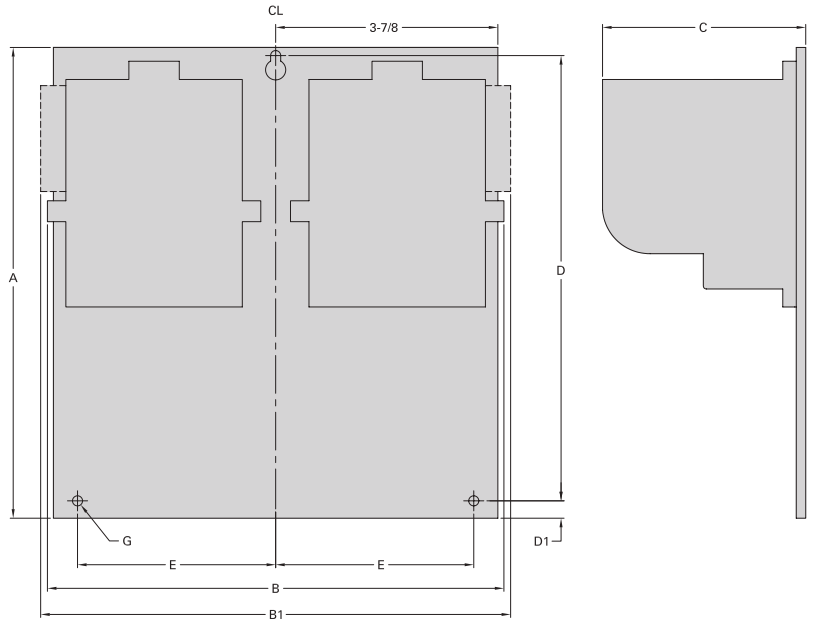
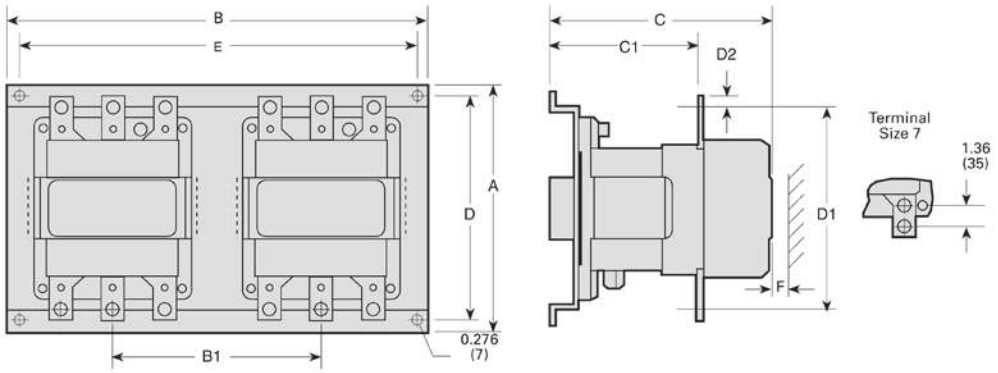



Figure 2



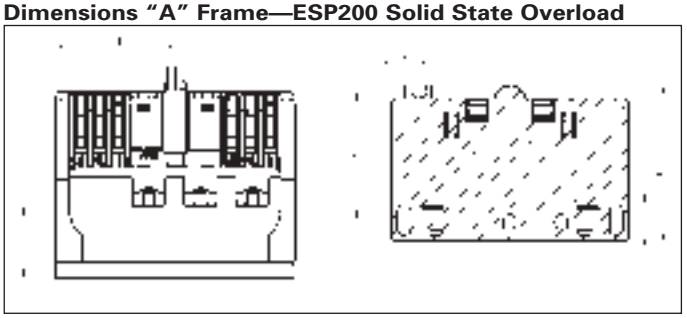

### Open Type Horizontal Mounted

| Size | Fig. | Outline Dimensions A | B | B1 | C | C1 | Mounting Dimensions D | D1 | E | F | Mouning Screw G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00–1¾ | 1 | 7.69 (195) | 7.75 (197) | 9.25 (235) | 3.88 (98) | — | 7.25 (184) | 0.25 (6) | 3.63 (92) | — | #10 |
| 2, 2½ | 1 | 8.94 (227) | 7.75 (197) | 9.25 (235) | 4.56 (116) | — | 8.5 (216) | 0.25 (6) | 3.63 (92) | — | #10 |
| 3–3½ | 1 | 11.44 (291) | 10.94 (278) | 11.50 (292) | 5.19 (132) | — | 10.75 (273) | 0.38 (6) | 5.13 (130) | — | 0.25 |
| 4 | 1 | 8.50 (216) | 10.94 (278) | 11.50 (292) | 6.25 (159) | — | 7.81 (198) | 0.38 (6) | 5.13 (130) | — | 0.25 |
| 5 | 2 | 18.07 (459) | 14.20 (361) | — | 9.44 (240) | — | 17.20 (437) | — | 9.61 (244) | | — |
| 6 | 2 | 11.61 (295) | 18.88 (480) | 9.45 (240) | 10.85 (276) | 7.44 (189) | 10.44 (265) | 10.71 (272) | 17.72 (450) | 1.18 (30) | — |

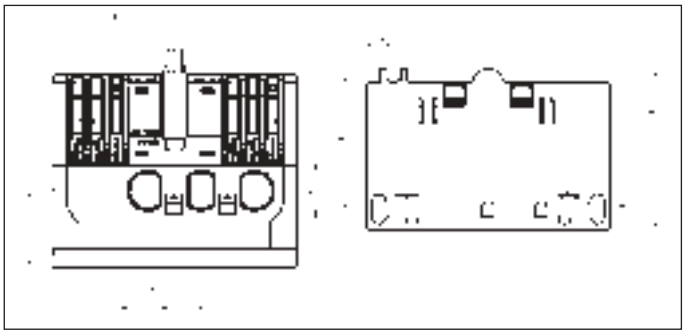
**Note:** Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.
Dimensions are in inches (mm).

## Dimensions

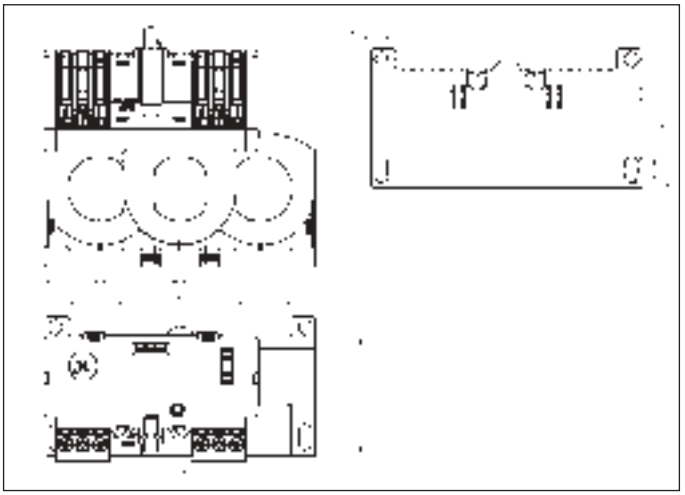
### Dimensions "A" Frame—ESP200 Solid State Overload



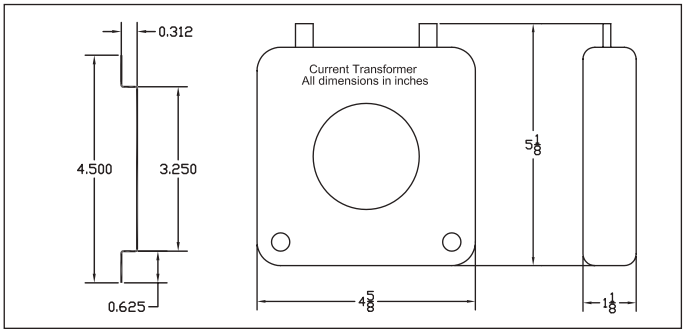
### Dimensions "A1" Frame—ESP200 Solid State Overload



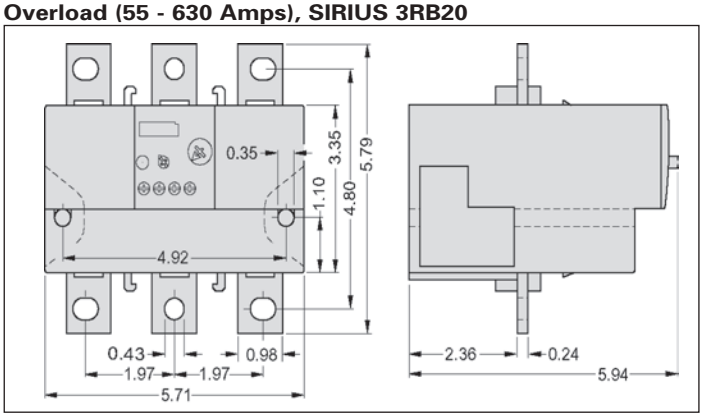
### Dimensions "B" Frame—ESP200 Solid State Overload



### Current Transformers (all CT's have the same dimensions)




### Overload (55 - 630 Amps), SIRIUS 3RB20

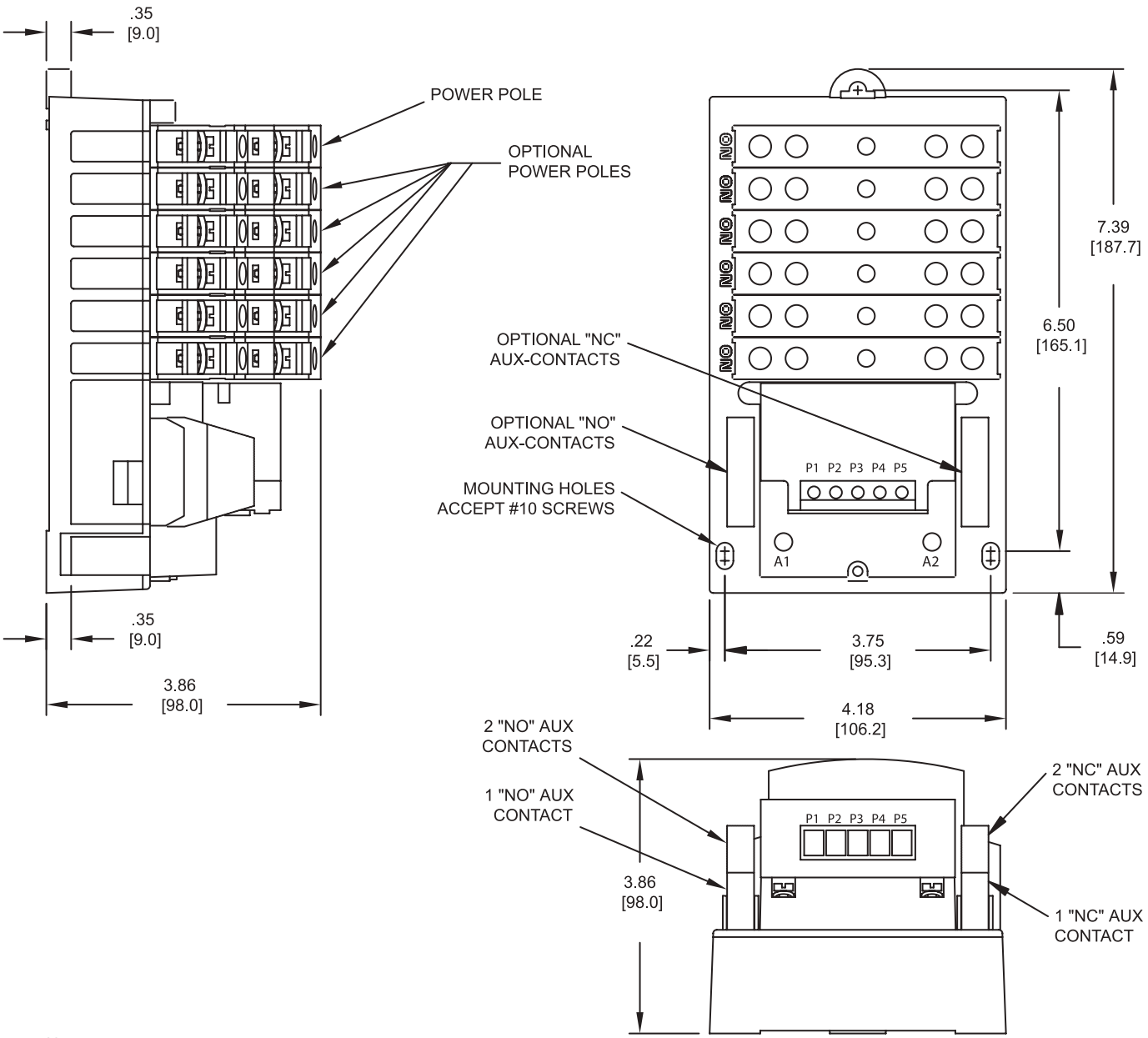



| Dimensions | Frame Size A | | Frame Size A1 | | Frame Size B | |
|---|---|---|---|---|---|---|
| | mm | in. | mm | in. | mm | in. |
| A | 80 | 3.15 | 80 | 3.15 | 100.4 | 3.95 |
| B | 12.6 | 0.5 | 12.6 | 0.5 | 8.6 | 0.34 |
| C | 27.7 | 1.1 | 28 | 1.10 | 32.6 | 1.28 |
| D | 44.85 | 1.77 | 44.85 | 1.77 | 44.85 | 1.77 |
| E | 34.9 | 1.37 | 34.9 | 1.37 | 23.5 | 0.93 |
| F | 19.6 | 0.77 | 19.6 | .077 | 33.5 | 1.32 |
| G | 48.95 | 1.93 | 48.95 | 1.93 | 46.23 | 1.82 |
| H | 10.7 | 0.42 | 10.7 | 0.42 | 10.9 | 0.43 |
| I | 2.3 | 0.09 | 2.3 | 0.09 | 2.4 | 0.09 |
| J | 80 | 3.15 | 80 | 3.15 | 104.6 | 4.12 |
| K | 53.9 | 2.12 | 53.9 | 2.12 | 58.6 | 2.31 |
| L | 66.0 | 2.6 | 55.9 | 2.20 | 50 | 1.97 |
| M | 89.7 | 3.53 | 89.7 | 3.53 | 114 | 4.49 |
| N | 10.18 | 0.40 | 10.18 | 0.40 | 4.7 | 0.19 |
| O | — | — | 10.77 | 0.42 | 23.6 | 0.93 |
| P | — | — | 8.62 | 0.34 | 21.1 | 0.83 |
| R | — | — | 12.9 | 0.51 | 27.1 | 1.07 |
| S | 9.5 | 0.37 | — | — | 2.45 | 0.1 |
| T | 5.2 | 0.21 | 5.2 | 0.21 | 5.2 | 0.21 |

**Note:** When mounted on a plate, torque screws to 11 lb.in. (1.2 Nm).

# Class LC Open Contactors

## Dimensions




Note:

1) Mounting Dimensions remain the same for 1 to 12 Poles

2) Line and Load terminals are inter-changeable

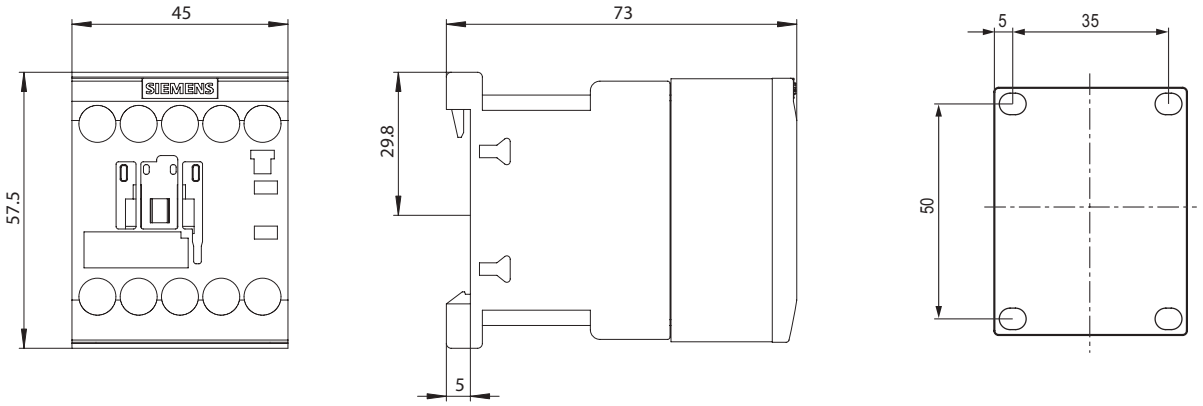
3) Up to 2NO and 2NC auxiliary contacts can be added onto the base product

4) Same Power Pole can be configured as NO type or NC type

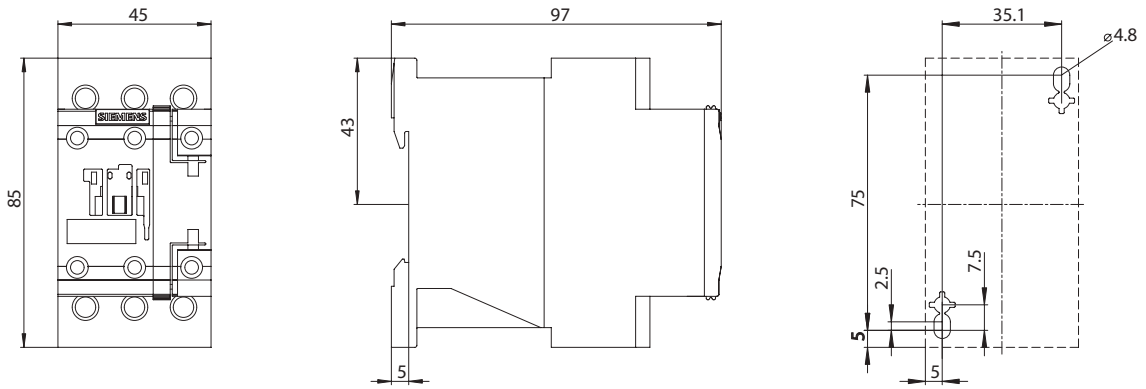
# Open Contactors, Class LE

## Dimensions

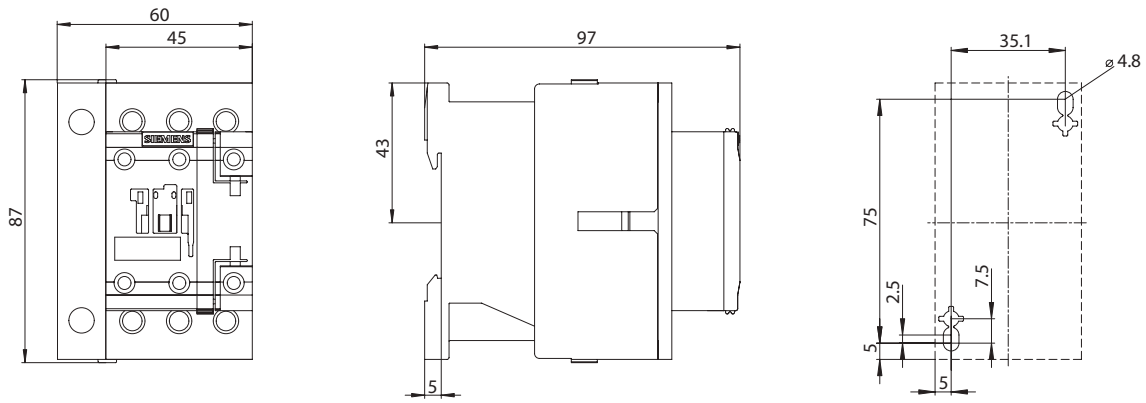
### LEN00B (20A 3 Pole and 4 Pole)




### LEN00C003 (30A 3 Pole)



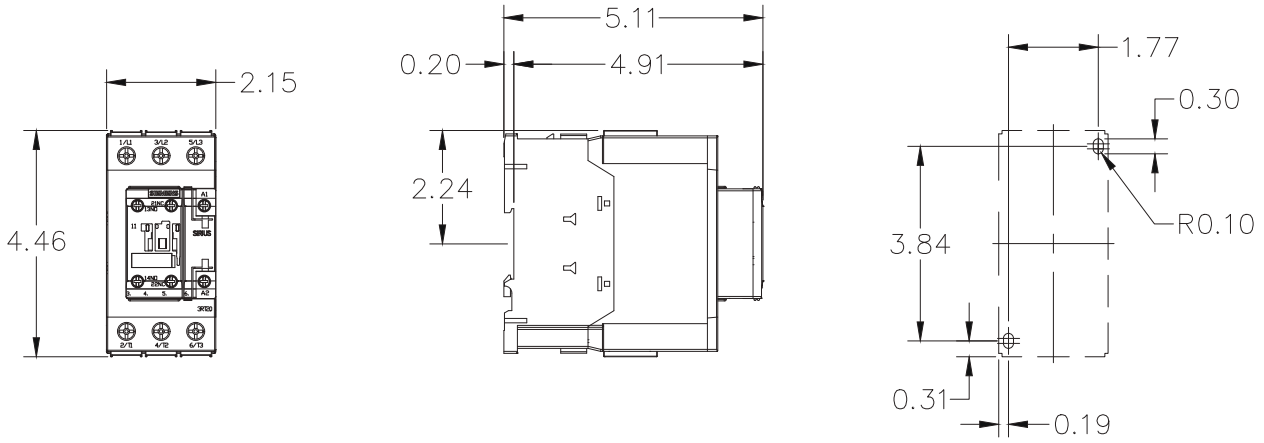

### LEN00C004 (30A 4 Pole)



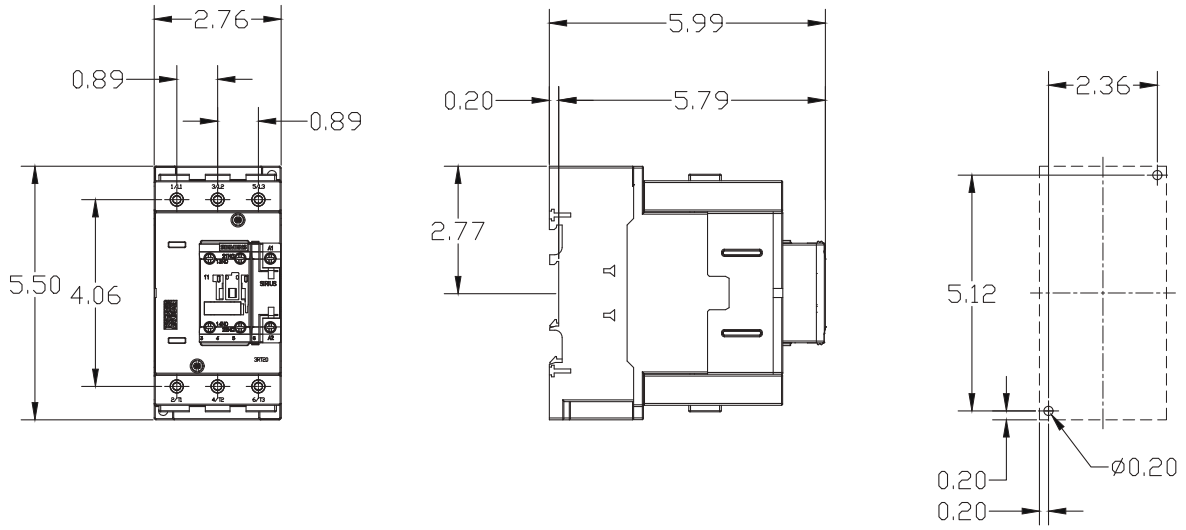
# Open Contactors, Class LE

## Dimensions

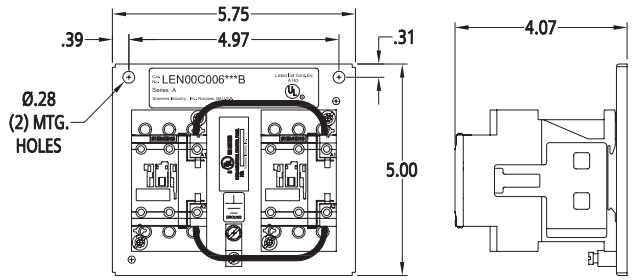
### LEN00D003 (60A 3 Pole)



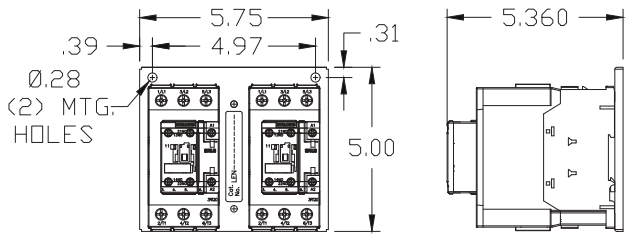

### LEN00E003 (100A 3 Pole)




### LEN00C006 (30A 6 Pole)




### LEN00D006 (60A 6 Pole)

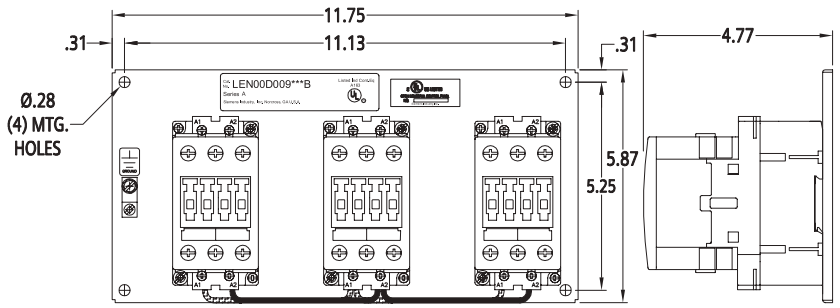



Dimensions in inches.

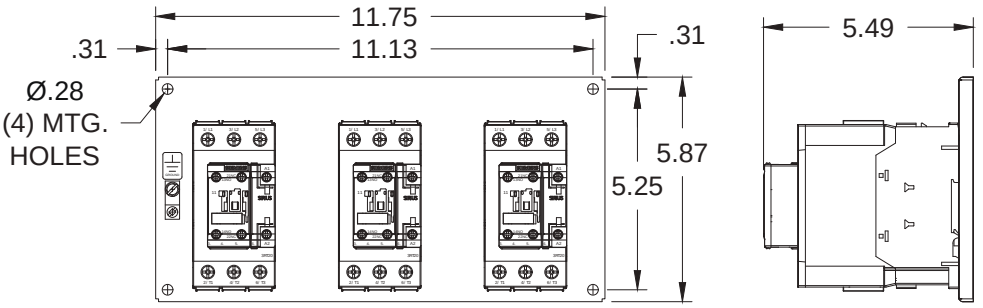
# Open Contactors, Class LE

## Dimensions

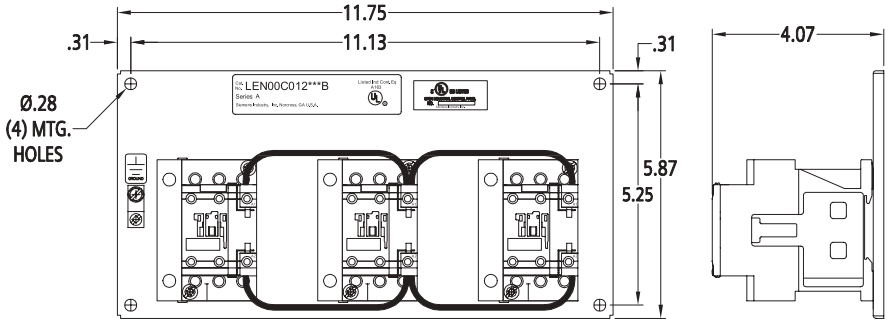
**LEN00C009 (30A 9 Pole)**



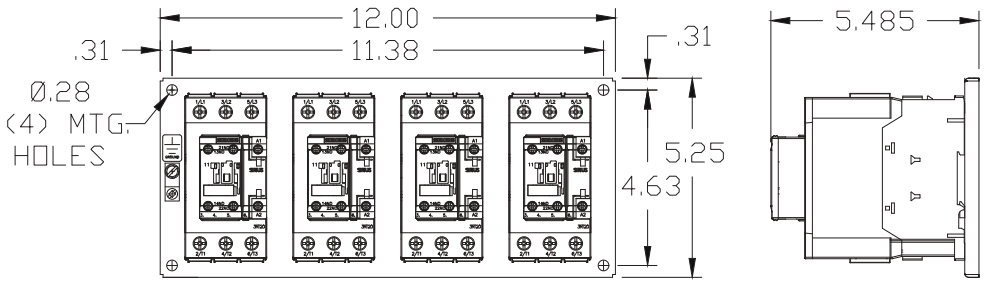

**LEN00D009 (60A 9 Pole)**




**LEN00C012 (30A 12 Pole)**



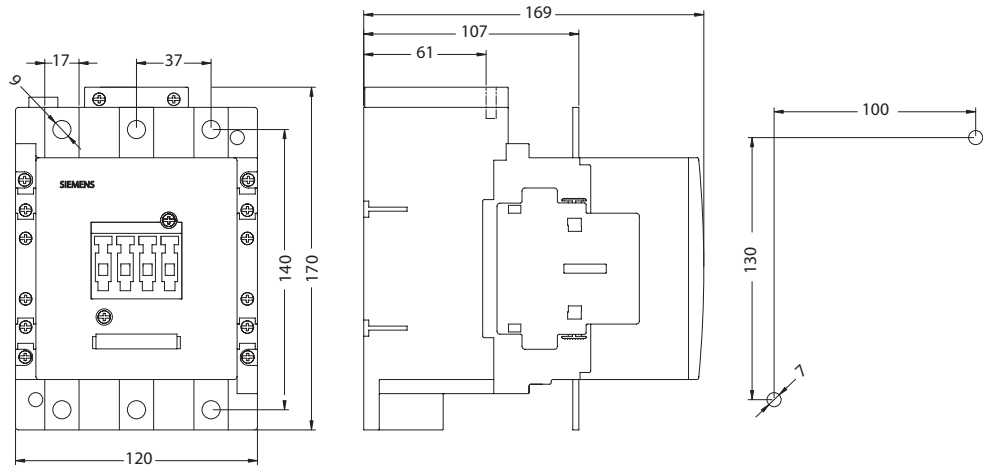

**LEN00D012 (60A 12 Pole)**



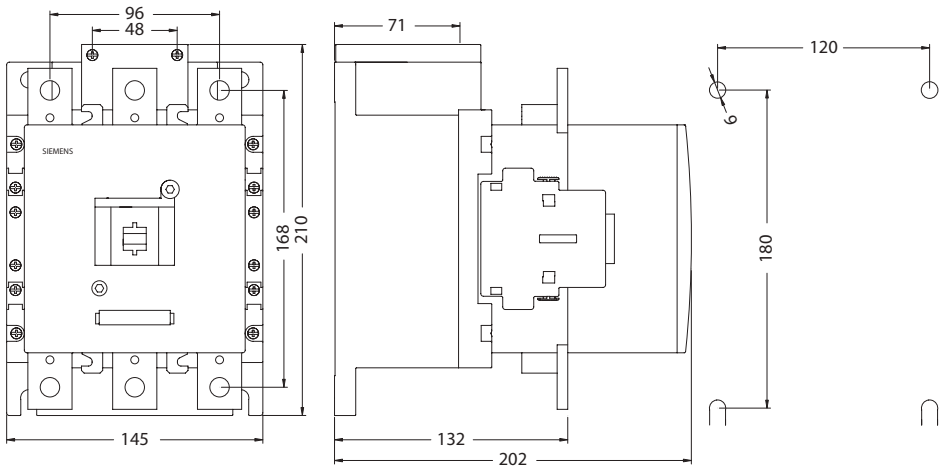
# Open Contactors, Class LE

## Dimensions

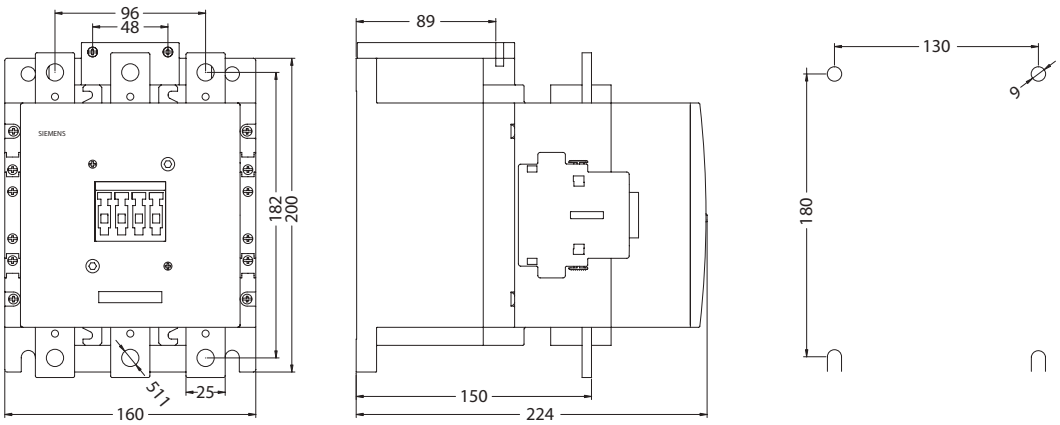
### LEN00F003 (200A 3 Pole)




### LEN00G003 (300A 3 Pole)




### LEN00H003 (400A 3 Pole)



# Mechanically / Magnetically Held Lighting Contactors, Class CLM

## Dimensions

### CLM Contactor, 30 Amp

Figure 1

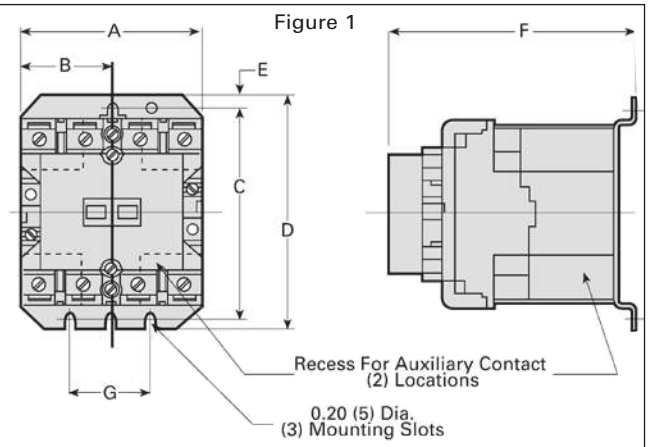



Figure 2

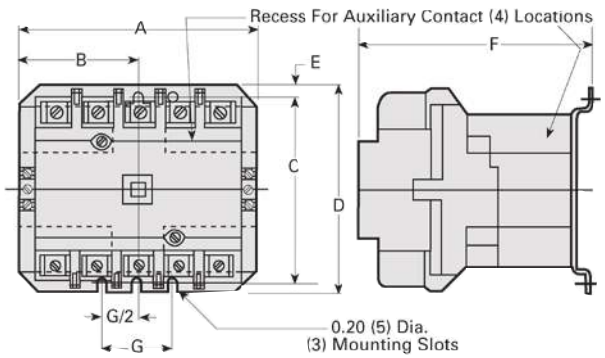



Figure 3

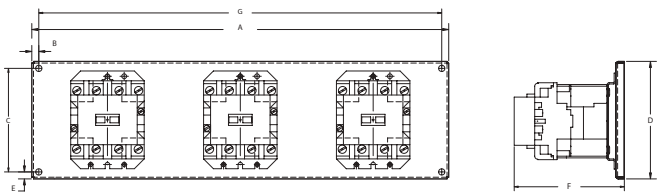


Figure is representative and may not depict the actual number of contactors mounted on the plate. There will be either 2 or 3 contactors. Furthermore, each contactor may have 3, 4 or 5 poles.

### Open Type Lighting Contactors

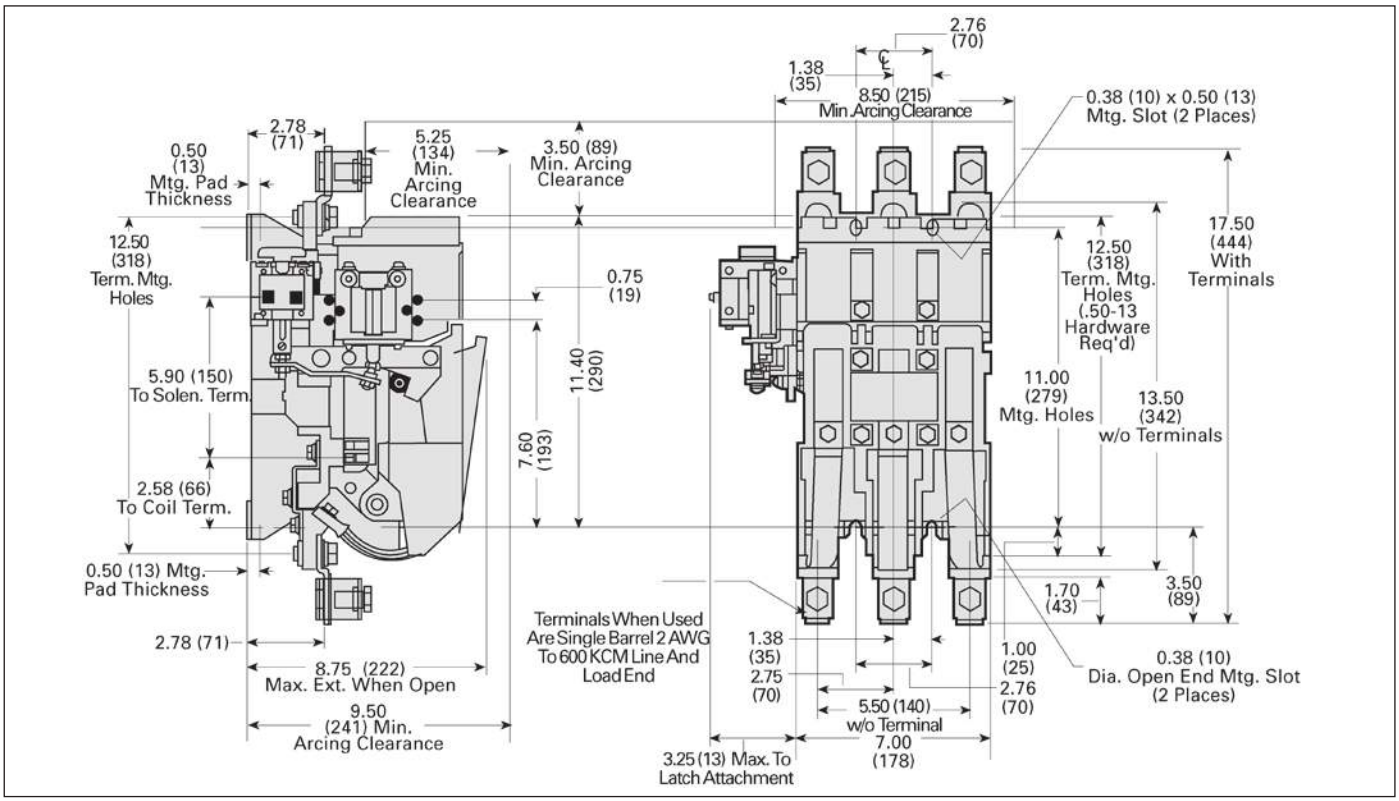
| Class | Figure Number | Amp Rating | Number of Poles | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|
| CLM | 1 | 30 | 2–4 | 3.31 (84) | 1.65 (42) | 3.95 (100) | 4.38 (111) | 0.23 (6) | 4.61 (117) | 1.50 (38) |
| | | 30 | 5 | 4.19 (106) | 2.09 (53) | 3.95 (100) | 4.38 (111) | 0.23 (6) | 4.61 (117) | 1.50 (38) |
| | 2 | 60 | 2, 3 | 3.31 (84) | 1.65 (42) | 3.95 (100) | 4.38 (111) | 0.23 (6) | 4.94 (125) | 1.50 (38) |
| | | 60 | 4, 5 | 5.06 (129) | 2.53 (64) | 3.95 (100) | 4.38 (111) | 0.23 (6) | 4.94 (125) | 1.50 (38) |
| | | 100 | 2, 3 | 4.62 (117) | 2.31 (59) | 6.00 (152) | 6.62 (168) | 0.38 (10) | 6.75 (171) | 1.88 (48) |
| | | 100 | 4, 5 | 7.25 (184) | 3.62 (92) | 6.00 (152) | 6.62 (168) | 0.38 (10) | 6.75 (171) | 1.88 (48) |
| | | 200 | 2, 3 | 4.62 (117) | 2.31 (59) | 6.00 (152) | 6.62 (168) | 0.38 (10) | 6.75 (171) | 1.88 (48) |
| | | 200 | 4, 5 | 7.25 (184) | 3.62 (92) | 6.00 (152) | 6.62 (168) | 0.38 (10) | 6.75 (171) | 1.88 (48) |
| | 3 | 30 | 6, 8 | 8.00 (196) | 0.31 (8) | 5.25 (129) | 5.87 (144) | 0.31 (8) | 4.86 (119) | 7.38 (181) |
| | | 30 | 9, 10, 12 | 11.75 (289) | 0.31 (8) | 5.25 (129) | 5.87 (144) | 0.31 (8) | 4.86 (119) | 11.13 (273) |
| | | 60 | 6 | 8.00 (196) | 0.31 (8) | 5.25 (129) | 5.87 (144) | 0.31 (8) | 5.19 (127) | 7.38 (181) |
| | | 60 | 8, 9, 10 | 11.75 (289) | 0.31 (8) | 5.25 (129) | 5.87 (144) | 0.31 (8) | 5.19 (127) | 11.13 (273) |
| | | 60 | 12 | 16.75 (410) | 0.31 (8) | 5.25 (129) | 5.87 (144) | 0.31 (8) | 5.19 (127) | 16.13 (395) |

**Note:** Dimensions for reference, not for construction.
Dimensions in inches (mm).

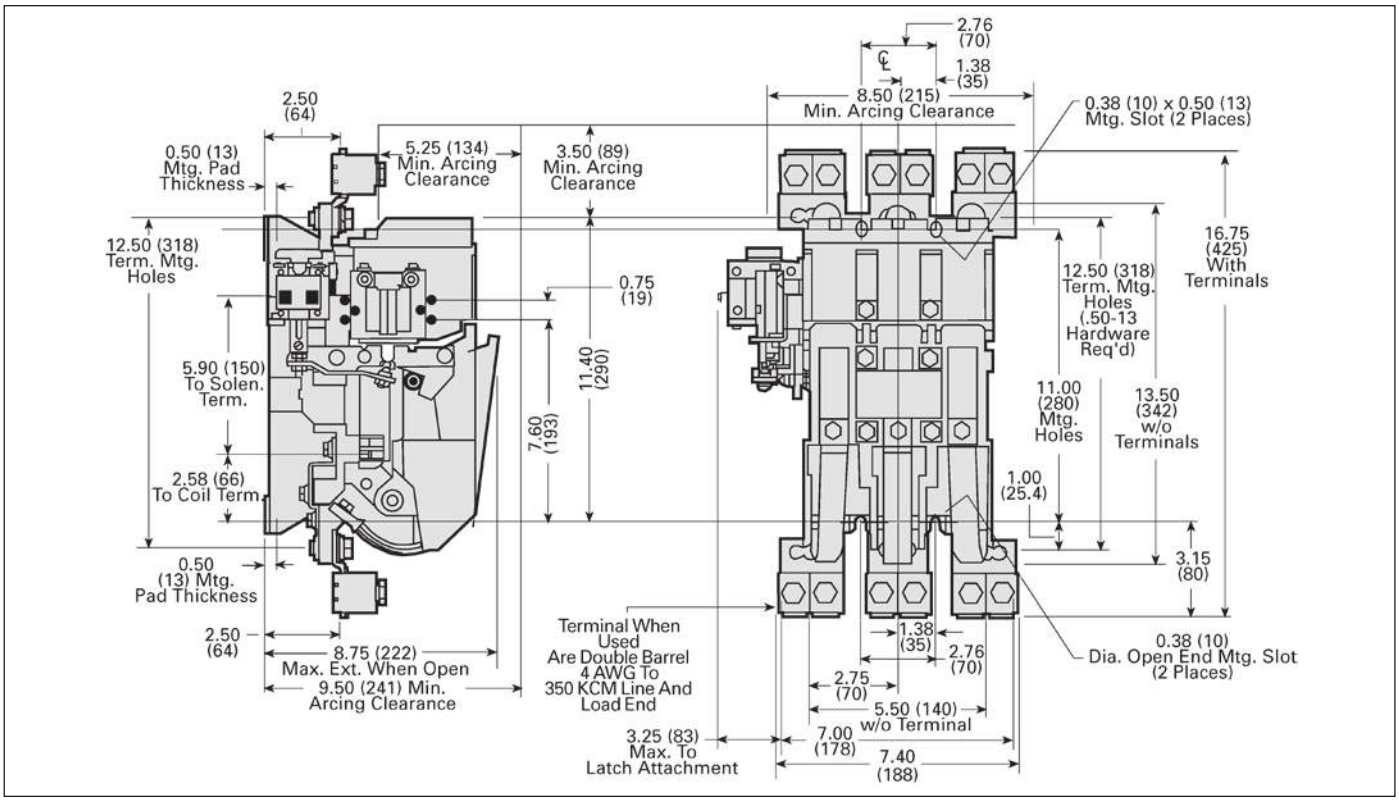
# Mechanically Latched 300 and 400 Amps, Class CLM

## Dimensions

### CLM Contactors 300 Amp




### CLM Contactors 400 Amp




**Note:** Dimensions for reference, not for construction.
Dimensions in inches (mm).

# Enclosed, Class 14, 40

## Dimensions

Figure 1

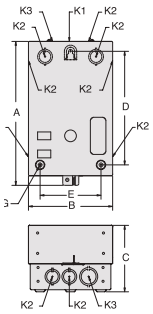
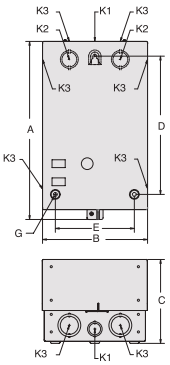



Figure 2




View is typical for bottom and top

Figure 3

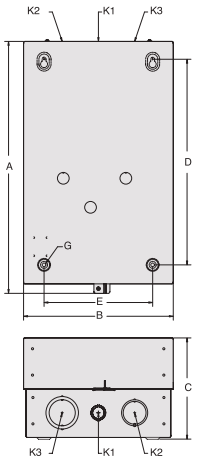



Figure 4

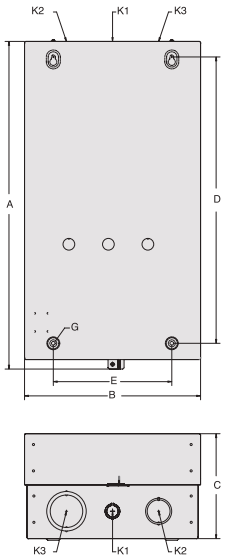
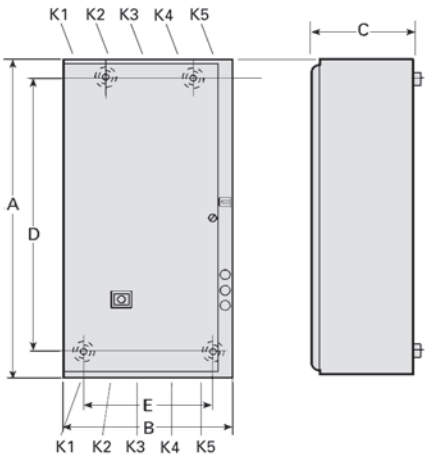



Figure 5




| Enclosure Type | Size | Fig.② | Outline Dimensions | | | Mounting | | G① | Conduit Size | | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | | K1 | K2 | K3 | K4 | K5 | | |
| 1 (Standard width for use with or without CPT) | 00–1 3/4 (w/o CPT) | 1 | 11.00 | 6.41 | 5.00 | 8.22 | 4.63 | 0.25 | 0.5 | 0.5-0.75 | 0.75–1 | — | — | 10 | D68870 |
| | 2–2 1/2 (w/o CPT) | 2 | 13.53 | 8.00 | 6.38 | 10.25 | 6.00 | 0.25 | 0.5-0.75 | 0.75-1 | 1–1.25 | — | — | 15 | D68870 |
| | 3–3 1/2 | 3 | 19.13 | 11.38 | 7.69 | 15.63 | 8.25 | 0.25 | 0.5-0.75 | 1–1.25 | 1.5–2 | — | — | 26 | D68870 |
| | 4 | 4 | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25–1.5 | 2–2.5 | — | — | 37 | D68870 |
| | 5 | 5 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.38 | 2–3 | | | | | 135 | |
| | 6, 7 | 5 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.38 | 2–2.5 | | | | | 150 | |
| | 8 | 5 | 60.00 | 38.00 | 16.00 | 61.56 | 36.50 | 0.38 | | | | | | 275 | |
| 1 (Extra wide for use with CPT) | 00–2 1/2 | 3 | 19.13 | 11.38 | 7.69 | 15.63 | 8.25 | 0.25 | 0.5-0.75 | 1–1.25 | 1.5–2 | — | — | 26 | D68870 |
| | 3–3 1/2 | 4 | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25–1.5 | 2–2.5 | — | — | 37 | D68870 |

**Note:** Dimensions are in inches.

① G designates mounting screw size.
② Enclosures shown in figures 1 - 4 have lift-off covers.
Enclosures shown in figure 5 have hinged covers.

# Enclosed, Class 14, 40

## Dimensions

Figure 1

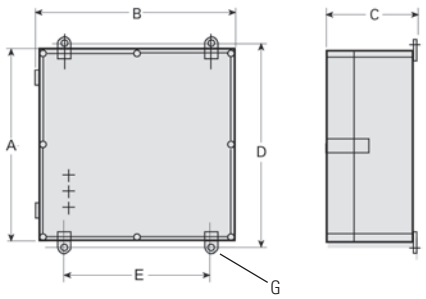
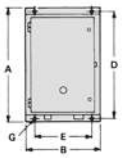
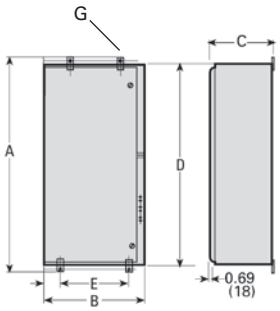



Figure 2




Typical view top and bottom

Figure 3




| Enclosure Type | Size | Fig. | Outline Dimensions A | B | C | Mounting D | E | G① | Conduit Size K1 | K2 | K3 | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/4X Fiberglass (Standard width for use with or without CPT) | 0-1 3/4 | 1 | 13.00 | 7.75 | 5.44 | 12.25 | 5.00 | 0.375 | — | — | — | 12 | D41547 |
| | 2-2 1/2 | 1 | 16.00 | 8.13 | 6.06 | 15.25 | 5.00 | 0.375 | — | — | — | 18 | D41547 |
| | 3-4 | 1 | 26.00 | 13.13 | 7.56 | 25.25 | 10.00 | 0.375 | — | — | — | 49 | D41552 |
| 3R/4/12 (Standard width for use without CPT) | 0-1 3/4 | 2 | 13.00 | 7.75 | 5.44 | 12.25 | 5.00 | 0.25 | — | — | — | 12 | D41547 |
| | 2-2 1/2 | 2 | 16.00 | 8.13 | 6.06 | 15.25 | 5.00 | 0.25 | — | — | — | 18 | D41547 |
| | 3-4 | 2 | 26.00 | 13.13 | 7.56 | 25.25 | 10.00 | 0.25 | — | — | — | 49 | D41552 |
| 3R/4/12 (Extra wide for use with CPT) | 0–1 3/4 | 2 | 13.00 | 12.63 | 5.38 | 12.25 | 10.00 | 0.25 | — | — | — | 30 | D17150 |
| | 2–2 1/2 | 2 | 16.00 | 13.25 | 6.13 | 15.25 | 11.00 | 0.25 | — | — | — | 33 | D17150 |
| | 3–3 1/2 | 2 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.375 | — | — | — | 49 | D41552 |
| | 4 | 2 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.375 | — | — | — | 64 | D17150 |
| | 5 | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.375 | — | — | — | | D65608007 |
| | 6, 7 | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.375 | — | — | — | | D65608009 |
| | 8 | 3 | 60.00 | 38.00 | 16.00 | 61.56 | 36.50 | 0.375 | — | — | — | 275 | D65632006 |
| 4/4X Stainless Steel (Standard width for use without CPT) | 0-1 3/4 | 2 | 13.00 | 7.75 | 5.44 | 12.25 | 5.00 | 0.25 | — | — | — | 18 | D41546 |
| | 2-2 1/2 | 2 | 16.00 | 8.13 | 6.06 | 15.25 | 5.00 | 0.25 | — | — | — | 36 | D41546 |
| | 3-4 | 2 | 26.00 | 13.13 | 7.56 | 25.25 | 10.00 | 0.25 | — | — | — | 67 | D41551 |
| 4/4X Stainless Steel (Extra wide for use with CPT) | 0–1 3/4 | 2 | 13.00 | 12.63 | 5.38 | 12.25 | 10.00 | 0.25 | — | — | — | 30 | D41917 |
| | 2–2 1/2 | 2 | 16.00 | 13.25 | 6.13 | 15.25 | 11.00 | 0.25 | — | — | — | 33 | D42935 |
| | 3–3 1/2 | 2 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.375 | — | — | — | 64 | D41551 |
| | 4 | 2 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.375 | — | — | — | 67 | D43292 |
| | 5 (Painted) | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.375 | — | — | — | | D65608007 |
| | 6, 7 (Painted) | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.375 | — | — | — | | D65608009 |
| | 8 | 3 | 60.00 | 38.00 | 16.00 | 61.56 | 26.50 | 0.375 | — | — | — | 275 | D65632006 |

**Note:** Dimensions are in inches.

① G designates mounting screw size.

## Dimensions

Figure 1

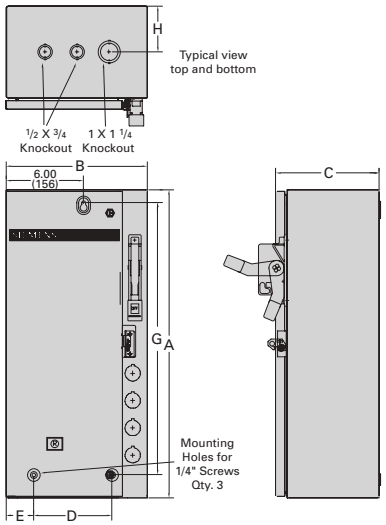



Figure 2

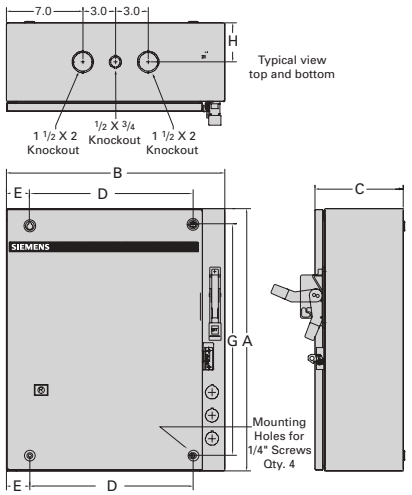



Figure 3

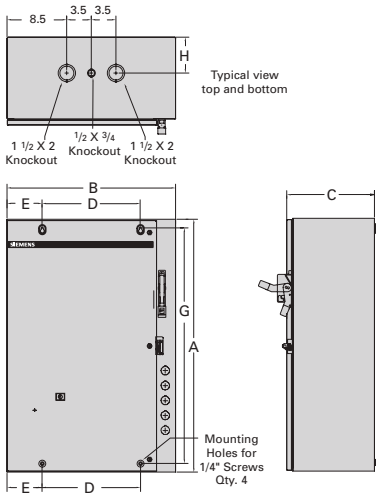
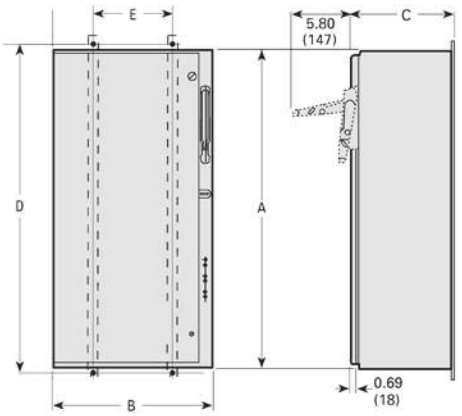



Figure 4




| Enclosure Type | Size | Fig. | Outline Dimensions | | | Mounting Dimensions | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | G | H | | |
| 1 (Standard width) | 0–2 | 1 | 24.00 | 11.00 | 8.00 | 6.13 | 2.13 | 21.00 | 3.50 | 35 | D68774001 |
| | 2 1/2, 3 (except 200A Disc.) | 2 | 24.00 | 20.00 | 8.00 | 15.00 | 2.13 | 21.00 | 3.50 | 48 | D68774002 |
| | 3 (200A Disc.), 3 1/2, 4 | 3 | 36.00 | 24.00 | 8.00 | 14.00 | 5.00 | 33.50 | 5.00 | 101 | D68774003 |
| | 5 | 4 | 72.16 | 20.00 | 11.03 | 71.00 | 16.00 | — | — | 250 | D56032005 |
| | 6 | 4 | 60.00 | 38.00 | 12.00 | 36.50 | 0.75 | 61.56 | — | 275 | D56032006 |
| 1 (Extra wide) | 0–2 | 2 | 24.00 | 20.00 | 8.00 | 15.00 | 2.13 | 21.00 | 3.50 | 48 | D68774002 |
| | 2 1/2, 3 | 3 | 36.00 | 24.00 | 8.00 | 14.00 | 5.00 | 33.50 | 5.00 | 101 | D68774003 |

**Note:** Dimensions are in inches.

## Dimensions

Figure 1

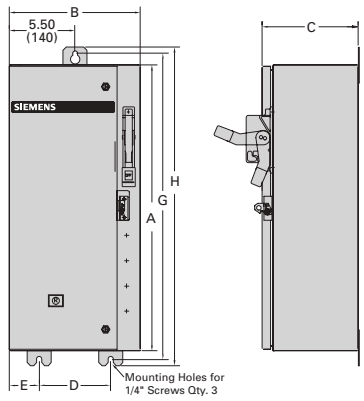



Figure 2

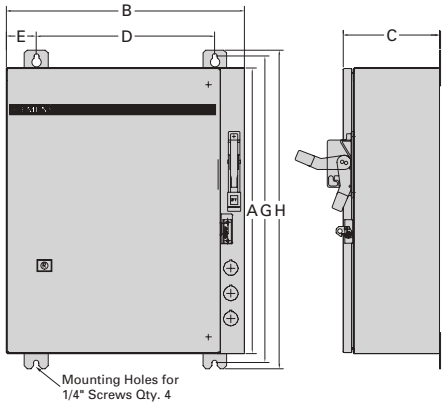



Figure 3

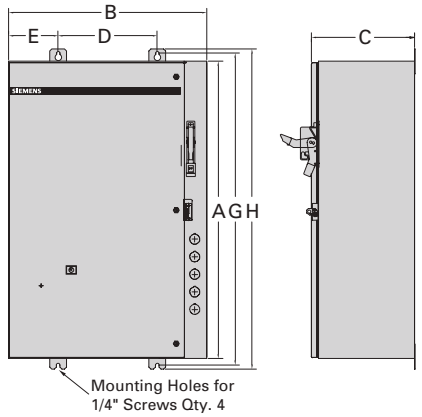



Figure 4

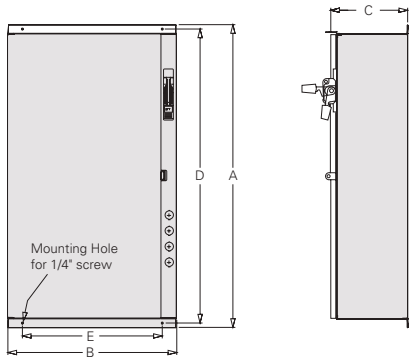
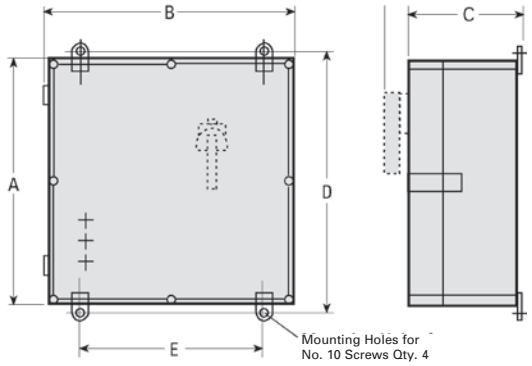



Figure 5




| Enclosure Type | Size | Fig. | Outline Dimensions | | | Mounting Dimensions | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | G | H | | |
| 3R/4/4X/12 (Standard width) | 0–2 | 1 | 24.00 | 11.00 | 8.00 | 6.00 | 2.50 | 25.75 | 26.75 | 35 | D56033 |
| | 2 1/2, 3 (except 200A Disc.) | 2 | 24.00 | 20.00 | 8.00 | 15.00 | 2.50 | 25.75 | 26.75 | 48 | D56033 |
| | 3 (200A Disc.), 3 1/2, 4 | 3 | 36.00 | 24.00 | 8.00 | 12.00 | 6.00 | 37.75 | 38.75 | 101 | D56033 |
| | 5 (Painted) | 4 | 72.16 | 20.00 | 11.03 | 71.00 | 16.00 | — | — | 250 | D56032005 |
| | 6 (Painted) | 4 | 60.00 | 38.00 | 12.00 | 36.50 | 0.75 | 61.56 | 63.10 | 275 | D56032006 |
| 3R/4/4X/12 (Extra wide) | 0–2 | 2 | 24.00 | 20.00 | 8.00 | 15.00 | 2.50 | 25.75 | 26.75 | 48 | D56033 |
| | 2 1/2, 3 | 3 | 36.00 | 24.00 | 8.00 | 12.00 | 6.00 | 37.75 | 38.75 | 101 | D56033 |
| 4/4X Fiberglass (Standard width) | 0–1 3/4 | 5 | 23.75 | 14.62 | 7.12 | 24.09 | 12.20 | — | — | 42 | |
| | 2–3 1/2 | 5 | 23.75 | 23.75 | 8.50 | 24.06 | 21.30 | — | — | 44 | |
| | 4 | 5 | 39.37 | 29.52 | 12.20 | 40.94 | 27.95 | — | — | 55 | |

**Note:** Dimensions are in inches.

## Dimensions

Figure 1

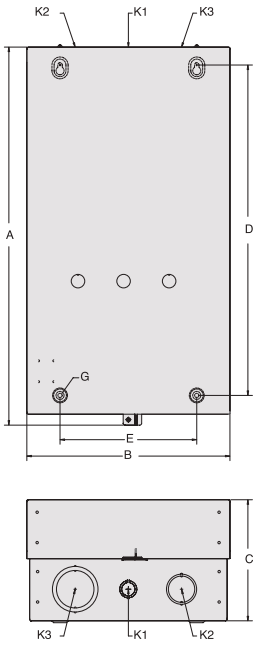



Figure 2

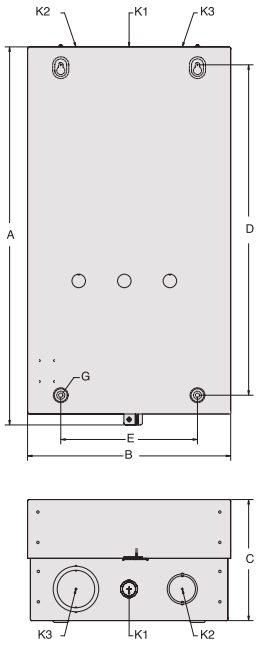
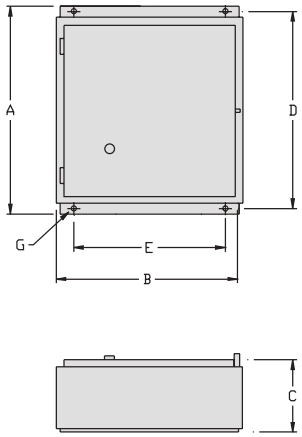



Figure 3




View is typical for bottom and top

| Enclosure Type | Size | Fig.③ | Outline Dimensions | | | Mounting | | G① | Conduit Size | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | | K1 | K2 | K3 | K4 | | |
| 1 (Standard width for use with or without CPT) | 00–2 1/2 | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.25 | 0.5-1.25 | 1-1.25 | 1.5-2 | — | 30 | D68870 |
| | 3–4 | 2 | 24.88 | 13.38 | 8.12 | 21.75 | 9.00 | 0.25 | 1.25-1.5 | 1.25-1.5 | 2-2.5 | — | 52 | D68870 |
| | 5 | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.38 | 1.25-1.5 | 1.25-1.5 | 0.5-0.75 | 1.25-1.5 | 135 | D65608 |
| | 6, 7 | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.38 | 1.25-1.5 | 1.25-1.5 | 0.5-0.75 | 1.25-1.5 | 150 | D65608013 |
| 4/4X Stainless Steel (Standard width for use without CPT) | 0–1 3/4 | 3 | 12.00 | 12.00 | 6.00 | 12.75 | 8.00 | 0.38 | — | — | — | — | 30 | D41917 |
| | 2–2 1/2 | 3 | 16.00 | 14.00 | 6.00 | 16.75 | 12.00 | 0.38 | — | — | — | — | 33 | D42935 |
| | 3–3 1/2 (w/o CPT) | 3 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.38 | — | — | — | — | 53 | D17423 |
| | 3–3 1/2 (w/ CPT),4 | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | — | 64 | D43292 |
| | 5② | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.38 | — | — | — | — | | D65608007 |
| | 6, 7② | 3 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.38 | — | — | — | — | | 65608009 |

**Note:** Dimensions are in inches.

① G designates mounting screw size.
② Type 4 painted enclosure.

③ Enclosures shown in figures 1 and 2 have lift-off covers. Enclosures shown in figure 3 have hinged covers.

## Dimensions

Figure 5

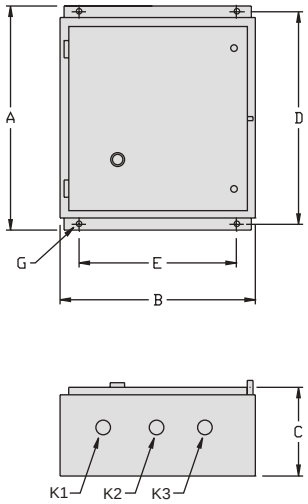



Figure 6

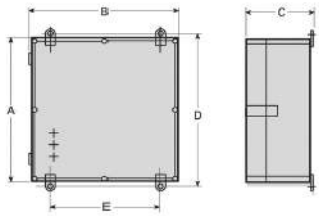
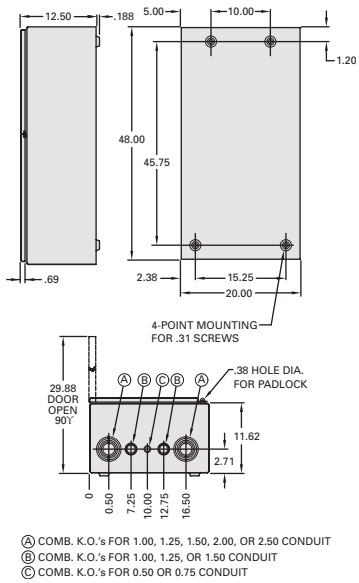



Figure 7




View is typical for bottom and top

| Enclosure Type | Size | Fig. | Outline Dimensions A | B | C | Mounting D | E | G① | Conduit Size K1 | K2 | K3 | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3R/4/12 (Standard width for use with or without CPT) | 0–1 3/4 | 5 | 13.00 | 12.63 | 5.63 | 12.25 | 10.00 | 0.25 | — | — | — | 30 | D17150 |
| | 2–2 1/2 | 5 | 16.00 | 13.25 | 6.13 | 15.25 | 11.00 | 0.25 | — | — | — | 33 | D17150 |
| | 3–3 1/2 (w/o CPT) | 5 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.380 | — | — | — | 53 | D17150 |
| | 3–4 (w/ CPT) | 5 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.380 | — | — | — | 64 | D17150 |
| | 5 | 7 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.375 | — | — | — | | D65608007 |
| | 6 | 7 | 48.00 | 24.00 | 12.00 | 49.56 | 22.50 | 0.375 | — | — | — | | |
| 4/4X Fiberglass (Standard width for use with or without CPT) | 0–2 1/2 | 6 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.380 | — | — | — | 35 | |
| | 3–4 | 6 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.380 | — | — | — | 38 | |

**Note:** Dimensions are in inches.

① G designates mounting screw size.

## Dimensions

Figure 1

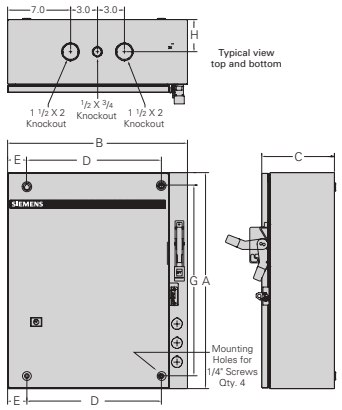



Figure 2

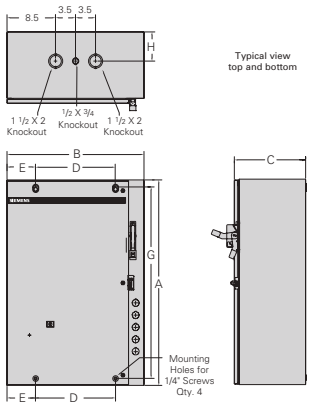



Figure 3

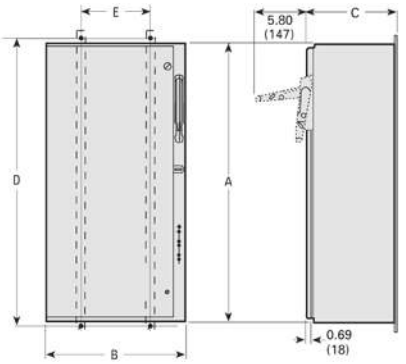



Figure 4

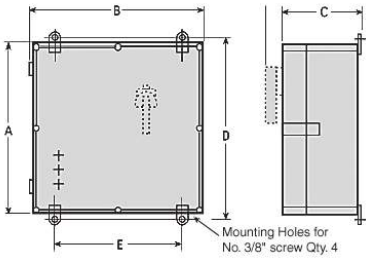
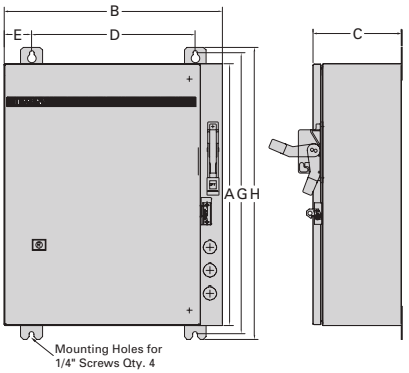



Figure 5




| Enclosure Type | Size | Fig. | Outline Dimensions | | | Mounting Dimensions | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | G | H | | |
| 1 (Standard width) | 0–2 1/2 | 1 | 24.00 | 20.00 | 8.00 | 15.00 | 2.13 | 21.00 | 3.50 | 60 | D68774002 |
| | 3-4 | 2 | 36.00 | 24.00 | 8.00 | 14.00 | 5.00 | 33.50 | 5.00 | 121 | D68774003 |
| | 5 | 3 | 72.16 | 20.00 | 11.03 | 71.00 | 16.00 | — | — | 250 | D56032005 |
| | 6 | 3 | 72.10 | 40.20 | 18.10 | 78.00 | 18.00 | — | — | 275 | D56032006 |
| 3R/4/4X/12 (Standard width) | 0–2 1/2 | 5 | 24.00 | 20.00 | 8.00 | 15.00 | 3.50 | 25.75 | 26.75 | 63 | D68774005 |
| | 3-4 | 5 | 36.00 | 24.00 | 8.00 | 14.00 | 6.00 | 37.75 | 38.75 | 124 | D68774006 |
| | 5(Painted) | 3 | 72.16 | 20.00 | 11.03 | 71.00 | 16.00 | — | — | 250 | D56032005 |
| | 6(Painted) | 3 | 72.10 | 40.20 | 18.10 | 78.00 | 18.00 | — | — | 275 | D56032006 |

| Enclosure Type | Size | Fig. | Outline Dimensions | | | Mounting | | G① | Conduit Size | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | | K1 | K2 | K3 | | |
| 4/4X Fg (Standard width) | 0-2 1/2 | 4 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.38 | — | — | — | 18 | 24-139-861-001 |
| | 3-4 | 4 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 28 | 24-139-861-003 |

**Note:** Dimensions are in inches.

① G designates mounting screw size.

# Enclosed, Class 30

## Dimensions

Figure 1

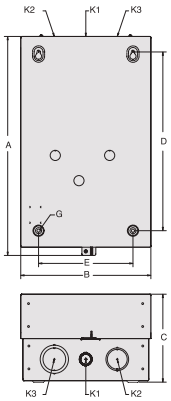



Figure 1a

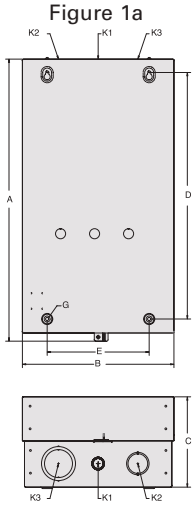



Figure 2

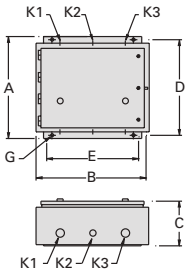



Figure 3

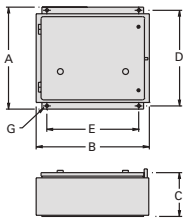
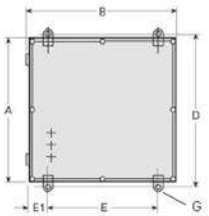



Figure 4




| Starter Type (Enclosure Type) | Size | Fig.② | Outline Dimensions | | | Mounting | | | Conduit Size | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | G① | K1 | K2 | K3 | | |
| 2 Speed 1 Winding (Type 1 for use with or without CPT) | 0–1 3/4 w/o CPT | 1 | 19.13 | 11.38 | 7.69 | 15.63 | 8.25 | 0.25 | 0.5-0.75 | 1.0-1.25 | 1.5-2 | 26 | D68870 |
| | 0–1 3/4 w/ CPT | 1a | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25-1.5 | 2-2.5 | 52 | D68870 |
| | 2–2 1/2 | 2 | 16.00 | 17.13 | 7.63 | 15.25 | 14.00 | 0.25 | 0.5-0.75 | 1.25-1.5 | 1.25-1.5 | 39 | D42932001 |
| | 3–3 1/2 | 2 | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25–1.5 | 2–2.5 | 60 | D72956002 |
| | 4 | 3 | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25–1.5 | 2–2.5 | 61 | D43292001 |
| 2 Speed 1 Winding (Type 4/4X Stainless Steel for use with or without CPT) | 0–1 3/4 w/o CPT | 3 | 12.00 | 12.00 | 6.00 | 12.75 | 10.00 | 0.38 | — | — | — | 34 | D41917000 |
| | 0–1 3/4 w/ CPT | 3 | 16.00 | 16.00 | 8.00 | 17.60 | 14.50 | 0.38 | — | — | — | 47 | |
| | 2–2 1/2 w/o CPT | 3 | 16.00 | 16.00 | 8.00 | 17.60 | 14.50 | 0.38 | — | — | — | 47 | |
| | 2–2 1/2 w/ CPT | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 55 | |
| | 3–3 1/2 | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 61 | D43292001 |
| | 4 | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 61 | D43292001 |
| 2 Speed 1 Winding (Type 3R/4/12 for use with or without CPT) | 0–1 3/4 w/o CPT | 3 | 13.00 | 12.63 | 5.38 | 12.25 | 10.00 | 0.25 | — | — | — | 34 | |
| | 0–1 3/4 w/ CPT | 3 | 16.00 | 17.13 | 7.63 | 15.25 | 14.00 | 0.25 | — | — | — | 47 | D17150010 |
| | 2–2 1/2 w/o CPT | 3 | 16.00 | 17.13 | 7.63 | 15.25 | 14.00 | 0.25 | — | — | — | 47 | D17150010 |
| | 2–2 1/2 w/ CPT | 3 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.38 | — | — | — | 55 | |
| | 3–4 | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 61 | D19673000 |
| 2 Speed 1 Winding (Type 4/4X Fg. for use w/ or w/o CPT) | 0–2 1/2 | 4 | 23.78 | 23.78 | 6.89 | — | — | 0.25 | — | — | — | 28 | 24139861003 |
| | 3–4 | 4 | 39.38 | 29.53 | 12.60 | — | — | — | — | — | — | | 24139861004 |
| 2 Speed 2 Winding (Type 1 for use with or without CPT) | 0–2 1/2 w/o CPT | 1 | 19.13 | 11.38 | 7.69 | 15.63 | 8.25 | 0.25 | 0.5-0.75 | 1.0-1.25 | 1.5-2 | 30 | D68870 |
| | 0–2 1/2 w/ CPT | 1a | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25-1.5 | 2-2.5 | 52 | D68870 |
| | 3–4 w/o CPT | 1a | 24.88 | 13.38 | 8.13 | 21.75 | 9.00 | 0.25 | 0.5-0.75 | 1.25-1.5 | 2-2.5 | 52 | D68870 |
| 2 Speed 2 Winding (Type 4/4X Stainless Steel for use with or without CPT) | 0–1 3/4 w/o CPT | 3 | 12.00 | 12.00 | 6.00 | 12.75 | 10.00 | 0.38 | — | — | — | 34 | |
| | 0–1 3/4 w/ CPT | 3 | 16.00 | 16.00 | 8.00 | 17.60 | 14.50 | 0.38 | — | — | — | 41 | |
| | 2–2 1/2 w/o CPT | 3 | 16.00 | 16.00 | 8.00 | 17.60 | 14.50 | 0.38 | — | — | — | 41 | |
| | 2–2 1/2 w/ CPT | 3 | 16.00 | 16.00 | 8.00 | 17.60 | 14.50 | 0.38 | — | — | — | 41 | |
| | 3–3 1/2 w/o CPT | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 55 | |
| | 3–3 1/2 w/ CPT | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 61 | D43292001 |
| | 4 | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 61 | D43292001 |
| 2 Speed 2 Winding (Type 3R/4/12 for use with or without CPT) | 0–1 3/4 w/o CPT | 3 | 13.00 | 12.63 | 5.38 | 12.25 | 10.00 | 0.25 | — | — | — | 34 | |
| | 0–1 3/4 w/ CPT | 3 | 16.00 | 17.13 | 7.63 | 15.25 | 14.00 | 0.25 | — | — | — | 41 | D17150010 |
| | 2–2 1/2 w/o CPT | 3 | 16.00 | 13.25 | 6.13 | 15.25 | 11.00 | 0.25 | — | — | — | 41 | |
| | 2–2 1/2 w/ CPT | 3 | 16.00 | 17.13 | 7.63 | 15.25 | 14.00 | 0.25 | — | — | — | 41 | D17150010 |
| | 3–3 1/2 w/o CPT | 3 | 24.00 | 20.00 | 8.00 | 25.56 | 18.50 | 0.38 | — | — | — | 55 | |
| | 3–4 w/CPT | 3 | 30.00 | 24.00 | 10.00 | 31.56 | 22.50 | 0.38 | — | — | — | 61 | D19673000 |
| 2 Speed 2 Winding (Type 4/4X Fg. for use w/ or w/o CPT) | 0–2 1/2 | 4 | 23.78 | 23.78 | 6.89 | — | — | 0.25 | — | — | — | 28 | 24139861003 |
| | 3–4 | 4 | 39.38 | 29.53 | 12.60 | — | — | — | — | — | — | | 24139861004 |

**Note:** Dimensions are in inches.

① G designates mounting screw size.

② Enclosures shown in figures 1and 1a have lift-off covers. Enclosures shown in figures 2, 3 and 4 have hinged covers.

## Dimensions

Figure 1

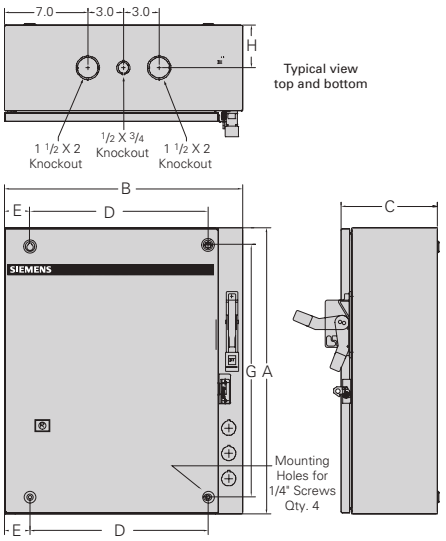



Figure 2

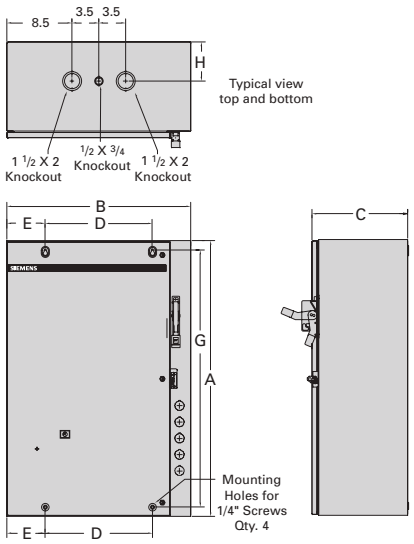



Figure 3

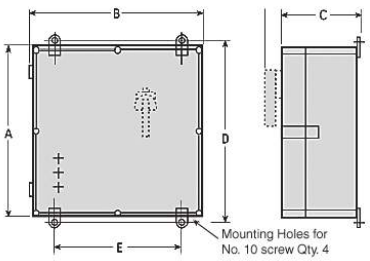
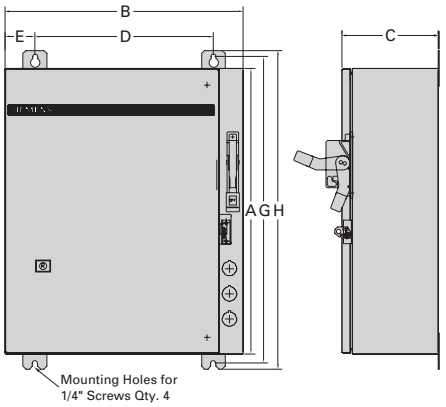



Figure 4




### NEMA 1 Standard Width 0–4

| Size | Figure | Outline Dimensions A | B | C | Mounting Dimensions D | E | G | H | Approx Ship Wt Lbs (Kg) | Ref Dwg |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–1¾ (1 Winding) | 1 | 24 (610) | 20 (508) | 8 (203) | 15.00 (381) | 2.125 (54) | 21.00 (533) | 3.50 (90) | 68 (31) | D68774 |
| 2–4 (1 Winding) | 2 | 36 (914) | 24 (610) | 8 (203) | 14.00 (356) | 5.00 (127) | 33.50 (851) | 3.50 (90) | 71 (32) | D68774 |
| 0–2½ (2 Winding) | 1 | 24 (610) | 20 (508) | 8 (203) | 15.00 (381) | 2.125 (54) | 21.00 (533) | 3.50 (90) | 135 (61) | D68774 |
| 3–4 (2 Winding) | 2 | 36 (914) | 24 (610) | 8 (203) | 14.00 (356) | 5.00 (127) | 33.50 (851) | 3.50 (90) | 138 (63) | D68774 |

### NEMA 12/3R/4 (Painted), 4/4X Stainless Standard Width 0–4

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–1¾ (1 Winding) | 4 | 24 (610) | 20 (508) | 8 (203) | 15.00 (381) | 2.50 (64) | 25.75 (654) | 26.75 (680) | 68 (31) | D68774 |
| 2–4 (1 Winding) | 4 | 36 (914) | 24 (610) | 8 (203) | 12 (305) | 6.00 (152) | 37.75 (959) | 38.75 (984) | 71 (32) | D68774 |
| 0–2½ (2 Winding) | 4 | 24 (610) | 20 (508) | 8 (203) | 15.00 (381) | 2.50 (64) | 25.75 (654) | 26.75 (680) | 135 (61) | D68774 |
| 3–4 (2 Winding) | 4 | 36 (914) | 24 (610) | 8 (203) | 12 (305) | 6.00 (152) | 37.75 (959) | 38.75 (984) | 138 (63) | D68774 |

### Nema 4X Fiberglass 0–4

| Size | Figure | Outline Dimensions A | B | C | Mounting Dimensions D | E | Mtg Screw G | Conduit Size K1 | K2 | K3 | Approx Ship Wt Lbs (Kg) | Ref Dwg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–1¾ | 3 | 23.780 (604) | 14.680 (373) | 6.890 (175) | 24.125 (613) | 12.250 (311) | ¼ | — | — | — | 18 (8) | — |
| 2–4 | 3 | 23.780 (604) | 23.780 (604) | 6.890 (175) | 24.125 (613) | 21.250 (540) | ¼ | — | — | — | 28 (13) | — |

**Note:** Dimensions in inches (mm).
Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.

## Dimensions

Figure 1

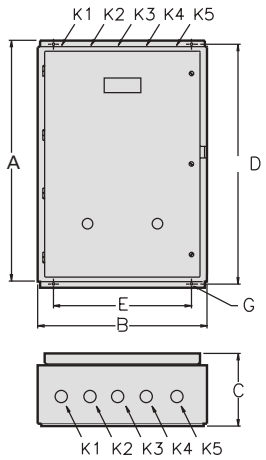



Figure 2

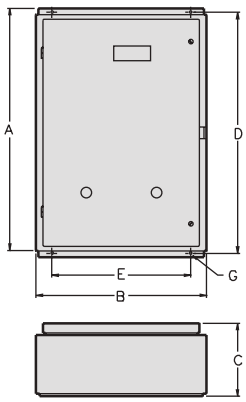
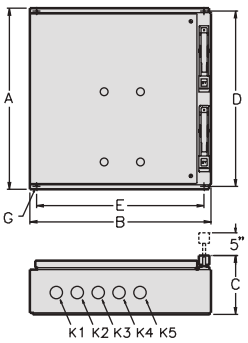



Figure 3




### Class 83 Non-Combination Type

| Enclosure Type | Size | Fig. | Outline Dimensions | | | Mounting | | G① | Conduit Size | | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | | K1 | K2 | K3 | K4 | K5 | | |
| 1 | 0–1 3/4 | 1 | 20.00 | 20.00 | 6.00 | 21.60 | 18.50 | 0.38 | — | — | — | — | — | 20 | |
| | 2, 2 1/2 | 1 | 24.00 | 20.00 | 8.00 | 25.60 | 18.50 | 0.38 | — | — | — | — | — | 57 | |
| | 3–4 | 1 | 30.00 | 24.00 | 10.00 | 31.60 | 22.50 | 0.38 | — | — | — | — | — | 93 | |
| 3R/4/12 | 0–1 3/4 | 2 | 20.00 | 20.00 | 6.00 | 21.60 | 18.50 | 0.38 | — | — | — | — | — | 20 | |
| | 2, 2 1/2 | 2 | 24.00 | 20.00 | 8.00 | 25.60 | 18.50 | 0.38 | — | — | — | — | — | 57 | |
| | 3–4 | 2 | 30.00 | 24.00 | 10.00 | 31.60 | 22.50 | 0.38 | — | — | — | — | — | 93 | |
| 4X Stainless Steel | 0–1 3/4 | 2 | 20.00 | 16.00 | 6.00 | 21.60 | 14.50 | 0.38 | — | — | — | — | — | 20 | |
| | 2, 2 1/2 | 2 | 24.00 | 20.00 | 8.00 | 25.60 | 18.50 | 0.38 | — | — | — | — | — | 57 | |
| | 3–4 | 2 | 30.00 | 24.00 | 10.00 | 31.60 | 22.50 | 0.38 | — | — | — | — | — | 93 | |

### Class 84 Combination Type

| Enclosure Type | Size | Fig. | Outline Dimensions | | | Mounting | | G① | Conduit Size | | | | | Approx. Ship Wt Lbs | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | | K1 | K2 | K3 | K4 | K5 | | |
| 1, 3R/4/12 | 0–2 | 3 | 34.13 | 24.63 | 7.56 | 33.00 | 20.00 | 0.38 | 0.88–1.13 | 0.88–1.13 | 1.13–1.36 | 1.13–1.36 | 1.36–1.72 | 70 | |
| | 2 1/2–4 | 3 | 48.00 | 36.00 | 10.00 | 49.60 | 34.50 | 0.38 | — | — | — | — | — | 106 | |
| 4X Stainless Steel | 0–2 | 3 | 36.00 | 24.00 | 10.00 | 37.60 | 22.50 | 0.38 | — | — | — | — | — | 70 | |
| | 2 1/2–4 | 3 | 48.00 | 36.00 | 12.00 | 49.60 | 34.50 | 0.38 | — | — | — | — | — | 106 | |

**Note:** Dimensions are in inches.

① G designates mounting screw size.

## Outline Drawings

Figure 1

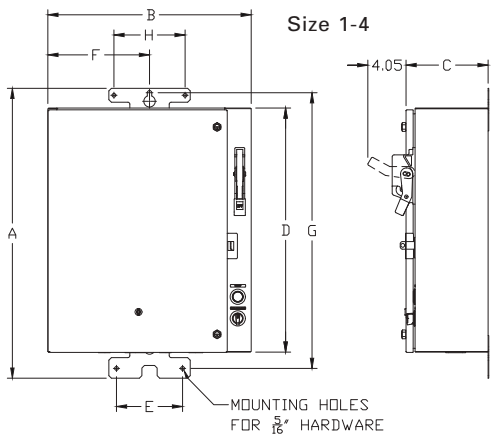



Figure 2

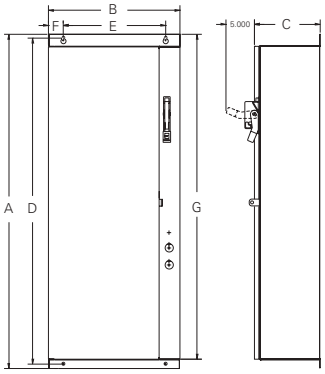
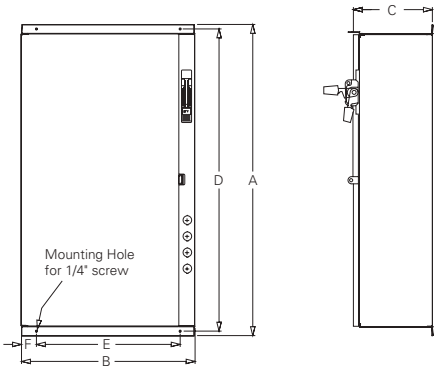
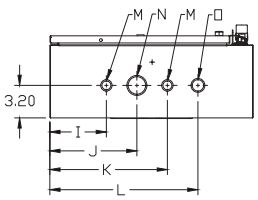


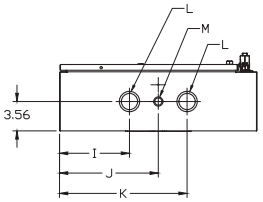

Figure 3




Size 1-2½




Size 3-4



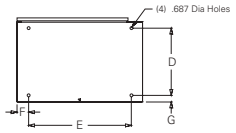
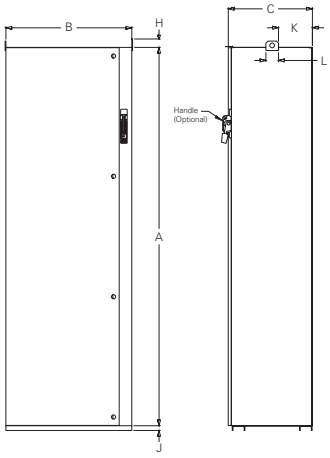




Figure 4




## Open air contacts (Class 3RE48 and 87)

| Size | Fig. | Outline Dimensions | | | Mounting Dimensions | | | | | Conduit Knockout | | | | | | | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | |
| 1–2 1/2 | 1 | 28.50 | 20.00 | 8.06 | 24.00 | 6.50 | 10.00 | 27.10 | 7.00 | 5.50 | 8.50 | 11.50 | 14.50 | 1.12-.875 | 1.96-1.71 | 1.35-1.12 | |
| 3 – 4 | 1 | 40.20 | 24.00 | 8.06 | 36.00 | 6.50 | 12.00 | 38.80 | 7.00 | 8.50 | 12.00 | 15.50 | 2.46-1.96 | 1.12-.875 | — | — | |
| 5 | 2 | 72.16 | 20.00 | 10.00 | 71.00 | 16.00 | 2.13 | 70.91 | — | — | — | — | — | — | — | — | |
| 6 | 2 | 60.00 | 38.00 | 16.00 | 61.60 | 36.50 | 0.75 | | — | — | — | — | — | — | — | — | |

## Vacuum contacts (Class 87)

| Size | Fig. | Outline Dimensions | | | Mounting Dimensions | | | | | | | | Conduit Knockout | | | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I | J | K | L | M | N | |
| 4 | 2 | 55.97 | 24.38 | 9.69 | 54.81 | 20.25 | 2.13 | 54.72 | 26.19 | — | — | — | — | — | — | |
| 5 | 2 | 72.16 | 20.00 | 10.00 | 71.00 | 16.00 | 2.13 | 70.91 | — | — | — | — | — | — | — | |
| 6 | 2 | 60.00 | 38.00 | 16.00 | 61.60 | 36.50 | 0.75 | | — | — | — | — | — | — | — | |

## Reduced voltage (Class 88)

| Size | | | Fig. | Outline Dimensions | | | | | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|
| AutoTransformer | Part Winding & Wye Delta | | | | | | | | |
| Disc. & MCP Type | Disc. Type | MCP Type | | A | B | C | D | E | |
| 2-2 1/2 | 1–2 | 1–2 1/2 | 3 | 42.00 | 32.00 | 12.00 | 43.60 | 30.50 | |
| 3-3 1/2 | 2 1/2–3 1/2 | 3–3 1/2 | 3 | 48.00 | 38.00 | 12.00 | 49.60 | 36.50 | |
| 4 | 4 | 4 | 3 | 60.00 | 38.00 | 16.00 | 61.60 | 36.50 | |
| 5, 6 | 5, 6 | 5, 6 | 4 | 90.00 | 30.00 | 20.00 | 16.00 | 24.44 | |

**Note:** Dimensions are in inches.
All enclosures are Type 3R

# Enclosed Contactors, Class LC and LE

## Dimensions

**Figure 1**

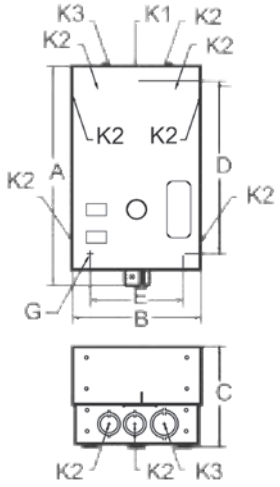



**Figure 2**

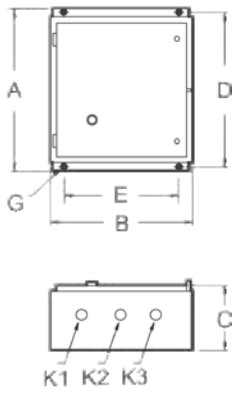
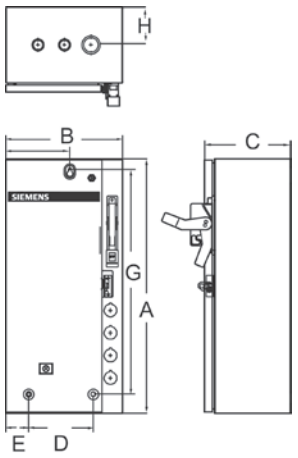



**Figure 3**




### Class LC and LE Non-combo

| Enclosure Type | Contactor Rating | Fig. | Outline Dimensions | | | Mounting① | | Conduit Size | | | | | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | K1 | K2 | K3 | K4 | K5 | |
| 1 without CPT | LE 20/30A 3-4P | 1 | 10.97 | 6.41 | 5.03 | 8.22 | 4.62 | 0.5 | 0.50–0.75 | 0.75–1 | — | — | |
| | LC 30A 2-12P, LE 60A 3P | 1 | 13.53 | 7.97 | 6.38 | 10.25 | 6 | 0.50–0.75 | 0.75–1 | 1–1.25 | — | — | |
| | LE 30/60A 6-12P, LE 100A 3P | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.50–0.75 | 1–1.25 | 1.5–2 | — | — | |
| | LE 200-400A 3P | 2 | 26 | 17.62 | 12.5 | 25.19 | 15.5 | 0.50–0.75 | 1.25–1.5 | 1.25–1.5 | — | — | |
| 1 with CPT | LC 30A 2-12P, LE 20A 3-4P, LE 30A 3-9P, LE 60A 3-9P, LE 100A 3P | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.50–0.75 | 1–1.25 | 1.5–2 | — | — | |
| | LE 30/60A 12P | 1 | 24.88 | 13.38 | 8.12 | 21.75 | 9 | 0.50–0.75 | 1.25–1.5 | 2–2.5 | — | — | |
| | LE 200-400A 3P | 2 | 26 | 17.62 | 12.5 | 25.19 | 15.5 | — | 1.25–1.5 | 1.25–1.5 | — | — | |
| 3R/4/12 without CPT | LE 20A 3-4P, LE 30/60A 3-9P, LC 30A 2-12P | 2 | 16 | 13.25 | 6.12 | 15.25 | 11 | — | — | — | — | — | |
| | LE 30/60A 12P | 2 | 26 | 13.12 | 7.56 | 25.25 | 10 | — | — | — | — | — | |
| | LE 100A 3P | 2 | 26 | 13.12 | 7.56 | 25.25 | 10 | — | — | — | — | — | |
| | LE 200-400A 3P | 2 | 26 | 17.62 | 12.5 | 25.19 | 15.5 | — | — | — | — | — | |
| 4/4X without CPT | LE 20A 3-4P, LE 30/60A 3-9P,LC 30A 2-12P | 2 | 16 | 14 | 6.02 | 16.75 | 12 | — | — | — | — | — | |
| | LE 30/60A, 12P | 2 | 24 | 16 | 8.76 | 22.5 | 14.5 | — | — | — | — | — | |
| | LE 100A 3P | 2 | 24 | 16 | 8.76 | 22.5 | 14.5 | — | — | — | — | — | |
| | LE 200-400A,3P | 2 | 24 | 20 | 10 | 22.5 | 18.5 | — | — | — | — | — | |
| 3R/4/12 with CPT | LE 20A 3-4P, LE 30/60A 3-9P,LC 30A 2-12P | 2 | 16 | 13.25 | 6.12 | 15.25 | 11 | — | — | — | — | — | |
| | LE 30/60A, 12P | 2 | 26 | 13.12 | 7.56 | 25.25 | 10 | — | — | — | — | — | |
| | LE 100A 3P | 2 | 26 | 13.12 | 7.56 | 25.25 | 10 | — | — | — | — | — | |
| | LE 200-400A,3P | 2 | 26 | 17.62 | 12.5 | 25.19 | 15.5 | — | — | — | — | — | |
| 4/4X with CPT | LE 20A 3-4P, LE 30/60A 3-9P,LC 30A 2-12P | 2 | 16 | 14 | 6.02 | 16.75 | 12 | — | — | — | — | — | |
| | LE 30/60A, 12P | 2 | 24 | 16 | 8.76 | 22.5 | 14.5 | — | — | — | — | — | |
| | LE 100A 3P | 2 | 24 | 16 | 8.76 | 22.5 | 14.5 | — | — | — | — | — | |
| | LE 200-400A,3P | 2 | 24 | 20 | 10 | 22.5 | 18.5 | — | — | — | — | — | |

### Class LE Combo

| Enclosure Type | Type | Contactor Rating | Fig. | Outline Dimensions | | | Reference Drawing |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| 1, 12/3R & 4/4X with & without CPT | Fusible and Non-fusible Disconnect | 20–60A | 3 | 24 | 11 | 8 | |
| | | 100A | 3 | 24 | 20 | 8 | |
| | | 200A | 3 | 46 | 20 | 10 | |
| | | 300A | 3 | 76 | 22 | 13 | |
| | Circuit Breaker | 20–100A | 3 | 24 | 11 | 8 | |

**Note:** Dimensions are in inches.

① Mounting screw G size is 0.25".

# Enclosed Contactors, Class CLM, CM

## Dimensions

**Figure 1**

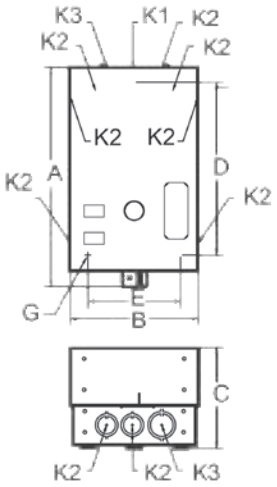



**Figure 2**

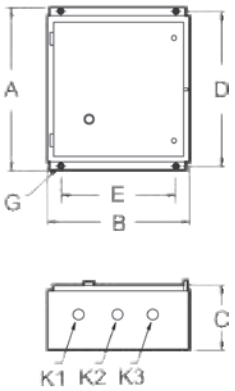
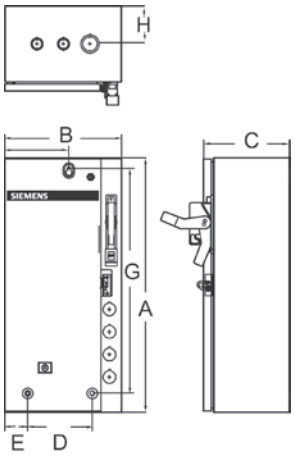



**Figure 3**




### Class CLM Non-combo

| Enclosure Type | Contactor Rating (Class CLM) | Fig. | Outline Dimensions | | | Mounting① | | Conduit Size | | | | | Reference Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | K1 | K2 | K3 | K4 | K5 | |
| 1 without CPT | 30A (2-5p) | 1 | 10.97 | 6.41 | 5.03 | 8.22 | 4.62 | 0.5 | 0.50–0.75 | 0.75–1 | — | — | |
| | 60A (2-5p) | 1 | 13.53 | 7.97 | 6.38 | 10.25 | 6.00 | 0.50–0.75 | 0.75–1 | 1–1.25 | — | — | |
| | 30–60A (6-12p) | 2 | 16.00 | 17.12 | 7.62 | 15.25 | 14.00 | 0.50–0.75 | 1.25–1.5 | 1.25–1.5 | — | — | |
| | 100A (2-5p) | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.50–0.75 | 1–1.25 | 1.5–2 | — | — | |
| | 200A (2-5p) | 1 | 24.88 | 13.38 | 8.12 | 21.75 | 9.00 | 0.50–0.75 | 1.25–1.5 | 2.5 | — | — | |
| | 300–400A (2-5p) | 2 | 48.00 | 24.00 | 12.00 | 46.50 | 22.50 | — | — | — | — | — | |
| 1 with CPT | 30A (2–5p) | 1 | 19.12 | 11.38 | 7.69 | 15.62 | 8.25 | 0.50–0.75 | 1–1.25 | 1.5–2 | — | — | |
| | 30–60A (6–12p) | 2 | 16.00 | 17.12 | 7.62 | 15.25 | 14.00 | 0.50–0.75 | 1.25–1.5 | 1.25–1.5 | — | — | |
| | 100-200A (2-5p) | 2 | 26.00 | 17.62 | 12.50 | 25.19 | 15.50 | — | 1.25–1.5 | 1.25–1.5 | — | — | |
| | 300–400A (2-5p) | 2 | 48.00 | 24.00 | 12.00 | 46.50 | 22.50 | — | — | — | — | — | |
| 3R/4/12 without CPT | 30A (2–12p), 60A (2 - 10p) | 2 | 16.00 | 13.25 | 6.12 | 15.25 | 11.00 | — | — | — | — | — | |
| | 100A (2-5p) | 2 | 16.00 | 13.00 | 9.50 | 15.12 | 11.00 | — | — | — | — | — | |
| | 60A (12p) | 2 | 19.00 | 22.00 | 8.00 | — | — | — | — | — | — | — | |
| | 200A (2-5p) | 2 | 26.00 | 17.62 | 12.50 | 23.19 | 15.50 | — | — | — | — | — | |
| | 300A -400A (3p) | 2 | 48.00 | 24.00 | 12.00 | 46.50 | 22.50 | — | — | — | — | — | |
| 3R/4/12 with CPT | 30A (2-5p) | 2 | 16.00 | 13.25 | 6.12 | 15.25 | 11.00 | — | — | — | — | — | |
| | 30A (6-12p) | 2 | 16.00 | 17.12 | 7.62 | 15.25 | 14.00 | — | — | — | — | — | |
| | 60-100A (2-5p) | 2 | 16.00 | 13.00 | 9.50 | 15.12 | 11.00 | — | — | — | — | — | |
| | 60A (6-12p) | 2 | 19.00 | 22.00 | 8.00 | — | — | — | — | — | — | — | |
| | 200A (3p) | 2 | 26.00 | 17.62 | 12.50 | 25.19 | 15.50 | — | — | — | — | — | |
| | 300–400A (3p) | 2 | 48.00 | 24.00 | 12.00 | 46.50 | 22.50 | — | — | — | — | — | |
| 4/4X without CPT | 30A (2–12p), 60A (2 - 10p) | 2 | 16.00 | 14.00 | 6.02 | 16.75 | 12.00 | — | — | — | — | — | |
| | 100A (2-5p) | 2 | 16.00 | 16.00 | 10.00 | 14.50 | 14.50 | — | — | — | — | — | |
| | 60A (12p) | 2 | 19.00 | 22.00 | 8.00 | — | — | — | — | — | — | — | |
| | 200A (2-5p) | 2 | 24.00 | 20.00 | 10.00 | 22.50 | 18.50 | — | — | — | — | — | |
| | 300A -400A (3p) | 2 | 48.00 | 20.00 | 12.50 | 49.00 | 10.00 | — | — | — | — | — | |
| 4/4X with CPT | 30A (2-5p) | 2 | 16.00 | 14.00 | 6.02 | 16.75 | 12.00 | — | — | — | — | — | |
| | 30A (6-12p) | 2 | 16.00 | 20.00 | 8.00 | 14.50 | 18.50 | — | — | — | — | — | |
| | 60-100A (2-5p) | 2 | 16.00 | 16.00 | 10.00 | 14.50 | 14.50 | — | — | — | — | — | |
| | 60A (6-12p) | 2 | 24.00 | 20.00 | 8.00 | 22.50 | 18.50 | — | — | — | — | — | |
| | 200A (3p) | 2 | 24.00 | 20.00 | 10.00 | 22.50 | 18.50 | — | — | — | — | — | |
| | 300–400A (3p) | 2 | 48.00 | 20.00 | 12.50 | 49.00 | 10.00 | — | — | — | — | — | |

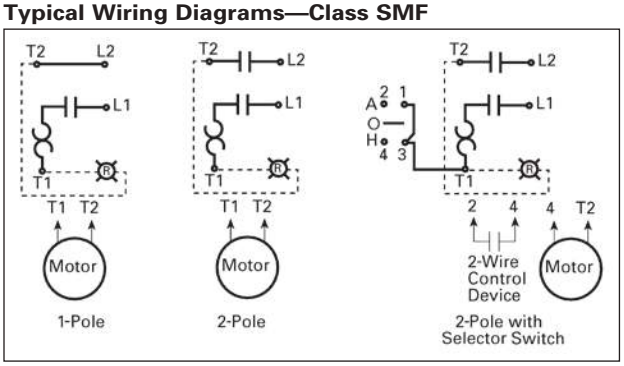
### Class CM Combo

| Enclosure Type | Type | Contactor Rating | Fig. | Outline Dimensions | | | Reference Drawing |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| 1, 12/3R & 4/4X with & without CPT | Fusible and Non-fusible Disconnect | 30–60A | 3 | 24 | 11 | 8 | |
| | | 100A | 3 | 24 | 20 | 8 | |
| | | 200A | 3 | 42 | 30 | 12 | |
| | | 300A | 3 | 60 | 38 | 12 | |
| | Circuit Breaker | 30–100A | 3 | 24 | 11 | 8 | |

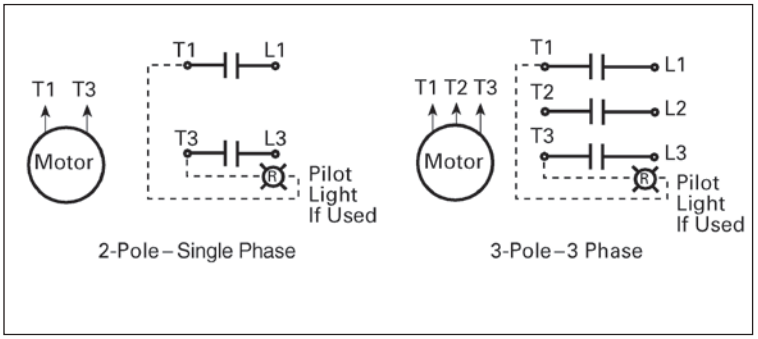
**Note:** Dimensions are in inches.

① Mounting screw G size is 0.25".

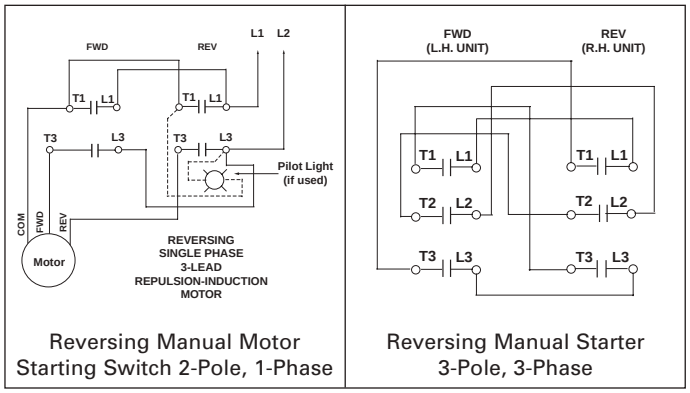
### Typical Wiring Diagrams—Class SMF




### Typical Wiring Diagrams—MMS



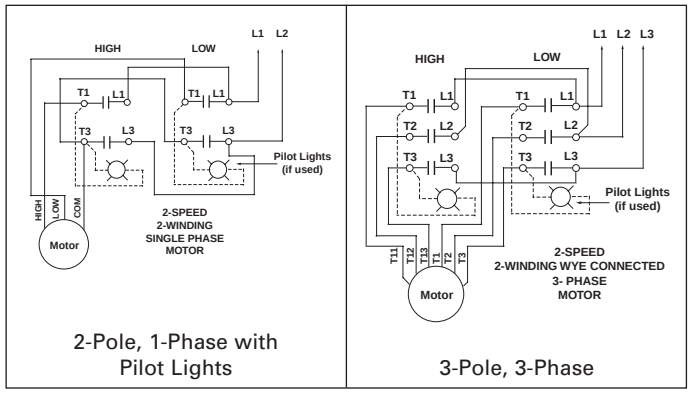

### AC Reversing Manual Starter and Manual Motor Starting Switches




Reversing Manual Motor Starting Switch 2-Pole, 1-Phase

Reversing Manual Starter 3-Pole, 3-Phase

### AC 2-Speed Manual Motor Starting Switches

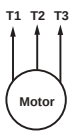



2-Pole, 1-Phase with Pilot Lights

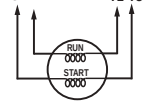
3-Pole, 3-Phase

### 3-Pole Reversing Switches

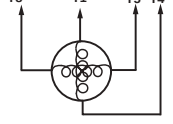
| THREE PHASE MOTOR | | | |
|---|---|---|---|
| LINE AND MOTOR LEADS | | L.H. UNIT | R.H. UNIT |
| Line | L1 to<br>L2 to<br>L3 to | —<br>—<br>— | L1<br>L2<br>L3 |
| Meter | T1 to<br>T2 to<br>T3 to | T1<br>T2<br>T3 | —<br>—<br>— |
| Pilot Light Leads to | | —<br>— | T1<br>T3 |




| SINGLE PHASE CAPACITOR OR SPLIT PHASE MOTOR | | | |
|---|---|---|---|
| LINE AND MOTOR LEADS | | L.H. UNIT | R.H. UNIT |
| Line | L1 to<br>L2 to | —<br>— | L1<br>L2 |
| Meter | T1 to<br>T4 to<br>T5 to<br>T8 to | T1<br>T3<br>L1<br>T2 | —<br>—<br>—<br>— |
| Furnish Jumper | | L3 to | T2 |
| Pilot Light Leads to | | —<br>— | T1<br>T3 |

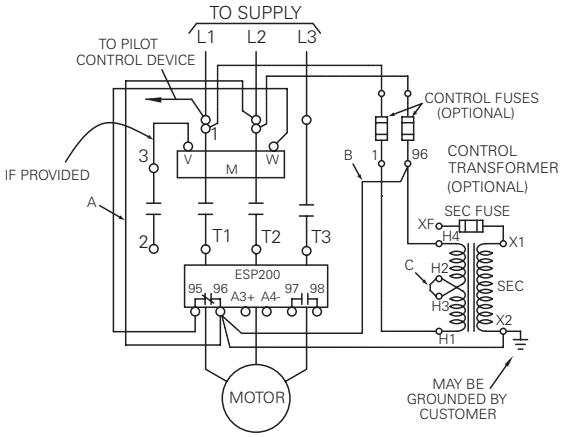



| SINGLE PHASE 4-LEAD REPULSION - INDUCTION MOTOR | | | |
|---|---|---|---|
| LINE AND MOTOR LEADS | | L.H. UNIT | R.H. UNIT |
| Line | L1 to<br>L2 to | —<br>— | L1<br>L2 |
| Meter | T1 to<br>T4 to<br>T5 to<br>T8 to | T2<br>L3<br>T3<br>T1 | —<br>—<br>—<br>— |
| Furnish Jumper | | L3 to | T2 |
| Pilot Light Leads to | | —<br>— | L1<br>T2 |

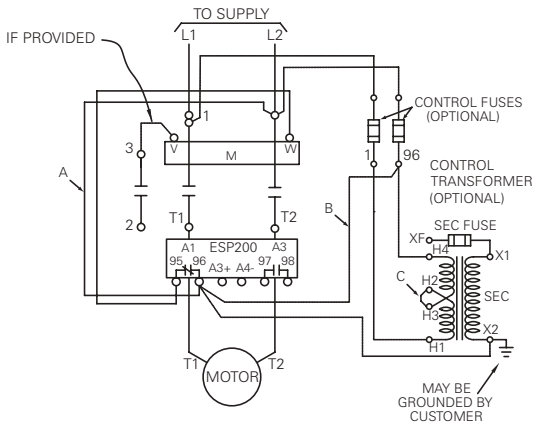


### 3-Phase and Single Phase Magnetic Starters

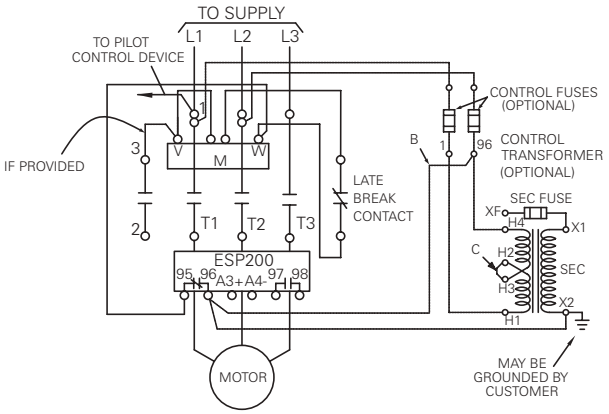
Three Phase Magnetic Starter, Size 00–4



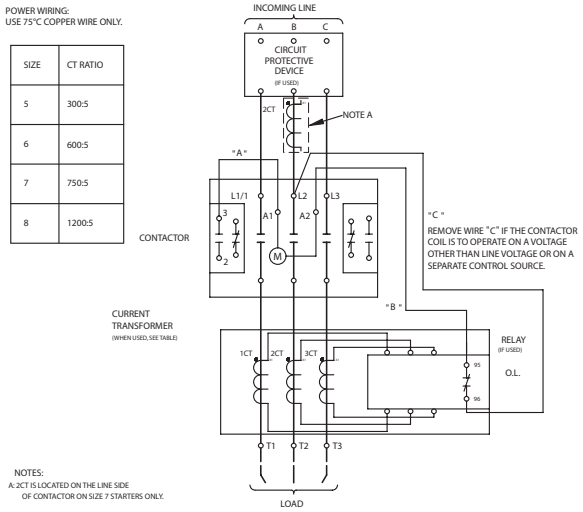

Single Phase Magnetic Starter①②




Three Phase Magnetic Starter with DC Coil, Sizes 00–4




Solid State Overload 3-Phase Sizes 5-8



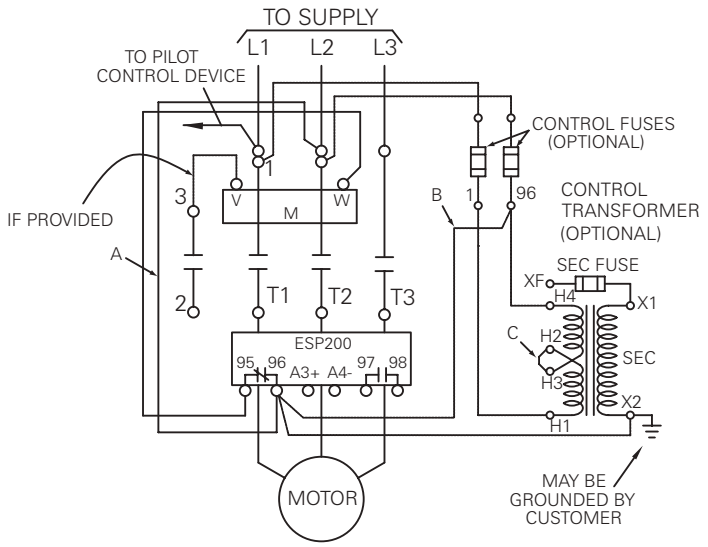

① Warning: The ESP200 Starter and Single Phase Motor must be wired as shown above. For L1, L2 do not use the middle terminal or hole.

② Full Load Amps (FLA): Adjustment of the ESP200 solid state overload relay accommodates the single phase motor.

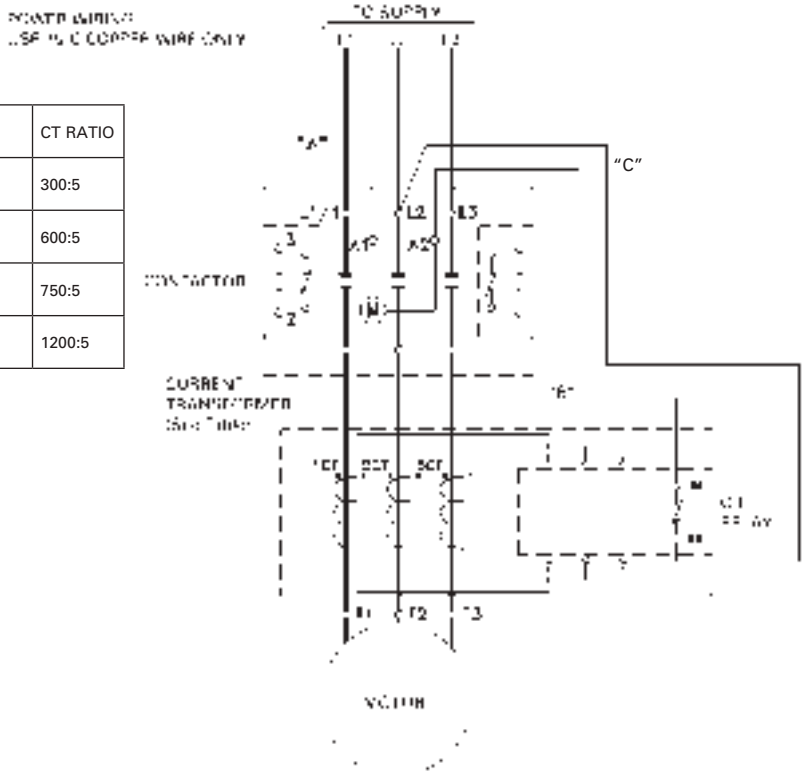
## Wiring Diagrams

### 3-Phase

Size 00–4①




Size 5–8②



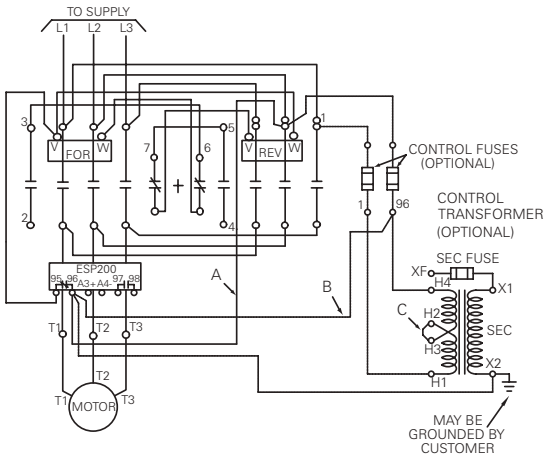

| SIZE | CT RATIO |
|---|---|
| 5 | 300:5 |
| 6 | 600:5 |
| 7 | 750:5 |
| 8 | 1200:5 |

① Remove wire "C" if control transformer is used. For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse line terminals.

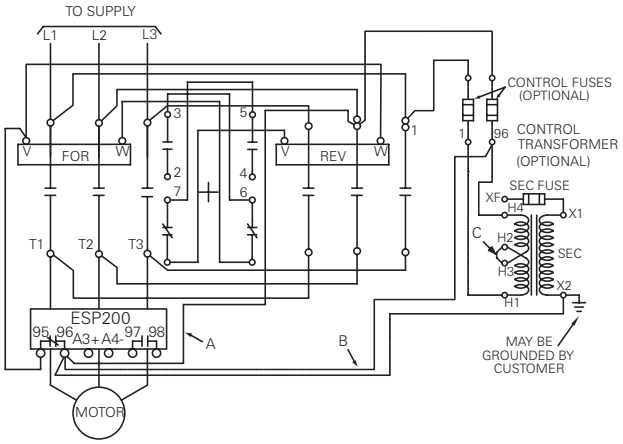
② Remove wire "C" if the contactor coil is to operate on a voltage other than line voltage or in a separate control source.

### 3-Phase Solid State Overload

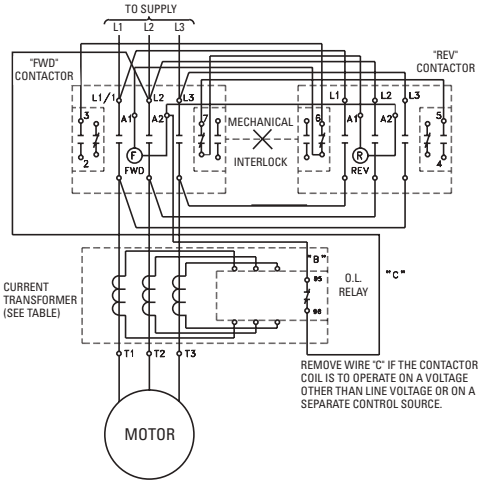
3-Phase Reversing Magnetic Starter
Sizes 00–1¾



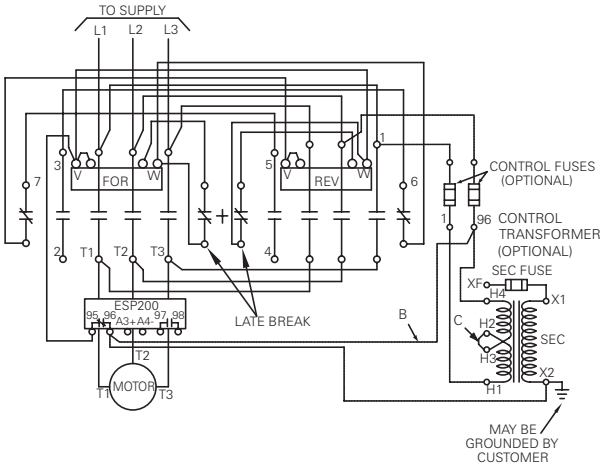

3-Phase Reversing Magnetic Starter
Sizes 2–4



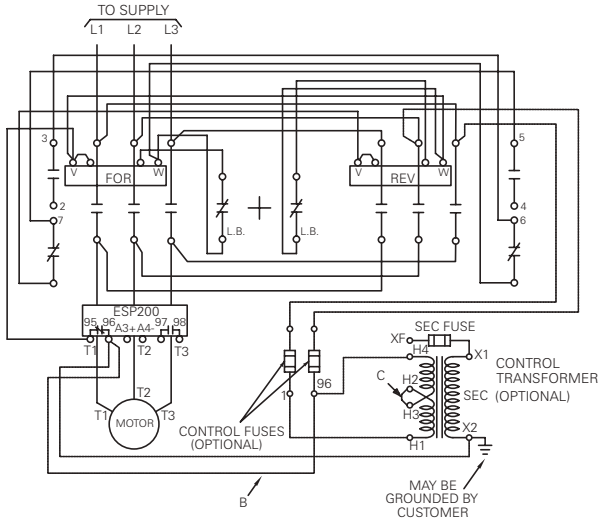

Solid State Overload
Sizes 5–6




3-Phase Reversing Magnetic Starter
with DC Coil, Sizes 00–1¾



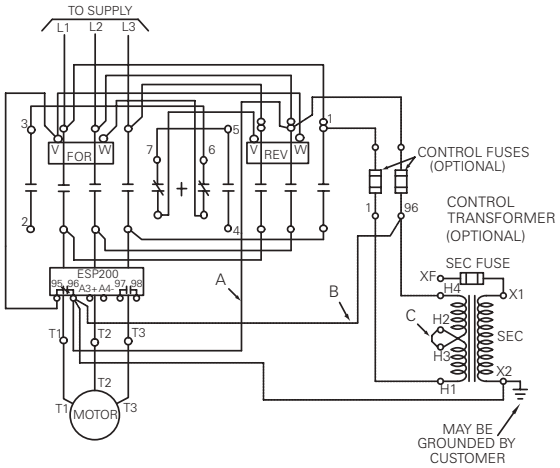

3-Phase Reversing Magnetic Starter
with DC Coil, Sizes 2–4



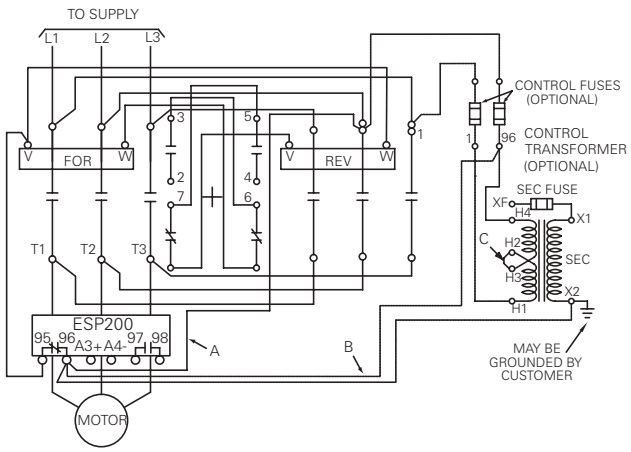
## Wiring Diagrams

### 3-Phase

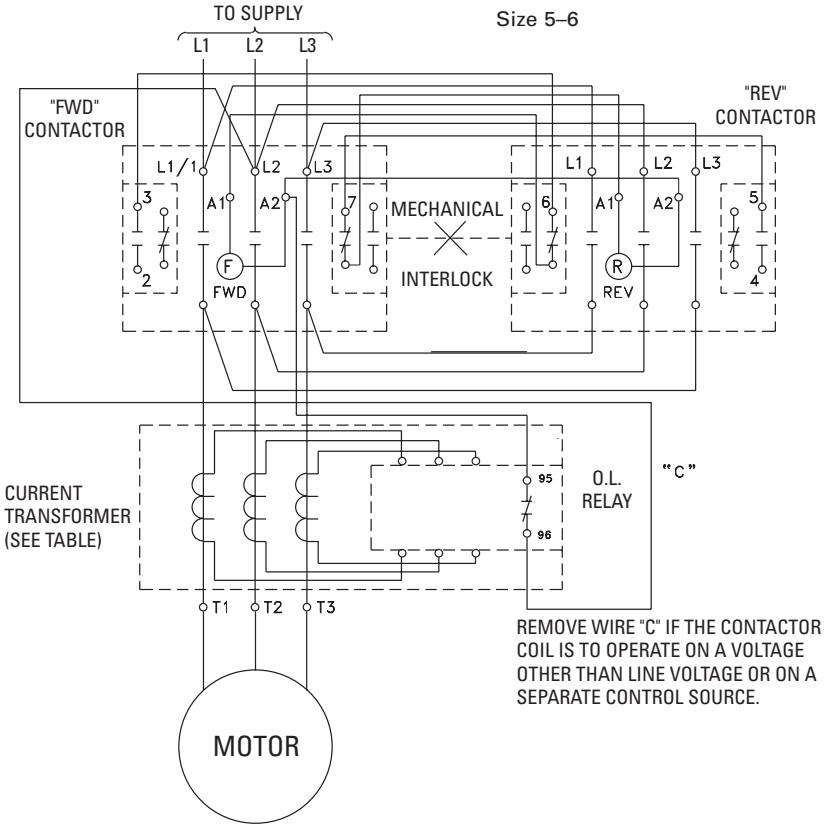
3-Phase Reversing Magnetic Starter
Sizes 00–1¾




3-Phase Reversing Magnetic Starter
Sizes 2–4

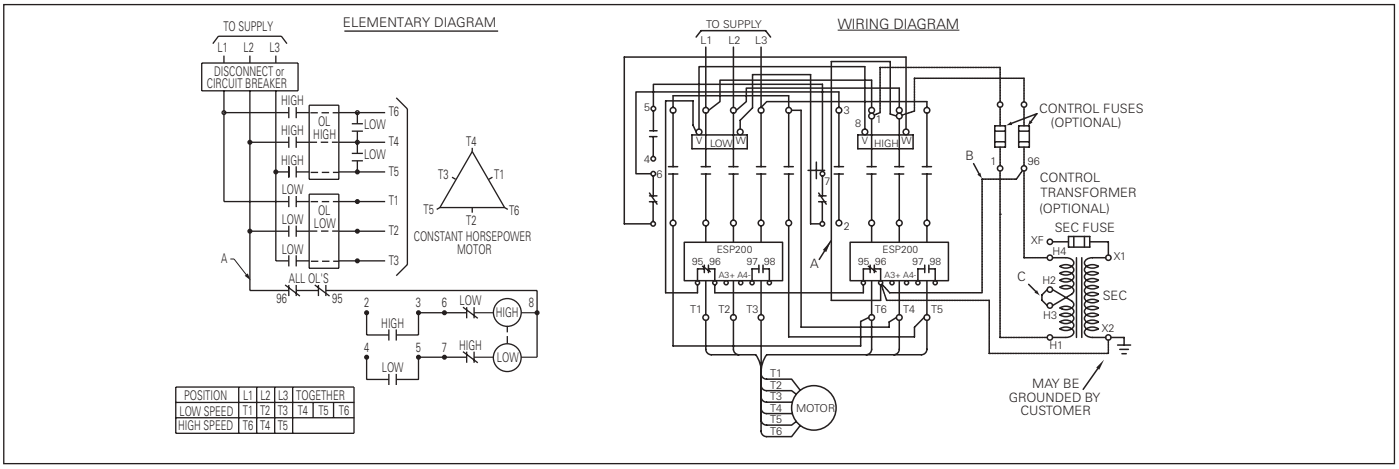



Size 5–6

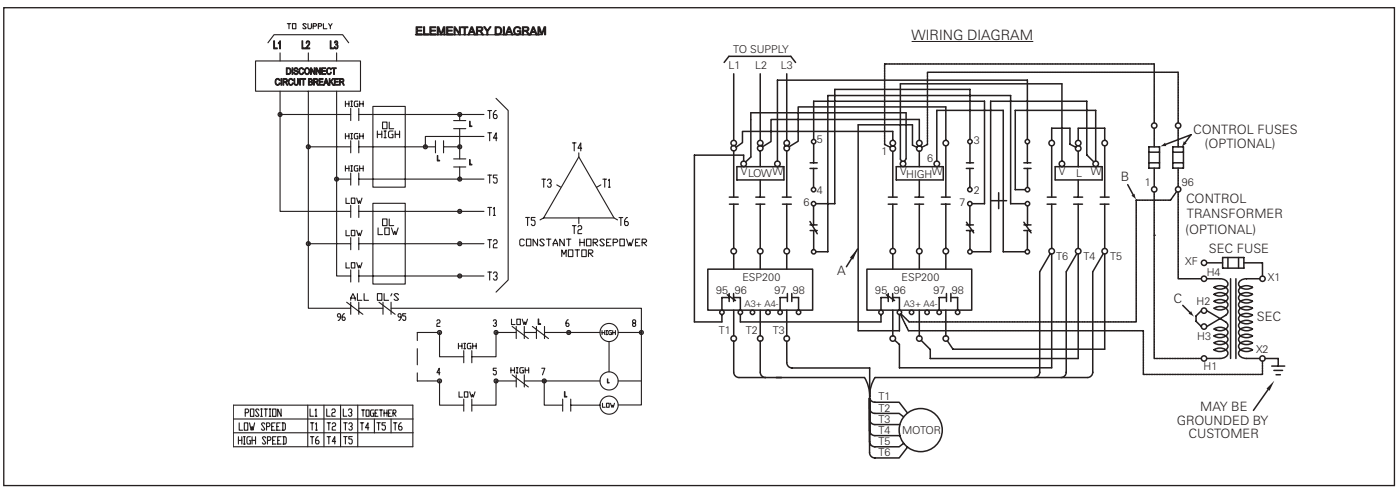



| SIZE | CT RATIO |
|---|---|
| 5 | 300:5 |
| 6 | 600:5 |

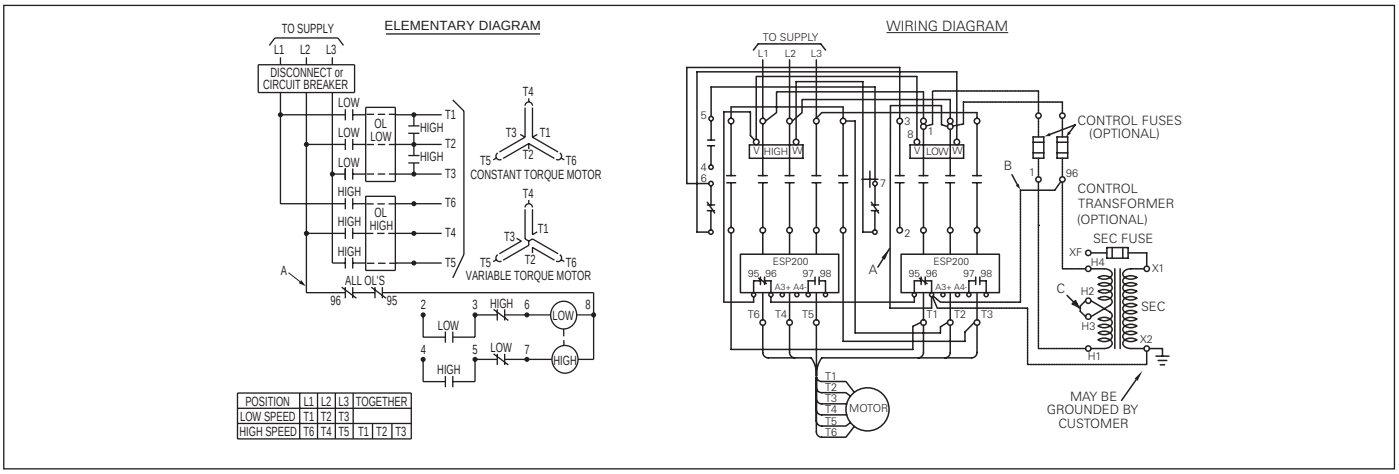
### 1 Winding Constant Horsepower Size 0–1 3/4




### 1 Winding Constant Horsepower Size 2–4

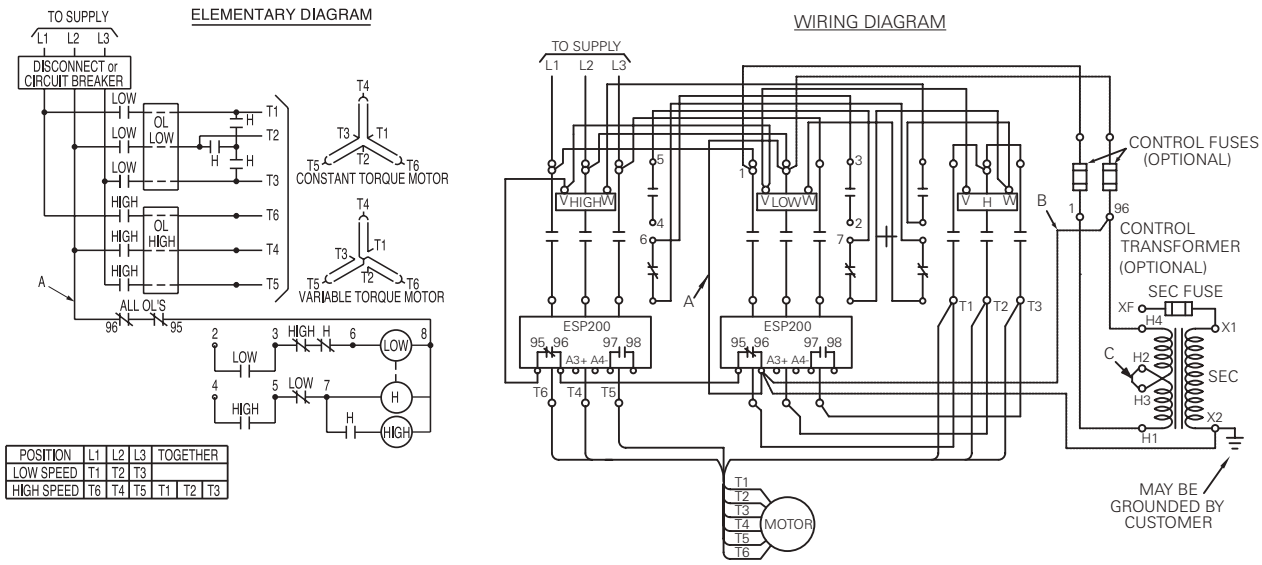



### 1 Winding Constant or Variable Torque Size 0–1 3/4



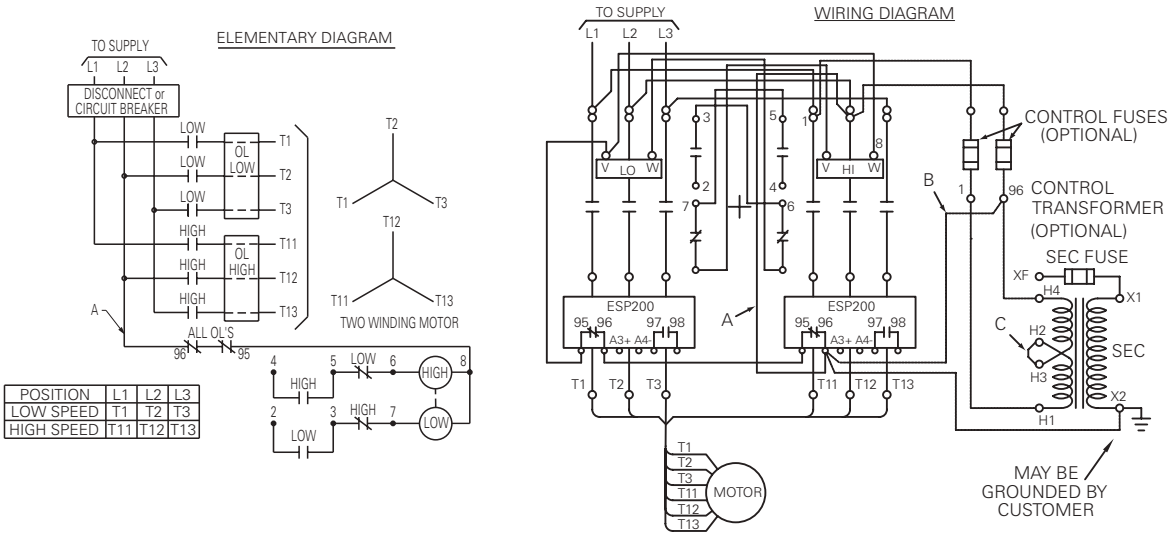

**Note:** For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

### 1 Winding Constant or Variable Torque Size 2–4




**D68784002**

### 2 Winding Constant Horsepower & 2 Winding Constant or Variable Torque Size 0–4

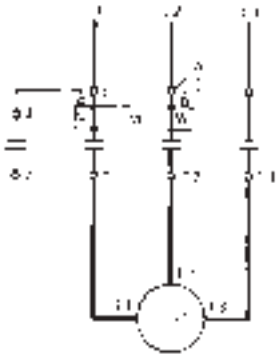



**D68786001**

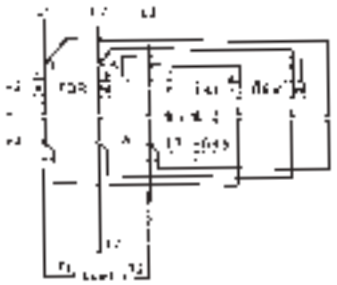
**Note:** For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

### 3-Phase Magnetic Contactors and Reversing Contactors

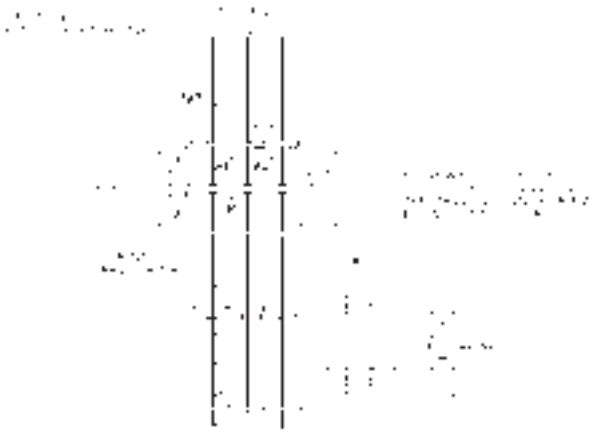
3-Phase Contactors—Size 00–4



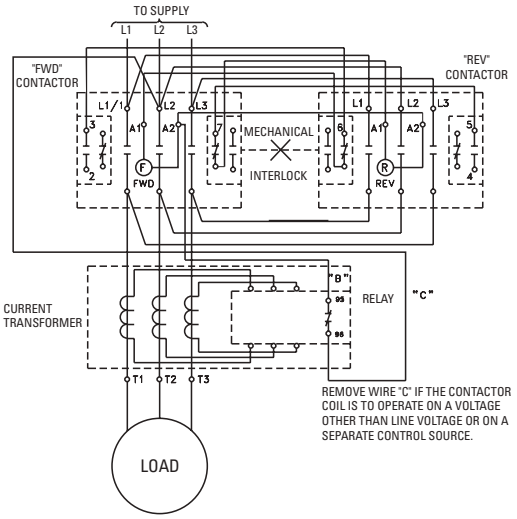
3-Phase Reversing Contactors—Size 00–4



3-Phase Contactors—Size 5, 6

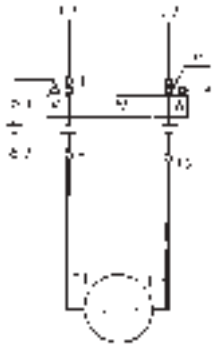


3-Phase Reversing Contactors—Size 5, 6

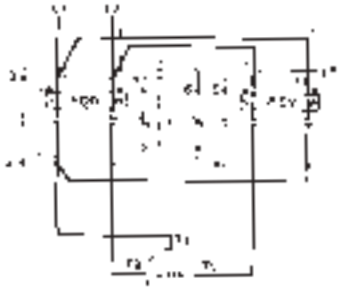



### Single Phase Magnetic Contactors and Reversing Contactors

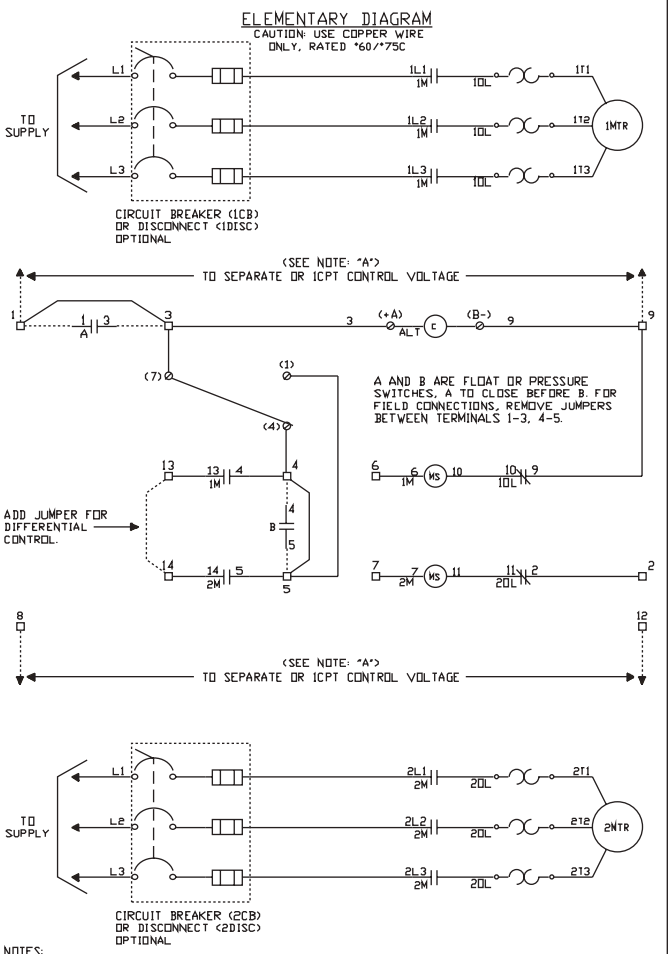
Single Phase Contactors—Size 00–4



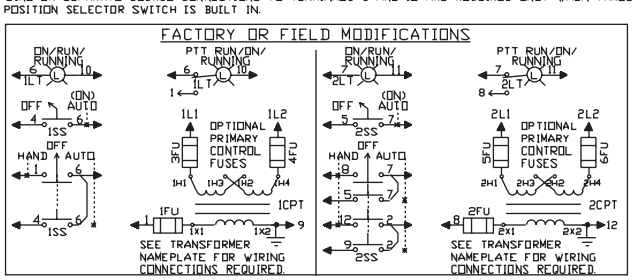
Single Phase Reversing Contactors—Size 00–1P



### Standard Duplex Pump Panel (92)



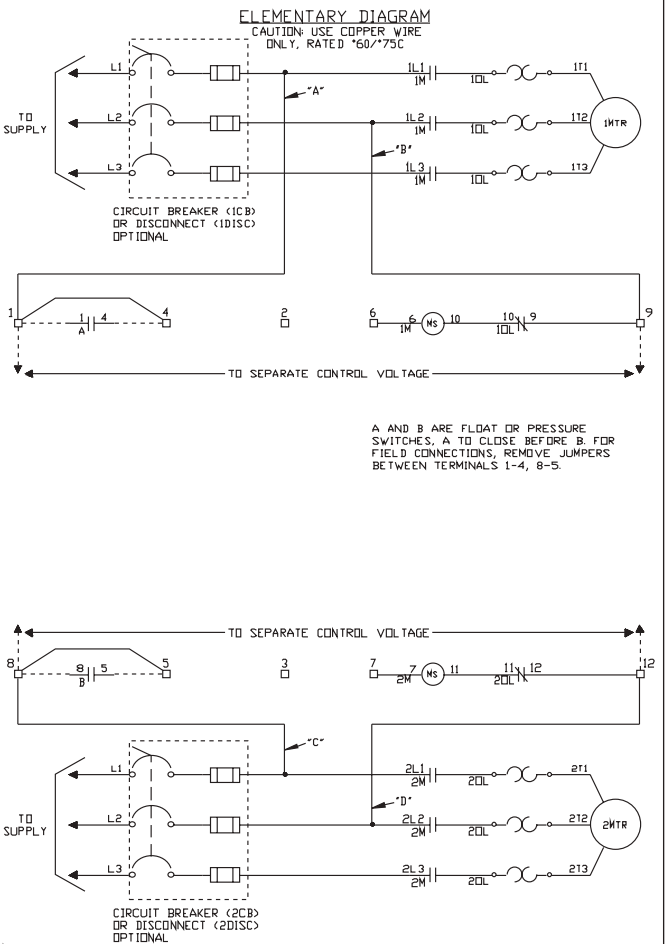

NOTES:
A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE: CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.
B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.
C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 4-6, 5-7, AND 9-2.
D. FOR TWO POSITION SELECTOR SWITCHES, WIRE AS SHOWN ALSO ADD JUMPER BETWEEN TERMINALS 9-2.
E. LINE OR SEPARATE SOURCE CONNECTIONS TO TERMINALS 8 AND 12 ARE REQUIRED ONLY WHEN THREE POSITION SELECTOR SWITCH IS BUILT IN.



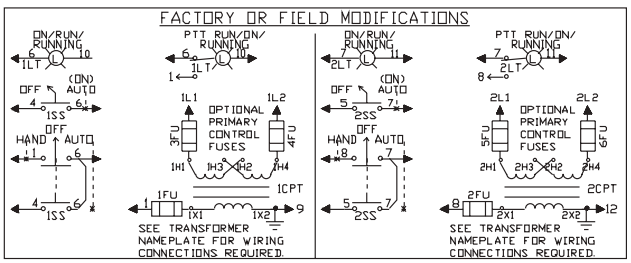

TB LAYOUT (REF)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|

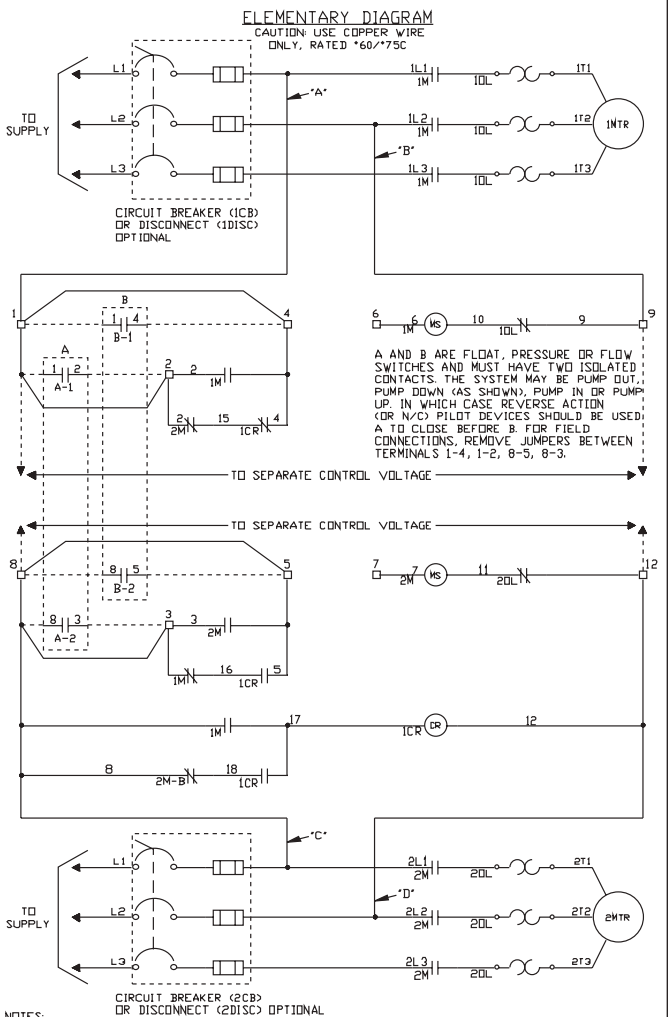
### Duplex Panel w/o alternator (95)



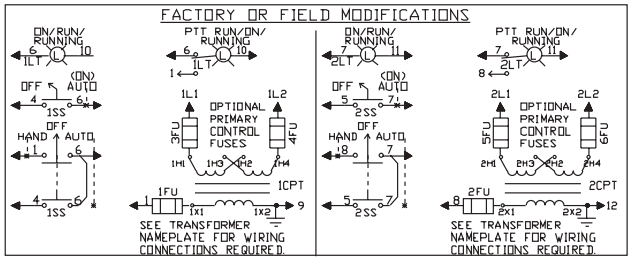

NOTES:
A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A","B","C", AND "D" AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.
B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.
C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 4-6, 5-7.



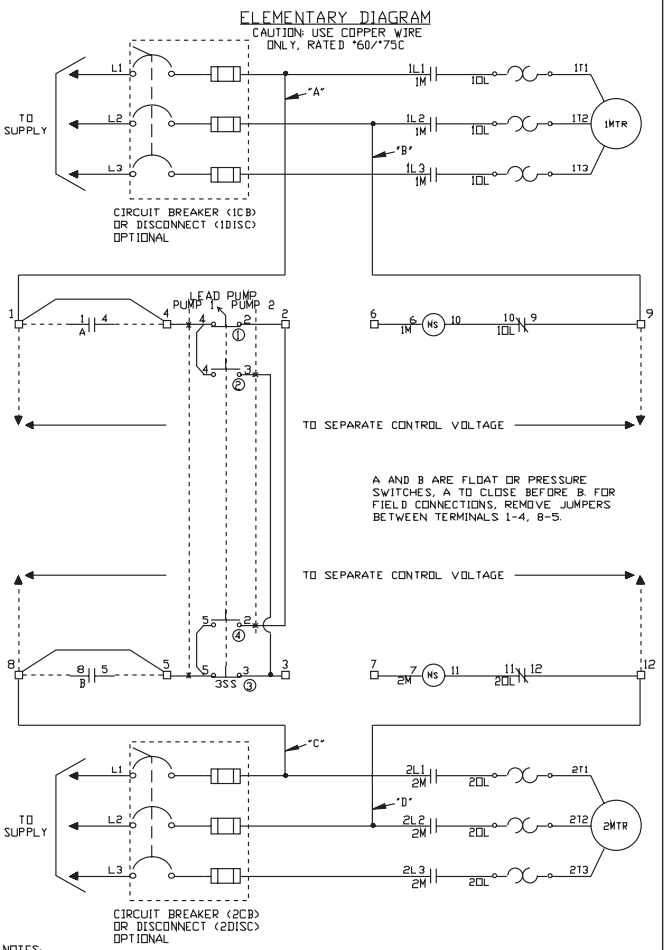
## Duplex Panel with Relay Alternation (93)



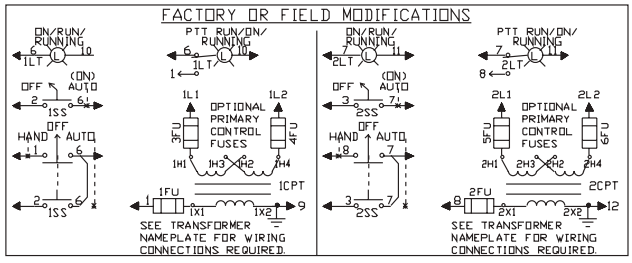

NOTES:
A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A","B","C", AND "D" AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.
B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.



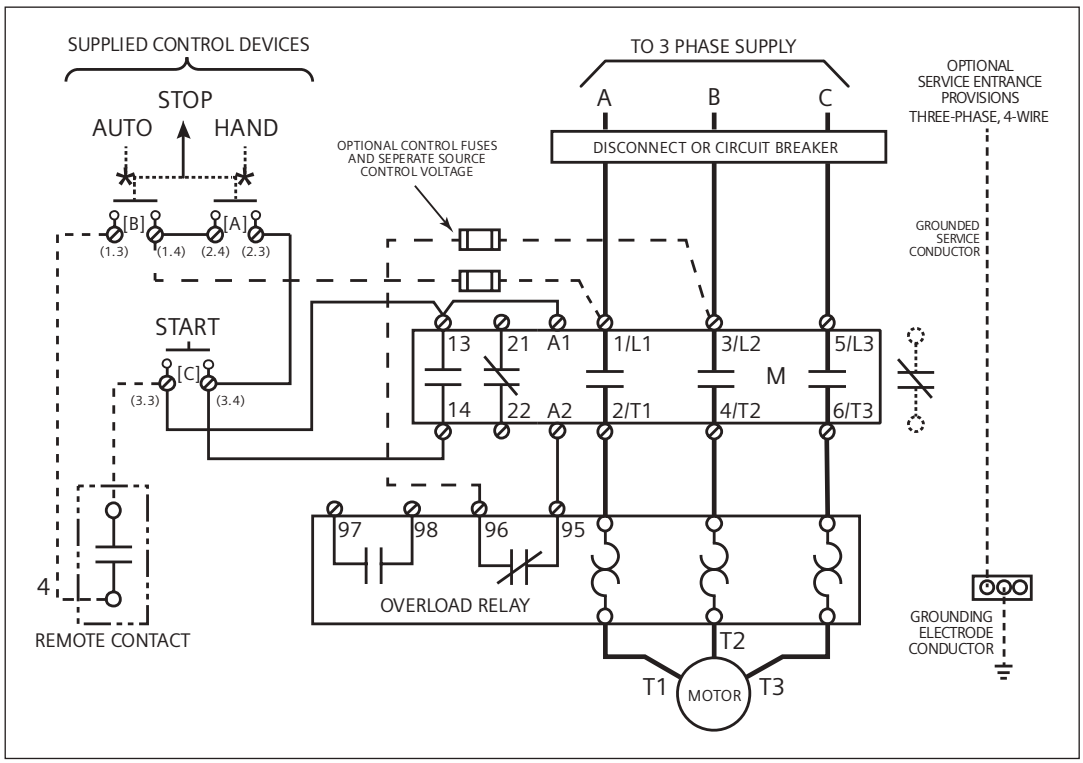

## Duplex Panel with Lead Pump Transfer Switch (94)



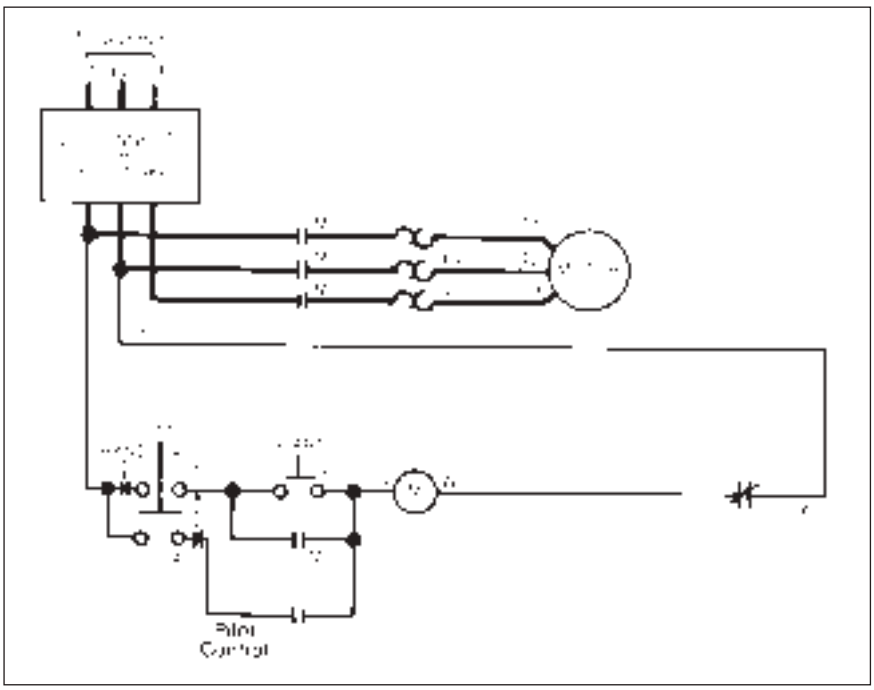

NOTES:
A. FOR SEPARATE OR CPT CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A","B","C", AND "D" AND CONNECT PER DOTTED LINES OR TO 1 AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.
B. FOR PROTECTION OF INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE N.E.C., USE FUSE KIT 49MAFB4.
C. TO USE THIS CONTROLLER W/O SELECTOR SWITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF TERMINALS 2-6, 3-7.
D. Ⓢ = SELECTOR SWITCH CONTACT LOCATION



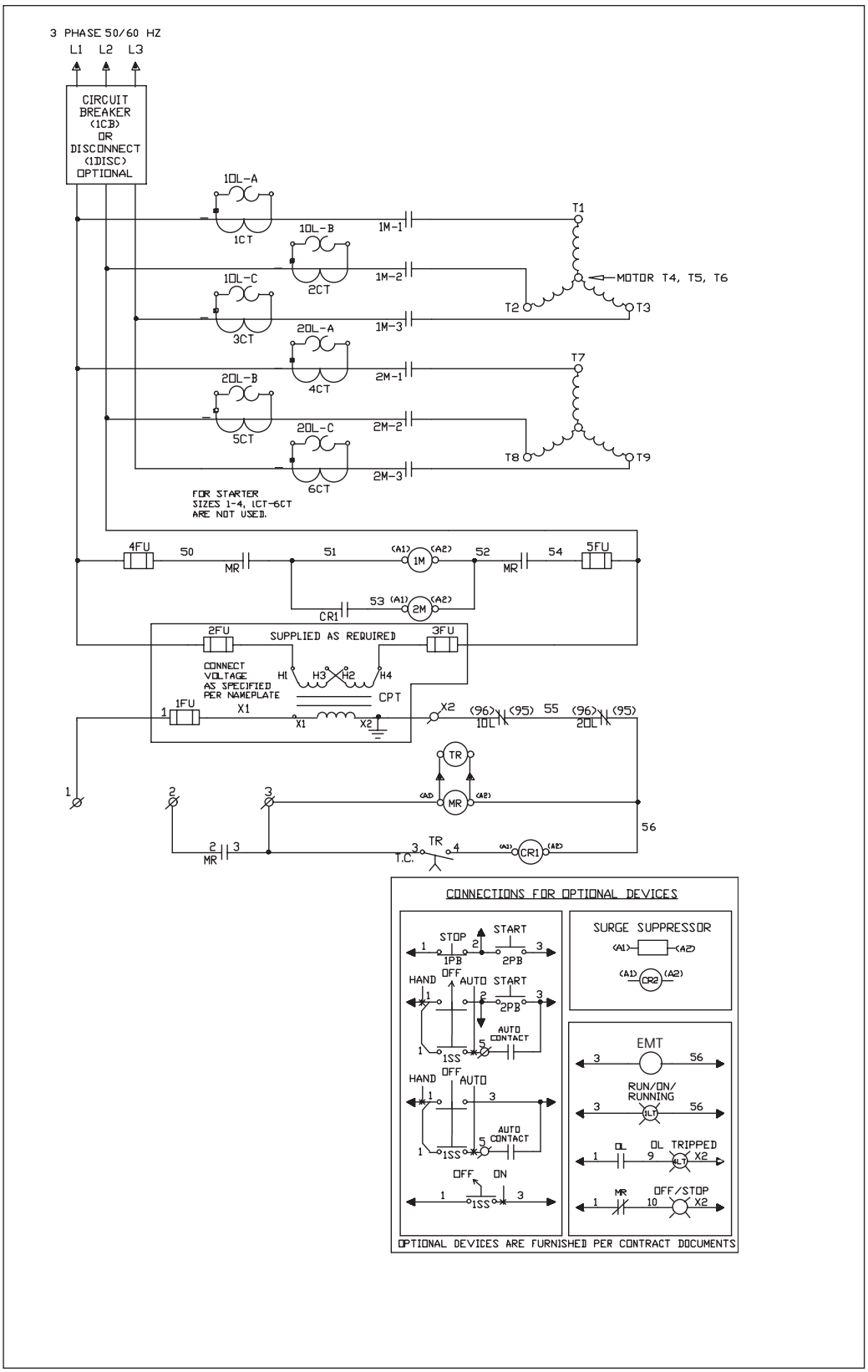
### 3RE48 Pump Panel



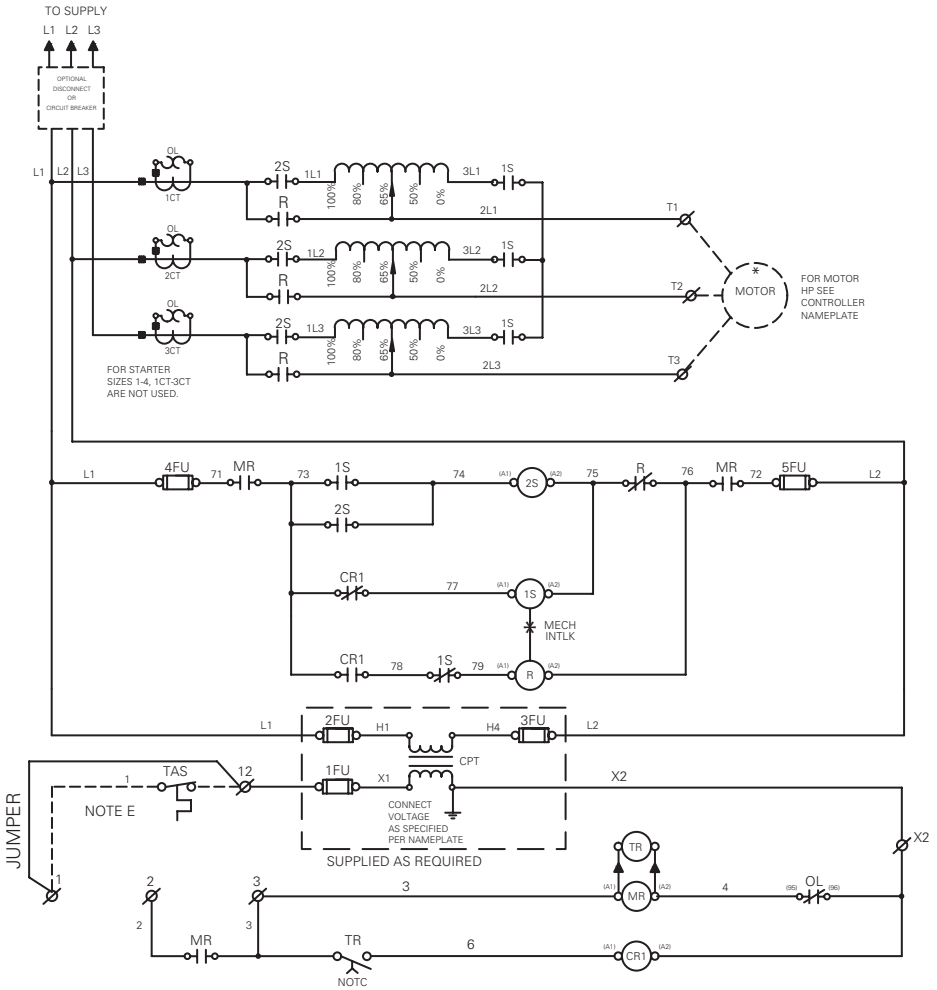

### Standard Class 87 Pump Panel



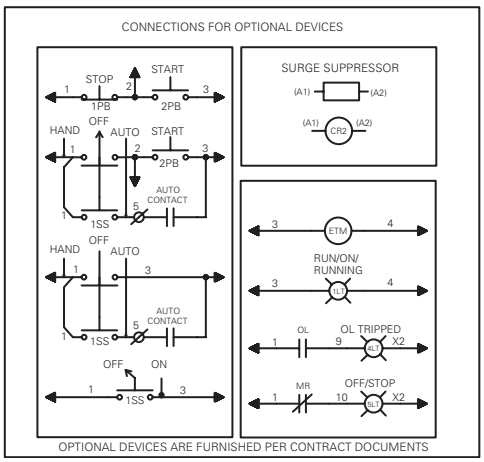
### Part Winding

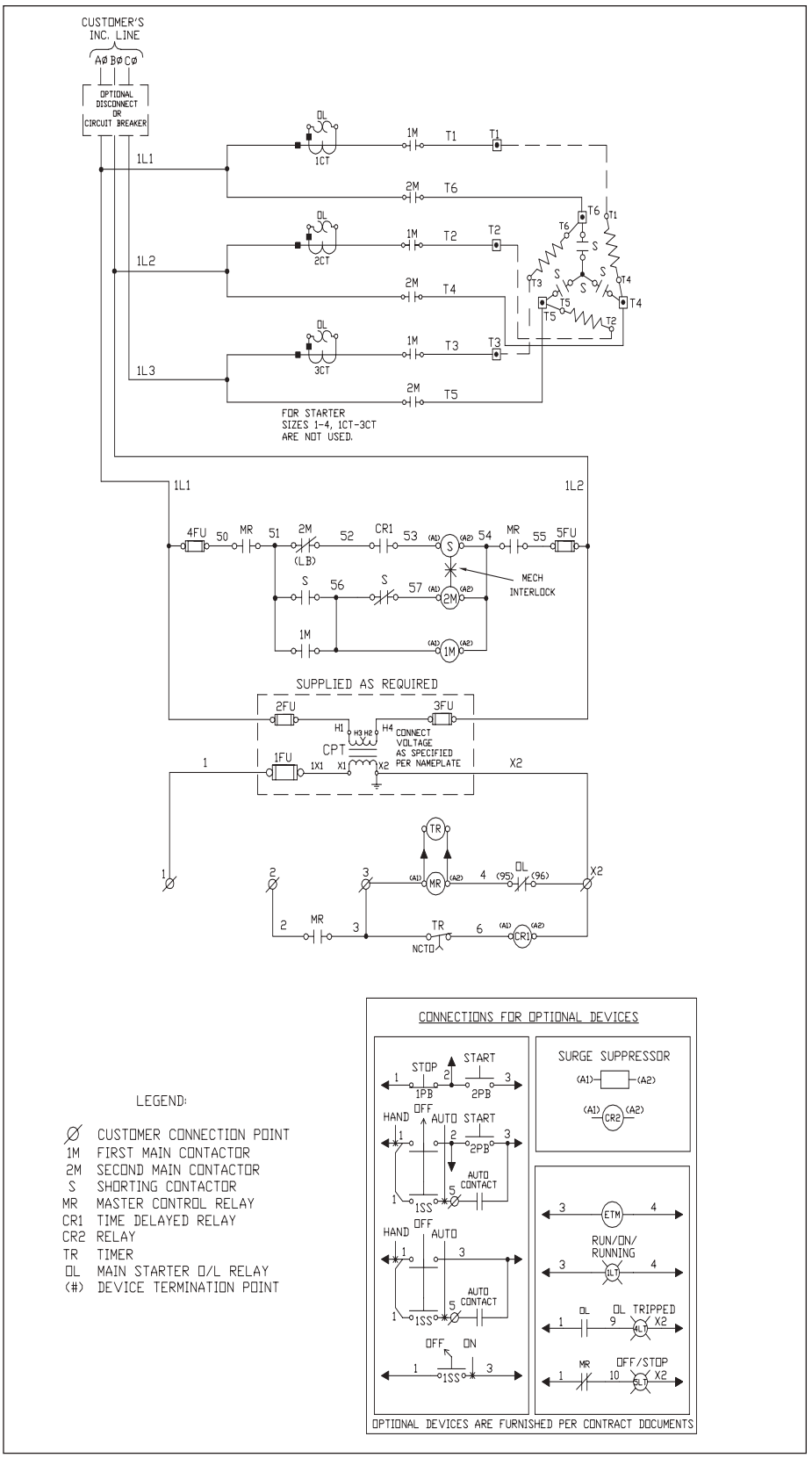


## Auto Transformer

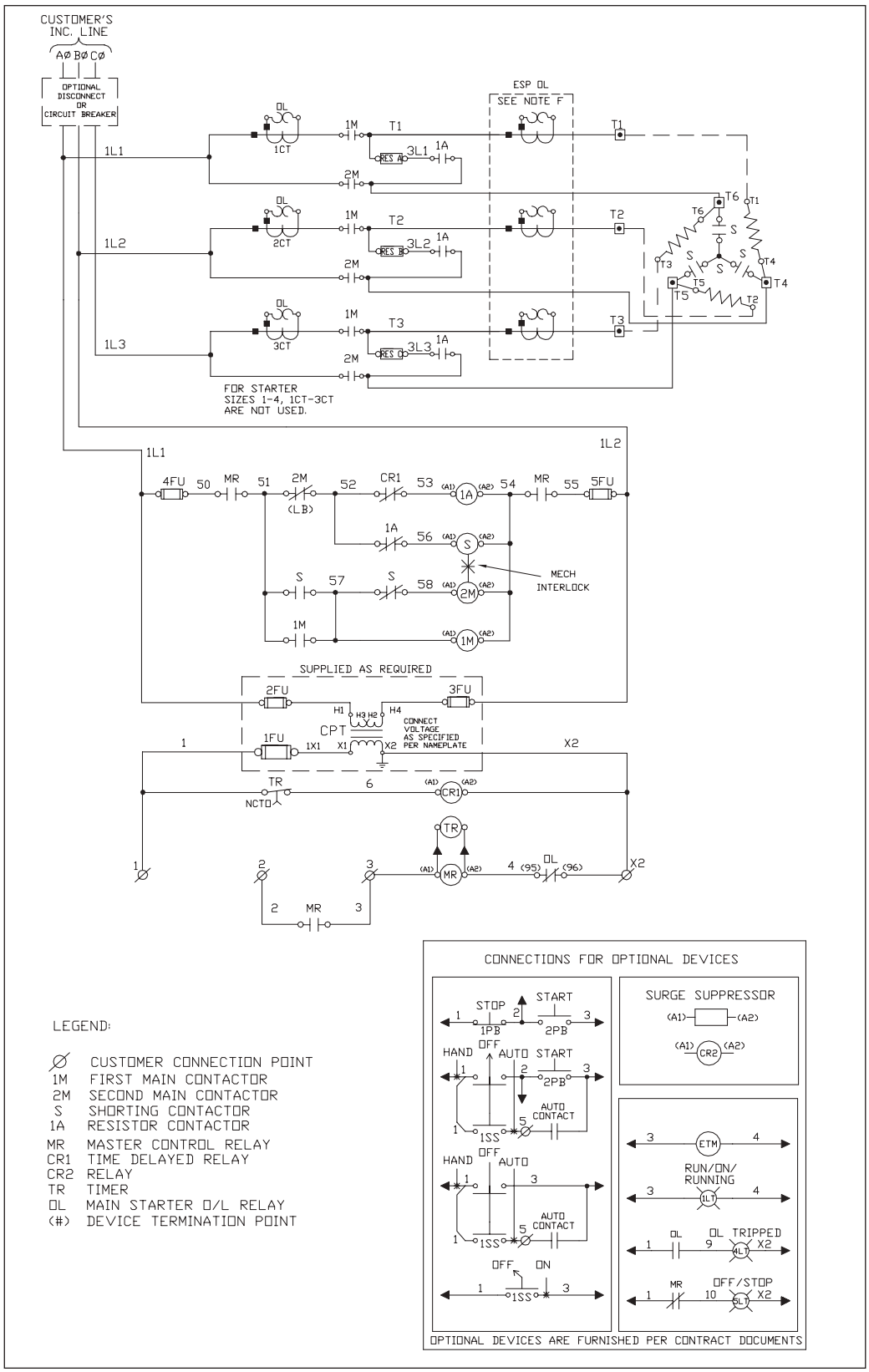



**Note E:**
Remove jumper if thermal protection switch is provided.




CUSTOMER'S INC. LINE
AØ BØ CØ
OPTIONAL DISCONNECT OR CIRCUIT BREAKER
1L1
1L2
1L3
OL
1CT
2CT
3CT
1M
2M
T1
T2
T3
T4
T5
T6
FOR STARTER SIZES 1-4, 1CT-3CT ARE NOT USED.
4FU
50
MR
51
2M
52
CR1
53
54
55
5FU
(LB)
S
56
57
MECH INTERLOCK
SUPPLIED AS REQUIRED
2FU
3FU
H1
H3
H2
H4
CONNECT VOLTAGE AS SPECIFIED PER NAMEPLATE
CPT
1FU
1X1
X1
X2
TR
MR
OL
(95)
(96)
CR1
NCTD
LEGEND:
Ø CUSTOMER CONNECTION POINT
1M FIRST MAIN CONTACTOR
2M SECOND MAIN CONTACTOR
S SHORTING CONTACTOR
MR MASTER CONTROL RELAY
CR1 TIME DELAYED RELAY
CR2 RELAY
TR TIMER
OL MAIN STARTER O/L RELAY
(#) DEVICE TERMINATION POINT
CONNECTIONS FOR OPTIONAL DEVICES
STOP
START
1PB
2PB
HAND
OFF
AUTO START
AUTO CONTACT
1SS
AUTO
ON
SURGE SUPPRESSOR
(A1)
(A2)
CR2
ETM
RUN/ON/ RUNNING
AL
OL TRIPPED
MR
OFF/STOP
OPTIONAL DEVICES ARE FURNISHED PER CONTRACT DOCUMENTS

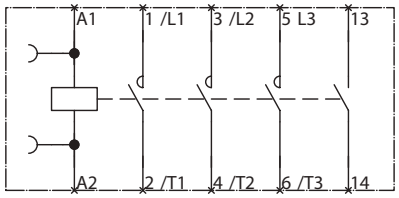
### Wye Delta (Closed Transition)



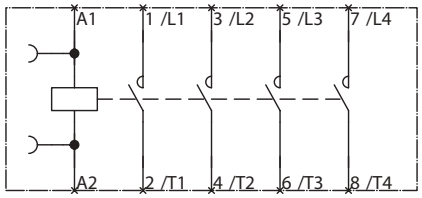

LEGEND:

| | |
|---|---|
| Ø | CUSTOMER CONNECTION POINT |
| 1M | FIRST MAIN CONTACTOR |
| 2M | SECOND MAIN CONTACTOR |
| S | SHORTING CONTACTOR |
| 1A | RESISTOR CONTACTOR |
| MR | MASTER CONTROL RELAY |
| CR1 | TIME DELAYED RELAY |
| CR2 | RELAY |
| TR | TIMER |
| OL | MAIN STARTER O/L RELAY |
| (#) | DEVICE TERMINATION POINT |

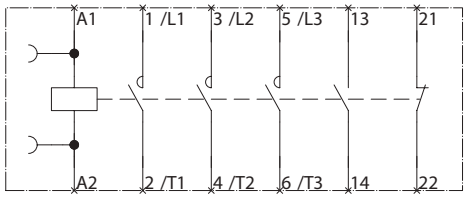
**LEN00B003 (20A 3 Pole)**



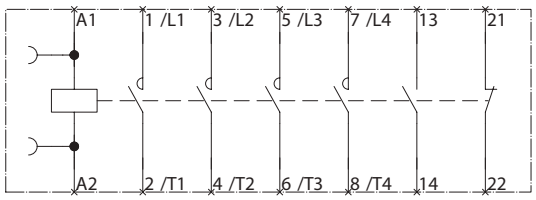

**LEN00B004 (20A 4 Pole)**



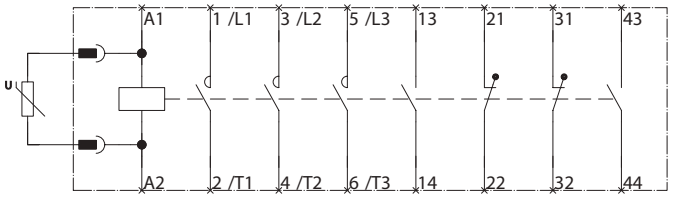

**LEN00C003 (30A 3 Pole)**
**LEN00D003 (60A 3 Pole)**
**LEN00E003 (100A 3 Pole)**



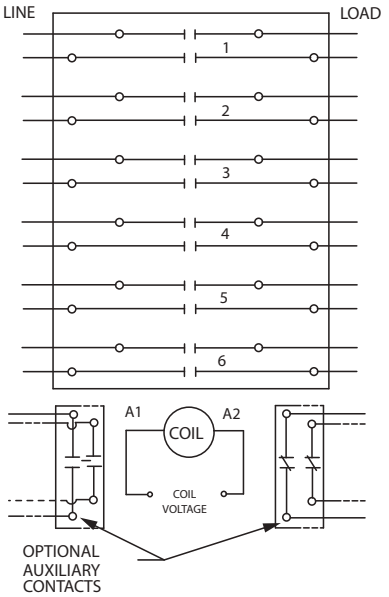

**LEN00C004 (30A 4 Pole)**




**LEN00F003 (200A 3 Pole)**
**LEN00G003 (300A 3 Pole)**
**LEN00H003 (400A 3 Pole)**

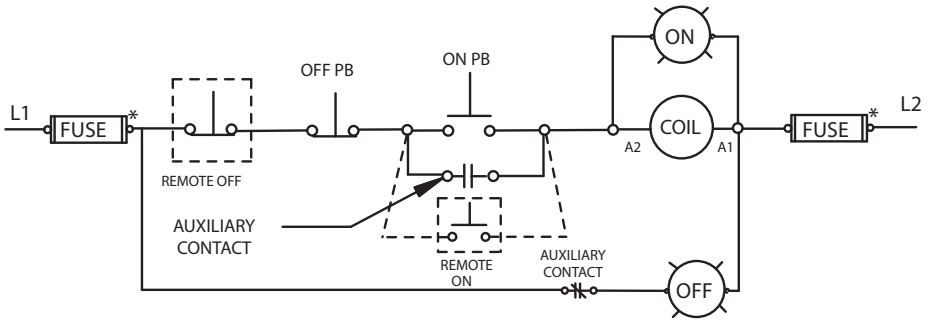



**LCE00C (30A 2-12 Pole)**

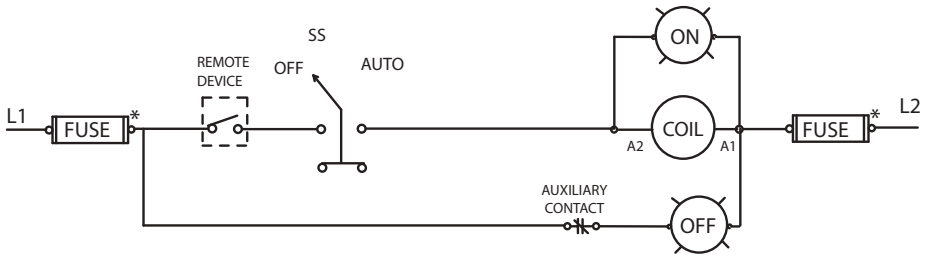


## Optional Pilot Devices for Electrically Held Contactor

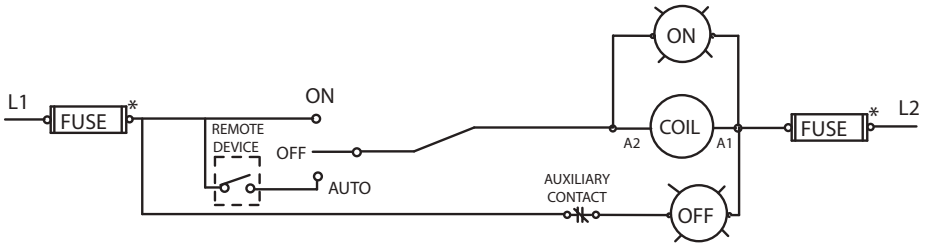
**ON and OFF Push buttons**



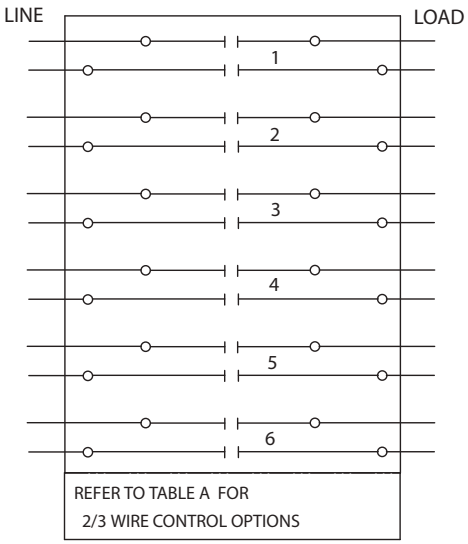

**OFF-ON or OFF-AUTO Selector Switch**




**OFF-ON-AUTO HAND-OFF-AUTO Selector Switch**




* -- IF USED


LINE
LOAD
1
2
3
4
5
6
REFER TO TABLE A FOR
2/3 WIRE CONTROL OPTIONS

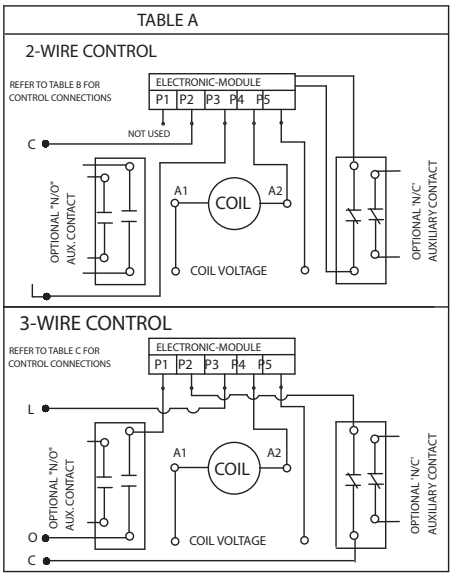


TABLE A
2-WIRE CONTROL
REFER TO TABLE B FOR CONTROL CONNECTIONS
ELECTRONIC-MODULE
P1 P2 P3 P4 P5
NOT USED
C
OPTIONAL "N/O" AUX. CONTACT
A1
COIL
A2
COIL VOLTAGE
OPTIONAL "N/C" AUXILIARY CONTACT
3-WIRE CONTROL
REFER TO TABLE C FOR CONTROL CONNECTIONS
ELECTRONIC-MODULE
P1 P2 P3 P4 P5
L
OPTIONAL "N/O" AUX. CONTACT
A1
COIL
A2
O
C
COIL VOLTAGE
OPTIONAL "N/C" AUXILIARY CONTACT

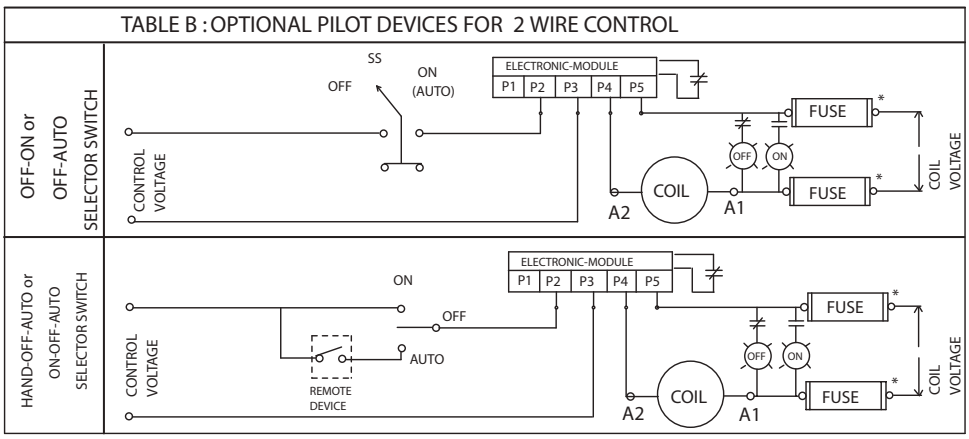


TABLE B : OPTIONAL PILOT DEVICES FOR 2 WIRE CONTROL
OFF-ON or OFF-AUTO SELECTOR SWITCH
SS
OFF
ON (AUTO)
ELECTRONIC-MODULE
P1 P2 P3 P4 P5
CONTROL VOLTAGE
FUSE
OFF
ON
COIL
A2
A1
COIL VOLTAGE
HAND-OFF-AUTO or ON-OFF-AUTO SELECTOR SWITCH
ON
OFF
AUTO
REMOTE DEVICE

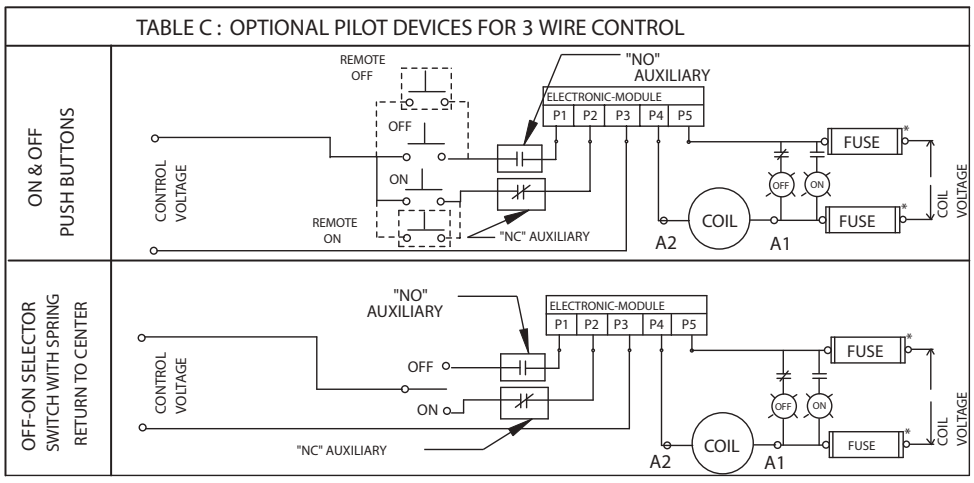


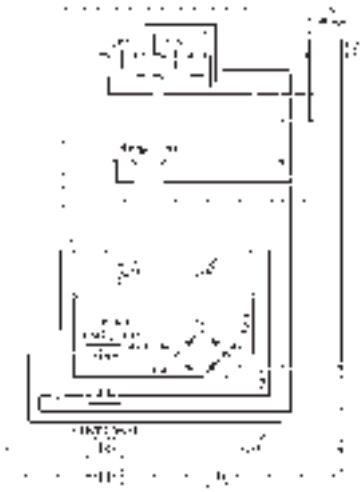
TABLE C : OPTIONAL PILOT DEVICES FOR 3 WIRE CONTROL
ON & OFF PUSH BUTTONS
REMOTE OFF
"NO" AUXILIARY
ELECTRONIC-MODULE
P1 P2 P3 P4 P5
OFF
ON
CONTROL VOLTAGE
REMOTE ON
"NC" AUXILIARY
FUSE
COIL
A2
A1
COIL VOLTAGE
OFF-ON SELECTOR SWITCH WITH SPRING RETURN TO CENTER

* -- IF USED

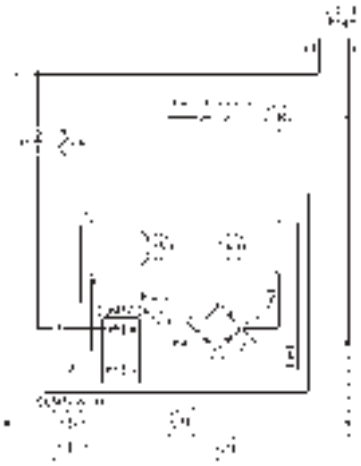
# Mechanically Latched 30-400 Amps, Class CLM

## Wiring Diagrams

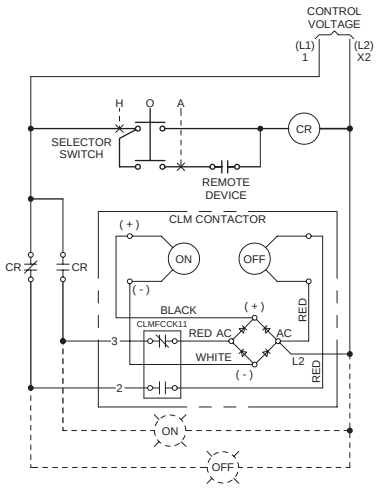
### Mechanically Latched, CLM 30–200 Amps①



Connection Diagram for Common/Separate Control with Momentary Pushbutton or ON-OFF Selector Switch **CLMOC**, **CLMOD**, **CLMOE**, and **CLMOF**

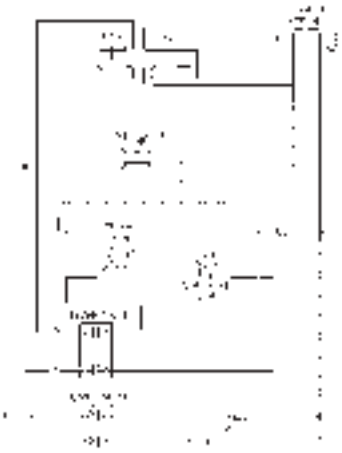


Connection for 2-Wire Control **CLMOC**, **CLMOD**, **CLMOE**, and **CLMOF**



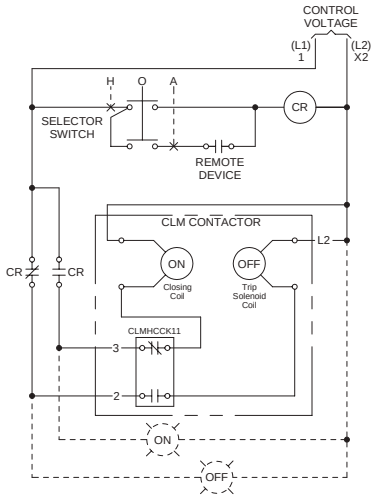

Connection for Hand/Off/Auto Control **CLMOC**, **CLMOD**, **CLMOE**, and **CLMOF**

### Mechanically Latched Type CLM 300 and 400 Amp①



Connection Diagram for Common/Separate Control with Momentary Pushbutton or ON-OFF Selector Switch **CLMOG** and **CLMOH**

Connection for 2-Wire Control **CLMOG** and **CLMOH**

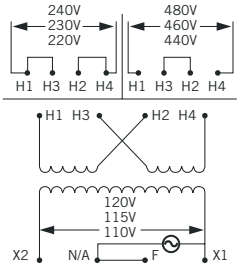



Connection for Hand/Off/Auto Control **CLMOG** and **CLMOH**

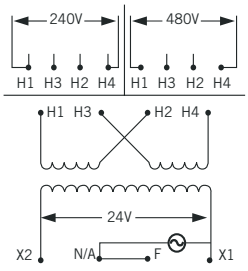
① Control relay is required for 2-wire and Hand/Off/Auto Control, as shown in diagram.

## Wiring Diagrams

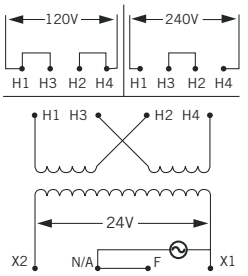
### Voltage Letter A①③



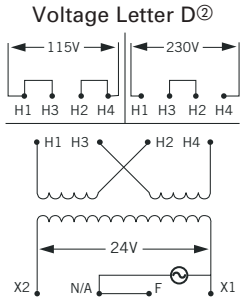

### Voltage Letter B②③



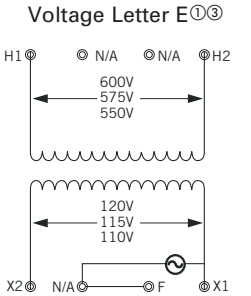

### Voltage Letter C②③



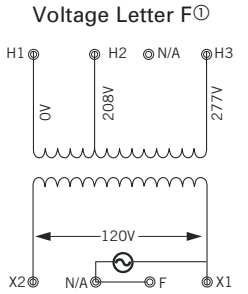

### Voltage Letter D②



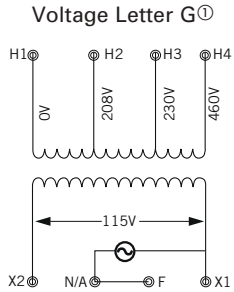

### Voltage Letter E①③



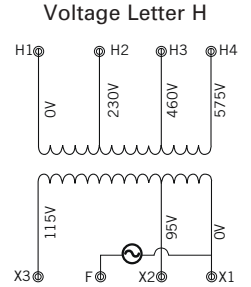

### Voltage Letter F①



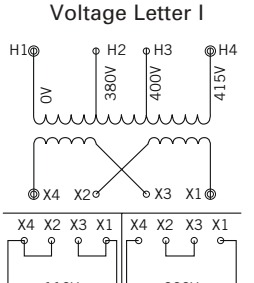

### Voltage Letter G①



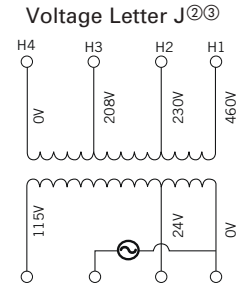

### Voltage Letter H



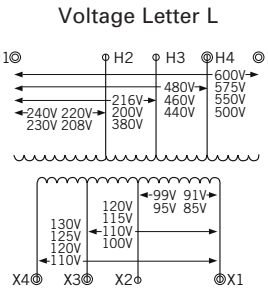

### Voltage Letter I



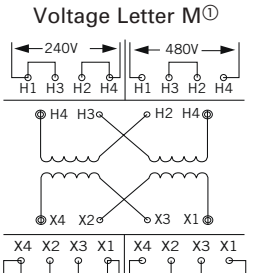

### Voltage Letter J②③



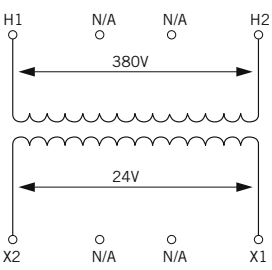

### Voltage Letter L




### Voltage Letter M①




### Voltage Letter P




① Includes secondary fuse clips on sizes 50-750VA
② Includes secondary fuse clips on sizes 50-500VA
③ Secondary fuse clips are not included on MTG transformers.

## Notes

## contents

**Section Overview** 10/2 - 10/3

**3SB2, 16mm Mounting Diameter Pilot Devices**
Introduction 10/4
Technical Specifications 10/5
PCB Mounting Instructions 10/6
Complete Units 10/7 - 10/8
Pushbutton and Selector Switch Operators 10/9
Key-operated Switches and Indicator Lights 10/10
Holders, Lampholders and Contact Blocks with Tabs 10/11
Holders, Lampholders and Contact Blocks with Solder Pins 10/12
Inserts, Legend Plates, and Accessories 10/13 - 10/19
Dimension Drawings 10/20

**SIRIUS ACT 3SU Series**
Introduction 10/22 - 10/23
General Data 10/24 - 10/37
Actuators and indicators, 22 mm, round, plastic, black
Complete Units 10/39 - 10/45
Compact Units 10/46 - 10/47
Actuating and Signaling Elements 10/49 - 10/60
Actuators and indicators, 22 mm, round,plastic with metal front ring, matte
Complete Units 10/61 - 10/66
Compact Units 10/68 - 10/69
Actuating and Signaling Elements 10/70 - 10/81
Actuators and indicators, 22 mm, round, metal, shiny
Complete Units 10/82 - 10/87
Compact Units 10/89 - 10/91
Actuating and Signaling Elements 10/92 - 10/102
Actuators and indicators, flat, 30 mm, round, metal, matte
Actuating and Signaling Elements 10/103 - 10/105
Special locks 10/106
Customized Designs 10/107 - 10/109
Holders
Holders without module 10/110
Holders with module 10/111
Modules for actuators and indicators
Contact modules 10/112
LED modules 10/116
AS-Interface modules 10/118
IO-Link modules 10/119
Electronic modules for ID key-operated switches 10/120
PROFINET modules 10/121
Enclosures
General data 10/122
Empty enclosures 10/123
Pushbuttons and indicator lights in the enclosure 10/124
Pushbuttons and indicator lights in the enclosure for AS-Interface 10/130
Modules for enclosures 10/133
Two-hand operation consoles 10/137
Labels
Insert labels 10/138
Label holders for labeling plates 10/141
Labeling plates 10/143
Labeling plates for enclosures 10/149
Labels for laser printers 10/152
Other labels 10/153

**SIRIUS ACT 3SU Series**
Accessories
Protection/access protection 10/155
Actuators 10/159
Enclosures 10/162
Miscellaneous accessories 10/164
Standards and approvals 10/166 - 10/167

**3SE2, 3SE3 Foot Switches**
Introduction 10/168
Plastic and Metal Enclosures 10/169

**SIRIUS Signal Columns**
8WD46 signaling columns, 70 mm diameter, Electronically configurable and accessories NEW 10/170 - 10/176
Introduction 10/177 - 10/178
Technical Specifications 10/179
8WD42 signaling columns, 50 mm diameter and accessories 10/180 - 10/181
8WD44 signaling columns, 70 mm diameter and accessories 10/182 - 10/185
8WD53 beacons, 70 mm diameter and accessories 10/186 - 10/187
Dimensional Drawings 10/188 - 10/190

**Class 52 30.5mm Mounting Diameter Pilot Devices**
Introduction 10/191
Momentary Push Button, Non-Illuminated 10/192 - 10/193
2 & 3 Position Push-Pull Mushroom Head Devices, Non-Illuminated 10/194 - 10/195
2 & 3 Position Push-Pull Mushroom Head Devices, Illuminated 10/196 - 10/197
2 Position Twist-to-Release Mushroom Head Devices, Non-Illuminated 10/198
2 Position Twist-to-Release Mushroom Head Devices, Illuminated 10/199
Indicator Light 10/200 - 10/201
Push Button & Push-to-Test, Illuminated 10/202 - 10/203
Push Button Mushroom Head Devices,Illuminated 10/204
Selector Switches, Illuminated 10/205
Selector Switch Short & Long Lever, Non-Illuminated 10/206 - 10/207
Keyed Selector Switch 10/208 - 10/209
Special Devices 10/211
Cam Selection Guide for Selector Switch, Keyed Selector Switch and Selector Pushbutton 10/212
Custom Selector Switch Designs 10/213
Accessories and Spare Parts 10/214 - 10/218
Dimensional Drawings 10/219 - 10/222
Break Glass and EPO Pushbutton Stations 10/223

**Class 52 30.5mm Enclosed Pushbutton Stations**
Assembled Enclosures with Standard Devices 10/224 - 10/225
P30 Empty Enclosures Only 10/226
Enclosure Legend Plates 10/227
Enclosure Dimensions 10/229
Technical Specifications 10/228

# Push Button Units and Indicator Lights

## contents

### 16 mm mounting diameter, molded-plastic

**3SB2** Page

**Selection and ordering data**


- 3SB22 complete units 10/7
- 3SB20 pushbuttons and lens assemblies 10/9
- 3SB2 holders, lampholders and contact blocks 10/11
- 3SB29 inserts, legend plates, and accessories 10/13

Introduction 10/4
Technical specifications 10/5
Dimension drawings 10/20


### 22 mm mounting diameter, plastic black

**SIRIUS ACT – 3SU1** Page

**Selection and ordering data**


- Complete units 10/39
- Compact units 10/46
- Actuating and signaling Elements 10/49
- Accessories 10/110 – 10/120; 10/138 – 10/161


### 22 mm mounting diameter, plastic with metal matte front ring

**SIRIUS 3SB3, plastic round** Page

**Selection and ordering data**


- Complete units 10/61
- Compact units 10/68
- Actuating and signaling Elements 10/70
- Accessories 10/110 – 10/120; 10/138 – 10/161


### 22 mm mounting diameter, metal shiny

**SIRIUS ACT – 3SU1** Page

**Selection and ordering data**


- Complete units 10/82
- Compact units 10/89
- Actuating and signaling Elements 10/92
- Accessories 10/110 – 10/120; 10/138 – 10/161


### 30 mm mounting diameter, metal matte

**SIRIUS ACT – 3SU1** Page

**Selection and ordering data**


- Actuating and signaling Elements 10/103
- Accessories 10/133 – 10/136; 10/162 – 10/164


### 22mm enclosures and communication devices

**SIRIUS ACT – 3SU1** Page

**Selection and ordering data**


- Empty enclosures 10/123
- Complete enclosure 10/124
- AS-Interface 10/130
- Accessories 10/133 – 10/136; 10/162 – 10/164
- Two-hand operation 10/137

# Push Button Units and Indicator Lights

## contents

### SIRIUS signal columns, built-in signal beacons and foot switches

**3SE2, 3SE3 Foot Switches** Page

**Selection and ordering data**


- Plastic and metal enclosures 10/169

**Lamp & LED version, enclosure diameters 50 and 70 mm**

- 8WD42 selection & accessories 10/180
- 8WD44 selection & accessories 10/182
- 8WD53 beacons 10/186

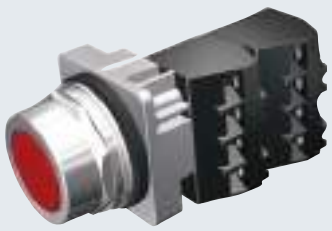
Introduction 10/177
Technical Specifications 10/179
Dimension drawings 10/188


### NEMA 30.5 mm mounting diameter, corrosion resistant, watertight & oiltight

**Class 52** Page

**Selection and ordering data**


- Momentary Push Button, Non-Illuminated 10/192-10/193
- 2 & 3 Position Push-Pull Mushroom Head Devices, Non-Illuminated 10/194-10/195
- 2 & 3 Position Push-Pull Mushroom Head Devices, Illuminated 10/196-10/197
- 2 Position Twist-to-Release Mushroom Head Devices, Non-Illuminated 10/198
- 2 Position Twist-to-Release Mushroom Head Devices, Illuminated 10/199
- Indicator Light 10/200-10/201

**Class 52** Page

**Selection and ordering data**


- Push Button & Push-to-Test, Illuminated 10/202-10/203
- Push Button Mushroom Head Devices, Illuminated 10/204
- Selector Switches, Illuminated 10/205
- Selector Switch Short & Long Lever, Non-Illuminated 10/206-10/207
- Keyed Selector Switch 10/208-10/209

Introduction 10/191
Accessories & Spare parts 10/214
Dimension drawings 10/219


### 30.5 mm heavy duty control stations, Type 4/4X/12/13 encl.

**Class 52** Page

**Selection and ordering data**


- Class 52 assembled stations with standard offerings 10/224 - 10/225
- P30 enclosures only 10/226
- Legend plates 10/227

# 3SB2, Mounting Diameter 16 mm

## General data

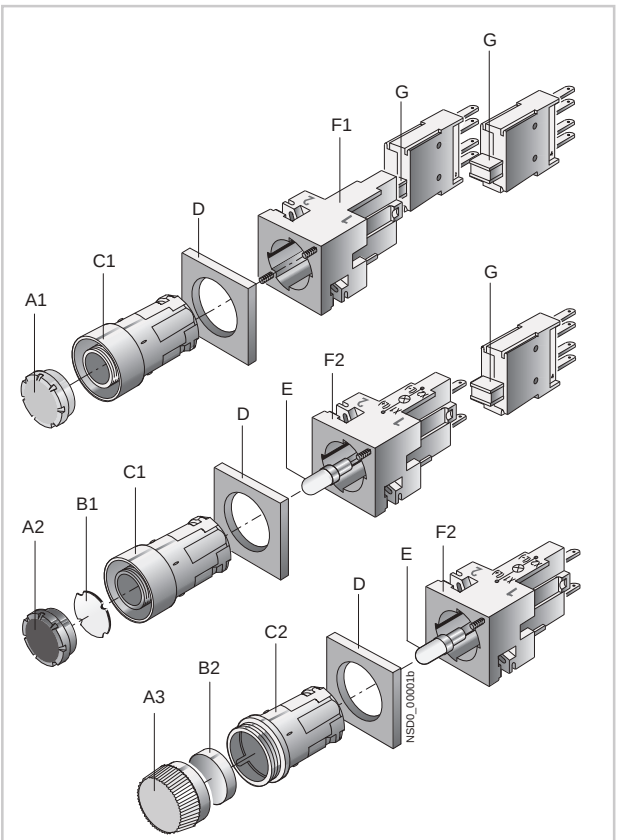
### Overview

The 3SB2 push buttons and indicator lights are provided for front plate mounting and rear connection with flat connectors. For use on printed circuit boards, contact blocks and lamp holders with solder pins are also available.

#### *Standards*

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1,
IEC 60947-5-5, EN 60947-5-5 for EMERGENCY-STOP mushroom push buttons.

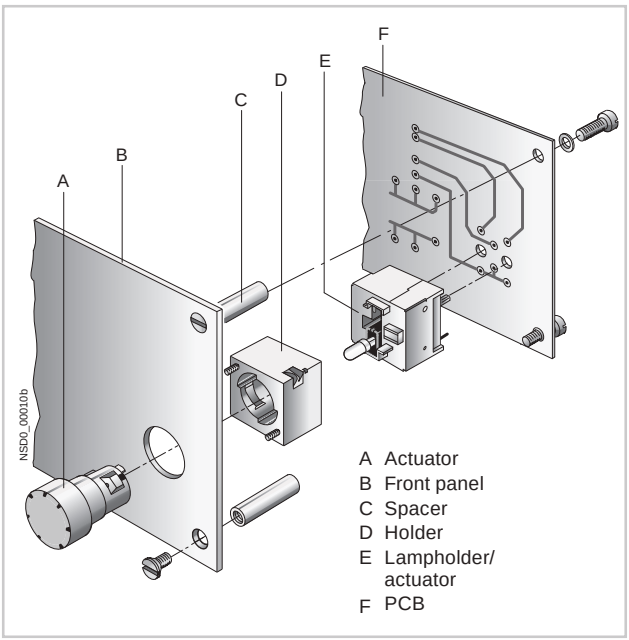
#### *Version with flat connector*




A1 Button, flat
A2 Illuminated button, flat
A3 Screw lens for indicator light
B1 Insert label, for labeling
B2 Insert cap, for labeling
C1 Collar with extruded front ring
C2 Collar for indicator light
D Frame for rectangular design
E Wedge base lamp, W2 x 4.6d
F1 Holders
F2 Lampholder with holder
G Contact blocks (1NO or 1NC) for snapping onto the holder or onto the lampholder

#### *For PCB mounting*

For use on printed circuit boards, special contact blocks and lamp holders for soldering into the printed circuit board are available. For this purpose, the contact blocks and lamp holders are fitted with 0.8 mm × 0.8 mm solder pins of length 3.5 mm.




#### *Connection methods*

Flat connectors

Solder pin connections

The terminals are indicated in the corresponding tables by the symbols shown on blue backgrounds.

### Application

The devices are climate-proof and suitable for marine applications.

#### *Safety EMERGENCY-STOP push buttons according to ISO 13850*

For controls according to IEC 60204-1 or EN 60204-1, the mushroom push buttons of the 3SB2 series are suitable for use as safety EMERGENCY-STOP push buttons.

#### *Safety circuits*

IEC 60947-5-1 and EN 60947-5-1 require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ➔.

Category 4 according to EN 954-1 can be attained with the EMERGENCY-STOP mushroom push buttons if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

# 3SB2, Mounting Diameter 16 mm

## General data

### Technical specifications

| Type | | 3SB2 |
|---|---|---|
| **Contact blocks and lamp holders** | | |
| **Standards** | | IEC 60947-5-1, EN 60947-5-1<br>IEC 60947-5-5, EN 60947-5-5 |
| **Rated insulation voltage $U_i$** | V | 250 |
| **Conventional thermal current $I_{th}$** | A | 10 |
| **Rated operational current $I_e$ at rated operational voltage $U_e$** | | |
| • Alternating current AC-12 | | |
| - At $U_e$ = 24 ... 230 V | A | 10 |
| • Alternating current AC-15 | | |
| - At $U_e$ = 24 ... 230 V | A | 4 |
| • Direct current DC-12 | | |
| - At $U_e$ = 24 V | A | 6 |
| - At $U_e$ = 60 V | A | 5 |
| - At $U_e$ = 110 V | A | 2.5 |
| - At $U_e$ = 230 V | A | 1 |
| • Direct current DC-13 | | |
| - At $U_e$ = 24 V | A | 3 |
| - At $U_e$ = 60 V | A | 1.5 |
| - At $U_e$ = 110 V | A | 0.7 |
| - At $U_e$ = 230 V | A | 0.3 |
| **Contact stability** | | |
| • Test voltage/test current | | 5 V/1 mA |
| **Lamps** | | |
| • Bases | | Wedge base W2× 4.6 d |
| • Rated voltage | V | 6, 12, 24, 30, 48, 60 |
| • Rated power, max. | W | 1 |
| **Short-circuit protection** weld-free according to IEC 60947-5-1 | | |
| • DIAZED fuse links, utilization category gG | | 10 A TDz, 16 A Dz |
| • Miniature circuit breaker with C characteristic according to IEC 60898 | | 10 A |
| **Electrical endurance** | | |
| • For utilization category AC-15 with 3RT10 15 to 3RT10 26 contactors | | $10 \times 10^6$ operating cycles |
| **Mechanical endurance** | | $10 \times 10^6$ operating cycles |
| **Degree of protection** acc. to IEC 60529 | | |
| • Connection of contact blocks and lamp holders behind the front panel | | IP00 |
| • Contact chambers of the contact blocks behind the front panel | | IP40 |
| **Finger-safe** according to IEC 61140 and BGV A3 | | With voltages > 50 V AC or 120 V DC, insulation sleeves must be fitted to the unassigned tab connections. |
| **Data according to UL and CSA** | | |
| **Rated voltage** | | |
| • Contact blocks | V | 250 AC |
| • Indicator light (lamp with wedge base W2× 4.6 d) | V | 60; 1 W |
| **Uninterrupted current** | A | 5 |
| **Switching capacity** | | B 300, R 300 |
| **Actuators and indicators** | | |
| **Mechanical endurance** | | |
| • Push Buttons | | $10 \times 10^6$ operating cycles |
| • Actuators, rotary or maintained | | $3 \times 10^5$ operating cycles |
| • Illuminated push buttons | | $3 \times 10^6$ operating cycles |
| **Climatic withstand capability** | | Climate-proof; suitable for marine applications |
| **Ambient temperature** | | |
| • During operation, non-illuminated devices and complete with LED | °C | –25 ... +70 |
| • During operation, devices with incandescent lamp | °C | –25 ... +60 |
| • During storage, transport | °C | –40 ... +80 |
| **Degree of protection** acc. to IEC 60529 | | |
| • Actuators and indicators | | IP65 |
| • Actuators and indicators with protective cap | | IP67 |
| **Protective measures** | | |
| • For mounting in metal front plates and enclosures | | The actuators and lens assemblies must not be included in the protective measures. |
| • For fitting into enclosures with total insulation | | The protective measure "Total insulation" is retained. |
| **Shock resistance** acc. to IEC 60068-2-27 | | |
| • Shock amplitude | | ≤ 50 *g* |
| • Shock duration | ms | 11 |
| • Shock form | | Half-sine |

More technical information see Reference manual "Commanding and Signaling Devices".

# 3SB2, Mounting Diameter 16 mm

## General data

### *Configuration*

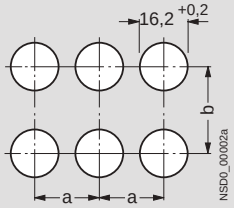
Design

Two design versions can be mounted:

- Round design: The 3SB2 push buttons and indicator lights are assembled with the modules – actuator, holder, contact block and lamp holder. Depending on the specific application, various versions can be assembled. Complete units are offered for the most commonly used applications.
- Square design: With square, black frames the round units can be given a square look. The frames are inserted underneath the round actuators. Further mounting is the same as for the round version.

Mounting and fixing:

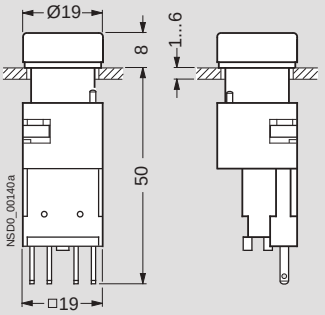
Mounting dimensions according to EN 50007
(not applicable to EMERGENCY-STOP mushroom push buttons)




| Minimum clearance | a | b |
|---|---|---|
| Round version | 19 | 19 |
| Square version without inscription label | 21 | 21 |
| Round and square version with inscription label | 21 | 32 |
| For 2 selector switches with 3 switch positions, maintained, side by side | 21 | 21 |

For mounting, the actuator or the lens assembly is inserted from the front into the hole in the front plate. Four small nubs ensure a secure fitting in the hole. The holder is plugged on from the back and snaps automatically into place. The module is fixed to the holder with 2 screws so that it is immune to vibrations.

One or two contact blocks can be mounted on the holder. They are inserted into the holder with slide slots and held down with two snap brackets.




Push button (flat) with holder and contact block

If a command point is fitted with an indicator light or illuminated push button, a lamp socket with lamp holder must be used instead of a holder. It is suitable for incandescent lamps or LEDs with bases of type W2 × 4.6d.

For PCB mounting

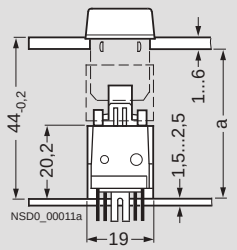
The command point comprises the actuator – e.g. 3SB2 push button, illuminated push button or indicator light –, which is mounted in the front plate, and a contact block and a lamp holder which are soldered to the PCB. For this purpose, the contact blocks and lamp holders are fitted with 0.8 mm × 0.8 mm solder pins of length 3.5 mm.

Mounting and fixing:

Mounting dimensions according to EN 50007.

The actuators are mounted in the same way as 3SB2 front plate mounting devices.

The contact blocks and lamp holders are plugged into the printed circuit board by means of their solder pins and can be flow-soldered. After soldering, the devices must be flush with the board and perpendicular to it. The printed circuit board must be supported on spacing bolts so that it cannot sag or bend more than 0.1 mm.




Length **a** of spacing bolts:
**a** = $44_{-0.2}$ minus front plate thickness.

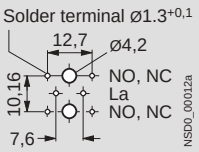
When using name plates, the length **a** is reduced by 0.8 mm.

Illuminated push button with solder pin connection

To avoid bending the PCB when the control device is operated, sufficient spacing bolts must be provided as shown in the table below:

| PCB thickness | Max. distance between spacing bolts |
|---|---|
| 1.5 mm | 80 mm |
| 2.5 mm | 150 mm |
| When using EMERGENCY-STOP push buttons | always 50 mm |

These details are based on epoxy resin glass fiber mat.




Solder pin spacing

# 3SB2, Mounting Diameter 16 mm

## Complete units

### Selection and ordering data

| | Version | Contact blocks | DT | Color of handle | Flat connectors<br>Order No. | PS |
|---|---|---|---|---|---|---|
| <br>Pushbutton with flat button | **Push buttons with flat button** | 1 NO | | Black | **3SB22 02-0AB01** | 1 unit |
| | | 1 NC | | Black | **3SB22 03-0AB01** | 1 unit |
| | | 1 NC | | Red | **3SB22 03-0AC01** | 1 unit |
| | | 1 NO | | Yellow | **3SB22 02-0AD01** | 1 unit |
| | | 1 NO | | Green | **3SB22 02-0AE01** | 1 unit |
| | | 1 NO | | Blue | **3SB22 02-0AF01** | 1 unit |
| | | 1 NO | | White | **3SB22 02-0AG01** | 1 unit |
| | | 1 NO | | Clear[1] | **3SB22 02-0AH01** | 1 unit |
| | **Illuminated push buttons with flat button**<br>Lamp holder W2 x 4.6 d[2] | 1 NC | | Red | **3SB22 07-0AC01** | 1 unit |
| | | 1 NO | | Yellow[1] | **3SB22 06-0AD01** | 1 unit |
| | | 1 NO | | Green | **3SB22 06-0AE01** | 1 unit |
| | | 1 NO | | Blue | **3SB22 06-0AF01** | 1 unit |
| | | 1 NO | | Clear[1] | **3SB22 06-0AH01** | 1 unit |
| | **Illuminated push buttons with flat button**<br>Lamp holder W2 x 4.6 d<br>with incandescent lamp 24 V | 1 NC | | Red | **3SB22 27-0AC01** | 1 unit |
| | | 1 NO | | Yellow[1] | **3SB22 26-0AD01** | 1 unit |
| | | 1 NO | | Green | **3SB22 26-0AE01** | 1 unit |
| | | 1 NO | | Blue | **3SB22 26-0AF01** | 1 unit |
| | | 1 NO | | Clear[1] | **3SB22 26-0AH01** | 1 unit |
| <br>Illuminated push button with raised button | **Push buttons with raised button** | 1 NO | | Black | **3SB22 02-0LB01** | 1 unit |
| | | 1 NC | | Red | **3SB22 03-0LC01** | 1 unit |
| | | 1 NO | | Yellow | **3SB22 02-0LD01** | 1 unit |
| | | 1 NO | | Blue | **3SB22 02-0LF01** | 1 unit |
| | | 1 NO | | Clear[1] | **3SB22 02-0LH01** | 1 unit |
| | **Illuminated push buttons with raised button**<br>Lamp holder W2 x 4.6 d[2] | 1 NC | | Red | **3SB22 07-0LC01** | 1 unit |
| | | 1 NO | | Yellow[1] | **3SB22 06-0LD01** | 1 unit |
| | | 1 NO | | Green | **3SB22 06-0LE01** | 1 unit |
| | | 1 NO | | Blue | **3SB22 06-0LF01** | 1 unit |
| | | 1 NO | | Clear[1] | **3SB22 06-0LH01** | 1 unit |
| | **Illuminated push buttons with raised button**<br>Lamp holder W2 x 4.6 d<br>with incandescent lamp 24 V | 1 NC | | Red | **3SB22 27-0LC01** | 1 unit |
| | | 1 NO | | Yellow[1] | **3SB22 26-0LD01** | 1 unit |
| | | 1 NO | | Green | **3SB22 26-0LE01** | 1 unit |
| | | 1 NO | | Blue | **3SB22 26-0LF01** | 1 unit |
| | | 1 NO | | Clear[1] | **3SB22 26-0LH01** | 1 unit |
| <br>EMERGENCY-STOP mushroom push button | **EMERGENCY-STOP mushroom push buttons acc. to ISO 13850, maintained[3]**<br>**Latches automatically when pressed; unlatches by turning the mushroom head anticlockwise,**<br>**with yellow name plate,**<br>**with inscription "NOT-HALT"** | 1 NC ➔[4] | | Red | **3SB22 03-1AC01** | 1 unit |

[1] Inscription is possible by inserting a label.

[2] For wedge base lamps see "Accessories", page 10/18.

[3] The mushroom push button cannot be combined with 3SB29 02-0AB name plate or 3SB29 02-0AA single frame.

[4] Positive opening according to IEC 60947-5-1, Appendix K.

# 3SB2, Mounting Diameter 16 mm

## Complete units

Selector switch

| Version | Contact blocks | Color of handle | DT | Flat connectors<br>Order No. | PS |
|---|---|---|---|---|---|
| **Selector switches,**<br>**2 switch positions**<br>Switching sequence O-I,<br>62° operating angle,<br>maintained<br> | 1 NO<br>1 NO<br>1 NO<br>1 NO | Black<br>Red<br>Green<br>White | | **3SB22 02-2AB01**<br>**3SB22 02-2AC01**<br>**3SB22 02-2AE01**<br>**3SB22 02-2AG01** | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| **Selector switches,**<br>**3 switch positions**<br>Switching sequence I-O-II,<br>2 × 62° operating angle,<br>maintained<br> | 1 NO, 1 NO<br>1 NO, 1 NO<br>1 NO, 1 NO<br>1 NO, 1 NO | Black<br>Red<br>Green<br>White | | **3SB22 10-2DB01**<br>**3SB22 10-2DC01**<br>**3SB22 10-2DE01**<br>**3SB22 10-2DG01** | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| **Selector switches,**<br>**3 switch positions**<br>Switching sequence I-O-II,<br>2 × 50° operating angle, momentary,<br>Spring return from left and right<br> | 1 NO, 1 NO<br>1 NO, 1 NO<br>1 NO, 1 NO<br>1 NO, 1 NO | Black<br>Red<br>Green<br>White | | **3SB22 10-2EB01**<br>**3SB22 10-2EC01**<br>**3SB22 10-2EE01**<br>**3SB22 10-2EG01** | 1 unit<br>1 unit<br>1 unit<br>1 unit |

CES key-operated switch

| Version | Contact blocks | Lock No. | Key removal position | DT | Flat connectors<br>Order No. | PS |
|---|---|---|---|---|---|---|
| **CES key-operated switches,**<br>**2 switch positions**<br>Switching sequence O-I,<br>62° operating angle,<br>maintained<br> | 1 NO<br>1 NO | SB2<br>SB2 | O<br>O + I | | **3SB22 02-4LA01**<br>**3SB22 02-4LB01** | 1 unit<br>1 unit |
| **CES key-operated switches,**<br>**3 switch positions**<br>Switching sequence I-O-II,<br>2 × 62° operating angle,<br>maintained<br> | 1 NO, 1 NO<br>1 NO, 1 NO | SB2<br>SB2 | O<br>I + O + II | | **3SB22 10-4PA01**<br>**3SB22 10-4PB01** | 1 unit<br>1 unit |
| **CES key-operated switches,**<br>**3 switch positions**<br>Switching sequence I-O-II,<br>2 × 50° operating angle, momentary,<br>Spring return from left and right<br> | 1 NO, 1 NO | SB2 | O | | **3SB22 10-4QA01** | 1 unit |

Indicator light

| Version | Color of screw lens | DT | Flat connectors<br>Order No. | PS |
|---|---|---|---|---|
| **Indicator lights**<br>Lamp holder W2 x 4.6 d<br>without lamp[1] | Red<br>Yellow<br>Green<br>White<br>Clear | | **3SB22 04-6BC06**<br>**3SB22 04-6BD06**<br>**3SB22 04-6BE06**<br>**3SB22 04-6BG06**<br>**3SB22 04-6BH06** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| **Indicator lights**<br>Lamp holder W2 x 4.6 d<br>with incandescent lamp 24 V | Red<br>Yellow<br>Green<br>White<br>Clear | | **3SB22 24-6BC06**<br>**3SB22 24-6BD06**<br>**3SB22 24-6BE06**<br>**3SB22 24-6BG06**<br>**3SB22 24-6BH06** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |

[1] For wedge base lamps see "Accessories", page 10/18.

## Selection and ordering data

### Push buttons

Push button and illuminated push button with flat button

| Version | Color of handle | DT | Order No. | PS |
|---|---|---|---|---|
| **Push buttons with flat button** | Black | | **3SB20 00-0AB01** | 1 unit |
| | Red | | **3SB20 00-0AC01** | 1 unit |
| | Yellow | | **3SB20 00-0AD01** | 1 unit |
| | Green | | **3SB20 00-0AE01** | 1 unit |
| | Blue | | **3SB20 00-0AF01** | 1 unit |
| | White | | **3SB20 00-0AG01** | 1 unit |
| | Clear[1] | | **3SB20 00-0AH01** | 1 unit |
| **Illuminated push buttons with flat button** | Red | | **3SB20 01-0AC01** | 1 unit |
| | Yellow[1] | | **3SB20 01-0AD01** | 1 unit |
| | Green | | **3SB20 01-0AE01** | 1 unit |
| | Blue | | **3SB20 01-0AF01** | 1 unit |
| | White | | **3SB20 00-0AG01** | 1 unit |
| | Clear[1] | | **3SB20 00-0AH01** | 1 unit |

Push button and illuminated push button with raised button

| Version | Color of handle | DT | Order No. | PS |
|---|---|---|---|---|
| **Push buttons with raised button** | Black | | **3SB20 00-0LB01** | 1 unit |
| | Red | | **3SB20 00-0LC01** | 1 unit |
| | Yellow | | **3SB20 00-0LD01** | 1 unit |
| | Blue | | **3SB20 00-0LF01** | 1 unit |
| | White | | **3SB20 00-0LG01** | 1 unit |
| | Clear[1] | | **3SB20 00-0LH01** | 1 unit |
| **Illuminated push buttons with raised button** | Red | | **3SB20 01-0LC01** | 1 unit |
| | Yellow[1] | | **3SB20 01-0LD01** | 1 unit |
| | Green | | **3SB20 01-0LE01** | 1 unit |
| | Blue | | **3SB20 01-0LF01** | 1 unit |
| | Clear[1] | | **3SB20 00-0LH01** | 1 unit |

EMERGENCY-STOP mushroom push button

| Version | Color of handle | DT | Order No. | PS |
|---|---|---|---|---|
| **EMERGENCY-STOP mushroom push buttons acc. to ISO 13850, maintained**[2]<br>Latches automatically when pressed; unlatches by turning the mushroom head anticlockwise | Red | | **3SB20 00-1AC01** | 1 unit |

[1] Inscription is possible by inserting a label.

[2] The mushroom push button cannot be combined with 3SB29 02-0AB name plate or 3SB29 02-0AA single frame.

### Selector switches

Selector switch

| Version | | Color of handle | DT | Order No. | PS |
|---|---|---|---|---|---|
| **Selector switches with 2 switch positions**<br>Switching sequence O-I,<br>62° operating angle,<br>maintained | | Black | | **3SB20 00-2AB01** | 1 unit |
| | | Red | | **3SB20 00-2AC01** | 1 unit |
| | | Green | | **3SB20 00-2AE01** | 1 unit |
| | | White | | **3SB20 00-2AG01** | 1 unit |
| **Selector switches with 2 switch positions**<br>Switching sequence O-I,<br>50° operating angle, momentary,<br>spring return from right | | Black | | **3SB20 00-2BB01** | 1 unit |
| | | Red | | **3SB20 00-2BC01** | 1 unit |
| | | Green | | **3SB20 00-2BE01** | 1 unit |
| **Selector switches with 2 switch positions**<br>Switching sequence O-I,<br>90° operating angle,<br>maintained | | Black | | **3SB20 00-2HB01** | 1 unit |
| | | Red | | **3SB20 00-2HC01** | 1 unit |
| | | Green | | **3SB20 00-2HE01** | 1 unit |
| | | White | | **3SB20 00-2HG01** | 1 unit |
| **Selector switches with 3 switch positions**<br>Switching sequence I-O-II,<br>2 x 62° operating angle,<br>maintained | | Black | | **3SB20 00-2DB01** | 1 unit |
| | | Red | | **3SB20 00-2DC01** | 1 unit |
| | | Green | | **3SB20 00-2DE01** | 1 unit |
| | | White | | **3SB20 00-2DG01** | 1 unit |
| **Selector switches with 3 switch positions**<br>Switching sequence I-O-II,<br>2 x 50° operating angle, momentary,<br>spring return from left and right | | Black | | **3SB20 00-2EB01** | 1 unit |
| | | Red | | **3SB20 00-2EC01** | 1 unit |
| | | Green | | **3SB20 00-2EE01** | 1 unit |
| | | White | | **3SB20 00-2EG01** | 1 unit |
| **Selector switches with 3 switch positions**<br>Switching sequence I-O-II,<br>2 x 90° operating angle,<br>maintained | | Black | | **3SB20 00-2JB01** | 1 unit |

# 3SB2, Mounting Diameter 16 mm

## Actuators and indicators

### Key-operated switches

CES key-operated switch

| Version | | Lock No. | Key removal position | DT | Order No. | PS |
|---|---|---|---|---|---|---|
| **CES key-operated switches with 2 keys, 2 switch positions** Switching sequence O-I, 62° operating angle, maintained | | SB2 | O+I<br>O | | **3SB20 00-4LB01**<br>**3SB20 00-4LA01** | 1 unit<br>1 unit |
| **CES key-operated switches with 2 keys, 2 switch positions** Switching sequence O-I, 50° operating angle,momentary, spring return from right | | SB2 | O | | **3SB20 00-4MA01** | 1 unit |
| **CES key-operated switches with 2 keys, 3 switch positions** Switching sequence I-O-II, 2 x 62° operating angle, maintained | | SB2 | I+O+II<br>O | | **3SB20 00-4PB01**<br>**3SB20 00-4PA01** | 1 unit<br>1 unit |
| **CES key-operated switches with 2 keys, 3 switch positions** Switching sequence I-O-II, 2 x 50° operating angle, momentary, spring return from left and right | | SB2 | O | | **3SB20 00-4QA01** | 1 unit |

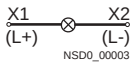
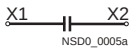
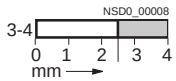
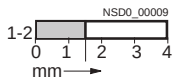
### Indicator lights

Indicator light

| Version | Color of screw lens | DT | Order No. | PS |
|---|---|---|---|---|
| **Indicator lights with concentric rings** (inscription by inserting a cap is not possible) | Red | | **3SB20 01-6BC06** | 1 unit |
| | Yellow | | **3SB20 01-6BD06** | 1 unit |
| | Green | | **3SB20 01-6BE06** | 1 unit |
| | Blue | | **3SB20 01-6BF06** | 1 unit |
| | White | | **3SB20 01-6BG06** | 1 unit |
| | Clear | | **3SB20 01-6BH06** | 1 unit |
| **Indicator lights, smooth** for inscription by inserting a cap[1)] | Red | | **3SB20 01-6CC06** | 1 unit |
| | Yellow | | **3SB20 01-6CD06** | 1 unit |
| | Green | | **3SB20 01-6CE06** | 1 unit |
| | Blue | | **3SB20 01-6CF06** | 1 unit |
| | Clear | | **3SB20 01-6CH06** | 1 unit |

[1)] Insert caps, see “Accessories”, page 10/15

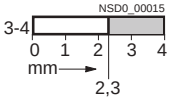
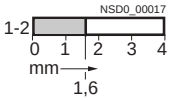
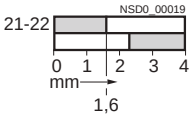
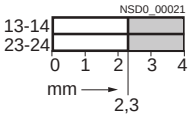
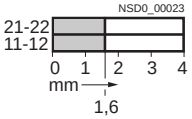
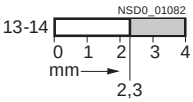
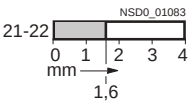
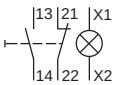
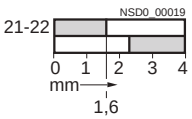
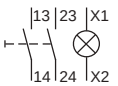
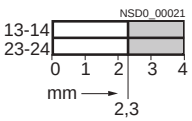
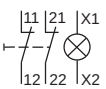
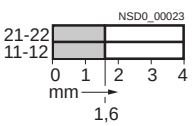
## Selection and ordering data

| Version | Diagram | Operating travel<br>▭ Contact closed<br>▭ Contact open | DT | Flat connectors<br>Order No. | PS |
|---|---|---|---|---|---|
| **Contact blocks and lamp holders with flat connectors 2 x 2.8 – 0.8 mm according to IEC 60760** | | | | | |
| ***Holders for fixing the actuator and the contact blocks*** | | | | | |
| Holder<br>Holders for 2 contact blocks<br>Inscription with identification number 1-2 | | | | **3SB29 08-0AA** | 5 units |
| ***Lamp holders with holder for fixing the actuator and the contact blocks*** | | | | | |
| Lamp holder<br>**Lamp holders**<br>W2 x 4.6 d<br>without lamp | | | | **3SB23 04-2A** | 1 unit |
| **Lamp holders**<br>W2 x 4.6 d<br>• With 6 V incandescent lamp |  | | | **3SB23 04-2F** | 1 unit |
| • With 24 V incandescent lamp | | | | **3SB23 04-2H** | 1 unit |
| Voltage reducer<br>**Voltage reducers**[1]<br>For connecting the 3SB29 08-1AE lamp (48 V) to 230 V AC |  | | | **3SB24 04-3D** | 1 unit |
| ***Contact blocks for fixing in the holder or lamp holder*** | | | | | |
| Contact block<br>**Contact blocks with one contact**[2]<br>1 NO | |  | | **3SB24 04-0B** | 1 unit |
| 1 NC ⊖ [3] | |  | | **3SB24 04-0C** | 1 unit |

[1] Use fixpoint terminal according to IEC 60439-1.
[2] For plug-in and insulation sleeves see "Accessories", page 10/19.
[3] Positive opening according to IEC 60947-5-1, Appendix K.

# 3SB2, Mounting Diameter 16 mm

## Contact blocks and lamp holders

| Version | Diagram | Operating travel<br>Contact closed<br>Contact open | DT | Solder pin connections<br>Order No. | PS |
|---|---|---|---|---|---|
| **Contact blocks and lamp holders with solder pins** | | | | | |
| <br>Holder | **Holders for contact block with solder pins**<br>For fixing the actuators in the front panel | | | **3SB29 08-0AB** | 5 units |
| | **Lamp holders**<br>Wedge base W2 x 4.6 d[1] | | | **3SB24 55-2A** | 1 unit |
| | **Contact blocks** | | | | |
| <br>Contact block with solder pins | 1 NO |  | | **3SB24 55-0B** | 1 unit |
| | 1 NC | ➔ 2)  | | **3SB24 55-0C** | 1 unit |
| | 1 NO + 1 NC | ➔ 2)  | | **3SB24 55-0J** | 1 unit |
| | 1 NO + 1 NO |  | | **3SB24 55-0E** | 1 unit |
| | 1 NC + 1 NC | ➔ 2)  | | **3SB24 55-0F** | 1 unit |
| | **Contact blocks and lamp holders,** wedge base W2 x 4.6 d[1] | | | | |
| <br>Contact block and lamp holder with solder pins | 1 NO |  | | **3SB24 55-1B** | 1 unit |
| | 1 NC | ➔ 2)  | | **3SB24 55-1C** | 1 unit |
| | 1 NO + 1 NC | ➔ 2)   | | **3SB24 55-1J** | 1 unit |
| | 1 NO + 1 NO |   | | **3SB24 55-1E** | 1 unit |
| | 1 NC + 1 NC | ➔ 2)   | | **3SB24 55-1F** | 1 unit |

[1] The lamp is not included in the scope of supply.

# 3SB2, Mounting Diameter 16 mm

## Insert labels and insert caps

### Overview

Clear push buttons, illuminated push buttons and indicator lights can be fitted with insert labels and caps for identification purposes.

The insert labels and insert caps are made of a milky-transparent plastic with black lettering; they can be fitted in any 90° angle.

#### *Inscriptions*

The inscriptions have upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

For customized inscriptions see "Options".

### Selection and ordering data

| | Inscription/Symbol | | Symbol No. | DT | **Insert labels** For push buttons and illuminated push buttons, flat Order No. | PS |
|---|---|---|---|---|---|---|
| **For self-inscription** | | | | | | |
| | Blank | | | | **3SB29 01-4AA** | 10 units |
| **With inscription** | | | | | | |
| | On | | | | **3SB29 01-4EB** | 10 units |
| | Start | | | | **3SB29 01-4EK** | 10 units |
| | Stop | | | | **3SB29 01-4EL** | 10 units |
| | Reset | | | | **3SB29 01-4EM** | 10 units |
| | Test | | | | **3SB29 01-4EN** | 10 units |
| | 0 | | | | **3SB29 01-4RA** | 10 units |
| | 1 | | | | **3SB29 01-4RB** | 10 units |
| | 2 | | | | **3SB29 01-4RC** | 10 units |
| | 3 | | | | **3SB29 01-4RD** | 10 units |
| | 4 | | | | **3SB29 01-4RE** | 10 units |
| | 5 | | | | **3SB29 01-4RF** | 10 units |
| | 6 | | | | **3SB29 01-4RG** | 10 units |
| | 7 | | | | **3SB29 01-4RH** | 10 units |
| | 8 | | | | **3SB29 01-4RJ** | 10 units |
| | 9 | | | | **3SB29 01-4RK** | 10 units |
| **Graphic ON/OFF symbols** | | | | | | |
|  | O (Off) | | 5008 IEC | | **3SB29 01-4MB** | 10 units |
| | I (On) |  | 5007 IEC | | **3SB29 01-4MC** | 10 units |
| | II (On) | | -- | | **3SB29 01-4MD** | 10 units |

# 3SB2, Mounting Diameter 16 mm

## Insert labels and insert caps

| Inscription/Symbol | | Symbol No. | DT | **Insert labels** For push buttons and illuminated push buttons, flat<br>Order No. | PS |
|---|---|---|---|---|---|
| **Graphic equipment symbols** | | | | | |
| Electric motor | | 0011 ISO | | **3SB29 01-4PA** | 10 units |
| Horn | | 5014 IEC | | **3SB29 01-4PB** | 10 units |
| Pump | | 0134 ISO | | **3SB29 01-4PD** | 10 units |
| Coolant pump | | 0355 ISO | | **3SB29 01-4PE** | 10 units |
| **Graphic motion symbols** | | | | | |
| Motion in direction of arrow (straight) | | 5022 IEC | | **3SB29 01-4NA** | 10 units |
| Motion in direction of arrow (diagonal) | | -- | | **3SB29 01-4NB** | 10 units |
| Clockwise rotation | | 0004 ISO | | **3SB29 01-4NC** | 10 units |
| Anticlockwise rotation | | -- | | **3SB29 01-4ND** | 10 units |
| Fast motion | | 0266 ISO | | **3SB29 01-4NE** | 10 units |
| Increase (plus) | | 5005 IEC | | **3SB29 01-4NG** | 10 units |
| Decrease (minus) | | 5006 IEC | | **3SB29 01-4MC** | 10 units |
| **Graphic control symbols** | | | | | |
| Clamp | | -- | | **3SB29 01-4QB** | 10 units |
| Release | | -- | | **3SB29 01-4QC** | 10 units |
| Brake off | | 0021 ISO | | **3SB29 01-4QE** | 10 units |
| Lock | | 0022 ISO | | **3SB29 01-4QF** | 10 units |
| Unlock | | 0023 ISO | | **3SB29 01-4QG** | 10 units |
| On/Off, momentary contact | | 5011 IEC | | **3SB29 01-4QJ** | 10 units |
| Manual operation | | 0096 ISO | | **3SB29 01-4QK** | 10 units |
| Automatic sequence | | 0017 ISO | | **3SB29 01-4QL** | 10 units |
| **Customized inscriptions** | | | | | |
| **Any inscription**<br>1 line of text with up to 6 characters of 3 mm in height.<br>Please add the appropriate order code to the Order No. and specify the line of text required. | | | | **3SB29 01-4AZ**<br>**K0Y**<br>**K1Y** or **K2Y**<br>**K5Y** | <br>1 unit<br>1 unit<br>1 unit |
| **Other graphic symbols**<br>Please add the order code **"K3Y"** to the Order No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417). | | | | **3SB29 01-4AZ**<br>**K3Y** | 1 unit |
| **Any inscription or symbol**<br>Please add the order code **"K9Y"** to the Order No. and specify the inscription or the symbol required. | | | | **3SB29 01-4AZ**<br>**K9Y** | 1 unit |

# 3SB2, Mounting Diameter 16 mm

## Insert labels and insert caps

| | Inscription/Symbol | | Symbol No. | DT | **Insert caps** For push buttons and illuminated push buttons, raised Order No. | PS |
|---|---|---|---|---|---|---|
| **For self-inscription** | | | | | | |
| | Blank | | | | **3SB29 01-5AA** | 10 units |
| **With inscription** | | | | | | |
| | On | | | | **3SB29 01-5EB** | 10 units |
| | 0 | | | | **3SB29 01-5RA** | 10 units |
| | 1 | | | | **3SB29 01-5RB** | 10 units |
| | 2 | | | | **3SB29 01-5RC** | 10 units |
| | 3 | | | | **3SB29 01-5RD** | 10 units |
| | 4 | | | | **3SB29 01-5RE** | 10 units |
| | 5 | | | | **3SB29 01-5RF** | 10 units |
| | 6 | | | | **3SB29 01-5RG** | 10 units |
| | 7 | | | | **3SB29 01-5RH** | 10 units |
| | 8 | | | | **3SB29 01-5RJ** | 10 units |
| | 9 | | | | **3SB29 01-5RK** | 10 units |
| **Graphic ON/OFF symbols** | | | | | | |
| | O (Off) | | 5008 IEC | | **3SB29 01-5MB** | 10 units |
| | I (On) |  | 5007 IEC | | **3SB29 01-5MC** | 10 units |
| | II (On) | | -- | | **3SB29 01-5MD** | 10 units |
| **Graphic motion symbols** | | | | | | |
| | Motion in direction of arrow | | 5022 IEC | | **3SB29 01-5NA** | 10 units |
| | Motion in direction of arrow | | -- | | **3SB29 01-5NB** | 10 units |
| | Increase (plus) | | 5005 IEC | | **3SB29 01-5NG** | 10 units |
| | Decrease (minus) |  | 5006 IEC | | **3SB29 01-5MC** | 10 units |
| **Graphic control symbols** | | | | | | |
| | Clamp | | -- | | **3SB29 01-5QB** | 10 units |
| | Release | | -- | | **3SB29 01-5QC** | 10 units |
| **Customized inscriptions** | | | | | | |
| | **Any inscription** | | | | **3SB29 01-5AZ** | |
| | 1 line of text with up to 6 characters of 3 mm in height. Please add the appropriate order code to the Order No. and specify the line of text required. | | | | **K0Y** | 1 unit |
| | | | | | **K1Y** or **K2Y** | 1 unit |
| | | | | | **K5Y** | 1 unit |
| | **Other graphic symbols** | | | | **3SB29 01-5AZ** | 1 unit |
| | Please add the order code **"K3Y"** to the Order No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417). | | | | **K3Y** | |
| | **Any inscription or symbol** | | | | **3SB29 01-5AZ** | 1 unit |
| | Please add the order code **"K9Y"** to the Order No. and specify the inscription or the symbol required. | | | | **K9Y** | |

# 3SB2, Mounting Diameter 16 mm

## Insert labels and insert caps

| | Inscription/Symbol | | Symbol No. | DT | Insert caps For indicator lights Order No. | PS |
|---|---|---|---|---|---|---|
| **For self-inscription** | | | | | | |
| | Blank | | | | **3SB29 01-7AA** | 10 units |
| **Graphic symbols** | | | | | | |
| | Pump | | 0134 ISO | | **3SB29 01-7PD** | 10 units |
| | Manual operation | | 0096 ISO | | **3SB29 01-7QK** | 10 units |
| **Customized inscriptions** | | | | | | |
| | **Any inscription**<br>1 line of text with up to 6 characters of 3 mm in height.<br>Please add the appropriate order code to the Order No. and specify the line of text required. | | | | **3SB29 01-7AZ**<br>**K0Y**<br>**K1Y** or **K2Y**<br>**K5Y** | <br>1 unit<br>1 unit<br>1 unit |
| | **Other graphic symbols**<br>Please add the order code **"K3Y"** to the Order No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417). | | | | **3SB29 01-7AZ**<br>**K3Y** | 1 unit |
| | **Any inscription or symbol**<br>Please add the order code **"K9Y"** to the Order No. and specify the inscription or the symbol required. | | | | **3SB29 01-7AZ**<br>**K9Y** | 1 unit |

## Options

### *Customized inscriptions*

Labels and caps can be inscribed with text and symbols not listed in the ordering data. Append the following codes to the Order No.:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift"): **K0Y**
- Text line in upper case (e.g. "LIFT"): **K1Y**
- Text line in lower case (e.g. "lift"): **K2Y**
- Text line in upper/lower case, all words begin with upper case letters (e.g. "Lift"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbols according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

One line with up to 6 characters with 3 mm letter height is possible for the inscription (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example 1

3SB29 01–4AZ
K1Y
Z = pump

Ordering example 2

3SB29 01–4AZ
K3Y
Z = 5008 IEC

Ordering example 3

3SB29 01–4AZ
K3Y
Z = 1118 ISO

# 3SB2, Mounting Diameter 16 mm

## Name plates

### Overview

The name plates consist of a black plastic label holder and an inscription label (silver with black print) for sticking in place.

Note mounting dimensions!

***Inscriptions***

The inscriptions (also special inscriptions) are lower case with upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

### Selection and ordering data

| Inscription/Symbol | Symbol No. | DT | Order No. | PS |
|---|---|---|---|---|
| **Inscription labels, self-adhesive, 9.5 mm × 18.5 mm** | | | | |
| Blank | | | **3SB29 01-2AA** | 10 units |
| On | | | **3SB29 01-2EB** | 10 units |
| Off | | | **3SB29 01-2EC** | 10 units |
| Start | | | **3SB29 01-2EL** | 10 units |
| Reset | | | **3SB29 01-2EM** | 10 units |
| Fault | | | **3SB29 01-2EW** | 10 units |
| Hand Auto | | | **3SB29 01-2BA** | 10 units |
| Manual 0 Auto | | | **3SB29 01-2BE** | 10 units |
| Man 0 Auto | | | **3SB29 01-2ET** | 10 units |
| **Graphic symbols** | | | | |
| O (Off) | 5008 IEC | | **3SB29 01-2MB** | 1 unit |
| I (On)  | 5007 IEC | | **3SB29 01-2MC** | 1 unit |
| O I (horizontal) | -- | | **3SB29 01-2MF** | 1 unit |
| Motion in direction of arrow | 5002 IEC | | **3SB29 01-2NA** | 1 unit |
| **Customized inscriptions or symbols** | | | **3SB29 01-2XZ** | |
| (see Options) | | | **K0Y** | 1 unit |
| | | | **K1Y, K2Y** or **K3Y** | 1 unit |
| | | | **K5Y** | 1 unit |
| | | | **K9Y** | 1 unit |
| **Label holders** | | | | |
| **Label holders for inscription labels**<br>The label holders must not be used with the 3SB2...-1AC01 EMERGENCY-STOP mushroom push button. | | | **3SB29 02-0AB** | 1 unit |

### Options

***Customized inscriptions***

The labels can be inscribed with text and symbols not listed in the ordering data. Append the following codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OFF"): **K1Y**
- Text line(s) in lower case (e.g. "lift off"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbols according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

Two lines of 11 characters are permitted with 4 mm letter height (1 line) or 3 mm (2-line).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

3SB29 01–2XZ
K3Y
Z = 1118 ISO

# 3SB2, Mounting Diameter 16 mm

## Mounting parts and components

### Selection and ordering data

| | Version | Lamp voltage | Color | DT | Order No. | PS |
|---|---|---|---|---|---|---|
| | | V | | | | |
| **Buttons and lenses**[1] | | | | | | |
| 3SB29 10-0AF | **Buttons, flat**<br>For push buttons | | Black<br>Red<br>Yellow<br>Green<br>Blue<br>White<br>Clear | | **3SB29 10-0AB**<br>**3SB29 10-0AC**<br>**3SB29 10-0AD**<br>**3SB29 10-0AE**<br>**3SB29 10-0AF**<br>**3SB29 10-0AG**<br>**3SB29 10-0AH** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB29 10-0CF | **Buttons, flat**<br>For illuminated push buttons | | Red<br>Yellow<br>Green<br>Blue<br>White<br>Clear | | **3SB29 10-0CC**<br>**3SB29 10-0CD**<br>**3SB29 10-0CE**<br>**3SB29 10-0CF**<br>**3SB29 10-0AG**<br>**3SB29 10-0AH** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB29 10-0BD | **Buttons, raised**<br>For push buttons | | Black<br>Red<br>Yellow<br>Clear | | **3SB29 10-0BB**<br>**3SB29 10-0BC**<br>**3SB29 10-0BD**<br>**3SB29 10-0BH** | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB29 10-0DD | **Buttons, raised**<br>For illuminated push buttons | | Red<br>Yellow<br>Clear | | **3SB29 10-0DC**<br>**3SB29 10-0DD**<br>**3SB29 10-0BH** | 1 unit<br>1 unit<br>1 unit |
| 3SB29 10-1AD | **Screw lenses**<br>With concentric rings | | Red<br>Yellow<br>Green<br>Blue<br>White<br>Clear | | **3SB29 10-1AC**<br>**3SB29 10-1AD**<br>**3SB29 10-1AE**<br>**3SB29 10-1AF**<br>**3SB29 10-1AG**<br>**3SB29 10-1AH** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB29 10-1BE | **Screw lenses**<br>Smooth, for inscription with insert cap | | Red<br>Yellow<br>Green<br>Blue<br>Clear | | **3SB29 10-1BC**<br>**3SB29 10-1BD**<br>**3SB29 10-1BE**<br>**3SB29 10-1BF**<br>**3SB29 10-1BH** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| **Key for actuators** | | | | | | |
| 3SB29 08-2AJ | **Keys**<br>For CES key-operated switch, lock No. SB2 | | | | **3SB29 08-2AJ** | 1 unit |
| **Lamps, wedge bases**[2] | | | | | | |
| 3SB29 08-1AE | **Incandescent lamps**<br>Wedge base W2 × 4.6 d, 1.0 W | AC/DC<br>6<br>12<br>24<br>30<br>48<br>60 | Clear | | <br>**3SB29 08-1AA**<br>**3SB29 08-1AB**<br>**3SB29 08-1AC**<br>**3SB29 08-1AD**<br>**3SB29 08-1AE**<br>**3SB29 08-1AF** | <br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB39 01-1SB | **LED lamps, super-bright**<br>Wedge base W2 × 4.6 d | 24 AC/DC | Red<br>Yellow<br>Green<br>White<br>Blue | | **3SB39 01-1SB**<br>**3SB39 01-1RB**<br>**3SB39 01-1TB**<br>**3SB39 01-1UB**<br>**3SB29 08-1BD** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB29 08-1BD | | 28 AC/DC | Red<br>Yellow<br>Green<br>White<br>Blue | | **3SB39 01-1SE**<br>**3SB39 01-1RE**<br>**3SB39 01-1TE**<br>**3SB39 01-1UE**<br>**3SB39 01-1VE** | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SB29 08-1AB | **Lamp extractors**<br>For lamps with bases W2 × 4.6 d | | | | **3SB29 08-2AB** | 1 unit |

[1] Included in the scope of supply of actuators or indicator lights.

[2] Included in the scope of supply of some complete units.

# 3SB2, Mounting Diameter 16 mm

## Mounting parts and components

| | Version | DT | Order No. | PS |
|---|---|---|---|---|
| **Accessories for command points** | | | | |
| 3SB29 02-0AA | **Single frames** for square design[1] | | **3SB29 02-0AA** | 1 unit |
| 3SB29 08-2AG | **Name plates, yellow, Ø 50 mm**<br>As backing plate for EMERGENCY-STOP, self-adhesive<br>• Blank<br>• With German inscription "NOT-HALT"<br>• With German inscription "NOT-AUS" | | <br><br>**3SB29 08-2AF**<br>**3SB29 08-2AG**<br>**3SB29 08-2AK** | <br><br>1 unit<br>1 unit<br>1 unit |
| 3SB29 08-3AA | **Blanking plugs**<br>Black plastic<br>(degree of protection IP65) | | **3SB29 08-3AA** | 1 unit |
| 3SB29 08-1 | **Protective caps, clear**<br>Silicone, for push buttons with flat and raised button | | **3SB29 08-3AB** | 1 unit |
| **Flat connectors** | | | | |
| 3SB29 08-8AA | **Plug-in sleeves**<br>For flat connectors 2.8 × 0.8 mm, cross-section 0.5 ... 1.5 mm$^2$ | | **3SB29 08-8AA** | 1unit |
| 3SB29 08-8AB | **Insulation sleeves**<br>For flat connectors, connection from the front | | **3SB29 08-8AB** | 1 unit |
| 3SB29 08-8AD | **Complete connectors**[2]<br>For connecting contact blocks and lamp holders<br>(up to 10 connections).<br>Guaranteed finger-safe acc. to IEC 61140 and BGV A3. | | **3SB29 08-8AD** | 1 unit |
| 3SB29 08-8AE | **Plug-in sleeves**<br>For flat connectors 2.8 × 0.8 mm,<br>with locating spring for maintained in complete connector | | **3SB29 08-8AE** | 250 units |
| **Tools** | | | | |
| 3SB29 08-2AA | **Dismantling tools**<br>For holders and lamp holders with holder | | **3SB29 08-2AA** | 1 unit |
| 3SB29 08-2AC | **Mounting tools**<br>For buttons<br>and screw lenses | | **3SB29 08-2AC** | 1 unit |

1) Not suitable for EMERGENCY-STOP mushroom push buttons.

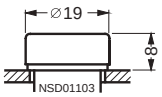
2) Required 3SB29 08-8AE plug-in sleeves for flat connectors 2.8 × 0.8 mm are not included in the scope of supply.

# 3SB2, Mounting Diameter 16 mm

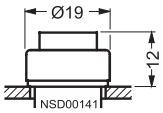
## Dimension drawings (mm)

### Actuators

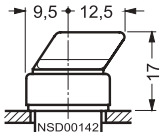
**Pushbutton or illuminated pushbutton**
with flat button



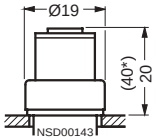

**Pushbutton or illuminated pushbutton**
with raised button




**Selector switch**

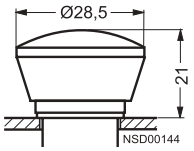



**CES key-operated switch**

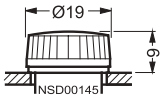



* with key

**EMERGENCY-STOP mushroom pushbutton**

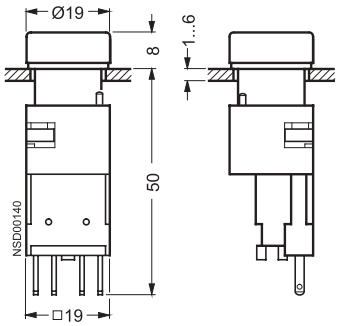



**Indicator light**




### Contact blocks with push-on connection

**Pushbutton and contact block**
with holder for frontplate mounting

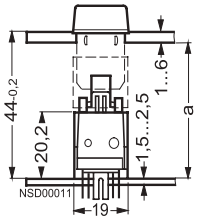


# 3SB2, Mounting Diameter 16 mm

## Dimension drawings (mm)

### Contact blocks with soldering pins for use on printed circuit boards

**Illuminated pushbutton unit**
with contact block and lamp-holder with solder pins

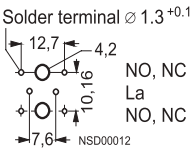



Length **a** of spacers: **a** = $44^{-0.2}$ minus front plate thickness.
When using backing plates, the length **a** is reduced by 0.8 mm.
To avoid bending of the PCB when the actuator is operated, sufficient spacers must be provided spaced as shown in the table below:

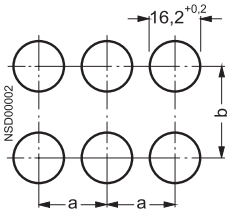
| Maximum PCB thickness | Max. distance between spacers |
|---|---|
| 1.5 mm | 80 mm |
| 2.5 mm | 150 mm |
| When using EMERGENCY-STOP actuators | generally 50 mm |

(These details are based on epoxy resin glass fibre mat.)

**Solder pin spacing**



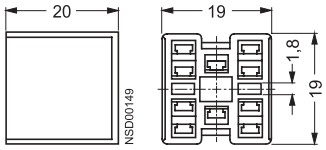

### Mounting dimensions




| Minimum clearance | a | b |
|---|---|---|
| Round design | 19 | 19 |
| Square design without inscription plate | 21 | 21 |
| Round and square designs with inscription plates | 21 | 32 |
| For 2 selector switches and 3 switching positions, maintained contact, side by side | 21 | 21 |

### Accessories

**Complete connector**



## Overview

| | 3SU1.0 | 3SU1.3 | 3SU1.5 | 3SU1.6 |
|---|---|---|---|---|
| **Pushbuttons and indicator lights** | | | | |
| **Designs** | | | | |
| Nominal diameter | 22 mm | 22 mm | 22 mm | 30 mm |
| Version | Plastic | Plastic with metal front ring, matte | Metal, shiny | Metal, matte, flat |
| **Actuators** | | | | |
| Pushbuttons | ✓ | ✓ | ✓ | ✓ |
| Illuminated pushbuttons | ✓ | ✓ | ✓ | ✓ |
| Mushroom pushbuttons | ✓ | ✓ | ✓ | -- |
| EMERGENCY STOP mushroom pushbuttons | ✓ | ✓ | ✓ | -- |
| Selector switches | ✓ | ✓ | ✓ | ✓ |
| Key-operated switches | ✓ | ✓ | ✓ | ✓ |
| **Special actuators** | | | | |
| Twin pushbuttons | ✓ | ✓ | ✓ | -- |
| Coordinate switches | ✓ | ✓ | ✓ | -- |
| Toggle switches | ✓ | ✓ | ✓ | -- |
| Sensor switches | ✓ | ✓ | -- | -- |
| ID key-operated switches | ✓ | ✓ | -- | -- |
| Pushbuttons with extended stroke | ✓ | ✓ | ✓ | -- |
| Potentiometers | ✓ | ✓ | ✓ | -- |
| **Indicators** | | | | |
| Indicator lights | ✓ | ✓ | ✓ | ✓ |
| Acoustic signaling devices | ✓ | ✓ | ✓ | -- |
| **Contact modules** | | | | |
| Single-pole | ✓ | ✓ | ✓ | ✓ |
| Two-pole | ✓ | ✓ | ✓ | ✓ |
| **LED modules** | | | | |
| With integrated LED | ✓ | ✓ | ✓ | ✓ |
| **Connections** | | | | |
| Screw terminals | ✓ | ✓ | ✓ | ✓ |
| Spring-type terminals | ✓ | ✓ | ✓ | ✓ |
| Solder pins | ✓ | ✓ | ✓ | ✓ |
| AS-Interface | ✓ | ✓ | ✓ | ✓ |
| IO-Link | ✓ | ✓ | ✓ | ✓ |

✓ Standard
-- Not available

Note:

Safety characteristics (see Appendix on page 10/166).

| | 3SU18 | 3SU18 |
|---|---|---|
| | Enclosures | Two-hand operation consoles |
| **Enclosures** | | |
| Plastic | ✓ | ✓ |
| Metal | ✓ | ✓ |
| **Actuators** | | |
| Pushbuttons | ✓ | ✓ |
| Illuminated pushbuttons | ✓ | ✓ |
| Mushroom pushbuttons | ✓ | ✓ |
| EMERGENCY STOP mushroom pushbuttons | ✓ | ✓ |
| Selector switches | ✓ | ✓ |
| Key-operated switches | ✓ | ✓ |
| **Indicators** | | |
| Indicator lights | ✓ | ❑ |
| Acoustic signaling devices | ✓ | ❑ |
| **Contact modules** | | |
| Single-pole | ✓ | ✓ |
| Two-pole | -- | ✓ |
| **Connections** | | |
| Screw terminals | ✓ | ✓ |
| Spring-type terminals | ✓ | ❑ |
| Plug-in connection | ❑ | ❑ |
| AS-Interface | ✓ | ❑ |

✓ Standard
-- Not available
❑ Optional

### *AS-Interface solutions*

Pushbuttons and indicator lights of the SIRIUS ACT series can be connected to the AS-Interface communication system quickly and easily with the help of various solutions.

AS-Interface EMERGENCY STOP according to ISO 13850

Using special modules, EMERGENCY STOP devices according to ISO 13850 can be directly connected through the standard AS-Interface with safety-related communication (see page 10/118).

AS-Interface enclosures

Enclosures with standard fittings are listed in this catalog.

For customized enclosures, use the SIRIUS ACT Configurator to select the elements for equipping (see page 10/130).

### *PROFINET solutions*

SIRIUS ACT devices will be equipped in future with a direct communication interface to PROFINET and PROFIsafe.

### *RFID authentication solutions*

Groups of employees or individuals can be authenticated by means of the ID key-operated switch. Color-coded keys for easy distinction between users and flexible in application thanks to four function stages.

## Overview

SIRIUS ACT pushbuttons and indicator lights

***SIRIUS ACT – commanding and signaling***

SIRIUS ACT is a modular system of pushbuttons and indicator lights for front plate mounting and rear-mounted electrical modules. Thanks to SIRIUS ACT with PROFINET,

Extensive portfolio

- Customized variants, e.g. special tumbler arrangements, labeling, equipped enclosures
- Communication-enabled thanks to direct interfacing to AS-Interface, IO-Link or PROFINET

Diverse possible applications

- National and international approvals
- Many trade approvals
- Short delivery times thanks to global availability

Standards

- IEC/EN 60947-1
- IEC/EN 60947-5-1
- IEC/EN 60947-5-5 for EMERGENCY STOP devices

**More information**

Homepage, see www.siemens.com/sirius-act
Industry Mall, see www.siemens.com/product?3SU1
Configurator, see www.siemens.com/sirius-act/configurator
Conversion tool, see www.siemens.com/sirius/conversion-tool
Manual, see https://support.industry.siemens.com/cs/ww/en/view/107542462
TIA Portal, see www.siemens.com/TIA

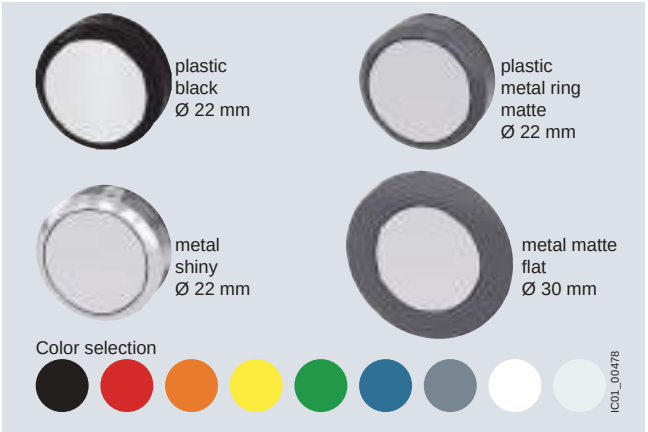
pushbuttons and indicator lights can be connected directly via PROFINET to the controller and HMI devices – including with safety functions. Engineering and commissioning are simplified no end by the TIA Portal.

***Configurator***

- Fast, simple selection by intuitive navigation through clearly-organized menus using drag & drop
- Image preview of selected components
- Inscription of pushbuttons and labeling plates using the interactive inscription tool
- Once created, a configuration can be ordered as often as required using the customer-specific article number and the CIN (Configuration Identification Number)
- Everything at a glance: Product data sheets, certificates, dimensional drawings, list prices, inscription tool

## Benefits

### *Design*




SIRIUS ACT is available in four design lines.

### *Communication*

- Direct connection of the enclosure to AS-Interface or IO-Link
- Direct connection in the control cabinet to PROFINET, IO-Link or AS-Interface
- Can be integrated easily via the TIA Portal

### *Ruggedness*

- Degree of protection IP66, IP67, IP69 (IP69K)

| IP66 | |
|---|---|
| 6 = Protection against the ingress of dust | 6 = Protection against powerful splash-water |
| **IP67** | |
| 6 = Protection against the ingress of dust | 7 = Protection against temporary immersion |
| **IP69 (IP69K)** | |
| 6 = Protection against the ingress of dust | 9/9K = Protection against water in high-pressure cleaning (approx. 80 bar) and high water jet temperatures (approx. 80 °C) |

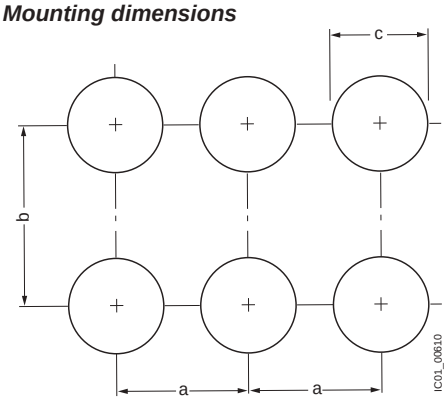
- Service life of 100 000 hours thanks to use of LEDs
- Media resistance (chemicals) thanks to solid stainless steel and high-grade plastics
- Mechanical endurance of 10 x $10^6$ switching cycles
- Suitable for use in extreme environments
- Reliable, friction-locked fixing with just one screw
- Design stability according to use
- Simple geometry for mounting holes

### *Easy handling*

- Self-holding function of the actuator when mounting
- Twist prevention integrated into patented holder design
- Stackable contact modules
- Self-explanatory and fast installation using one hand
- Components can be mounted with holder removed
- No special tools required, simple size 2 screwdriver (cross-tip DIN ISO 87641PZD1, flat-head DIN ISO 2380-1 A/B 1x4.5) is sufficient

## General data

### *Mounting dimensions*




| | Minimum clearance | | |
|---|---|---|---|
| | a | b | c |
| | mm | mm | mm |
| **22 mm, plastic with metal front ring, matte** | | | |
| 3-slot holder | 30 | 40 | $22.3^{+0.4}$ |
| 4-slot holder | 40 | 40 | $22.3^{+0.4}$ |
| **30 mm, metal, matte** | | | |
| 3-slot holder | 40 | 45 | $30.5^{+0.5}$ |

### *Versions*

SIRIUS ACT is a modular system of pushbuttons and indicator lights with which customized variants can be configured flexibly.

One command point comprises:

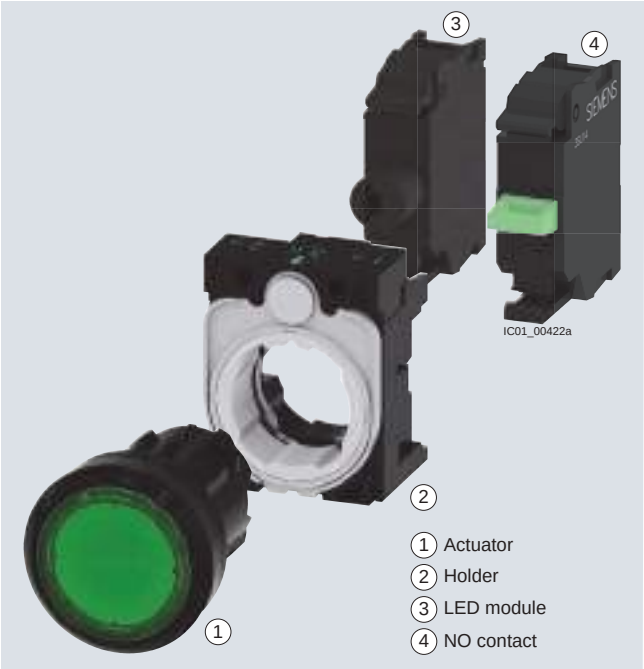
- An actuating or signaling element in front of the control panel
- A holder for securing behind the control panel
- Up to six contact modules and/or one LED module (mounted onto the holder), single-pole contacts can be stacked
- A comprehensive range of accessories for inscription/marking

Complete units

Complete units made up of an actuating or signaling element, holder and contact modules and/or LED modules are offered for the most frequent application cases. The electrical parts are integrated and only have to be wired.

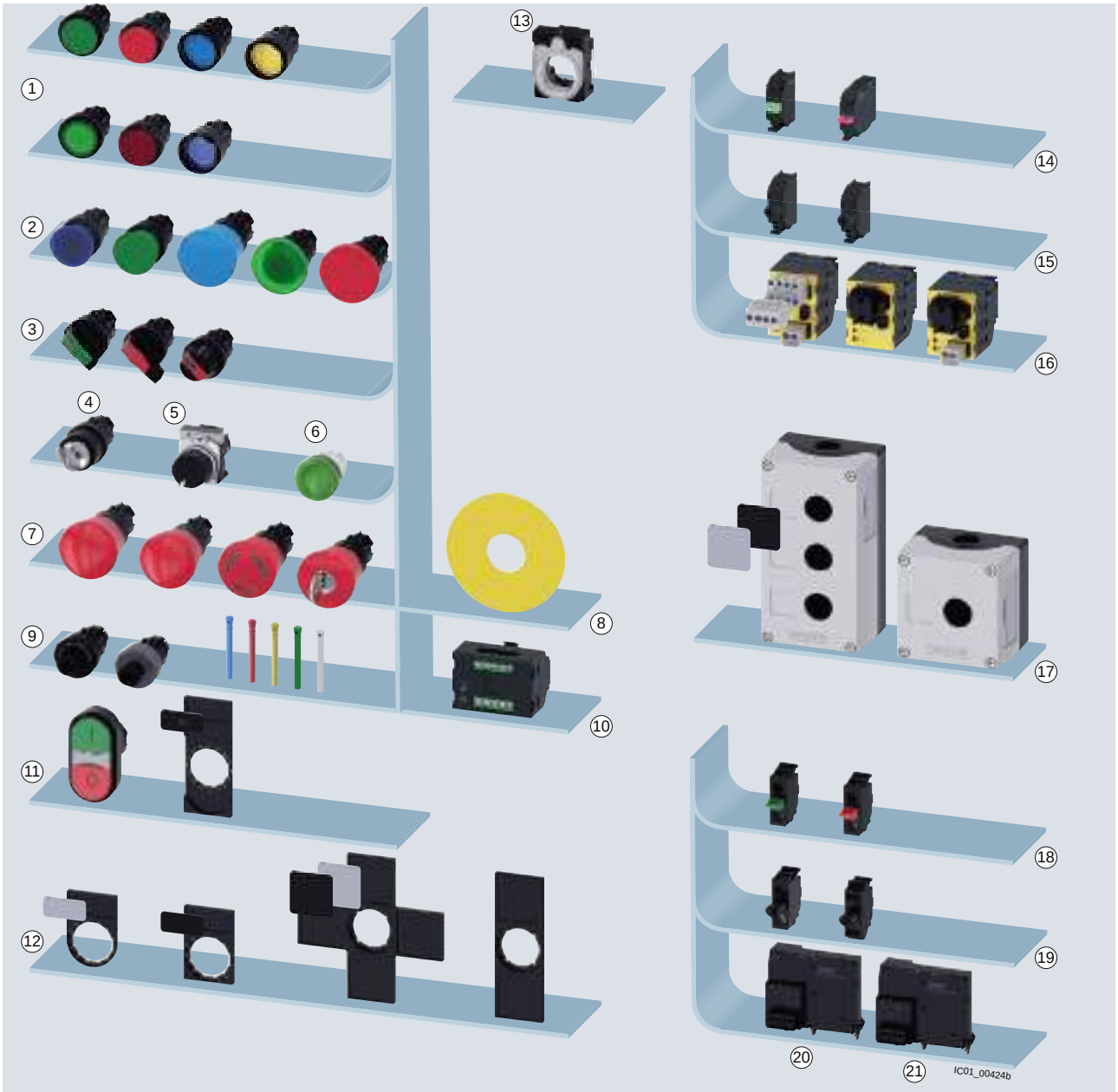
Compact units

Signaling devices, sensor switches, and pushbuttons with extended stroke are available as compact units. The electronic circuitry is already integrated in these devices, i.e. it is not necessary to snap on a contact or LED module.



| Complete units | Pages | Compact units | Pages |
|---|---|---|---|
| Plastic, black | 10/39 | Plastic, black | 10/46 |
| Plastic with metal front ring, matte | 10/61 | Plastic with metal front ring, matte | 10/68 |
| Metal, shiny | 10/82 | Metal, shiny | 10/90 |

### *Actuating and signaling elements*




| Actuating and signaling elements | | Pages |
|---|---|---|
| ① | Pushbuttons, illuminated pushbuttons | 10/39 |
| ② | Mushroom pushbuttons | 10/41 |
| ③ | Selector switches | 10/42 |
| ④⑤⑥ | Key-operated switches, potentiometers, indicator lights | 10/43 |
| ⑦⑧ | EMERGENCY STOP mushroom pushbuttons, backing plates | 10/41 |
| ⑨⑩ | ID key-operated switches, ID keys, electronic modules | 10/59 |
| ⑪ | Twin pushbuttons, label holders, labeling plates | 10/51 |
| ⑫ | Label holders, labeling plates | 10/138 |
| **Holders and labels** | | **Pages** |
| ⑬ | Holders | 10/138 |

| Modules for front plate mounting | | Pages |
|---|---|---|
| ⑭ | Contact modules | 10/112 |
| ⑮ | LED modules | 10/116 |
| ⑯ | AS-Interface modules | 10/118 |
| **Enclosures** | | **Pages** |
| ⑰ | Enclosures | 10/122 |
| **Modules for base mounting** | | **Pages** |
| ⑱ | Contact modules | 10/133 |
| ⑲ | LED modules | 10/133 |
| ⑳ | IO-Link modules | 10/136 |
| ㉑ | AS-Interface modules | 10/136 |

System overview of SIRIUS ACT pushbuttons and indicator lights from the plastic design line.
Pushbuttons and indicator lights available in 4 design lines.

# SIRIUS ACT DIGITALIZATION @ YOUR FINGERTIPS™

## General data

***SIRIUS ACT with PROFINET***

SIRIUS ACT with PROFINET connects pushbuttons and indicator lights directly via PROFINET to the controller and HMI devices – including with safety functions.

With this solution designed for the control panel, up to 21 SIRIUS ACT devices can be connected to the controller via PROFINET. Integration of the EMERGENCY STOP mushroom pushbutton (SIL 3, PL e) is possible via PROFIsafe. Non SIRIUS ACT devices, e.g. position switches, can additionally be connected via the open, digital/analog interfaces (DI, DQ, AI).

The system is entirely integrated into TIA Portal and does not require any further addressing apart from the IP address for PROFINET.

Quick and easy installation with flat cables without special tools saves significantly on wiring outlay.

| | | | |
|---|---|---|---|
| **Interface modules/fail-safe interface modules** | | | |
| | **Interface module for PROFINET**, 24 V DC<br>1 to 20 terminal modules can be connected | **3SU1400-1L☐10-☐AA1** | See page 10/121 |
| **Terminal modules** | | | |
| | **Terminal modules with 2 contacts**<br>**Terminal modules with 2 contacts and integrated LED**<br>**Terminal modules with integrated LED** | **3SU1401-1MA☐0-1☐A1**<br>**3SU1401-1MC☐0-1☐A1**<br>**3SU1401-1ME☐0-1☐A1** | See page 10/121 |
| **Accessories** | | | |
| | **Memory module**<br>For backing up the complete parameterization of the 3SK2 safety system without a PC/PG through the system interface | **3RK3931-0AA00** | See page 10/121 |
| | **LED modules for mounting on printed-circuit boards** | **3SU1401-3BA☐0-5AA0** | See page 10/117 |
| | **Flat ribbon cable**<br>7 cores, length 5 m<br>7 cores, length 10 m | **3SU1900-0KQ80-0AA0**<br>**3SU1900-0KP80-0AA0** | See page 10/165 |

## General data

### *ID key-operated switches*

Groups of employees or individuals can be authenticated by means of the ID key-operated switch. The ID key-operated switch is electronic and has four switch positions that are selected by keys with different codes. Using the four ID keys with different codes, it is possible to select 1 to 4 positions. The ID keys are color-coded (yellow, blue, red, green, white) so that they can be clearly differentiated at a glance and used flexibly thanks to four function levels.

RFID authentication solutions

Groups of employees or individuals can be authenticated by means of the ID key-operated switch. Color-coded keys for easy distinction between users.

Different versions of ID key-operated switches are available depending on the following features:

- Front ring material
- Conventional variant: 1 + 4 non-isolated outputs
- Variant with IO-Link: Option of individual coding

Operation:
Insert ID key, turn key to select the position. Standard keys can also be used in conjunction with the electronic module for ID key-operated switches with IO-Link function. The white ID key is supplied without coding.

Note: ID Key Switches requires the use of a plastic holder only! Purchase 3SU1500-0AA10-0AA0 Holder Separately.

| | | | | |
|---|---|---|---|---|
| | **3SU1000-4WS10-0AA0 Plastic, black** | **3SU1500-0AA10-0AA0 Holder, plastic** | **3SU1030-4WS10-0AA0 Plastic with metal front ring, matte** | **3SU1500-0AA10-0AA0 Holder, plastic** |
| **ID key-operated switches** | | | | |
| **Number of switching positions** | 4 | | 4 | |
| **Operating angle** | 45° | | 45° | |
| **Operating principle** | Latching | | Latching | |
| **Switch position for key removal** | Key removal possible in all 4 positions | | Key removal possible in all 4 positions | |
| **Color** | Black | | Black | |
| **Pages** | 10/59 | | 10/80 | |

| | | |
|---|---|---|
| | **3SU1400-1GC10-1AA0** | **3SU1400-1GD10-1AA0** |
| **Electronic modules for ID key-operated switches** | | |
| **Type of power supply** | -- | via IO-Link master |
| **Protocol is supported IO-Link protocol** | -- | IO-Link protocol |
| **Number of NO contacts** | 5 | 5 |
| **IO-Link transfer rate** | -- | COM2 (38.4 kBaud) |
| **Pages** | 10/120 | 10/120 |

| | | |
|---|---|---|
| | **3SU1900-0FU60-0AA0**<br>**ID keys ID group individual** | **3SU1900-0FV40-0AA0**<br>**3SU1900-0FW30-0AA0**<br>**3SU1900-0FX20-0AA0**<br>**3SU1900-0FY50-0AA0**<br>**ID keys** |
| **ID keys** | | |
| **Material** | Plastic | Plastic |
| **Version of RFID coding** | Individually coded, programmable several times | ID group 1<br>ID group 2<br>ID group 3<br>ID group 4 |
| **Color** | White | Green<br>Yellow<br>Red<br>Blue |
| **Pages** | 10/161 | 10/161 |

## General data

### *Article No. scheme*

Device types

| 3SU10 | 3SU11 | 3SU12 | 3SU14 | 3SU15 | 3SU18 | 3SU19 |
|---|---|---|---|---|---|---|
| **Device types** | | | | | | |
| **Actuating and signaling elements** | **Complete units** | **Compact units** | **Modules for actuators and indicators** | **Holders with module** | **Enclosures** | **Accessories** |

Actuating and signaling elements

| Product versions | | Article number |
|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** □ □ □ – □ □ □ □ □ – □ □ □ □ |
| Device type | Actuating and signaling elements | **0** |
| Material (front ring) | Plastic, black | **0** |
| | Metal, matte (front ring)/plastic, black (rosette, holder) | **3** |
| | Metal, matte (front ring)/metal (rosette, holder) | **4** |
| | Metal, shiny | **5** |
| | Metal, matte | **6** |
| Illumination | Non-illuminated | **0** |
| | Illuminated/transparent | **1** |
| | Illuminated/non-illuminated | **2** |
| Type of actuator/indicator | Pushbutton | **0** |
| | Mushroom pushbutton/EMERGENCY STOP mushroom pushbutton/sensor switch | **1** |
| | Selector switch | **2** |
| | Twin pushbutton, toggle switch | **3** |
| | Key-operated switch | **4/5** |
| | Indicator light/acoustic signaling device | **6** |
| | Coordinate switch | **7** |
| Design of the actuator/ acoustic signaling device | e.g. A = Flat | □ |
| Function | e.g. B = Momentary contact | □ |
| Color/key removal position | e.g. 10 = Black, 20 = Red | □ □ |
| Connection type | None | **0** |
| Module/holder equipment | e.g. A = Without module, without holder Y = Without module, with holder | □ |
| Marking | e.g. A = None, C = "I", D = "O", R = "R" | □ |
| Ambient condition | Standard | **0** |
| | ATEX Zone 21-22: Protection from dust | **1** |
| | ATEX Zone 1-2: Intrinsic safety | **2** |
| **Example** | | **3SU1 0 0 0 – 0 A B 1 0 – 0 A A 0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Complete units

| Product versions | | Article number |
|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** □ □ □ – □ □ □ □ □ – □ □ □ □ |
| Device type | Complete units | **1** |
| Material (front ring) | Plastic, black<br>Metal, matte (front ring)/plastic, black (rosette, holder)<br>Metal, shiny<br>Metal, matte | **0**<br>**3**<br>**5**<br>**6** |
| Illumination | Non-illuminated<br>Illuminated (with/without LED, various voltages) | **0**<br>**1**<br>**...**<br>**8** |
| Type of actuator/indicator | Pushbutton<br>Mushroom pushbutton/EMERGENCY STOP mushroom pushbutton/sensor switch<br>Selector switch<br>Twin pushbutton, toggle switch<br>Key-operated switch<br>Indicator light/acoustic signaling device<br>Coordinate switch | **0**<br>**1**<br>**2**<br>**3**<br>**4/5**<br>**6**<br>**7** |
| Design of the actuator/ acoustic signaling device | e.g. A = Flat | □ |
| Function | e.g. B = Momentary contact | □ |
| Color/key removal position | e.g. 10 = Black, 20 = Red | □ □ |
| Connection type | Screw terminals<br>Spring-type terminals | **1**<br>**3** |
| Module/holder equipment including contact material | e.g.<br>A = Without module, with holder<br>B = 1 NO contact with holder<br>C = 1 NC contact with holder | □ |
| Marking | e.g. A = None, C = "I", D = "O", R = "R" | □ |
| Ambient condition | Standard<br>ATEX Zone 21-22: Protection from dust<br>ATEX Zone 1-2: Intrinsic safety | **0**<br>**1**<br>**2** |
| **Example** | | **3SU1 1 0 0 – 0 A B 1 0 – 1 B A 0** |

## Compact units

| Product versions | | Article number |
|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** □ □ □ – □ □ □ □ □ – □ □ □ □ |
| Device type | Compact units | **2** |
| Material (front ring) | Plastic, black<br>Metal, matte (front ring)/plastic, black (rosette, holder)<br>Metal, shiny<br>Metal, matte | **0**<br>**3**<br>**5**<br>**6** |
| Illumination | Non-illuminated<br>Illuminated/non-illuminated | **0**<br>**1** |
| Type of actuator/indicator | Pushbutton<br>Sensor switch<br>Potentiometers<br>Indicator light/acoustic signaling device | **0**<br>**1**<br>**2**<br>**6** |
| Design of the actuator/ acoustic signaling device | e.g. A = Flat | □ |
| Function (voltage/resistance) | e.g. B = 24 V AC/DC | □ |
| Color | e.g. 10 = Black, 20 = Red | □ □ |
| Connection type | None<br>Screw terminals<br>M12 connection, 4-pin<br>Spring-type terminals | **0**<br>**1**<br>**2**<br>**3** |
| Module/holder equipment including contact material | e.g.<br>A = Without module, without holder<br>B = 1 NO contact with holder<br>C = 1 NC contact with holder | □ |
| Marking | e.g. A = None | □ |
| Ambient condition | Standard<br>ATEX Zone 21-22: Protection from dust<br>ATEX Zone 1-2: Intrinsic safety | **0**<br>**1**<br>**2** |
| **Example** | | **3SU1 2 0 1 – 6 A B 1 0 – 1 A A 0** |

Note:

The Article No. schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## General data

### Modules for actuators and indicators

| Product versions | | Article number |
|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** □□□ – □□□□□ – □□□□ |
| Device type | Modules for actuators and indicators | **4** |
| Material (front ring) | Plastic, black | **0** |
| Illumination | Non-illuminated<br>Illuminated | **0**<br>**1** |
| Fastening method | Front plate mounting<br>Base mounting<br>Printed circuit board | **1**<br>**2**<br>**3** |
| Module type | Contact module<br>LED module<br>LED test module<br>Support terminal<br>AS-Interface module<br>Electronic module for ID key-operated switches<br>Interface modules for PROFINET<br>Terminal modules | **A**<br>**B**<br>**C**<br>**D**<br>**E**<br>**G**<br>**L**<br>**M** |
| Function/voltage | e.g. B = 24 V AC/DC | □ |
| Color | e.g. 10 = Black, 20 = Red | □□ |
| Connection type | Screw terminals<br>Screw terminals + insulation piercing method<br>Spring-type terminals<br>Spring-type terminals + insulation piercing method<br>Socket terminals | **1**<br>**2**<br>**3**<br>**4**<br>**5** |
| Module equipment including contact material | e.g.<br>A = None<br>B = 1 NO contact, silver<br>C = 1 NC contact, silver | □ |
| Marking | None | **A** |
| Ambient condition | Standard<br>ATEX Zone 21-22: Protection from dust<br>ATEX Zone 1-2: Intrinsic safety | **0**<br>**1**<br>**2** |
| **Example** | | **3SU1 4 0 0 – 1 A A 1 0 – 1 B A 0** |

### Holders

| Product versions | | Article number |
|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** □□□ – □□□□□ – □□□□ |
| Device type | Holder | **5** |
| Material (front ring) | Plastic, black<br>Metal, shiny | **0**<br>**5** |
| Illumination | Non-illuminated<br>Illuminated | **0**<br>**1** |
| Fastening method | Without<br>Front plate mounting | **0**<br>**1** |
| Holder type | 3x A<br>4x B | **A**<br>**B** |
| Function/voltage | Without<br>6 ... 24 V AC/DC | **A**<br>**G** |
| Color | e.g. 10 = Black, 20 = Red | □□ |
| Connection type | None<br>Screw terminals | **1**<br>**2** |
| Module equipment including contact material and slot | e.g.<br>A = None<br>B = 1 NO contact, silver<br>C = 1 NC contact, silver | □ |
| Marking | None | **A** |
| Ambient condition | Standard<br>ATEX Zone 21-22: Protection from dust<br>ATEX Zone 1-2: Intrinsic safety | **0**<br>**1**<br>**2** |
| **Example** | | **3SU1 5 0 0 – 0 A A 1 0 – 0 A A 0** |

Note:

The Article No. schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Enclosures

| Product versions | | Article number | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** | □ | □ | □ | – | □ | □ | □ | □ | □ | – | □ | □ | □ | □ |
| Device type | Enclosures | | **8** | | | | | | | | | | | | | |
| Material (enclosure/front ring) | Plastic, black plastic<br>Metal, shiny metal | | | **0**<br>**5** | | | | | | | | | | | | |
| Number of command points | Command point<br>...<br>Command points | | | | **1**<br>**...**<br>**6** | | | | | | | | | | | |
| Type of enclosure | Surface-mounting<br>4-position selector switch and coordinate switch<br>Palm pushbutton<br>Two-hand operation console | | | | | **0**<br>**1**<br>**2**<br>**3** | | | | | | | | | | |
| Command point | e.g. command point, inscription, module | | | | | | □ | □ | | | | | | | | |
| Communication capability | Without<br>AS-i | | | | | | | | **0**<br>**1** | | | | | | | |
| Ambient condition | Standard<br>ATEX Zone 21-22: Protection from dust<br>ATEX Zone 1-2: Intrinsic safety | | | | | | | | | **0**<br>**1**<br>**2** | | | | | | |
| Mounting/connection of modules | None<br>Front plate mounting, screw terminals<br>Base mounting, screw terminals<br>Front mounting, spring-type terminals<br>Base mounting, spring-type terminals | | | | | | | | | | **0**<br>**1**<br>**2**<br>**3**<br>**4** | | | | | |
| Cable exit from enclosure | None<br>Direct entry of AS-i flat cable at top/on right<br>AS-i insulation piercing method at top/on right | | | | | | | | | | | **A**<br>**G**<br>**H** | | | | |
| Design of enclosure top | Center command point<br>With recess for labeling plate<br>With protective collar<br>4 additional holes (two-hand operation console)<br>8 additional premachined breaking points (two-hand operation console) | | | | | | | | | | | | **A**<br>**B**<br>**C**<br>**D**<br>**E** | | | |
| Color of enclosure top | Gray<br>Yellow | | | | | | | | | | | | | | | **1**<br>**2** |
| **Example** | | **3SU1** | **8** | **0** | **1** | **–** | **0** | **A** | **A** | **0** | **0** | **–** | **0** | **A** | **A** | **2** |

## Accessories

| Product versions | | Article number | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SIRIUS ACT pushbuttons and indicator lights** | | **3SU1** | □ | □ | □ | – | □ | □ | □ | □ | □ | – | □ | □ | □ | □ |
| Device type | Accessories | | **9** | | | | | | | | | | | | | |
| Material | Plastic, black<br>Metal/plastic<br>Metal, shiny<br>Metal, matte | | | **0**<br>**3**<br>**5**<br>**6** | | | | | | | | | | | | |
| Illumination | Non-illuminated<br>Illuminated | | | | **0**<br>**1** | | | | | | | | | | | |
| Type of accessory (labels, protection, actuator, enclosure) | e.g. 0AB = Insert label | | | | | | □ | □ | □ | | | | | | | |
| Color | e.g. 10 = Black, 20 = Red | | | | | | | | | □ | □ | | | | | |
| Marking | e.g.<br>0AA = None<br>0AB = ON<br>0AT = EMERGENCY STOP | | | | | | | | | | | | □ | □ | □ | |
| Ambient condition | Standard<br>ATEX Zone 21-22: Protection from dust<br>ATEX Zone 1-2: Intrinsic safety | | | | | | | | | | | | | | | **0**<br>**1**<br>**2** |
| **Example** | | **3SU1** | **9** | **0** | **0** | **–** | **0** | **A** | **B** | **2** | **0** | **–** | **0** | **A** | **B** | **0** |

Note:

The Article No. schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Application

### *Environmental conditions*

The pushbuttons and indicator lights are climate-proof (KTW 24) and suitable for standard industrial applications and operation in marine applications.

### *Simple electrical equipment*

Non-illuminated actuators, contact modules, enclosures and special accessories can be classified as simple electrical equipment according to IEC 60079-11. This means that they may be used in intrinsically safe circuits in potentially explosive atmospheres. An overview of the devices and atmospheres can be found in Confirmation No. 3287.01.

### *Safety EMERGENCY STOP pushbuttons according to ISO 13850*

For controls according to IEC/EN 60204-1, the SIRIUS ACT mushroom pushbuttons are suitable for use as safety EMERGENCY STOP pushbuttons.

### *Safety circuits*

The IEC/EN 60947-5-1 standard requires positive opening. This means that for the purpose of personal safety, the reliable opening of NC contacts in all safety circuits is expressly prescribed for the electrical equipment of machines and is designated according to IEC 60947-5-1 with the symbol (⊖).

Category 4 according to EN ISO 13849-1 can be attained with the EMERGENCY STOP mushroom pushbuttons if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK11 safety relays or the 3RK3 Modular Safety System (see page 11/1 onwards) or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

The SIRIUS ACT pushbuttons and indicator lights can be connected to the AS-Interface communication system quickly and safely.

The following solutions are available:

- AS-Interface modules
- AS-Interface module in safety-related version for EMERGENCY STOP mushroom pushbutton
- Ready-fitted AS-Interface enclosures with 1 to 6 command points

### *IO-Link*

The SIRIUS ACT pushbuttons and indicator lights can be connected to IO-Link quickly and safely. The connection is made via a special IO-Link module.

## Technical specifications

| More information | |
|---|---|
| Industry Mall, see www.siemens.com/product?3SU1 | Configurator, see www.siemens.com/sirius-act/configurator<br>Conversion tool, see www.siemens.com/sirius/conversion-tool<br>Manual, see https://support.industry.siemens.com/cs/ww/en/view/107542462 |

| Type | | 3SU1..0-.AA<br>3SU1..0-.JA | 3SU1..1-.AA<br>3SU1..1-.JA | 3SU1..0-.AB<br>3SU1..0-.BB<br>3SU1..0-.CB<br>3SU1..0-.DB<br>3SU1..0-.JB | 3SU1..1-.AB<br>3SU1..1-.BB<br>3SU1..1-.JB |
|---|---|---|---|---|---|
| Product version | | **Pushbuttons** | | | |
| **Operating principle of the actuating element** | | Latching | | Momentary contact | |
| **Optional expansion of product by light source** | | No | Yes | No | Yes |
| **Mechanical endurance (operating cycles) typical** | | 500 000 | | 10 000 000 | 3 000 000 |
| **Switching frequency maximum** | 1/h | 1 800 | | 3 600 | |
| **Shock resistance** according to IEC 60068-2-27 | | Half-sine wave 50 *g* / 11 ms | | | |
| **Vibration resistance** according to IEC 60068-2-6 | | 10 ... 500 Hz: 5 *g* | | | |
| **Degree of protection** | | IP66, IP67, IP69 (IP69K) | | | |
| **Environmental category during operation** According to IEC 60721 | | 3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%) | | | |
| **Ambient temperature** | | | | | |
| • During operation | °C | -25 … +70 | | | |
| • During storage | °C | -40 … +80 | | | |

| Type | | 3SU1.00-.AA<br>3SU1.00-.BA<br>3SU1.00-.CA<br>3SU1.30-.AA<br>3SU1.30-.BA<br>3SU1.50-.AA<br>3SU1.50-.BA<br>3SU1.50-.CA | 3SU1.50-.EA | 3SU1.01-.AA<br>3SU1.01-.BA<br>3SU1.51-.AA<br>3SU1.51-.BA<br>3SU1.51-.CA | 3SU1.00-.AD<br>3SU1.00-.BD<br>3SU1.00-.CD<br>3SU1.30-.AD<br>3SU1.30-.BD<br>3SU1.50-.AD<br>3SU1.50-.BD<br>3SU1.50-.CD | 3SU1.50-.ED | 3SU1.01-.AD<br>3SU1.01-.BD<br>3SU1.31-.AD<br>3SU1.31-.BD |
|---|---|---|---|---|---|---|---|
| Product version | | **Mushroom pushbuttons** | | | | | |
| **Operating principle of the actuating element** | | Latching | | | Momentary contact | | |
| **Optional expansion of product by light source** | | No | | Yes | No | | Yes |
| **Mechanical endurance (operating cycles) typical** | | 500 000 | 300 000 | 500 000 | 10 000 000 | 300 000 | 3 000 000 |
| **Switching frequency maximum** | 1/h | 1 800 | | | 3 600 | 1 800 | 3 600 |
| **Shock resistance** according to IEC 60068-2-27 | | Half-sine wave 50 *g* / 11 ms | | | | | |
| **Vibration resistance** according to IEC 60068-2-6 | | 10 ... 500 Hz: 5 *g* | | | | | |
| **Degree of protection** | | IP66, IP67, IP69 (IP69K) | IP65, IP67, IP69 (IP69K) | IP66, IP67, IP69 (IP69K) | | IP65, IP67, IP69 (IP69K) | IP66, IP67, IP69 (IP69K) |
| **Environmental category during operation** According to IEC 60721 | | 3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%) | | | | | |
| **Ambient temperature** | | | | | | | |
| • During operation | °C | -25 … +70 | | | | | |
| • During storage | °C | -40 … +80 | | | | | |

## General data

| | | | |
|---|---|---|---|
| Type | | **3SU1...-.J**<br>**3SU1...-.H**<br>**3SU1...-.G** | |
| Product version | | **EMERGENCY STOP mushroom pushbuttons** | |
| **Mechanical endurance (operating cycles)** | | 300 000 | |
| **Switching frequency maximum** | 1/h | 600 | |
| **Shock resistance** according to IEC 60068-2-27 | | Half-sine wave 50 *g* / 11 ms | |
| **Vibration resistance** according to IEC 60068-2-6 | | 10 ... 500 Hz: 5 *g* | |
| **Degree of protection** | | IP66, IP67, IP69 (IP69K) | |
| **Environmental category during operation**<br>According to IEC 60721 | | 3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%) | |
| **Ambient temperature** | | | |
| • During operation | °C | -25 ... +70 | |
| • During storage | °C | -40 ... +80 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Type | | **3SU1.5.-2A**<br>**3SU1.5.-2B**<br>**3SU1.5.-2C**<br>**3SU1.5.-2D**<br>**3SU1.5.-2E** | **3SU1.0.-2A**<br>**3SU1.0.-2B**<br>**3SU1.0.-2C**<br>**3SU1.3.-2A**<br>**3SU1.3.-2B**<br>**3SU1.3.-2C** | **3SU1.0.-3E**<br>**3SU1.3.-3E**<br>**3SU1.5.-3E** | **3SU1.0.-4B**<br>**3SU1.0.-4C**<br>**3SU1.0.-4D**<br>**3SU1.0.-4F**<br>**3SU1.0.-4G**<br>**3SU1.0.-4H**<br>**3SU1.0.-4J**<br>**3SU1.0.-4L**<br>**3SU1.0.-5B**<br>**3SU1.0.-5H**<br>**3SU1.0.-5P**<br>**3SU1.0.-5Q**<br>**3SU1.0.-5R**<br>**3SU1.0.-5S**<br>**3SU1.0.-5T**<br>**3SU1.0.-5X** | **3SU1...-4B**<br>**3SU1...-4C**<br>**3SU1...-4D**<br>**3SU1...-4F**<br>**3SU1...-4G**<br>**3SU1...-4H**<br>**3SU1...-4J**<br>**3SU1...-4L**<br>**3SU1...-5B**<br>**3SU1...-5H**<br>**3SU1...-5K**<br>**3SU1...-5L**<br>**3SU1...-5P**<br>**3SU1...-5Q**<br>**3SU1...-5R**<br>**3SU1...-5S**<br>**3SU1...-5T**<br>**3SU1...-5X** | **3SU1.0.-7A**<br>**3SU1.0.-7B**<br>**3SU1.3.-7A**<br>**3SU1.3.-7B**<br>**3SU1.5.-7A**<br>**3SU1.5.-7B** |
| Product version | | **Selector switches** | | **Toggle switches** | **Key-operated switches** | | **Coordinate switches** |
| **Mechanical endurance (operating cycles)** | | 300 000 | 1 000 000 | | | 300 000 | 250 000 |
| **Switching frequency maximum** | 1/h | 1 800 | | | | | 3 600 |
| **Shock resistance** according to IEC 60068-2-27 | | Half-sine wave 50 *g* / 11 ms | | | | | |
| **Vibration resistance** according to IEC 60068-2-6 | | 10 ... 500 Hz:<br>5 *g* | | | | | |
| **Degree of protection** | | IP66, IP67, IP69 (IP69K) | | IP66, IP67, IP69K | IP66, IP67, IP69 (IP69K) | | IP65, IP67 |
| **Ambient temperature** | | | | | | | |
| • During operation | °C | -25 … +70 | | | | | |
| • During storage | °C | -40 … +80 | | | | | |

## General data

| Type | | 3SU1400-.AA10-1.A0 | 3SU1400-1AA10-1GA0, 3SU1400-1AA10-1RA0 | 3SU1400-1AA10-1HA0 | 3SU1400-.AA10-3.A0 | 3SU1400-1AA10-3HA0 | 3SU1400-3AA10-5.A0 |
|---|---|---|---|---|---|---|---|
| Product version | | **Contact modules** | | | | | |
| **Rated insulation voltage** | V | 500 | | | | | |
| **Pollution degree** | | 3 | | | | | |
| **Impulse withstand voltage, rated value** | kV | 6 | | | | | |
| **Operational voltage type** | | AC/DC | | | | | |
| **Operational voltage, rated value** | | | | | | | |
| • At AC at 50 Hz | V | 5 … 500 | | | | | |
| • At DC | V | 5 … 500 | | | | | |
| **Thermal current** | A | 10 | | | | | |
| **Operational current, rated value** | | | | | | | |
| • At AC-12 | | | | | | | |
| - At 24 V | A | 10 | | | | | |
| - At 230 V | A | 8 | | | | | |
| • At AC-15 | | | | | | | |
| - At 24 V | A | 6 | | | | | |
| - At 230 V | A | 6 | 4 | | 6 | | 6 |
| - At 400 V | A | 3 | | | | | |
| - At 500 V | A | 1.4 | | | | | |
| • At DC-12 | | | | | | | |
| - At 24 V | A | 10 | | | | | |
| - At 48 V | A | 5 | | | | | |
| - At 110 V | A | 2.5 | | | | | |
| - At 230 V | A | 1 | | 0.3 | 1 | 0.3 | 1 |
| - At 400 V | A | 0.3 | | | | | |
| - At 500 V | A | 0.3 | | 0.2 | 0.3 | | |
| • At DC-13 | | | | | | | |
| - At 24 V | A | 3 | | | | | |
| - At 48 V | A | 1.5 | | | | | |
| - At 110 V | A | 0.7 | | 0.6 | 0.7 | 0.6 | 0.7 |
| - At 230 V | A | 0.3 | | | | | |
| - At 400 V | A | 0.1 | | | | | |
| - At 500 V | A | 0.1 | | | | | |
| **Contact reliability** | | One contact failure per 100 million switching operations (17 V, 5 mA), one contact failure per 10 million switching operations (5 V, 1 mA) | | | | | |
| **Mechanical endurance (operating cycles) typical** | | 10 000 000 | | | | | |
| **Switching frequency maximum** | 1/s | 3 600 | | | | | |
| **Fuse link version required for short-circuit protection of the auxiliary switch with type of coordination 1** | | gG / Dz 10 A, quick-response / Dz 10 A | | | | | |
| **Continuous current of miniature circuit breaker C characteristic** | A | 10 | | | | | |
| **Vibration resistance** according to IEC 60068-2-6 | | 10 ... 500 Hz: 5 *g* | | | | | |
| **Shock resistance** according to IEC 60068-2-27 | | Half-sine wave 50 *g* / 11 ms | | | | | |
| **Climate class during operation** according to IEC 60721 | | 3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%, no condensation permitted in operation) | | | | | |
| **Ambient temperature** | | | | | | | |
| • During operation | °C | -25 … +70 | | | | | |
| • During storage | °C | -40 … +80 | | | | | |
| **Degree of protection** | | | | | | | |
| • Of enclosure | | IP40 | | | | | |
| **Type of electrical connection** | | **Screw terminals** | | | **Spring-type terminals** | | **Socket terminals (THT)** |
| **Type of connectable conductor cross-sections** | | | | | | | |
| • Solid with end sleeve | $mm^2$ | 2 x (0.5 ... 0.75) | | | -- | | |
| • Solid without end sleeve | $mm^2$ | 2 x (1.0 ... 1.5) | | | 2 x (0.25 ... 1.5) | | -- |
| • Finely stranded with end sleeve | $mm^2$ | 2 x (0.5 ... 1.5) | | | 2 x (0.25 ... 0.75) | | -- |
| • Finely stranded without end sleeve | $mm^2$ | 2 x (1.0 ... 1.5) | | | 2 x (0.25 ... 1.5) | | -- |
| • For AWG cables | | 2 x (18 ... 14) | | | 2 x (24 ... 16) | | -- |
| **Tightening torque** for screw terminals | Nm | 0.8 ... 0.9 | | | -- | | |

## General data

| Type | | 3SU1401-.....-1 | 3SU1401-.....-3 | 3SU1401-.....-5 |
|---|---|---|---|---|
| Product version | | LED module | | |
| **Light source integrated in product** | | Yes | | |
| **Type of light source** | | LED | | |
| **Rated insulation voltage** | V | 320 | | |
| **Pollution degree** | | 3 | | |
| **Impulse withstand voltage, rated value** | kV | 4 | | |
| **Relative positive tolerance of the operational voltage** | % | 20 | | |
| **Relative negative tolerance of the operational voltage** | % | 20 | | |
| **Operating time typical** | h | 100 000 | | |
| **Vibration resistance** according to IEC 60068-2-6 | | 10 ... 500 Hz: 5 *g* | | |
| **Shock resistance** according to IEC 60068-2-27 | | Half-sine wave 50 *g* / 11 ms | | |
| **Environmental category during operation** According to IEC 60721 | | 3M6, 3S2, 3B2, 3K6 (with a relative air humidity of 10 ... 95%, no condensation permitted in operation) | | |
| **Ambient temperature** | | | | |
| • During operation | °C | -25 … +70 | | |
| • During storage | °C | -40 … +80 | | |
| **Type of electrical connection** | | **Screw terminals** | **Spring-type terminals** | **Socket terminals (THT)** |

| Type | | 3SU1400-1LK10-1AA1 | 3SU1400-1LK10-3AA1 | 3SU1400-1LL10-1BA1 | 3SU1400-1LL10-3BA1 |
|---|---|---|---|---|---|
| Product designation | | Interface module | | Fail-safe interface module | |
| **Operational voltage type** | | DC | | | |
| **Supply voltage at DC rated value** | V | 24 | | | |
| **Current consumed, maximum** | mA | 150 | | | |
| **Product function at the interface 1 PROFINET IO-Device** | | Yes | | | |
| **Type of interface Fast Ethernet interface** | | Yes | | | |
| **Type of interface 1 RJ45 (Ethernet) interface** | | Yes | | | |
| **Number of ports at the interface 1** | | 1 | | | |
| **Number of modules per rack, maximum** | | 20 | | | |
| **Number of digital outputs** | | 0 | | 1 | |
| **Number of digital inputs** | | 0 | | 4 | |
| **Software version required for STEP 7 in the TIA Portal** | | Integrated in the TIA Portal, version 14 SP1 or higher (HSP for V13 and V14) | | | |
| **SIL response limit (subsystem) according to IEC 62061** | | -- | | SIL CL 3 | |
| **Performance level (PL) according to EN ISO 13849-1** | | -- | | e | |
| **Ambient temperature** | | | | | |
| • During operation | °C | 60 … -25 | | | |
| • During storage | °C | 80 … -40 | | | |
| **Connectable conductor cross-section** | | | | | |
| • Solid | | | | | |
| - With end sleeves | $mm^2$ | 0.2 ... 2.5 | | | |
| • Finely stranded | | | | | |
| - With end sleeves | $mm^2$ | 0.25 … 2.5 | | | |
| - Without end sleeves | $mm^2$ | 0.2 ... 2.5 | | | |

# 3SU1 22 mm, Round, Plastic, Black — Complete Units



## Selection and ordering data

| Supply voltage for light source at AC V | Supply voltage for light source at DC V | Color | Number of Contact modules | Number of NO contacts | Number of NC contacts | SD d | Screw terminals Article No. | Screw terminals Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | | | |
| ***Pushbuttons with flat button, momentary contact*** | | | | | | | | | | |
| 13 | -- | Black | 1 | 1 | 0 | ▶ | **3SU1100-0AB10-1BA0** | | 1 | 1 unit |
| | | | 0 | 0 | 1 | ▶ | **3SU1100-0AB10-1CA0** | | 1 | 1 unit |
| | | | 1 | 1 | 1 | ▶ | **3SU1100-0AB10-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 1 | 0 | ▶ | **3SU1100-0AB20-1BA0** | | 1 | 1 unit |
| | | | 0 | 0 | 1 | ▶ | **3SU1100-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1100-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 3 | **3SU1100-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1100-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | ▶ | **3SU1100-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1100-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | ▶ | **3SU1100-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1100-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | ▶ | **3SU1100-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1100-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1100-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB70-1FA0** | | 1 | 1 unit |
| | | Gray | 1 | 1 | 1 | 5 | **3SU1100-0AB80-1FA0** | | 1 | 1 unit |
| ***Pushbuttons with raised button, momentary contact*** | | | | | | | | | | |
| -- | -- | Black | 1 | 0 | 1 | 5 | **3SU1100-0BB10-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0BB10-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | 5 | **3SU1100-0BB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0BB20-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1100-0BB50-1BA0** | | 1 | 1 unit |
| ***Illuminated pushbuttons with flat button, momentary contact with integrated LED*** | | | | | | | | | | |
| 24 | 24 | Red | 1 | 1 | 0 | 5 | **3SU1102-0AB20-1BA0** | | 1 | 1 unit |
| | | | | 0 | 1 | ▶ | **3SU1102-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1102-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | ▶ | **3SU1102-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1102-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | ▶ | **3SU1102-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1102-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | ▶ | **3SU1102-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1102-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | ▶ | **3SU1102-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1102-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | ▶ | **3SU1102-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1102-0AB70-1FA0** | | 1 | 1 unit |
| 110 | -- | Red | 1 | 0 | 1 | 5 | **3SU1103-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1103-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1103-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 3 | **3SU1103-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1103-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1103-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1103-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1103-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB70-1FA0** | | 1 | 1 unit |

3SU1100-0AB40-1BA0

3SU1100-0BB20-1CA0

3SU1102-0AB40-1BA0

3SU1103-0AB20-1CA0

# 3SU1 22 mm, Round, Plastic, Black — Complete Units

## Pushbuttons

| Supply voltage for light source at AC V | Supply voltage for light source at DC V | Color | Number of Contact modules | Number of NO contacts | Number of NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | | | |
| | | ***Illuminated pushbuttons with flat button, momentary contact with integrated LED*** | | | | | | | | |
| 230 | -- | Red | 1 | 0 | 1 | 5 | **3SU1106-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1106-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1106-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 3 | **3SU1106-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1106-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1106-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1106-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1106-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB70-1FA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| | | ***Pushbuttons with flat button, momentary contact*** | | | | | | | | |
| -- | -- | Black | 1 | 1 | 0 | 3 | **3SU1100-0AB10-3BA0** | | 1 | 1 unit |
| | | | 1 | 0 | 1 | 5 | **3SU1100-0AB10-3CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB10-3FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | 5 | **3SU1100-0AB20-3CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB20-3FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1100-0AB30-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB30-3FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1100-0AB40-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB40-3FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1100-0AB50-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB50-3FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1100-0AB60-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1100-0AB60-3FA0** | | 1 | 1 unit |
| | | ***Illuminated pushbuttons with flat button, momentary contact with integrated LED*** | | | | | | | | |
| 24 | 24 | Red | 1 | 0 | 1 | 5 | **3SU1102-0AB20-3CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1102-0AB20-3FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1102-0AB30-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1102-0AB30-3FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 3 | **3SU1102-0AB40-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1102-0AB40-3FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1102-0AB50-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1102-0AB50-3FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 3 | **3SU1102-0AB60-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1102-0AB60-3FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1102-0AB70-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1102-0AB70-3FA0** | | 1 | 1 unit |
| 110 | -- | Red | 1 | 0 | 1 | 5 | **3SU1103-0AB20-3CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB20-3FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 1 | 5 | **3SU1103-0AB30-3FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1103-0AB40-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB40-3FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 1 | 5 | **3SU1103-0AB50-3FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1103-0AB60-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB60-3FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1103-0AB70-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1103-0AB70-3FA0** | | 1 | 1 unit |
| 230 | -- | Red | 1 | 0 | 1 | 5 | **3SU1106-0AB20-3CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB20-3FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 1 | 5 | **3SU1106-0AB30-3FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1106-0AB40-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB40-3FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 1 | 5 | **3SU1106-0AB50-3FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1106-0AB60-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB60-3FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1106-0AB70-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1106-0AB70-3FA0** | | 1 | 1 unit |

3SU1106-0AB40-1BA0

3SU1100-0AB30-3BA0

3SU1102-0AB20-3CA0

# 3SU1 22 mm, Round, Plastic, Black — Complete Units

## Mushroom pushbuttons / EMERGENCY STOP mushroom pushbuttons

### Selection and ordering data

| Unlatching method | Number of Contact modules | NO contacts | NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Mushroom pushbuttons** | | | | | | | | |
| ***With red mushroom, diameter 40 mm, latching*** | | | | | | | | |
| Pull to unlatch | 1 | 0 | 1 | 3 | **3SU1100-1BA20-1CA0** | | 1 | 1 unit |
| | | 1 | 1 | 3 | **3SU1100-1BA20-1FA0** | | 1 | 1 unit |
| | | | | | **Spring-type terminals** | | | |
| Pull to unlatch | 1 | 0 | 1 | 5 | **3SU1100-1BA20-3CA0** | | 1 | 1 unit |
| | | 1 | 1 | 5 | **3SU1100-1BA20-3FA0** | | 1 | 1 unit |

3SU1100-1BA20-3CA0

### Selection and ordering data

| Unlatching method | Number of Contact modules | NO contacts | NC contacts | Marking | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5** | | | | | | | | | |
| ***With red mushroom, diameter 40 mm, with positive latching*** | | | | | | | | | |
| Pull to unlatch | 1 | 0 | 1 | NOT-HALT ⊖ | 5 | **3SU1100-1HA20-1CH0** | | 1 | 1 unit |
| | | 1 | 1 | EMERGENCY STOP ⊖ | 5 | **3SU1100-1HA20-1FG0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT ⊖ | 5 | **3SU1100-1HA20-1FH0** | | 1 | 1 unit |
| Rotate to unlatch | 1 | 0 | 1 | None ⊖ | 5 | **3SU1100-1HB20-1CF0** | | 1 | 1 unit |
| | | 0 | 1 | EMERGENCY STOP ⊖ | 5 | **3SU1100-1HB20-1CG0** | | 1 | 1 unit |
| | | 0 | 1 | NOT-HALT ⊖ | ▶ | **3SU1100-1HB20-1CH0** | | 1 | 1 unit |
| | | 0 | 2 | EMERGENCY STOP ⊖ | 5 | **3SU1100-1HB20-1PG0** | | 1 | 1 unit |
| | | 1 | 1 | EMERGENCY STOP ⊖ | 5 | **3SU1100-1HB20-1FG0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT ⊖ | ▶ | **3SU1100-1HB20-1FH0** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| Rotate to unlatch | 1 | 0 | 1 | NOT-HALT ⊖ | 5 | **3SU1100-1HB20-3CH0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT ⊖ | 5 | **3SU1100-1HB20-3FH0** | | 1 | 1 unit |
| ***With red mushroom, diameter 40 mm, with latching*** NEW | | | | | | **Screw terminals** | | | |
| Rotate to unlatch | 2 | 0 | 2 | NOT-HALT | 5 | **3SU1100-1LB20-1PH0** | | 1 | 1 unit |

3SU1100-1HA20-1CH0

3SU1100-1HB20-1CH0

3SU1100-1LB20-1PH0

⊖ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.
Certificate:

# 3SU1 22 mm, Round, Plastic, Black — Complete Units

## Selector switches

### Selection and ordering data

| Operating principle | Color<br>Supply voltage for light source | Number of<br>Contact modules | NO contacts | NC contacts | SD<br>d | Screw terminals<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | | | |
| 3SU1100-2BF60-1BA0 | | | | | | | | | |
| ***Short black actuator, 2 switch positions, can be illuminated*** | | | | | | | | | |
| Latching, 90° | White | 1 | 1 | 0 | ▶ | **3SU1100-2BF60-1BA0** | | 1 | 1 unit |
| | | 2 | 1 | 1 | ▶ | **3SU1100-2BF60-1MA0** | | 1 | 1 unit |
| | White<br>110 V | 1 | 1 | 0 | 5 | **3SU1103-2BF60-1BA0** | | 1 | 1 unit |
| ***Short black actuator, 3 switch positions, can be illuminated*** | | | | | | | | | |
| Momentary contact, 2x45°, reset from left + right | White | 2 | 2 | 2 | 3 | **3SU1100-2BM60-1LA0** | | 1 | 1 unit |
| | | | 2 | 0 | ▶ | **3SU1100-2BM60-1NA0** | | 1 | 1 unit |
| Latching, 2x45° | White | 2 | 2 | 2 | ▶ | **3SU1100-2BL60-1LA0** | | 1 | 1 unit |
| | | | 2 | 0 | ▶ | **3SU1100-2BL60-1NA0** | | 1 | 1 unit |
| **Spring-type terminals** | | | | | | | | | |
| 3SU1100-2BL60-1NA0 | | | | | | | | | |
| ***Short black actuator, 2 switch positions, can be illuminated*** | | | | | | | | | |
| Latching, 90° | White | 1 | 1 | 0 | 5 | **3SU1100-2BF60-3BA0** | | 1 | 1 unit |
| | | 2 | 1 | 1 | 5 | **3SU1100-2BF60-3MA0** | | 1 | 1 unit |
| ***Short black actuator, 3 switch positions, can be illuminated*** | | | | | | | | | |
| Momentary contact, 2x45°, reset from left + right | White | 2 | 2 | 2 | 5 | **3SU1100-2BM60-3LA0** | | 1 | 1 unit |
| | | | 2 | 0 | 5 | **3SU1100-2BM60-3NA0** | | 1 | 1 unit |
| Latching, 2x45° | White | 2 | 2 | 2 | 5 | **3SU1100-2BL60-3LA0** | | 1 | 1 unit |
| | | | 2 | 0 | 5 | **3SU1100-2BL60-3NA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Complete Units

## Key-operated switches

### Selection and ordering data

| Operating principle | Switch position for key removal | Number of Contact modules | NO contacts | NC contacts | Number of keys | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | | | |
| 3SU1100-4BF11-1BA0 | | | | | | | | | | |
| ***With RONIS lock, SB30, 2 switch positions*** | | | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | O+I | 1 | 1 | 0 | 2 | ► | **3SU1100-4BF11-1BA0** | | 1 | 1 unit |
| | | | 1 | 1 | 2 | ► | **3SU1100-4BF11-1FA0** | | 1 | 1 unit |
| ***With RONIS lock, SB30, 3 switch positions*** | | | | | | | | | | |
| Latching, 2x45° (10:30/ 1:30 o'clock) | I+O+II | 2 | 2 | 0 | 2 | 5 | **3SU1100-4BL11-1NA0** | | 1 | 1 unit |
| 3SU1100-4BL11-1NA0 | | | | | | | | | | |
| | | | | | | | **Spring-type terminals** | | | |
| ***With RONIS lock, SB30, 2 switch positions*** | | | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | O+I | 1 | 1 | 0 | 2 | 5 | **3SU1100-4BF11-3BA0** | | 1 | 1 unit |
| | | | 1 | 1 | 2 | 5 | **3SU1100-4BF11-3FA0** | | 1 | 1 unit |
| ***With CES lock, SSG10, 2 switch positions*** | | | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | O+I | 1 | 1 | 1 | 2 | 5 | **3SU1100-5BF11-3FA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Complete Units

## Coordinate switches

### Selection and ordering data

| | Number of NO contacts (1 per direction) | Operating principle | Direction of actuation | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Coordinate switches** | | | | | | | | |
| 3SU1100-7AC10-1NA0 | ***Without mechanical interlock, 2 switch positions*** | | | | | | | |
| | 2 | Momentary contact | Horizontal | 5 | **3SU1100-7AC10-1NA0** | | 1 | 1 unit |
| | | | Vertical | 5 | **3SU1100-7AD10-1NA0** | | 1 | 1 unit |
| | | Latching | Horizontal | 5 | **3SU1100-7AA10-1NA0** | | 1 | 1 unit |
| | | | Vertical | 5 | **3SU1100-7AB10-1NA0** | | 1 | 1 unit |
| 3SU1100-7AF10-1QA0 | ***Without mechanical interlock, 4 switch positions*** | | | | | | | |
| | 4 | Momentary contact | Horizontal/Vertical | 3 | **3SU1100-7AF10-1QA0** | | 1 | 1 unit |
| | | Latching | Horizontal/Vertical | 5 | **3SU1100-7AE10-1QA0** | | 1 | 1 unit |
| 3SU1100-7BA10-1NA0 | ***With mechanical interlock, 2 switch positions*** | | | | | | | |
| | 2 | Momentary contact | Horizontal | 5 | **3SU1100-7BC10-1NA0** | | 1 | 1 unit |
| | | | Vertical | 5 | **3SU1100-7BD10-1NA0** | | 1 | 1 unit |
| | | Latching | Horizontal | 5 | **3SU1100-7BA10-1NA0** | | 1 | 1 unit |
| | | | Vertical | 5 | **3SU1100-7BB10-1NA0** | | 1 | 1 unit |
| 3SU1100-7BF10-1QA0 | ***With mechanical interlock, 4 switch positions*** | | | | | | | |
| | 4 | Momentary contact | Horizontal/Vertical | 5 | **3SU1100-7BF10-1QA0** | | 1 | 1 unit |
| | | Latching | Horizontal/Vertical | 5 | **3SU1100-7BE10-1QA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Complete Units

## Indicator lights

### Selection and ordering data

| Operational voltage at AC, rated value V | Operational voltage at DC, rated value V | Color of actuating element | Color of light source | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Indicator lights** | | | | | | | | |
| ***With smooth lens and integrated LED*** | | | | | | | | |
| 3SU1102-6AA30-1AA0 | | | | | | | | |
| 24 | 24 | Red | Red | ▶ | **3SU1102-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1102-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1102-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | ▶ | **3SU1102-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1102-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | ▶ | **3SU1102-6AA70-1AA0** | | 1 | 1 unit |
| 3SU1106-6AA50-1AA0 | | | | | | | | |
| 110 | -- | Amber | Amber | 5 | **3SU1103-6AA00-1AA0** | | 1 | 1 unit |
| | | Red | Red | ▶ | **3SU1103-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1103-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1103-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 3 | **3SU1103-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1103-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 3 | **3SU1103-6AA70-1AA0** | | 1 | 1 unit |
| 230 | -- | Amber | Amber | 5 | **3SU1106-6AA00-1AA0** | | 1 | 1 unit |
| | | Red | Red | ▶ | **3SU1106-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1106-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1106-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 3 | **3SU1106-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1106-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 3 | **3SU1106-6AA70-1AA0** | | 1 | 1 unit |
| | | | | | **Spring-type terminals** | | | |
| 3SU1102-6AA40-3AA0 | | | | | | | | |
| 24 | 24 | Red | Red | 3 | **3SU1102-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1102-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 3 | **3SU1102-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1102-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 3 | **3SU1102-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1102-6AA70-3AA0** | | 1 | 1 unit |
| 3SU1106-6AA60-3AA0 | | | | | | | | |
| 110 | -- | Red | Red | 5 | **3SU1103-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1103-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 5 | **3SU1103-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1103-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 5 | **3SU1103-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1103-6AA70-3AA0** | | 1 | 1 unit |
| 230 | -- | Red | Red | 5 | **3SU1106-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1106-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 5 | **3SU1106-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1106-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 5 | **3SU1106-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1106-6AA70-3AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Compact Units

## Sensor switches / Potentiometers

### Selection and ordering data

| | Operational voltage at AC, rated value | Operational voltage at DC, rated value | Color of actuating element | Color of light source | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | V | V | | | d | | | | |
| **Indicator lights** NEW | | | | | | | | | |
| 3SU1201-6AB50-1AA0 | 24 | 24 | Amber | Amber | 3 | **3SU1201-6AB00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | ▶ | **3SU1201-6AB20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | ▶ | **3SU1201-6AB30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | ▶ | **3SU1201-6AB40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 3 | **3SU1201-6AB50-1AA0** | | 1 | 1 unit |
| | | | White | White | ▶ | **3SU1201-6AB60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | ▶ | **3SU1201-6AB70-1AA0** | | 1 | 1 unit |
| 3SU1201-6AC30-1AA0 | 110 | 110 | Amber | Amber | 5 | **3SU1201-6AC00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | 3 | **3SU1201-6AC20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | 3 | **3SU1201-6AC30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | 3 | **3SU1201-6AC40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1201-6AC50-1AA0** | | 1 | 1 unit |
| | | | White | White | 3 | **3SU1201-6AC60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 5 | **3SU1201-6AC70-1AA0** | | 1 | 1 unit |
| 3SU1201-6AF30-1AA0 | 230 | 230 | Amber | Amber | 5 | **3SU1201-6AF00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | 3 | **3SU1201-6AF20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | 3 | **3SU1201-6AF30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | 3 | **3SU1201-6AF40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1201-6AF50-1AA0** | | 1 | 1 unit |
| | | | White | White | 3 | **3SU1201-6AF60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 5 | **3SU1201-6AF70-1AA0** | | 1 | 1 unit |
| **Indicator lights with "traffic light" LED** | | | | | | | | | |
| 3SU1201-6AG24-1AA0 | 6 ... 24 | 6 ... 24 | Clear | Red/Yellow/Green | ▶ | **3SU1201-6AG24-1AA0** | | 1 | 1 unit |
| | 110 | -- | Clear | Red/Yellow/Green | ▶ | **3SU1201-6AC24-1AA0** | | 1 | 1 unit |
| | 230 | -- | Clear | Red/Yellow/Green | ▶ | **3SU1201-6AF24-1AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Compact Units

## Pushbuttons with extended stroke

### Selection and ordering data

| Operational voltage at AC, rated value | Operational voltage at DC, rated value | Volume level | SD | Screw terminals — Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| V | V | dB | d | | | | |
| **Acoustic signaling devices** | | | | | | | |
| 24 | 24 | 90 | 5 | **3SU1200-6KB10-1AA0** | | 1 | 1 unit |
| 110 | -- | 90 | 5 | **3SU1200-6KC10-1AA0** | | 1 | 1 unit |
| 230 | -- | 90 | 5 | **3SU1200-6KF10-1AA0** | | 1 | 1 unit |

3SU1200-6KB10-1AA0

### Selection and ordering data

| Operating principle | Number of NO contacts | Number of NC contacts | Color | SD | M12 connector, 4-pin — Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Sensor switches** | | | | | | | | |
| Whether integrated in the two-hand operation console or installed as a door opening contact, the capacitive sensor switch is suitable for many different applications in industrial environments.<br>The switch is actuated by simple contact with the hand or other part of the body (i.e. without the application of pressure). As a result, these switches are rugged, extremely durable and have the highest possible degree of protection IP66, IP67, IP69 (IP69K). | | | | | | | | |
| Without pressure | 1 | 0 | Black | ▶ | **3SU1200-1SK10-2SA0** | | 1 | 1 unit |

3SU1200-1SK10-2SA0

Optional accessories

- "Protection for sensor switches", see page 10/157.
- "Connectors for sensor switches, angled socket with screw terminal connection", see page 10/165.

### Selection and ordering data

| Version of actuating element | Operating principle | Adjustable resistance | SD | Screw terminals — Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | kΩ | d | | | | |
| **Potentiometers** | | | | | | | |
| **Rotary knob** | Stepless | 1 | ▶ | **3SU1200-2PQ10-1AA0** | | 1 | 1 unit |
| | | 2.2 | 5 | **3SU1200-2PW10-1AA0** | | 1 | 1 unit |
| | | 4.7 | ▶ | **3SU1200-2PR10-1AA0** | | 1 | 1 unit |
| | | 10 | ▶ | **3SU1200-2PS10-1AA0** | | 1 | 1 unit |
| | | 47 | ▶ | **3SU1200-2PT10-1AA0** | | 1 | 1 unit |
| | | 100 | ▶ | **3SU1200-2PU10-1AA0** | | 1 | 1 unit |
| | | 470 | ▶ | **3SU1200-2PV10-1AA0** | | 1 | 1 unit |

3SU1200-2PQ10-1AA0

Labeling plates for potentiometers, see page 10/153.

# 3SU1 22 mm, Round, Plastic, Black — Compact Units

## Pushbuttons with extended stroke

### Selection and ordering data

| Version | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Pushbuttons with extended stroke** | | | | | | |
| For actuating relays, can only be combined with extension plunger, no contact module or LED module required | | | | | | |
| 3SU1200-0EB20-0AA0 **Pushbuttons with flat button** | Red | 5 | **3SU1200-0EB20-0AA0** | | 1 | 1 unit |
| | Green | 5 | **3SU1200-0EB40-0AA0** | | 1 | 1 unit |
| 3SU1200-0FB10-0AA0 **Pushbuttons with raised button** | Black | ▶ | **3SU1200-0FB10-0AA0** | | 1 | 1 unit |
| | Red | 5 | **3SU1200-0FB20-0AA0** | | 1 | 1 unit |
| 3SU1201-0EB70-0AA0 **Pushbuttons with flat transparent button for insertion of insert labels** | Red | ▶ | **3SU1201-0EB20-0AA0** | | 1 | 1 unit |
| | Clear | ▶ | **3SU1201-0EB70-0AA0** | | 1 | 1 unit |
| **Mechanical reset kit - complete** | | | **3SU1200-0KB10-0AA0** | | | |

| Version | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Accessories** | | | | | | | |
| 3SU1900-0KG10-0AA0 **Extension plungers** For compensation of the distance between the pushbutton and the unlatching button of an overload relay | Plastic | Gray | ▶ | **3SU1900-0KG10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Pushbuttons

### Selection and ordering data

| Version of actuating element / Front ring version | Operating principle / Unlatching method | Color, marking | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | |
| 3SU1000-0AB20-0AD0 | | | | | | | |
| **Pushbuttons with flat button** Standard | Momentary contact | Black ▶ | | **3SU1000-0AB10-0AA0** | | 1 | 1 unit |
| | | Black, "O" ▶ | | **3SU1000-0AB10-0AD0** | | 1 | 1 unit |
| | | Red ▶ | | **3SU1000-0AB20-0AA0** | | 1 | 1 unit |
| | | Red, "O" ▶ | | **3SU1000-0AB20-0AD0** | | 1 | 1 unit |
| | | Yellow ▶ | | **3SU1000-0AB30-0AA0** | | 1 | 1 unit |
| | | Green ▶ | | **3SU1000-0AB40-0AA0** | | 1 | 1 unit |
| | | Green, "I" ▶ | | **3SU1000-0AB40-0AC0** | | 1 | 1 unit |
| | | Blue ▶ | | **3SU1000-0AB50-0AA0** | | 1 | 1 unit |
| | | Blue, "R" | 5 | **3SU1000-0AB50-0AR0** | | 1 | 1 unit |
| | | White ▶ | | **3SU1000-0AB60-0AA0** | | 1 | 1 unit |
| | | White, "I" ▶ | | **3SU1000-0AB60-0AC0** | | 1 | 1 unit |
| | | Clear ▶ | | **3SU1000-0AB70-0AA0** | | 1 | 1 unit |
| | | Gray ▶ | | **3SU1000-0AB80-0AA0** | | 1 | 1 unit |
| 3SU1000-0AA30-0AA0 | Latching / Push to unlatch | Black ▶ | | **3SU1000-0AA10-0AA0** | | 1 | 1 unit |
| | | Red ▶ | | **3SU1000-0AA20-0AA0** | | 1 | 1 unit |
| | | Yellow | 3 | **3SU1000-0AA30-0AA0** | | 1 | 1 unit |
| | | Green ▶ | | **3SU1000-0AA40-0AA0** | | 1 | 1 unit |
| | | Blue ▶ | | **3SU1000-0AA50-0AA0** | | 1 | 1 unit |
| | | White ▶ | | **3SU1000-0AA60-0AA0** | | 1 | 1 unit |
| 3SU1000-0BB30-0AA0 | | | | | | | |
| **Pushbuttons with raised button** Standard | Momentary contact | Black ▶ | | **3SU1000-0BB10-0AA0** | | 1 | 1 unit |
| | | Red ▶ | | **3SU1000-0BB20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1000-0BB30-0AA0** | | 1 | 1 unit |
| | | Green ▶ | | **3SU1000-0BB40-0AA0** | | 1 | 1 unit |
| | | Blue ▶ | | **3SU1000-0BB50-0AA0** | | 1 | 1 unit |
| | | White ▶ | | **3SU1000-0BB60-0AA0** | | 1 | 1 unit |
| 3SU1000-0CB40-0AA0 | | | | | | | |
| **Pushbuttons with flat button** Raised | Momentary contact | Black | 3 | **3SU1000-0CB10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1000-0CB20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1000-0CB30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1000-0CB40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1000-0CB50-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1000-0CB60-0AA0** | | 1 | 1 unit |
| 3SU1000-0DB50-0AA0 | | | | | | | |
| **Pushbuttons with flat button** Raised, castellated | Momentary contact | Black | 3 | **3SU1000-0DB10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1000-0DB20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1000-0DB30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1000-0DB40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1000-0DB50-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1000-0DB60-0AA0** | | 1 | 1 unit |

| Front ring | Operating principle | Colors caps/ markings | Direction of Actuation | SD d | **Screw terminals** Article No. | Price | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Quadruple pushbuttons** | | | | | | | | |
| 3SU1000-3FB11-0AA0 | | | | | | | | |
| **Plastic, Black** | Momentary Action | Black, None | Up/Down/ Left/Right | | **3SU1000-3FB11-0AA0** | | 1 | 1 unit |
| **Plastic, Black** | Momentary Action | Black, Arrows | Up/Down/ Left/Right | | **3SU1000-3FB11-0AU0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Pushbuttons

| | Version of actuating element<br>Front ring version | Operating principle<br>Unlatching method | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | |
| 3SU1001-0AB40-0AA0 | **Illuminated pushbuttons with flat button**<br>Standard | Momentary contact | Amber | 5 | **3SU1001-0AB00-0AA0** | | 1 | 1 unit |
| | | | Red | ▶ | **3SU1001-0AB20-0AA0** | | 1 | 1 unit |
| | | | Yellow | ▶ | **3SU1001-0AB30-0AA0** | | 1 | 1 unit |
| | | | Green | ▶ | **3SU1001-0AB40-0AA0** | | 1 | 1 unit |
| | | | Blue | ▶ | **3SU1001-0AB50-0AA0** | | 1 | 1 unit |
| | | | White | ▶ | **3SU1001-0AB60-0AA0** | | 1 | 1 unit |
| | | | Clear | ▶ | **3SU1001-0AB70-0AA0** | | 1 | 1 unit |
| 3SU1001-0AA20-0AA0 | | Latching<br>Push to unlatch | Red | ▶ | **3SU1001-0AA20-0AA0** | | 1 | 1 unit |
| | | | Yellow | ▶ | **3SU1001-0AA30-0AA0** | | 1 | 1 unit |
| | | | Green | ▶ | **3SU1001-0AA40-0AA0** | | 1 | 1 unit |
| | | | Blue | ▶ | **3SU1001-0AA50-0AA0** | | 1 | 1 unit |
| | | | White | ▶ | **3SU1001-0AA60-0AA0** | | 1 | 1 unit |
| | | | Clear | ▶ | **3SU1001-0AA70-0AA0** | | 1 | 1 unit |
| 3SU1001-0BB70-0AA0 | **Illuminated pushbuttons with raised button**<br>Standard | Momentary contact | Red | ▶ | **3SU1001-0BB20-0AA0** | | 1 | 1 unit |
| | | | Yellow | ▶ | **3SU1001-0BB30-0AA0** | | 1 | 1 unit |
| | | | Green | ▶ | **3SU1001-0BB40-0AA0** | | 1 | 1 unit |
| | | | Blue | ▶ | **3SU1001-0BB50-0AA0** | | 1 | 1 unit |
| | | | Clear | 3 | **3SU1001-0BB70-0AA0** | | 1 | 1 unit |
| 3SU1001-0DB50-0AA0 | **Illuminated pushbuttons with flat button**<br>Raised, castellated | Momentary contact | Blue | 5 | **3SU1001-0DB50-0AA0** | | 1 | 1 unit |
| 3SU1000-0HC10-0AA0 | **Stop pushbuttons**<br>Standard | Momentary contact, latching by pressing in and turning to the right,<br>rotate-to-unlatch to the left | Black | 3 | **3SU1000-0HC10-0AA0** | | 1 | 1 unit |
| | | | Red | 3 | **3SU1000-0HC20-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Twin pushbuttons

### Selection and ordering data

| | Version of actuating element | Operating principle | Color | Marking Symbol No. | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Twin pushbuttons** | | | | | | | | | |
| 3SU1000-3AB66-0AL0 | **Twin pushbuttons** flat, flat | Momentary contact | Green/Red | -- | 3 | **3SU1000-3AB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1000-3AB42-0AK0** | | 1 | 1 unit |
| | | | White/Black | -- | ▶ | **3SU1000-3AB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1000-3AB61-0AK0** | | 1 | 1 unit |
| | | | White/White | -- | 3 | **3SU1000-3AB66-0AA0** | | 1 | 1 unit |
| | | | | "–"/"+" | 5 | **3SU1000-3AB66-0AL0** | | 1 | 1 unit |
| | | | | Arrows, hor. | 5 | **3SU1000-3AB66-0AM0** | | 1 | 1 unit |
| | | | | Arrows, vert. | 5 | **3SU1000-3AB66-0AN0** | | 1 | 1 unit |
| | | | Black/Black | -- | 3 | **3SU1000-3AB11-0AA0** | | 1 | 1 unit |
| | | | | ⊙ ○ 5264/5265 (IEC 60417) | 3 | **3SU1000-3AB11-0AQ0** | | 1 | 1 unit |
| 3SU1000-3BB42-0AK0 | **Twin pushbuttons** flat, raised | Momentary contact | Green/Red | -- | 3 | **3SU1000-3BB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1000-3BB42-0AK0** | | 1 | 1 unit |
| | | | White/Black | -- | ▶ | **3SU1000-3BB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 5 | **3SU1000-3BB61-0AK0** | | 1 | 1 unit |
| 3SU1001-3AB42-0AN0 | **Twin pushbuttons** flat, flat, illuminated | Momentary contact | Green/Red | -- | ▶ | **3SU1001-3AB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1001-3AB42-0AK0** | | 1 | 1 unit |
| | | | | Arrows, vert. | 3 | **3SU1001-3AB42-0AN0** | | 1 | 1 unit |
| | | | White/Black | -- | ▶ | **3SU1001-3AB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1001-3AB61-0AK0** | | 1 | 1 unit |
| | | | White/White | -- | ▶ | **3SU1001-3AB66-0AA0** | | 1 | 1 unit |
| | | | | "–"/"+" | 5 | **3SU1001-3AB66-0AL0** | | 1 | 1 unit |
| | | | | Arrows, vert. | 5 | **3SU1001-3AB66-0AN0** | | 1 | 1 unit |
| | | | | Symbols "Circular saw blade"/ "Tilt tipper" | 5 | **3SU1001-3AB66-0AP0** | | 1 | 1 unit |
| 3SU1001-3BB61-0AK0 | **Twin pushbuttons** flat, raised, illuminated | Momentary contact | Green/Red | -- | 3 | **3SU1001-3BB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1001-3BB42-0AK0** | | 1 | 1 unit |
| | | | White/Black | -- | ▶ | **3SU1001-3BB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 3 | **3SU1001-3BB61-0AK0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Mushroom pushbuttons

### Selection and ordering data

| | Version of actuating element | Operating principle<br>Unlatching method | Color, marking | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Mushroom pushbuttons** | | | | | | | | |
| 3SU1000-1AD20-0AA0 | **Mushroom pushbuttons**<br>30 mm diameter,<br>2 positions | Momentary contact | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶ | | **3SU1000-1AD10-0AA0**<br>**3SU1000-1AD20-0AA0**<br>**3SU1000-1AD30-0AA0**<br>**3SU1000-1AD40-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Black ▶<br>Red ▶<br>Yellow 5 | | **3SU1000-1AA10-0AA0**<br>**3SU1000-1AA20-0AA0**<br>**3SU1000-1AA30-0AA0** | | 1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit |
| 3SU1000-1BD40-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions | Momentary contact | Black ▶<br>Red ▶<br>Yellow 3<br>Green ▶ | | **3SU1000-1BD10-0AA0**<br>**3SU1000-1BD20-0AA0**<br>**3SU1000-1BD30-0AA0**<br>**3SU1000-1BD40-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Black ▶<br>Red ▶<br>Red "O" ▶<br>Yellow 3<br>Green 5 | | **3SU1000-1BA10-0AA0**<br>**3SU1000-1BA20-0AA0**<br>**3SU1000-1BA20-0AD0**<br>**3SU1000-1BA30-0AA0**<br>**3SU1000-1BA40-0AA0** | | 1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1000-1CD10-0AA0 | **Mushroom pushbuttons**<br>60 mm diameter,<br>2 positions | Momentary contact | Black 3<br>Red 5<br>Yellow 5<br>Green 3 | | **3SU1000-1CD10-0AA0**<br>**3SU1000-1CD20-0AA0**<br>**3SU1000-1CD30-0AA0**<br>**3SU1000-1CD40-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Black 5<br>Red 5 | | **3SU1000-1CA10-0AA0**<br>**3SU1000-1CA20-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1001-1AD30-0AA0 | **Mushroom pushbuttons**<br>30 mm diameter,<br>2 positions,<br>illuminated | Momentary contact | Red 5<br>Yellow 3<br>Green 3<br>Blue 5<br>White 3<br>Clear 5 | | **3SU1001-1AD20-0AA0**<br>**3SU1001-1AD30-0AA0**<br>**3SU1001-1AD40-0AA0**<br>**3SU1001-1AD50-0AA0**<br>**3SU1001-1AD60-0AA0**<br>**3SU1001-1AD70-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Red ▶<br>Yellow 3<br>Green 5<br>Blue 3<br>Clear 5 | | **3SU1001-1AA20-0AA0**<br>**3SU1001-1AA30-0AA0**<br>**3SU1001-1AA40-0AA0**<br>**3SU1001-1AA50-0AA0**<br>**3SU1001-1AA70-0AA0** | | 1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1001-1BA50-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions,<br>illuminated | Momentary contact | Yellow 3<br>Green 3<br>White 3<br>Clear 3 | | **3SU1001-1BD30-0AA0**<br>**3SU1001-1BD40-0AA0**<br>**3SU1001-1BD60-0AA0**<br>**3SU1001-1BD70-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Red ▶<br>Yellow 3<br>Green 5<br>Blue 3<br>Clear 5 | | **3SU1001-1BA20-0AA0**<br>**3SU1001-1BA30-0AA0**<br>**3SU1001-1BA40-0AA0**<br>**3SU1001-1BA50-0AA0**<br>**3SU1001-1BA70-0AA0** | | 1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1000-1HB10-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions | With positive latching<br>Rotate to unlatch | Black ▶<br>Blue 3 | | **3SU1000-1HB10-0AA0**<br>**3SU1000-1HB50-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1000-1HG10-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions<br>RONIS SB30 | With positive latching<br>Key-operated release | Black NEW 5 | | **3SU1000-1HG10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## EMERGENCY STOP mushroom pushbuttons

### Selection and ordering data

| | Version of actuating element | Outer diameter of mushroom | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | mm | | d | | | | |
| **EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5** | | | | | | | | |
| | ***With pull-to-unlatch mechanism*** | | | | | | | |
| 3SU1000-1HA20-0AA0 | With positive latching, 2 positions | 40 | Red | ▶ | **3SU1000-1HA20-0AA0** | | 1 | 1 unit |
| | ***With rotate-to-unlatch mechanism*** | | | | | | | |
| 3SU1000-1GB20-0AA0 | With positive latching, 2 positions | 33.8 | Red | ▶ | **3SU1000-1GB20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HB20-0AA0 | | 40 | Red | ▶ | **3SU1000-1HB20-0AA0** | | 1 | 1 unit |
| 3SU1000-1JB20-0AA0 | | 60 | Red | ▶ | **3SU1000-1JB20-0AA0** | | 1 | 1 unit |
| 3SU1000-1LB20-0AA0 | With latching, 2 positions | 40 | Red | NEW ▶ | **3SU1000-1LB20-0AA0** | | 1 | 1 unit |
| | ***With rotate-to-unlatch mechanism, can be illuminated*** | | | | | | | |
| 3SU1001-1HB20-0AA0 | With positive latching, 2 positions | 33.8 | Red | ▶ | **3SU1001-1GB20-0AA0** | | 1 | 1 unit |
| | | 40 | Red | ▶ | **3SU1001-1HB20-0AA0** | | 1 | 1 unit |
| | | 60 | Red | ▶ | **3SU1001-1JB20-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## EMERGENCY STOP mushroom pushbuttons

| | Version of actuating element | Outer diameter of mushroom | Make of lock | Color | Number of keys | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | | | | d | | | | |
| **EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5** | | | | | | | | | | |
| | ***With key-operated release*** | | | | | | | | | |
| 3SU1000-1HF20-0AA0 | With positive latching, 2 positions | 40 | RONIS SB30 | Red | 2 | ▶ | **3SU1000-1HF20-0AA0** | | 1 | 1 unit |
| | | | RONIS 455 | Red | 2 | 3 | **3SU1000-1HG20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HK20-0AA0 | | | BKS S1 | Red | 2 | ▶ | **3SU1000-1HK20-0AA0** | | 1 | 1 unit |
| | | | BKS E7 | Red | 0 | 3 | **3SU1000-1HM20-0AA0** | | 1 | 1 unit |
| | | | BKS E9 | Red | 0 | 3 | **3SU1000-1HN20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HQ20-0AA0 | | | O.M.R. 73037 | Red | 2 | ▶ | **3SU1000-1HQ20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HR20-0AA0 | | | CES SSG10 | Red | 2 | ▶ | **3SU1000-1HR20-0AA0** | | 1 | 1 unit |
| | | | CES SSP9 | Red | 2 | ▶ | **3SU1000-1HS20-0AA0** | | 1 | 1 unit |
| | | | CES SMS1 | Red | 2 | 3 | **3SU1000-1HT20-0AA0** | | 1 | 1 unit |

## Selection and ordering data

| | Number of switching positions | Number of command points | Color of actuating element | Operating principle of the actuating element | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **Toggle switches** | | | | | | | | | |
| 3SU1000-3EA10-0AA0 | 2 | 1 | Black | Latching | 3 | **3SU1000-3EA10-0AA0** | | 1 | 1 unit |
| | | | | Momentary contact, reset from above | 3 | **3SU1000-3EC10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Selector switches

### Selection and ordering data

| Version of actuating element | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | |
| ***2 switch positions, can be illuminated*** | | | | | | | |
| 3SU1002-2BC40-0AA0 | | | | | | | |
| Selector, short black actuator | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | Black ► | | **3SU1002-2BC10-0AA0** | | 1 | 1 unit |
| | | Red ► | | **3SU1002-2BC20-0AA0** | | 1 | 1 unit |
| | | Yellow ► | | **3SU1002-2BC30-0AA0** | | 1 | 1 unit |
| | | Green ► | | **3SU1002-2BC40-0AA0** | | 1 | 1 unit |
| | | Blue ► | | **3SU1002-2BC50-0AA0** | | 1 | 1 unit |
| | | White ► | | **3SU1002-2BC60-0AA0** | | 1 | 1 unit |
| 3SU1002-2BF30-0AA0 | Latching, 90° (10:30/1:30 o'clock) | Black ► | | **3SU1002-2BF10-0AA0** | | 1 | 1 unit |
| | | Red ► | | **3SU1002-2BF20-0AA0** | | 1 | 1 unit |
| | | Yellow ► | | **3SU1002-2BF30-0AA0** | | 1 | 1 unit |
| | | Green ► | | **3SU1002-2BF40-0AA0** | | 1 | 1 unit |
| | | Blue ► | | **3SU1002-2BF50-0AA0** | | 1 | 1 unit |
| | | White ► | | **3SU1002-2BF60-0AA0** | | 1 | 1 unit |
| 3SU1002-2CF20-0AA0 | | | | | | | |
| Selector, long black actuator | Latching, 90° (10:30/1:30 o'clock) | Black | 3 | **3SU1002-2CF10-0AA0** | | 1 | 1 unit |
| | | Red | 3 | **3SU1002-2CF20-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1002-2CF60-0AA0** | | 1 | 1 unit |
| 3SU1002-2AF20-0AA0 | | | | | | | |
| Rotary knob | Latching, 90° (10:30/1:30 o'clock) | Red | 3 | **3SU1002-2AF20-0AA0** | | 1 | 1 unit |
| | | White ► | | **3SU1002-2AF60-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Selector switches

| Version of actuating element | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | |
| ***3 switch positions, can be illuminated*** | | | | | | | |
| Selector, short black actuator | Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1002-2BM10-0AA0**<br>**3SU1002-2BM20-0AA0**<br>**3SU1002-2BM30-0AA0**<br>**3SU1002-2BM40-0AA0**<br>**3SU1002-2BM50-0AA0**<br>**3SU1002-2BM60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1002-2BM20-0AA0 | | | | | | | |
| | Latching, 2x45° (10:30/12/1:30 o'clock) | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1002-2BL10-0AA0**<br>**3SU1002-2BL20-0AA0**<br>**3SU1002-2BL30-0AA0**<br>**3SU1002-2BL40-0AA0**<br>**3SU1002-2BL50-0AA0**<br>**3SU1002-2BL60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1002-2BL60-0AA0 | | | | | | | |
| | Momentary contact/ latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right | Black ▶<br>Red 5<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1002-2BP10-0AA0**<br>**3SU1002-2BP20-0AA0**<br>**3SU1002-2BP30-0AA0**<br>**3SU1002-2BP40-0AA0**<br>**3SU1002-2BP50-0AA0**<br>**3SU1002-2BP60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1002-2BP50-0AA0 | | | | | | | |
| | Latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1002-2BN10-0AA0**<br>**3SU1002-2BN20-0AA0**<br>**3SU1002-2BN30-0AA0**<br>**3SU1002-2BN40-0AA0**<br>**3SU1002-2BN50-0AA0**<br>**3SU1002-2BN60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1002-2BN30-0AA0 | | | | | | | |
| ***4 switch positions*** | | | | | | | |
| Rotary knob | Latching, 4x90° (3/6/9/12 o'clock) | White ▶ | | **3SU1000-2AS60-0AA0** | | 1 | 1 unit |
| 3SU1000-2AS60-0AA0 | | | | | | | |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Key-operated switches

### Selection and ordering data

| Operating principle | Make of lock | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | |
| ***2 switch positions*** | | | | | | | | |
| 3SU1000-4JC01-0AA0 | | | | | | | | |
| Momentary contact, 45° (10:30/ 12 o'clock), reset from center to left | RONIS, SB30 | O | 2 | ▶ | **3SU1000-4BC01-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1000-4CC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73037, red | O | 2 | 3 | **3SU1000-4FC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 3 | **3SU1000-4GC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 3 | **3SU1000-4HC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | O | 2 | 3 | **3SU1000-4JC01-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | ▶ | **3SU1000-5BC01-0AA0** | | 1 | 1 unit |
| | CES, LSG1 | | 2 | 3 | **3SU1000-5HC01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | ▶ | **3SU1000-5PC01-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | ▶ | **3SU1000-5XC01-0AA0** | | 1 | 1 unit |
| 3SU1000-4BF11-0AA0 | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | RONIS, SB30 | O | 2 | ▶ | **3SU1000-4BF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1000-4BF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | ▶ | **3SU1000-4BF21-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 3 | **3SU1000-4CF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-4CF11-0AA0** | | 1 | 1 unit |
| | RONIS, 421 | O+I | 2 | 5 | **3SU1000-4DF11-0AA0** | | 1 | 1 unit |
| 3SU1000-4GF11-0AA0 | | | | | | | | |
| | O.M.R. 73037, red | O | 2 | 3 | **3SU1000-4FF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-4FF11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | ▶ | **3SU1000-4GF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-4GF11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 3 | **3SU1000-4HF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-4HF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1000-4HF21-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | O | 2 | 3 | **3SU1000-4JF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-4JF11-0AA0** | | 1 | 1 unit |
| 3SU1000-5BF11-0AA0 | | | | | | | | |
| | CES, SSG10 | O | 2 | ▶ | **3SU1000-5BF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1000-5BF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | ▶ | **3SU1000-5BF21-0AA0** | | 1 | 1 unit |
| | CES, SSG10 with key monitoring | O | 2 | NEW ▶ | **3SU1000-5JF01-0AA0** | | 1 | 1 unit |
| | CES, LSG1 | O | 2 | ▶ | **3SU1000-5HF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1000-5HF11-0AA0** | | 1 | 1 unit |
| 3SU1000-5PF11-0AA0 | | | | | | | | |
| | BKS, S1 | O | 2 | ▶ | **3SU1000-5PF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1000-5PF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 3 | **3SU1000-5PF21-0AA0** | | 1 | 1 unit |
| | BKS, E1 | O | 0 | 3 | **3SU1000-5QF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 3 | **3SU1000-5QF11-0AA0** | | 1 | 1 unit |
| | BKS, E2 | O | 0 | ▶ | **3SU1000-5RF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 3 | **3SU1000-5RF11-0AA0** | | 1 | 1 unit |
| | BKS, E7 | O | 0 | ▶ | **3SU1000-5SF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | ▶ | **3SU1000-5SF11-0AA0** | | 1 | 1 unit |
| | BKS, E9 | O | 0 | ▶ | **3SU1000-5TF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 3 | **3SU1000-5TF11-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | ▶ | **3SU1000-5XF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1000-5XF11-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Key-operated switches

| Operating principle | Make of lock | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | |
| ***3 switch positions*** | | | | | | | | |
| Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right | RONIS, SB30 | O | 2 | ▶ | **3SU1000-4BM01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73037, red | O | 2 | 5 | **3SU1000-4FM01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1000-4HM01-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | ▶ | **3SU1000-5BM01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 3 | **3SU1000-5PM01-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 3 | **3SU1000-5XM01-0AA0** | | 1 | 1 unit |
| Latching, 2x45° (10:30/12/1:30 o'clock) | RONIS, SB30 | O | 2 | 3 | **3SU1000-4BL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | ▶ | **3SU1000-4BL11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1000-4BL21-0AA0** | | 1 | 1 unit |
| | | II | 2 | 3 | **3SU1000-4BL31-0AA0** | | 1 | 1 unit |
| | | I+II | 2 | 3 | **3SU1000-4BL41-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-4BL51-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1000-4CL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1000-4CL11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73037, red | O | 2 | 5 | **3SU1000-4FL01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1000-4FL51-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 3 | **3SU1000-4GL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1000-4GL11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1000-4HL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1000-4HL11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | I+O+II | 2 | 5 | **3SU1000-4JL11-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | ▶ | **3SU1000-5BL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | ▶ | **3SU1000-5BL11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 3 | **3SU1000-5BL21-0AA0** | | 1 | 1 unit |
| | | II | 2 | ▶ | **3SU1000-5BL31-0AA0** | | 1 | 1 unit |
| | | I+II | 2 | 3 | **3SU1000-5BL41-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1000-5BL51-0AA0** | | 1 | 1 unit |
| | CES, SSG10 with key monitoring | O | 2 | NEW 3 | **3SU1000-5JL01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 3 | **3SU1000-5PL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1000-5PL11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 3 | **3SU1000-5PL21-0AA0** | | 1 | 1 unit |
| | | II | 2 | 3 | **3SU1000-5PL31-0AA0** | | 1 | 1 unit |
| | | I+II | 2 | 3 | **3SU1000-5PL41-0AA0** | | 1 | 1 unit |
| | BKS, E2 | I+O+II | 0 | 5 | **3SU1000-5RL11-0AA0** | | 1 | 1 unit |
| | BKS, E9 | I+O+II | 0 | 3 | **3SU1000-5TL11-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 3 | **3SU1000-5XL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1000-5XL11-0AA0** | | 1 | 1 unit |

3SU1000-4BM01-0AA0

3SU1000-4FL01-0AA0

3SU1000-5BL01-0AA0

3SU1000-5JL01-0AA0

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Key-operated switches / ID key-operated switches

### Key-operated switches

| | Operating principle | Make of lock | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | ***3 switch positions*** | | | | | | | | |
| 3SU1000-4BP01-0AA0 | Momentary contact/ latching, 2x45° (10:30/12/ 1:30 o'clock), reset from left, latching to the right | RONIS, SB30 | O | 2 | 3 | **3SU1000-4BP01-0AA0** | | 1 | 1 unit |
| | | | II | 2 | 3 | **3SU1000-4BP31-0AA0** | | 1 | 1 unit |
| | | | O+II | 2 | 3 | **3SU1000-4BP61-0AA0** | | 1 | 1 unit |
| 3SU1000-5BP01-0AA0 | | CES, SSG10 | O | 2 | 3 | **3SU1000-5BP01-0AA0** | | 1 | 1 unit |
| | | | II | 2 | 5 | **3SU1000-5BP31-0AA0** | | 1 | 1 unit |
| | | | O+II | 2 | 3 | **3SU1000-5BP61-0AA0** | | 1 | 1 unit |
| | | BKS, S1 | O | 2 | 3 | **3SU1000-5PP01-0AA0** | | 1 | 1 unit |
| 3SU1000-4GN01-0AA0 | Latching/ momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from right, latching to the left | RONIS, SB30 | O | 2 | 3 | **3SU1000-4BN01-0AA0** | | 1 | 1 unit |
| | | | I | 2 | 3 | **3SU1000-4BN21-0AA0** | | 1 | 1 unit |
| | | | O+I | 2 | 3 | **3SU1000-4BN51-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1000-4GN01-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73034, black | I | 2 | 5 | **3SU1000-4HN21-0AA0** | | 1 | 1 unit |
| | | CES, SSG10 | O | 2 | 3 | **3SU1000-5BN01-0AA0** | | 1 | 1 unit |
| | | | I | 2 | 3 | **3SU1000-5BN21-0AA0** | | 1 | 1 unit |
| | | | O+I | 2 | 3 | **3SU1000-5BN51-0AA0** | | 1 | 1 unit |
| | | BKS, S1 | I | 2 | 5 | **3SU1000-5PN21-0AA0** | | 1 | 1 unit |
| | | | O+I | 2 | 3 | **3SU1000-5PN51-0AA0** | | 1 | 1 unit |
| | | IKON, 360012K1 | O+I | 2 | 5 | **3SU1000-5XN51-0AA0** | | 1 | 1 unit |

## Selection and ordering data

### ID key-operated switches

| | Operating angle | Operating principle | Switch position for key removal | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | ***4 switch positions*** | | | | | | | | |
| 3SU1000-4WS10-0AA0 | 45° | Latching | Key removal possible in all 4 positions | Black | ► | **3SU1000-4WS10-0AA0** | | 1 | 1 unit |

For ID keys, see page 10/161.

For electronic modules for ID key-operated switches, see page 10/120.

For plastic holders for ID key-operated switches, see page 10/110.

Note:

ID Key Switches requires the use of a plastic holder only!
Purchase **3SU1500-0AA10-0AA0** Holder Separately.

# 3SU1 22 mm, Round, Plastic, Black — Actuating & Signaling Elements

## Indicator lights

### Selection and ordering data

| | Product function Locking in zero position | Number of switching positions | Operating principle | Direction of actuation | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Coordinate switches** | | | | | | | | | |
| 3SU1000-7AA10-0AA0 | No | 2 | Momentary contact | Horizontal | ▶ | **3SU1000-7AC10-0AA0** | | 1 | 1 unit |
| | | | | Vertical | ▶ | **3SU1000-7AD10-0AA0** | | 1 | 1 unit |
| | | | Latching | Horizontal | ▶ | **3SU1000-7AA10-0AA0** | | 1 | 1 unit |
| | | | | Vertical | ▶ | **3SU1000-7AB10-0AA0** | | 1 | 1 unit |
| | | 4 | Momentary contact | Horizontal/ Vertical | ▶ | **3SU1000-7AF10-0AA0** | | 1 | 1 unit |
| | | | Latching | Horizontal/ Vertical | ▶ | **3SU1000-7AE10-0AA0** | | 1 | 1 unit |
| 3SU1000-7BA10-0AA0 | Yes | 2 | Momentary contact | Horizontal | ▶ | **3SU1000-7BC10-0AA0** | | 1 | 1 unit |
| | | | | Vertical | ▶ | **3SU1000-7BD10-0AA0** | | 1 | 1 unit |
| | | | Latching | Horizontal | ▶ | **3SU1000-7BA10-0AA0** | | 1 | 1 unit |
| | | | | Vertical | ▶ | **3SU1000-7BB10-0AA0** | | 1 | 1 unit |
| | | 4 | Momentary contact | Horizontal/ Vertical | ▶ | **3SU1000-7BF10-0AA0** | | 1 | 1 unit |
| | | | Latching | Horizontal/ Vertical | ▶ | **3SU1000-7BE10-0AA0** | | 1 | 1 unit |

### Selection and ordering data

| | Type of product | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Indicator lights** | | | | | | | |
| 3SU1001-6AA40-0AA0 | With smooth lens | Amber | 3 | **3SU1001-6AA00-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1001-6AA20-0AA0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1001-6AA30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1001-6AA40-0AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1001-6AA50-0AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1001-6AA60-0AA0** | | 1 | 1 unit |
| | | Clear | ▶ | **3SU1001-6AA70-0AA0** | | 1 | 1 unit |
| **Indicator lights in illuminated pushbutton design** | | | | | | | |
| 3SU1001-0AD50-0AA0 | -- | Red | 3 | **3SU1001-0AD20-0AA0** | | 1 | 1 unit |
| | | Yellow | 3 | **3SU1001-0AD30-0AA0** | | 1 | 1 unit |
| | | Green | 3 | **3SU1001-0AD40-0AA0** | | 1 | 1 unit |
| | | Blue | 3 | **3SU1001-0AD50-0AA0** | | 1 | 1 unit |
| | | Clear | ▶ | **3SU1001-0AD70-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Complete Units

## Pushbuttons

### Selection and ordering data

| Supply voltage for light source at AC V | Supply voltage for light source at DC V | Color | Number of Contact modules | Number of NO contacts | Number of NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | | | |
| | | ***Pushbuttons with flat button, momentary contact*** | | | | | | | | |
| -- | -- | Black | 1 | 1 | 0 | ▶ | **3SU1130-0AB10-1BA0** | | 1 | 1 unit |
| | | | 0 | 0 | 1 | 3 | **3SU1130-0AB10-1CA0** | | 1 | 1 unit |
| | | | 1 | 1 | 1 | ▶ | **3SU1130-0AB10-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 1 | 0 | 5 | **3SU1130-0AB20-1BA0** | | 1 | 1 unit |
| | | | | 0 | 1 | ▶ | **3SU1130-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1130-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1130-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1130-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | ▶ | **3SU1130-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1130-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 3 | **3SU1130-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1130-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 3 | **3SU1130-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1130-0AB60-1FA0** | | 1 | 1 unit |
| | | ***Pushbuttons with raised button, momentary contact*** | | | | | | | | |
| -- | -- | Red | 1 | 0 | 1 | 5 | **3SU1130-0BB20-1CA0** | | 1 | 1 unit |
| | | ***Illuminated pushbuttons with flat button, momentary contact with integrated LED*** | | | | | | | | |
| 24 | 24 | Red | 1 | 1 | 0 | 5 | **3SU1132-0AB20-1BA0** | | 1 | 1 unit |
| | | | | 0 | 1 | 3 | **3SU1132-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1132-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 3 | **3SU1132-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | ▶ | **3SU1132-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1132-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 3 | **3SU1132-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | ▶ | **3SU1132-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1132-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 3 | **3SU1132-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB70-1FA0** | | 1 | 1 unit |
| 110 | -- | Red | 1 | 0 | 1 | 5 | **3SU1133-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1133-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1133-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1133-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1133-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1133-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1133-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1133-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1133-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1133-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1133-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1133-0AB70-1FA0** | | 1 | 1 unit |

3SU1130-0AB10-1BA0

3SU1130-0BB20-1CA0

3SU1132-0AB40-1BA0

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Complete Units

## Actuators and Indicator

### Pushbuttons

| Supply voltage for light source at AC V | Supply voltage for light source at DC V | Color | Number of Contact modules | Number of NO contacts | Number of NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Illuminated pushbuttons with flat button, momentary contact with integrated LED** | | | |
| 230 | -- | Red | 1 | 0 | 1 | 5 | **3SU1136-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1136-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1136-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1136-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1136-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1136-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1136-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1136-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1136-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1136-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1136-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1136-0AB70-1FA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |

3SU1136-0AB40-1BA0

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ***Pushbuttons with flat button, momentary contact*** | | | |
| -- | -- | Black | 1 | 1 | 0 | 5 | **3SU1130-0AB10-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1130-0AB10-3FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | 5 | **3SU1130-0AB20-3CA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1130-0AB40-3BA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 1 | 5 | **3SU1130-0AB60-3FA0** | | 1 | 1 unit |

3SU1130-0AB10-3BA0

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ***Illuminated pushbuttons with flat button, momentary contact*** | | | |
| 24 | 24 | Red | 1 | 0 | 1 | 5 | **3SU1132-0AB20-3CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB20-3FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1132-0AB30-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB30-3FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | **3SU1132-0AB40-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB40-3FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1132-0AB50-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB50-3FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1132-0AB60-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB60-3FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1132-0AB70-3BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1132-0AB70-3FA0** | | 1 | 1 unit |

3SU1132-0AB30-3BA0

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Complete Units

## Mushroom pushbuttons / EMERGENCY STOP mushroom pushbuttons

### Selection and ordering data

| Unlatching method | Number of Contact modules | NO contacts | NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Mushroom pushbuttons** | | | | | | | | |
| ***With red mushroom, diameter 40 mm, latching*** | | | | | | | | |
| Pull to unlatch | 1 | 0 | 1 | 5 | **3SU1130-1BA20-1CA0** | | 1 | 1 unit |
| | | 1 | 1 | 5 | **3SU1130-1BA20-1FA0** | | 1 | 1 unit |

3SU1130-1BA20-1CA0

### Selection and ordering data

| Unlatching method | Number of Contact modules | NO contacts | NC contacts | Marking | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5** | | | | | | | | | |
| ***With red mushroom, diameter 40 mm, with positive latching*** | | | | | | | | | |
| Pull to unlatch | 1 | 0 | 1 | NOT-HALT ⊕ | 5 | **3SU1100-1HA20-1CH0** | | 1 | 1 unit |
| | | 1 | 1 | EMERGENCY STOP ⊕ | 5 | **3SU1100-1HA20-1FG0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT ⊕ | 5 | **3SU1100-1HA20-1FH0** | | 1 | 1 unit |
| Rotate to unlatch | 1 | 0 | 1 | None ⊕ | 5 | **3SU1100-1HB20-1CF0** | | 1 | 1 unit |
| | | 0 | 1 | EMERGENCY STOP ⊕ | 5 | **3SU1100-1HB20-1CG0** | | 1 | 1 unit |
| | | 0 | 1 | NOT-HALT ⊕ ▶ | | **3SU1100-1HB20-1CH0** | | 1 | 1 unit |
| | | 0 | 2 | EMERGENCY STOP ⊕ | 5 | **3SU1100-1HB20-1PG0** | | 1 | 1 unit |
| | | 0 | 2 | Less backing plate ⊕ | 5 | **3SU1100-1HB20-1PA0** | | 1 | 1 unit |
| | | 1 | 1 | EMERGENCY STOP ⊕ | 5 | **3SU1100-1HB20-1FG0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT ⊕ ▶ | | **3SU1100-1HB20-1FH0** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| Rotate to unlatch | 1 | 0 | 1 | NOT-HALT ⊕ | 5 | **3SU1100-1HB20-3CH0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT ⊕ | 5 | **3SU1100-1HB20-3FH0** | | 1 | 1 unit |
| ***With red mushroom, diameter 40 mm, with latching*** NEW | | | | | | | | | |
| | | | | | | **Screw terminals** | | | |
| Rotate to unlatch | 2 | 0 | 2 | NOT-HALT | 5 | **3SU1100-1LB20-1PH0** | | 1 | 1 unit |

3SU1100-1HA20-1CH0

3SU1100-1HB20-1CH0

3SU1100-1LB20-1PH0

⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.
Certificate:

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Complete Units

## Coordinate switches, complete

### Selection and ordering data

| Operating principle | Color | Number of Contact modules | NO contacts | NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | | | |
| ***Short black actuator, 2 switch positions, can be illuminated*** | | | | | | | | | |
| Latching, 90° | White | 1 | 1 | 0 | ▶ | **3SU1130-2BF60-1BA0** | | 1 | 1 unit |
| | | | 1 | 1 | ▶ | **3SU1130-2BF60-1MA0** | | 1 | 1 unit |
| ***Short black actuator, 3 switch positions, can be illuminated*** | | | | | | | | | |
| Momentary contact, 2x45° | White | 2 | 2 | 2 | 5 | **3SU1130-2BM60-1LA0** | | 1 | 1 unit |
| | | | 2 | 0 | 3 | **3SU1130-2BM60-1NA0** | | 1 | 1 unit |
| Latching, 2x45° | White | 2 | 2 | 2 | 3 | **3SU1130-2BL60-1LA0** | | 1 | 1 unit |
| | | | 2 | 0 | ▶ | **3SU1130-2BL60-1NA0** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| ***Short black actuator, 2 switch positions, can be illuminated*** | | | | | | | | | |
| Latching, 90° | White | 1 | 1 | 0 | 5 | **3SU1130-2BF60-3BA0** | | 1 | 1 unit |
| | | | 1 | 1 | 5 | **3SU1130-2BF60-3MA0** | | 1 | 1 unit |
| ***Short black actuator, 3 switch positions, can be illuminated*** | | | | | | | | | |
| Momentary contact, 2x45° | White | 2 | 2 | 0 | 5 | **3SU1130-2BM60-3NA0** | | 1 | 1 unit |
| Latching, 2x45° | White | 2 | 2 | 2 | 5 | **3SU1130-2BL60-3LA0** | | 1 | 1 unit |
| | | | 2 | 0 | 5 | **3SU1130-2BL60-3NA0** | | 1 | 1 unit |

3SU1130-2BF60-1BA0

3SU1130-2BL60-1NA0

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Complete Units

## Coordinate switches, complete

### Selection and ordering data

| Operating principle | Switch position for key removal | Number of Contact modules | NO contacts | NC contacts | Number of keys | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | | | |
| 3SU1130-4BF11-1BA0 | | | | | | | | | | |
| ***With RONIS lock, SB30, 2 switch positions*** | | | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | O+I | 1 | 1 | 0 | 2 | 3 | **3SU1130-4BF11-1BA0** | | 1 | 1 unit |
| | | | 1 | 1 | 2 | 3 | **3SU1130-4BF11-1FA0** | | 1 | 1 unit |
| 3SU1130-4BL11-1NA0 | | | | | | | | | | |
| ***With RONIS lock, SB30, 3 switch positions*** | | | | | | | | | | |
| Latching, 2x45° (10:30/12/ 1:30 o'clock) | I+O+II | 2 | 2 | 0 | 2 | 5 | **3SU1130-4BL11-1NA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| ***With RONIS lock, SB30, 2 switch positions*** | | | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | O+I | 1 | 1 | 0 | 2 | 5 | **3SU1130-4BF11-3BA0** | | 1 | 1 unit |

### Selection and ordering data

| Number of NO contacts (1 per direction) | Operating principle | Direction of actuation | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Coordinate switches** | | | | | | | |
| 3SU1130-7AE10-1QA0 | | | | | | | |
| ***Without mechanical interlock, 2 switch positions*** | | | | | | | |
| 2 | Momentary contact | Horizontal | 5 | **3SU1130-7AC10-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1130-7AD10-1NA0** | | 1 | 1 unit |
| | Latching | Horizontal | 5 | **3SU1130-7AA10-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1130-7AB10-1NA0** | | 1 | 1 unit |
| ***Without mechanical interlock, 4 switch positions*** | | | | | | | |
| 4 | Momentary contact | Horizontal/Vertical | 5 | **3SU1130-7AF10-1QA0** | | 1 | 1 unit |
| | Latching | Horizontal/Vertical | 5 | **3SU1130-7AE10-1QA0** | | 1 | 1 unit |
| 3SU1130-7BE10-1QA0 | | | | | | | |
| ***With mechanical interlock, 2 switch positions*** | | | | | | | |
| 2 | Momentary contact | Horizontal | 5 | **3SU1130-7BC10-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1130-7BD10-1NA0** | | 1 | 1 unit |
| | Latching | Horizontal | 5 | **3SU1130-7BA10-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1130-7BB10-1NA0** | | 1 | 1 unit |
| ***With mechanical interlock, 4 switch positions*** | | | | | | | |
| 4 | Momentary contact | Horizontal/Vertical | 5 | **3SU1130-7BF10-1QA0** | | 1 | 1 unit |
| | Latching | Horizontal/Vertical | 5 | **3SU1130-7BE10-1QA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Complete Units

## Indicator Lights – Complete Units

### Selection and ordering data

| Operational voltage at AC, rated value | Operational voltage at DC, rated value | Color of actuating element | Color of light source | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| V | V | | | d | | | | |
| **Indicator lights** | | | | | | | | |
| ***With smooth lens and integrated LED*** | | | | | | | | |
| 24 | 24 | Red | Red | ▶ | **3SU1102-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1102-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1102-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | ▶ | **3SU1102-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1102-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | ▶ | **3SU1102-6AA70-1AA0** | | 1 | 1 unit |
| 110 | -- | Amber | Amber | 5 | **3SU1103-6AA00-1AA0** | | 1 | 1 unit |
| | | Red | Red | ▶ | **3SU1103-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1103-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1103-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 3 | **3SU1103-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1103-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 3 | **3SU1103-6AA70-1AA0** | | 1 | 1 unit |
| 230 | -- | Amber | Amber | 5 | **3SU1106-6AA00-1AA0** | | 1 | 1 unit |
| | | Red | Red | ▶ | **3SU1106-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1106-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1106-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 3 | **3SU1106-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1106-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 3 | **3SU1106-6AA70-1AA0** | | 1 | 1 unit |
| | | | | | **Spring-type terminals** | | | |
| 24 | 24 | Red | Red | 3 | **3SU1102-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1102-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 3 | **3SU1102-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1102-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 3 | **3SU1102-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1102-6AA70-3AA0** | | 1 | 1 unit |
| 110 | -- | Red | Red | 5 | **3SU1103-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1103-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 5 | **3SU1103-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1103-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 5 | **3SU1103-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1103-6AA70-3AA0** | | 1 | 1 unit |
| 230 | -- | Red | Red | 5 | **3SU1106-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1106-6AA30-3AA0** | | 1 | 1 unit |

3SU1102-6AA30-1AA0

3SU1106-6AA50-1AA0

3SU1102-6AA40-3AA0

3SU1106-6AA60-3AA0

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Compact Units

## Indicator lights

### Selection and ordering data

| | Operational voltage at AC, rated value | Operational voltage at DC, rated value | Color of actuating element | Color of light source | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | V | V | | | d | | | | |
| **Indicator lights** NEW | | | | | | | | | |
| 3SU1201-6AB50-1AA0 | 24 | 24 | Amber | Amber | 3 | **3SU1201-6AB00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | ▶ | **3SU1201-6AB20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | ▶ | **3SU1201-6AB30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | ▶ | **3SU1201-6AB40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 3 | **3SU1201-6AB50-1AA0** | | 1 | 1 unit |
| | | | White | White | ▶ | **3SU1201-6AB60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | ▶ | **3SU1201-6AB70-1AA0** | | 1 | 1 unit |
| 3SU1201-6AC30-1AA0 | 110 | 110 | Amber | Amber | 5 | **3SU1201-6AC00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | 3 | **3SU1201-6AC20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | 3 | **3SU1201-6AC30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | 3 | **3SU1201-6AC40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1201-6AC50-1AA0** | | 1 | 1 unit |
| | | | White | White | 3 | **3SU1201-6AC60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 5 | **3SU1201-6AC70-1AA0** | | 1 | 1 unit |
| 3SU1201-6AF30-1AA0 | 230 | 230 | Amber | Amber | 5 | **3SU1201-6AF00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | 3 | **3SU1201-6AF20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | 3 | **3SU1201-6AF30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | 3 | **3SU1201-6AF40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1201-6AF50-1AA0** | | 1 | 1 unit |
| | | | White | White | 3 | **3SU1201-6AF60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 5 | **3SU1201-6AF70-1AA0** | | 1 | 1 unit |
| **Indicator lights with "traffic light" LED** | | | | | | | | | |
| 3SU1201-6AG24-1AA0 | 6 ... 24 | 6 ... 24 | Clear | Red/Yellow/Green | ▶ | **3SU1201-6AG24-1AA0** | | 1 | 1 unit |
| | 110 | -- | Clear | Red/Yellow/Green | ▶ | **3SU1201-6AC24-1AA0** | | 1 | 1 unit |
| | 230 | -- | Clear | Red/Yellow/Green | ▶ | **3SU1201-6AF24-1AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Compact Units

## Sensor switches / potentiometers

### Selection and ordering data

| | Operational voltage at AC, rated value | Operational voltage at DC, rated value | Volume level | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | V | dB | d | Article No. | Price per PU | | |
| **Acoustic signaling devices** | | | | | | | | |
| 3SU1200-6KB10-1AA0 | 24 | 24 | 90 | 5 | **3SU1200-6KB10-1AA0** | | 1 | 1 unit |
| | 110 | -- | 90 | 5 | **3SU1200-6KC10-1AA0** | | 1 | 1 unit |
| | 230 | -- | 90 | 5 | **3SU1200-6KF10-1AA0** | | 1 | 1 unit |

### Selection and ordering data

| | Operating principle | Number of NO contacts | Number of NC contacts | Color | SD | M12 connector, 4-pin | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | Article No. | Price per PU | | |
| **Sensor switches** | | | | | | | | | |
| 3SU1200-1SK10-2SA0 | Whether integrated in the two-hand operation console or installed as a door opening contact, the capacitive sensor switch is suitable for many different applications in industrial environments.<br>The switch is actuated by simple contact with the hand or other part of the body (i.e. without the application of pressure). As a result, these switches are rugged, extremely durable and have the highest possible degree of protection IP66, IP67, IP69 (IP69K). | | | | | | | | |
| | Without pressure | 1 | 0 | Black | ► | **3SU1200-1SK10-2SA0** | | 1 | 1 unit |

Optional accessories

- "Protection for sensor switches", see page 10/157.
- "Connectors for sensor switches, angled socket with screw terminal connection", see page 10/165.

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Compact Units

## Sensor switches / Pushbuttons with extended stroke

### Selection and ordering data

| Version of actuating element | Operating principle | Adjustable resistance | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | kΩ | d | | | | |
| **Potentiometers** | | | | | | | |
| Rotary knob | Stepless | 1 | ▶ | **3SU1200-2PQ10-1AA0** | | 1 | 1 unit |
| | | 2.2 | 5 | **3SU1200-2PW10-1AA0** | | 1 | 1 unit |
| | | 4.7 | ▶ | **3SU1200-2PR10-1AA0** | | 1 | 1 unit |
| | | 10 | ▶ | **3SU1200-2PS10-1AA0** | | 1 | 1 unit |
| | | 47 | ▶ | **3SU1200-2PT10-1AA0** | | 1 | 1 unit |
| | | 100 | ▶ | **3SU1200-2PU10-1AA0** | | 1 | 1 unit |
| | | 470 | ▶ | **3SU1200-2PV10-1AA0** | | 1 | 1 unit |

3SU1200-2PQ10-1AA0

Labeling plates for potentiometers, see page 10/153.

### Selection and ordering data

| Version | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Pushbuttons with extended stroke** | | | | | | |
| For actuating relays, can only be combined with extension plunger, no contact module or LED module required | | | | | | |
| **Pushbuttons with flat button** | Red | 5 | **3SU1230-0EB20-0AA0** | | 1 | 1 unit |
| | Green | 5 | **3SU1230-0EB40-0AA0** | | 1 | 1 unit |
| **Pushbuttons with raised button** | Black | 3 | **3SU1230-0FB10-0AA0** | | 1 | 1 unit |
| **Pushbuttons with flat transparent button for insertion of insert labels** | Red | 3 | **3SU1231-0EB20-0AA0** | | 1 | 1 unit |
| | Clear | 3 | **3SU1231-0EB70-0AA0** | | 1 | 1 unit |

3SU1230-0EB40-0AA0

3SU1230-0FB10-0AA0

3SU1231-0EB20-0AA0

| Version | Material | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Accessories** | | | | | | | |
| **Extension plungers** For compensation of the distance between the pushbutton and the unlatching button of an overload relay | Plastic | Gray | ▶ | **3SU1900-0KG10-0AA0** | | 1 | 1 unit |

3SU1900-0KG10-0AA0

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Pushbuttons

### Selection and ordering data

| Version of actuating element<br>Front ring version | Operating principle<br>Unlatching method | Color, marking | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | |
| <br>3SU1030-0AB50-0AR0 | | | | | | | |
| **Pushbuttons with flat button**<br>Standard | Momentary contact | Black | ▶ | **3SU1030-0AB10-0AA0** | | 1 | 1 unit |
| | | Black, "O" | ▶ | **3SU1030-0AB10-0AD0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1030-0AB20-0AA0** | | 1 | 1 unit |
| | | Red, "O" | ▶ | **3SU1030-0AB20-0AD0** | | 1 | 1 unit |
| | | Red, "AUTO" | 5 | **3SU1030-0AB20-0AQ0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1030-0AB30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1030-0AB40-0AA0** | | 1 | 1 unit |
| | | Green, "I" | ▶ | **3SU1030-0AB40-0AC0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1030-0AB50-0AA0** | | 1 | 1 unit |
| | | Blue, "R" | 5 | **3SU1030-0AB50-0AR0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1030-0AB60-0AA0** | | 1 | 1 unit |
| | | White, "I" | ▶ | **3SU1030-0AB60-0AC0** | | 1 | 1 unit |
| | | Clear | ▶ | **3SU1030-0AB70-0AA0** | | 1 | 1 unit |
| | | Gray | ▶ | **3SU1030-0AB80-0AA0** | | 1 | 1 unit |
| <br>3SU1030-0AA40-0AA0 | Latching<br>Push to unlatch | Black | ▶ | **3SU1030-0AA10-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1030-0AA20-0AA0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1030-0AA30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1030-0AA40-0AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1030-0AA50-0AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1030-0AA60-0AA0** | | 1 | 1 unit |
| <br>3SU1030-0BB20-0AA0 | | | | | | | |
| **Pushbuttons with raised button**<br>Standard | Momentary contact | Black | ▶ | **3SU1030-0BB10-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1030-0BB20-0AA0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1030-0BB30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1030-0BB40-0AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1030-0BB50-0AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1030-0BB60-0AA0** | | 1 | 1 unit |
| <br>3SU1030-0CB30-0AA0 | | | | | | | |
| **Pushbuttons with flat button**<br>Raised | Momentary contact | Black | 5 | **3SU1030-0CB10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1030-0CB20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1030-0CB30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1030-0CB40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1030-0CB50-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1030-0CB60-0AA0** | | 1 | 1 unit |

### Selection and ordering data

| Front ring | Operating principle | Colors caps/ markings | Direction of Actuation | SD<br>d | Screw terminals<br>Article No. | Price | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Quadruple pushbuttons** | | | | | | | | |
| <br>3SU1030-3FB11-0AA0 | | | | | | | | |
| **Metal, Matt** | Momentary Action | Black, None | Up/Down/ Left/Right | | **3SU1030-3FB11-0AA0** | | 1 | 1 unit |
| **Metal, Matt** | Momentary Action | Black, Arrows | Up/Down/ Left/Right | | **3SU1030-3FB11-0AU0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Pushbuttons

| | Version of actuating element<br>Front ring version | Operating principle<br>Unlatching method | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | |
| 3SU1031-0AB20-0AA0 | **Illuminated pushbuttons with flat button**<br>Standard | Momentary contact | Amber | 5 | **3SU1031-0AB00-0AA0** | | 1 | 1 unit |
| | | | Red ▶ | | **3SU1031-0AB20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1031-0AB30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1031-0AB40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1031-0AB50-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1031-0AB60-0AA0** | | 1 | 1 unit |
| | | | Clear ▶ | | **3SU1031-0AB70-0AA0** | | 1 | 1 unit |
| 3SU1031-0AA50-0AA0 | | Latching<br>Push to unlatch | Red ▶ | | **3SU1031-0AA20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1031-0AA30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1031-0AA40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1031-0AA50-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1031-0AA60-0AA0** | | 1 | 1 unit |
| | | | Clear ▶ | | **3SU1031-0AA70-0AA0** | | 1 | 1 unit |
| 3SU1031-0BB40-0AA0 | **Illuminated pushbuttons with raised button**<br>Standard | Momentary contact | Red ▶ | | **3SU1031-0BB20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1031-0BB30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1031-0BB40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1031-0BB50-0AA0** | | 1 | 1 unit |
| | | | Clear | 3 | **3SU1031-0BB70-0AA0** | | 1 | 1 unit |
| 3SU1031-0CB20-0AA0 | **Pushbuttons with flat button** NEW<br>Raised | Momentary contact | Red | 25 | **3SU1031-0CB20-0AA0** | | 1 | 100 units |
| | | | Green | 25 | **3SU1031-0CB40-0AA0** | | 1 | 100 units |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Twin pushbuttons

### Selection and ordering data

| Version of actuating element | Operating principle | Color | Marking Symbol No. | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Twin pushbuttons** | | | | | | | | |
| 3SU1030-3AB66-0AN0 | | | | | | | | |
| **Twin pushbuttons** flat, flat | Momentary contact | Green/Red | -- | 3 | **3SU1030-3AB42-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | ▶ | **3SU1030-3AB42-0AK0** | | 1 | 1 unit |
| | | White/Black | -- | 3 | **3SU1030-3AB61-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | 3 | **3SU1030-3AB61-0AK0** | | 1 | 1 unit |
| | | White/White | -- | 3 | **3SU1030-3AB66-0AA0** | | 1 | 1 unit |
| | | | Arrows, vert. | 5 | **3SU1030-3AB66-0AN0** | | 1 | 1 unit |
| | | Black/Black | -- | 3 | **3SU1030-3AB11-0AA0** | | 1 | 1 unit |
| | | | ⊙ ○ 5264/5265 (IEC 60417) | 5 | **3SU1030-3AB11-0AQ0** | | 1 | 1 unit |
| 3SU1030-3BB42-0AK0 | | | | | | | | |
| **Twin pushbuttons** flat, raised | Momentary contact | Green/Red | -- | 3 | **3SU1030-3BB42-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | 3 | **3SU1030-3BB42-0AK0** | | 1 | 1 unit |
| 3SU1031-3AB42-0AN0 | | | | | | | | |
| **Twin pushbuttons** flat, flat, illuminated | Momentary contact | Green/Red | -- | ▶ | **3SU1031-3AB42-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | ▶ | **3SU1031-3AB42-0AK0** | | 1 | 1 unit |
| | | | Arrows, vert. | 5 | **3SU1031-3AB42-0AN0** | | 1 | 1 unit |
| | | White/Black | -- | ▶ | **3SU1031-3AB61-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | ▶ | **3SU1031-3AB61-0AK0** | | 1 | 1 unit |
| | | White/White | -- | 3 | **3SU1031-3AB66-0AA0** | | 1 | 1 unit |
| | | | Arrows, vert. | 5 | **3SU1031-3AB66-0AN0** | | 1 | 1 unit |
| 3SU1031-3BB61-0AA0 | | | | | | | | |
| **Twin pushbuttons** flat, raised, illuminated | Momentary contact | Green/Red | -- | 3 | **3SU1031-3BB42-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | ▶ | **3SU1031-3BB42-0AK0** | | 1 | 1 unit |
| | | White/Black | -- | 3 | **3SU1031-3BB61-0AA0** | | 1 | 1 unit |
| | | | "I"/"O" | 3 | **3SU1031-3BB61-0AK0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Mushroom pushbuttons

### Selection and ordering data

| | Version of actuating element | Operating principle<br>Unlatching method | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Mushroom pushbuttons** | | | | | | | | |
| 3SU1030-1AD20-0AA0 | **Mushroom pushbuttons**<br>30 mm diameter,<br>2 positions | Momentary contact | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶ | | **3SU1030-1AD10-0AA0**<br>**3SU1030-1AD20-0AA0**<br>**3SU1030-1AD30-0AA0**<br>**3SU1030-1AD40-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Black ▶<br>Red ▶ | | **3SU1030-1AA10-0AA0**<br>**3SU1030-1AA20-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1030-1BD40-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions | Momentary contact | Black<br>Red<br>Yellow<br>Green | 3<br>3<br>3<br>3 | **3SU1030-1BD10-0AA0**<br>**3SU1030-1BD20-0AA0**<br>**3SU1030-1BD30-0AA0**<br>**3SU1030-1BD40-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Black ▶<br>Red ▶<br>Red, "O" | <br><br>5 | **3SU1030-1BA10-0AA0**<br>**3SU1030-1BA20-0AA0**<br>**3SU1030-1BA20-0AD0** | | 1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit |
| 3SU1031-1AD30-0AA0 | **Mushroom pushbuttons**<br>30 mm diameter,<br>2 positions,<br>illuminated | Momentary contact | Yellow<br>Green<br>Blue<br>White<br>Clear | 5<br>3<br>NEW 5<br>3<br>5 | **3SU1031-1AD30-0AA0**<br>**3SU1031-1AD40-0AA0**<br>**3SU1031-1AD50-0AA0**<br>**3SU1031-1AD60-0AA0**<br>**3SU1031-1AD70-0AA0** | | 1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Red<br>Yellow | 3<br>5 | **3SU1031-1AA20-0AA0**<br>**3SU1031-1AA30-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1031-1BD60-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions,<br>illuminated | Momentary contact | Yellow<br>Green<br>White<br>Clear | 5<br>5<br>3<br>5 | **3SU1031-1BD30-0AA0**<br>**3SU1031-1BD40-0AA0**<br>**3SU1031-1BD60-0AA0**<br>**3SU1031-1BD70-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | Latching<br>Pull to unlatch | Red<br>Yellow | 3<br>3 | **3SU1031-1BA20-0AA0**<br>**3SU1031-1BA30-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1000-1HB50-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions | With positive latching<br>Rotate to unlatch | Black ▶<br>Blue | <br>3 | **3SU1000-1HB10-0AA0**<br>**3SU1000-1HB50-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1000-1HG10-0AA0 | **Mushroom pushbuttons**<br>40 mm diameter,<br>2 positions<br>RONIS SB30 | With positive latching<br>Key-operated release | Black | NEW 5 | **3SU1000-1HG10-0AA0** | | 1 | 1 unit |
| | **Mushroom pushbuttons,**<br>60 mm diameter,<br>2 positions<br>RONIS SB30 | With positive latching<br>Rotate to unlatch | Black | NEW X | **3SU1000-1JB10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## EMERGENCY STOP Mushroom pushbuttons

### Selection and ordering data

| | Version of actuating element | Outer diameter of mushroom | Make of lock | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | | | d | | | | |
| **EMERGENCY STOP mushroom pushbuttons** | | | | | | | | | |
| | ***With pull-to-unlatch mechanism*** | | | | | | | | |
| 3SU1000-1HA20-0AA0 | With positive latching, 2 positions | 40 | -- | Red | ► | **3SU1000-1HA20-0AA0** | | 1 | 1 unit |
| | ***With rotate-to-unlatch mechanism*** | | | | | | | | |
| 3SU1000-1GB20-0AA0 | With positive latching, 2 positions | 33.8 | -- | Red | ► | **3SU1000-1GB20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HB20-0AA0 | | 40 | -- | Red | ► | **3SU1000-1HB20-0AA0** | | 1 | 1 unit |
| 3SU1000-1JB20-0AA0 | | 60 | -- | Red | ► | **3SU1000-1JB20-0AA0** | | 1 | 1 unit |
| 3SU1000-1LB20-0AA0 | With latching, 2 positions | 40 | -- | Red NEW | ► | **3SU1000-1LB20-0AA0** | | 1 | 1 unit |
| | ***With rotate-to-unlatch mechanism, can be illuminated*** | | | | | | | | |
| 3SU1001-1HB20-0AA0 | With positive latching, 2 positions | 33.8<br>40<br>60 | --<br>--<br>-- | Red<br>Red<br>Red | ►<br>►<br>► | **3SU1001-1GB20-0AA0**<br>**3SU1001-1HB20-0AA0**<br>**3SU1001-1JB20-0AA0** | | 1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## EMERGENCY STOP mushroom pushbuttons / toggle switches

### EMERGENCY STOP mushroom pushbuttons

***With key-operated release***

| | Version of actuating element | Outer diameter of mushroom | Make of lock | Color | Number of keys | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | | | | d | | | | |
| 3SU1000-1HF20-0AA0 | With positive latching, 2 positions | 40 | RONIS SB30 | Red | 2 | ▶ | **3SU1000-1HF20-0AA0** | | 1 | 1 unit |
| | | | RONIS 455 | Red | 2 | 3 | **3SU1000-1HG20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HK20-0AA0 | | | BKS S1 | Red | 2 | ▶ | **3SU1000-1HK20-0AA0** | | 1 | 1 unit |
| | | | BKS E7 | Red | 0 | 3 | **3SU1000-1HM20-0AA0** | | 1 | 1 unit |
| | | | BKS E9 | Red | 0 | 3 | **3SU1000-1HN20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HQ20-0AA0 | | | O.M.R. 73037 | Red | 2 | ▶ | **3SU1000-1HQ20-0AA0** | | 1 | 1 unit |
| 3SU1000-1HR20-0AA0 | | | CES SSG10 | Red | 2 | ▶ | **3SU1000-1HR20-0AA0** | | 1 | 1 unit |
| | | | CES SSP9 | Red | 2 | ▶ | **3SU1000-1HS20-0AA0** | | 1 | 1 unit |
| | | | CES SMS1 | Red | 2 | 3 | **3SU1000-1HT20-0AA0** | | 1 | 1 unit |

### Selection and ordering data

### Toggle switches

| | Number of switching positions | Number of command points | Color of actuating element | Operating principle of the actuating element | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| 3SU1030-3EA10-0AA0 | 2 | 1 | Black | Latching | 3 | **3SU1030-3EA10-0AA0** | | 1 | 1 unit |
| | | | | Momentary contact, reset from above | 5 | **3SU1030-3EC10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Selector switches

### Selection and ordering data

| | Version of actuating element | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | | |
| | ***2 switch positions, can be illuminated*** | | | | | | | |
| 3SU1032--2BC40-0AA0 | Selector, short black actuator | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | Black | 3 | **3SU1032-2BC10-0AA0** | | 1 | 1 unit |
| | | | Red ▶ | | **3SU1032-2BC20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1032-2BC30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1032-2BC40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1032-2BC50-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1032-2BC60-0AA0** | | 1 | 1 unit |
| 3SU1032-2BF30-0AA0 | | Latching, 90° (10:30/1:30 o'clock) | Black | ▶ | **3SU1032-2BF10-0AA0** | | 1 | 1 unit |
| | | | Red ▶ | | **3SU1032-2BF20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1032-2BF30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1032-2BF40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1032-2BF50-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1032-2BF60-0AA0** | | 1 | 1 unit |
| 3SU1032-2CF60-0AA0 | Selector, long black actuator | Latching, 90° (10:30/1:30 o'clock) | Black | 3 | **3SU1032-2CF10-0AA0** | | 1 | 1 unit |
| | | | Red | 3 | **3SU1032-2CF20-0AA0** | | 1 | 1 unit |
| | | | White | 3 | **3SU1032-2CF60-0AA0** | | 1 | 1 unit |
| 3SU1032-2AF20-0AA0 | Rotary knob | Latching, 90° (10:30/1:30 o'clock) | Red | 3 | **3SU1032-2AF20-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1032-2AF60-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Selector switches

| | Version of actuating element | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | | |
| | ***3 switch positions, can be illuminated*** | | | | | | | |
| 3SU1032-2BM60-0AA0 | Selector, short black actuator | Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1032-2BM10-0AA0**<br>**3SU1032-2BM20-0AA0**<br>**3SU1032-2BM30-0AA0**<br>**3SU1032-2BM40-0AA0**<br>**3SU1032-2BM50-0AA0**<br>**3SU1032-2BM60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1032-2BL20-0AA0 | | Latching, 2x45° (10:30/12/1:30 o'clock) | Black ▶<br>Red ▶<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1032-2BL10-0AA0**<br>**3SU1032-2BL20-0AA0**<br>**3SU1032-2BL30-0AA0**<br>**3SU1032-2BL40-0AA0**<br>**3SU1032-2BL50-0AA0**<br>**3SU1032-2BL60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1032-2BP40-0AA0 | | Momentary contact/ latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right | Black ▶<br>Red 5<br>Yellow ▶<br>Green ▶<br>Blue 5<br>White ▶ | | **3SU1032-2BP10-0AA0**<br>**3SU1032-2BP20-0AA0**<br>**3SU1032-2BP30-0AA0**<br>**3SU1032-2BP40-0AA0**<br>**3SU1032-2BP50-0AA0**<br>**3SU1032-2BP60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| 3SU1032-2BN30-0AA0 | | Latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left | Black 3<br>Red ▶<br>Yellow ▶<br>Green ▶<br>Blue ▶<br>White ▶ | | **3SU1032-2BN10-0AA0**<br>**3SU1032-2BN20-0AA0**<br>**3SU1032-2BN30-0AA0**<br>**3SU1032-2BN40-0AA0**<br>**3SU1032-2BN50-0AA0**<br>**3SU1032-2BN60-0AA0** | | 1<br>1<br>1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit<br>1 unit |
| | ***4 switch positions*** | | | | | | | |
| 3SU1030-2AS60-0AA0 | Rotary knob | Latching, 4x90° (3/6/9/12 o'clock) | White | 3 | **3SU1030-2AS60-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Key-operated switches

### Selection and ordering data

| Operating principle | Make of lock | Switch position for key removal | Number of keys | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Key-operated switches** | | | | | | | | |
| ***2 switch positions*** | | | | | | | | |
| 3SU1030-4BC01-0AA0 | | | | | | | | |
| Momentary contact, 45° (10:30/12 o'clock), reset from center to left | RONIS, SB30 | O | 2 | ▶ | **3SU1030-4BC01-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1030-4CC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73037, red | O | 2 | 3 | **3SU1030-4FC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1030-4GC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1030-4HC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | O | 2 | 3 | **3SU1030-4JC01-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | ▶ | **3SU1030-5BC01-0AA0** | | 1 | 1 unit |
| | CES, LSG1 | O | 2 | 3 | **3SU1030-5HC01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | ▶ | **3SU1030-5PC01-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 3 | **3SU1030-5XC01-0AA0** | | 1 | 1 unit |
| 3SU1030-4BF01-0AA0 | | | | | | | | |
| Latching, 90° (10:30/1:30 o'clock) | RONIS, SB30 | O | 2 | ▶ | **3SU1030-4BF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1030-4BF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 3 | **3SU1030-4BF21-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 3 | **3SU1030-4CF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1030-4CF11-0AA0** | | 1 | 1 unit |
| 3SU1030-4FF01-0AA0 | | | | | | | | |
| | O.M.R. 73037, red | O | 2 | 3 | **3SU1030-4FF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-4FF11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 3 | **3SU1030-4GF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-4GF11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 3 | **3SU1030-4HF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-4HF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1030-4HF21-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | O | 2 | 3 | **3SU1030-4JF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1030-4JF11-0AA0** | | 1 | 1 unit |
| 3SU1030-5BF01-0AA0 | | | | | | | | |
| | CES, SSG10 | O | 2 | ▶ | **3SU1030-5BF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | ▶ | **3SU1030-5BF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 3 | **3SU1030-5BF21-0AA0** | | 1 | 1 unit |
| | CES, LSG1 | O | 2 | 3 | **3SU1030-5HF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-5HF11-0AA0** | | 1 | 1 unit |
| 3SU1030-5PF01-0AA0 | | | | | | | | |
| | BKS, S1 | O | 2 | 3 | **3SU1030-5PF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-5PF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1030-5PF21-0AA0** | | 1 | 1 unit |
| | BKS, E1 | O | 0 | 3 | **3SU1030-5QF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 5 | **3SU1030-5QF11-0AA0** | | 1 | 1 unit |
| | BKS, E2 | O | 0 | ▶ | **3SU1030-5RF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 3 | **3SU1030-5RF11-0AA0** | | 1 | 1 unit |
| | BKS, E7 | O | 0 | ▶ | **3SU1030-5SF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | ▶ | **3SU1030-5SF11-0AA0** | | 1 | 1 unit |
| | BKS, E9 | O | 0 | 3 | **3SU1030-5TF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 3 | **3SU1030-5TF11-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | ▶ | **3SU1030-5XF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-5XF11-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Key-operated switches

| | Operating principle | Make of lock | Switch position for key removal | Number of keys | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | | |
| | ***3 switch positions*** | | | | | | | | |
| 3SU1030-4BM01-0AA0 | Momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from left + right | RONIS, SB30 | O | 2 | 3 | **3SU1030-4BM01-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73037, red | O | 2 | 5 | **3SU1030-4FM01-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73034, black | O | 2 | 5 | **3SU1030-4HM01-0AA0** | | 1 | 1 unit |
| | | CES, SSG10 | O | 2 | ▶ | **3SU1030-5BM01-0AA0** | | 1 | 1 unit |
| | | BKS, S1 | O | 2 | 3 | **3SU1030-5PM01-0AA0** | | 1 | 1 unit |
| | | IKON, 360012K1 | O | 2 | 5 | **3SU1030-5XM01-0AA0** | | 1 | 1 unit |
| 3SU1030-4JL11-0AA0 | Latching, 2x45° (10:30/12/ 1:30 o'clock) | RONIS, SB30 | O | 2 | 3 | **3SU1030-4BL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | ▶ | **3SU1030-4BL11-0AA0** | | 1 | 1 unit |
| | | | I | 2 | 5 | **3SU1030-4BL21-0AA0** | | 1 | 1 unit |
| | | | II | 2 | 3 | **3SU1030-4BL31-0AA0** | | 1 | 1 unit |
| | | | I+II | 2 | 5 | **3SU1030-4BL41-0AA0** | | 1 | 1 unit |
| | | | O+I | 2 | 3 | **3SU1030-4BL51-0AA0** | | 1 | 1 unit |
| | | RONIS, 455 | O | 2 | 5 | **3SU1030-4CL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | 5 | **3SU1030-4CL11-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73037, red | O | 2 | 5 | **3SU1030-4FL01-0AA0** | | 1 | 1 unit |
| | | | O+I | 2 | 5 | **3SU1030-4FL51-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1030-4GL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | 3 | **3SU1030-4GL11-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73034, black | O | 2 | 5 | **3SU1030-4HL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | 3 | **3SU1030-4HL11-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73033, yellow | I+O+II | 2 | 5 | **3SU1030-4JL11-0AA0** | | 1 | 1 unit |
| 3SU1030-5BL41-0AA0 | | CES, SSG10 | O | 2 | 3 | **3SU1030-5BL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | ▶ | **3SU1030-5BL11-0AA0** | | 1 | 1 unit |
| | | | I | 2 | 3 | **3SU1030-5BL21-0AA0** | | 1 | 1 unit |
| | | | II | 2 | 3 | **3SU1030-5BL31-0AA0** | | 1 | 1 unit |
| | | | I+II | 2 | 3 | **3SU1030-5BL41-0AA0** | | 1 | 1 unit |
| | | | O+I | 2 | 5 | **3SU1030-5BL51-0AA0** | | 1 | 1 unit |
| 3SU1030-5PL01-0AA0 | | BKS, S1 | O | 2 | 5 | **3SU1030-5PL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | 3 | **3SU1030-5PL11-0AA0** | | 1 | 1 unit |
| | | | I | 2 | 3 | **3SU1030-5PL21-0AA0** | | 1 | 1 unit |
| | | | II | 2 | 5 | **3SU1030-5PL31-0AA0** | | 1 | 1 unit |
| | | | I+II | 2 | 5 | **3SU1030-5PL41-0AA0** | | 1 | 1 unit |
| | | BKS, E2 | I+O+II | 0 | 5 | **3SU1030-5RL11-0AA0** | | 1 | 1 unit |
| | | BKS, E9 | I+O+II | 0 | 5 | **3SU1030-5TL11-0AA0** | | 1 | 1 unit |
| | | IKON, 360012K1 | O | 2 | 5 | **3SU1030-5XL01-0AA0** | | 1 | 1 unit |
| | | | I+O+II | 2 | 5 | **3SU1030-5XL11-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Key-operated switches /

| Operating principle | Make of lock | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | |
| ***3 switch positions*** | | | | | | | | |
| 3SU1030-4BP01-0AA0 | | | | | | | | |
| Momentary contact/ latching, 2x45° (10:30/12/ 1:30 o'clock), reset from left, latching to the right | RONIS, SB30 | O | 2 | 5 | **3SU1030-4BP01-0AA0** | | 1 | 1 unit |
| | | II | 2 | 5 | **3SU1030-4BP31-0AA0** | | 1 | 1 unit |
| | | O+II | 2 | 5 | **3SU1030-4BP61-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | 3 | **3SU1030-5BP01-0AA0** | | 1 | 1 unit |
| | | II | 2 | 5 | **3SU1030-5BP31-0AA0** | | 1 | 1 unit |
| | | O+II | 2 | 3 | **3SU1030-5BP61-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 3 | **3SU1030-5PP01-0AA0** | | 1 | 1 unit |
| Latching/momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from right, latching to the left | RONIS, SB30 | O | 2 | 5 | **3SU1030-4BN01-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1030-4BN21-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1030-4BN51-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1030-4GN01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | I | 2 | 5 | **3SU1030-4HN21-0AA0** | | 1 | 1 unit |
| 3SU1030-5BN01-0AA0 | | | | | | | | |
| | CES, SSG10 | O | 2 | 3 | **3SU1030-5BN01-0AA0** | | 1 | 1 unit |
| | | I | 2 | 3 | **3SU1030-5BN21-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1030-5BN51-0AA0** | | 1 | 1 unit |
| | BKS, S1 | I | 2 | 5 | **3SU1030-5PN21-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1030-5PN51-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O+I | 2 | 5 | **3SU1030-5XN51-0AA0** | | 1 | 1 unit |

## Selection and ordering data

| Operating angle | Operating principle | Switch position for key removal | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **ID key-operated switches** | | | | | | | | |
| ***4 switch positions*** | | | | | | | | |
| 3SU1030-4WS10-0AA0 | | | | | | | | |
| 45° | Latching | Key removal possible in all 4 positions | Black | ▶ | **3SU1030-4WS10-0AA0** | | 1 | 1 unit |

For ID keys, see page 10/161.

For electronic modules for ID key-operated switches, see page 10/120.

For plastic holders for ID key-operated switches, see page 10/110.

Note:

ID Key Switches requires the use of a plastic holder only!
Purchase **3SU1500-0AA10-0AA0** Holder Separately.

# 3SU1 22 mm, Plastic with Metal Front Ring, Matte — Actuating and Signaling Elements

## Indicator lights

### Selection and ordering data

| Product function Locking in zero position | Number of switching positions | Operating principle | Direction of actuation | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Coordinate switches** | | | | | | | | |
| 3SU1030-7AA10-0AA0 | | | | | | | | |
| No | 2 | Momentary contact | Horizontal | ▶ | **3SU1030-7AC10-0AA0** | | 1 | 1 unit |
| | | | Vertical | ▶ | **3SU1030-7AD10-0AA0** | | 1 | 1 unit |
| | | Latching | Horizontal | ▶ | **3SU1030-7AA10-0AA0** | | 1 | 1 unit |
| | | | Vertical | ▶ | **3SU1030-7AB10-0AA0** | | 1 | 1 unit |
| | 4 | Momentary contact | Horizontal/ Vertical | ▶ | **3SU1030-7AF10-0AA0** | | 1 | 1 unit |
| | | Latching | Horizontal/ Vertical | ▶ | **3SU1030-7AE10-0AA0** | | 1 | 1 unit |
| 3SU1030-7BA10-0AA0 | | | | | | | | |
| Yes | 2 | Momentary contact | Horizontal | ▶ | **3SU1030-7BC10-0AA0** | | 1 | 1 unit |
| | | | Vertical | ▶ | **3SU1030-7BD10-0AA0** | | 1 | 1 unit |
| | | Latching | Horizontal | ▶ | **3SU1030-7BA10-0AA0** | | 1 | 1 unit |
| | | | Vertical | ▶ | **3SU1030-7BB10-0AA0** | | 1 | 1 unit |
| | 4 | Momentary contact | Horizontal/ Vertical | ▶ | **3SU1030-7BF10-0AA0** | | 1 | 1 unit |
| | | Latching | Horizontal/ Vertical | ▶ | **3SU1030-7BE10-0AA0** | | 1 | 1 unit |

### Selection and ordering data

| Type of product | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Indicator lights** | | | | | | |
| 3SU1001-6AA20-0AA0 | | | | | | |
| With smooth lens | Amber | 3 | **3SU1001-6AA00-0AA0** | | 1 | 1 unit |
| | Red | ▶ | **3SU1001-6AA20-0AA0** | | 1 | 1 unit |
| | Yellow | ▶ | **3SU1001-6AA30-0AA0** | | 1 | 1 unit |
| | Green | ▶ | **3SU1001-6AA40-0AA0** | | 1 | 1 unit |
| | Blue | ▶ | **3SU1001-6AA50-0AA0** | | 1 | 1 unit |
| | White | ▶ | **3SU1001-6AA60-0AA0** | | 1 | 1 unit |
| | Clear | ▶ | **3SU1001-6AA70-0AA0** | | 1 | 1 unit |
| **Indicator lights in illuminated pushbutton design** | | | | | | |
| 3SU1031-0AD50-0AA0 | | | | | | |
| -- | Red | 3 | **3SU1031-0AD20-0AA0** | | 1 | 1 unit |
| | Yellow | 5 | **3SU1031-0AD30-0AA0** | | 1 | 1 unit |
| | Green | 3 | **3SU1031-0AD40-0AA0** | | 1 | 1 unit |
| | Blue | 5 | **3SU1031-0AD50-0AA0** | | 1 | 1 unit |
| | Clear | 3 | **3SU1031-0AD70-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Complete Units

## Pushbuttons

### Selection and ordering data

| Supply voltage for light source | | Color | Number of | | | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| at AC | at DC | | Contact modules | NO contacts | NC contacts | | Article No. | Price per PU | | |
| V | V | | | | | d | | | | |
| **Pushbuttons** | | | | | | | | | | |
| ***Pushbuttons with flat button, momentary contact*** | | | | | | | | | | |
| -- | -- | Black | 1 | 1 | 0 | ▶ | **3SU1150-0AB10-1BA0** | | 1 | 1 unit |
| | | | | 0 | 1 | 3 | **3SU1150-0AB10-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1150-0AB10-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 1 | 0 | 5 | **3SU1150-0AB20-1BA0** | | 1 | 1 unit |
| | | | | 0 | 1 | ▶ | **3SU1150-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1150-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 3 | **3SU1150-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1150-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | ▶ | **3SU1150-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1150-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 3 | **3SU1150-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1150-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 3 | **3SU1150-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1150-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1150-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1150-0AB70-1FA0** | | 1 | 1 unit |
| ***Pushbuttons with raised button, momentary contact*** | | | | | | | | | | |
| -- | -- | Black | 1 | 1 | 0 | 5 | **3SU1150-0BB10-1BA0** | | 1 | 1 unit |
| | | | | 0 | 1 | 5 | **3SU1150-0BB10-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1150-0BB10-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | 3 | **3SU1150-0BB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1150-0BB20-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 1 | 5 | **3SU1150-0BB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1150-0BB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1150-0BB50-1FA0** | | 1 | 1 unit |
| ***Illuminated pushbuttons with flat button, momentary contact, with integrated LED*** | | | | | | | | | | |
| 24 | 24 | Amber | 1 | 1 | 0 | 5 | **3SU1152-0AB00-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1152-0AB00-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | ▶ | **3SU1152-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1152-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | ▶ | **3SU1152-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | **3SU1152-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | ▶ | **3SU1152-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1152-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | ▶ | **3SU1152-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1152-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | ▶ | **3SU1152-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1152-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | ▶ | **3SU1152-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | ▶ | **3SU1152-0AB70-1FA0** | | 1 | 1 unit |
| 110 | -- | Amber | 1 | 1 | 0 | 5 | **3SU1153-0AB00-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB00-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | 5 | **3SU1153-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1153-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 3 | **3SU1153-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB40-1FA0** | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | **3SU1153-0AB50-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB50-1FA0** | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | **3SU1153-0AB60-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB60-1FA0** | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | **3SU1153-0AB70-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1153-0AB70-1FA0** | | 1 | 1 unit |
| 230 | -- | Amber | 1 | 1 | 0 | 5 | **3SU1156-0AB00-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1156-0AB00-1FA0** | | 1 | 1 unit |
| | | Red | 1 | 0 | 1 | 5 | **3SU1156-0AB20-1CA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1156-0AB20-1FA0** | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | **3SU1156-0AB30-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1156-0AB30-1FA0** | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 3 | **3SU1156-0AB40-1BA0** | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | **3SU1156-0AB40-1FA0** | | 1 | 1 unit |

3SU1150-0AB30-1BA0

3SU1150-0BB20-1CA0

3SU1152-0AB50-1BA0

3SU1153-0AB60-1BA0

# 3SU1 22 mm, Metal, Shiny — Complete Units

## Pushbuttons

3SU1156-0AB50-1BA0

3SU1150-0AB40-3BA0

3SU1150-0BB20-3CA0

3SU1152-0AB20-3CA0

3SU1153-0AB60-3BA0

3SU1156-0AB30-3BA0

| Supply voltage for light source at AC V | Supply voltage for light source at DC V | Color | Number of Contact modules | Number of NO contacts | Number of NC contacts | SD d | Screw terminals Article No. | Screw terminals Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | | | |
| 230 | -- | Blue | 1 | 1 | 0 | 5 | 3SU1156-0AB50-1BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB50-1FA0 | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | 3SU1156-0AB60-1BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB60-1FA0 | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | 3SU1156-0AB70-1BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB70-1FA0 | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| ***Pushbuttons with flat button, momentary contact*** | | | | | | | | | | |
| -- | -- | Black | 1 | 1 | 0 | ▶ | 3SU1150-0AB10-3BA0 | | 1 | 1 unit |
| | | | | 0 | 1 | 5 | 3SU1150-0AB10-3CA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1150-0AB10-3FA0 | | 1 | 1 unit |
| | | Red | 1 | 1 | 0 | 5 | 3SU1150-0AB20-3CA0 | | 1 | 1 unit |
| | | | | 0 | 1 | 5 | 3SU1150-0AB20-3FA0 | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | 3SU1150-0AB30-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1150-0AB30-3FA0 | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | 3SU1150-0AB40-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1150-0AB40-3FA0 | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | 3SU1150-0AB50-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1150-0AB50-3FA0 | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | 3SU1150-0AB60-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1150-0AB60-3FA0 | | 1 | 1 unit |
| ***Pushbuttons with raised button, momentary contact*** | | | | | | | | | | |
| -- | -- | Red | 1 | 0 | 1 | 5 | 3SU1150-0BB20-3CA0 | | 1 | 1 unit |
| ***Illuminated pushbuttons with flat button, momentary contact, with integrated LED*** | | | | | | | | | | |
| 24 | 24 | Red | 1 | 0 | 1 | 5 | 3SU1152-0AB20-3CA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1152-0AB20-3FA0 | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | 3SU1152-0AB30-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1152-0AB30-3FA0 | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | 3SU1152-0AB40-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 3 | 3SU1152-0AB40-3FA0 | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | 3SU1152-0AB50-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1152-0AB50-3FA0 | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 3 | 3SU1152-0AB60-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1152-0AB60-3FA0 | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | 3SU1152-0AB70-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1152-0AB70-3FA0 | | 1 | 1 unit |
| 110 | -- | Red | 1 | 0 | 1 | 5 | 3SU1153-0AB20-3CA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1153-0AB20-3FA0 | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | 3SU1153-0AB30-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1153-0AB30-3FA0 | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | 3SU1153-0AB40-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1153-0AB40-3FA0 | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | 3SU1153-0AB50-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1153-0AB50-3FA0 | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | 3SU1153-0AB60-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1153-0AB60-3FA0 | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | 3SU1153-0AB70-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1153-0AB70-3FA0 | | 1 | 1 unit |
| 230 | -- | Red | 1 | 0 | 1 | 5 | 3SU1156-0AB20-3CA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB20-3FA0 | | 1 | 1 unit |
| | | Yellow | 1 | 1 | 0 | 5 | 3SU1156-0AB30-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB30-3FA0 | | 1 | 1 unit |
| | | Green | 1 | 1 | 0 | 5 | 3SU1156-0AB40-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB40-3FA0 | | 1 | 1 unit |
| | | Blue | 1 | 1 | 0 | 5 | 3SU1156-0AB50-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB50-3FA0 | | 1 | 1 unit |
| | | White | 1 | 1 | 0 | 5 | 3SU1156-0AB60-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB60-3FA0 | | 1 | 1 unit |
| | | Clear | 1 | 1 | 0 | 5 | 3SU1156-0AB70-3BA0 | | 1 | 1 unit |
| | | | | 1 | 1 | 5 | 3SU1156-0AB70-3FA0 | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Complete Units

## Mushroom pushbuttons / EMERGENCY STOP mushroom pushbuttons

### Selection and ordering data

| Unlatching method | Number of Contact modules | NO contacts | NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Mushroom pushbuttons** | | | | | | | | |
| ***With red mushroom, diameter 40 mm, latching*** | | | | | | | | |
| Pull to unlatch | 1 | 0 | 1 | ▶ | **3SU1150-1BA20-1CA0** | | 1 | 1 unit |
| | | 1 | 1 | 3 | **3SU1150-1BA20-1FA0** | | 1 | 1 unit |
| | | | | | **Spring-type terminals** | | | |
| Pull to unlatch | 1 | 0 | 1 | 5 | **3SU1150-1BA20-3CA0** | | 1 | 1 unit |
| | | 1 | 1 | 5 | **3SU1150-1BA20-3FA0** | | 1 | 1 unit |

3SU1150-1BA20-1CA0

### Selection and ordering data

| Unlatching method | Number of Contact modules | NO contacts | NC contacts | Marking | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5** | | | | | | | | | |
| ***With red mushroom, diameter 40 mm, with positive latching*** | | | | | | | | | |
| Pull to unlatch | 1 | 0 | 1 | EMERGENCY STOP | ⊖ 5 | **3SU1150-1HA20-1CG0** | | 1 | 1 unit |
| | 1 | 0 | 1 | NOT-HALT | ⊖ 5 | **3SU1150-1HA20-1CH0** | | 1 | 1 unit |
| | | 1 | 1 | EMERGENCY STOP | ⊖ 5 | **3SU1150-1HA20-1FG0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT | ⊖ 5 | **3SU1150-1HA20-1FH0** | | 1 | 1 unit |
| Rotate to unlatch | 1 | 0 | 1 | EMERGENCY STOP | ⊖ 3 | **3SU1150-1HB20-1CG0** | | 1 | 1 unit |
| | 1 | 0 | 1 | NOT-HALT | ⊖ ▶ | **3SU1150-1HB20-1CH0** | | 1 | 1 unit |
| | | 1 | 1 | EMERGENCY STOP | ⊖ 5 | **3SU1150-1HB20-1FG0** | | 1 | 1 unit |
| | | 1 | 1 | NOT-HALT | ⊖ ▶ | **3SU1150-1HB20-1FH0** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| Pull to unlatch | 1 | 0 | 1 | NOT-HALT | ⊖ 5 | **3SU1150-1HA20-3CH0** | | 1 | 1 unit |
| | 2 | 0 | 2 | NOT-HALT | ⊖ 5 | **3SU1150-1HA20-3FH0** | | 1 | 1 unit |
| | 2 | 0 | 2 | NOT-HALT | ⊖ 5 | **3SU1150-1HA20-3PH0** | | 1 | 1 unit |
| Rotate to unlatch | 1 | 0 | 1 | NOT-HALT | ⊖ 5 | **3SU1150-1HB20-3CH0** | | 1 | 1 unit |
| | 2 | 0 | 2 | NOT-HALT | ⊖ 5 | **3SU1150-1HB20-3FH0** | | 1 | 1 unit |
| | 2 | 0 | 2 | NOT-HALT | ⊖ 5 | **3SU1150-1HB20-3PH0** | | 1 | 1 unit |
| **Illuminated EMERGENCY STOP with integrated LED light module, Rated 24-240V AC/DC** | | | | | | | | | |
| **Red button, yellow backing plate, self-adhesive label with text:** | | | | | | | | | |
| Rotate to unlatch | 2 | 1 | 1 | EMERGENCY STOP | 5 | **A6X30120577** | | 1 | 1 unit |
| **Red button, yellow backing plate, self-adhesive label with text:** | | | | | | | | | |
| Rotate to unlatch | 2 | 1 | 2 | EMERGENCY STOP | 5 | **A6X30120587** | | 1 | 1 unit |
| **Red button, installed-monitoring contact modules, yellow backing plate, self-adhesive label with text** | | | | | | | | | |
| Rotate to unlatch | 2 | 0 | 2 MC | EMERGENCY STOP | 5 | **A6X30120588** | | 1 | 1 unit |

3SU1150-1HB20-1CH0

⊖ Positive opening according to IEC 60947-5-1, Annex K. Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

# 3SU1 22 mm, Metal, Shiny — Complete Units

## Selector switches / key-operated switches

| Un-latching method | Supply voltage for light source at AC V | Supply voltage for light source at DC V | Number of Contact modules | Number of NO con-tacts | Number of NC con-tacts | Marking | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ILLUMINATED EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5 NEW** | | | | | | | | | | | |
| ***With red mushroom, diameter 40 mm, with positive latching*** | | | | | | | | | | | |
| Rotate to unlatch | 24 ... 240 | 24 ... 240 | 1 | 0 | 2 | EMER-GENCY STOP | ⊕ 5 | **3SU1158-1HB20-1PT0** | | 1 | 1 unit |

3SU1158-1HB20-1PT0

⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.
Certificate:

## Selection and ordering data

| Operating principle | Color | Number of Contact modules | Number of NO contacts | Number of NC contacts | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | | | |
| ***Short black actuator, 2 switch positions*** | | | | | | | | | |
| Latching, 90° | White | 1 | 1 | 0 | ▶ | **3SU1150-2BF60-1BA0** | | 1 | 1 unit |
| | | | 1 | 1 | 3 | **3SU1150-2BF60-1FA0** | | 1 | 1 unit |
| | | 2 | 1 | 1 | ▶ | **3SU1150-2BF60-1MA0** | | 1 | 1 unit |
| ***Short black actuator, 3 switch positions (I - O - II)*** | | | | | | | | | |
| Momentary contact, 2x45°, reset from left + right | White | 2 | 2 | 2 | 3 | **3SU1150-2BM60-1LA0** | | 1 | 1 unit |
| | | | 2 | 0 | ▶ | **3SU1150-2BM60-1NA0** | | 1 | 1 unit |
| Latching, 2x45° | White | 2 | 2 | 2 | ▶ | **3SU1150-2BL60-1LA0** | | 1 | 1 unit |
| | | | 2 | 0 | ▶ | **3SU1150-2BL60-1NA0** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| ***Short black actuator, 2 switch positions*** | | | | | | | | | |
| Latching, 90° | White | 1 | 1 | 0 | 5 | **3SU1150-2BF60-3BA0** | | 1 | 1 unit |
| | | 2 | 1 | 1 | 5 | **3SU1150-2BF60-3MA0** | | 1 | 1 unit |
| ***Short black actuator, 3 switch positions*** | | | | | | | | | |
| Momentary contact, 2x45°, reset from left + right | White | 2 | 2 | 2 | 5 | **3SU1150-2BM60-3LA0** | | 1 | 1 unit |
| | | | 2 | 0 | 5 | **3SU1150-2BM60-3NA0** | | 1 | 1 unit |
| Latching, 2x45° | White | 2 | 2 | 2 | 5 | **3SU1150-2BL60-3LA0** | | 1 | 1 unit |
| | | | 2 | 0 | 5 | **3SU1150-2BL60-3NA0** | | 1 | 1 unit |

3SU1150-2BF60-1BA0

3SU1150-2BL60-3NA0

# 3SU1 22 mm, Metal, Shiny — Complete Units

## Coordinate switches

### Selection and ordering data

| Operating principle | Switch position for key removal | Number of Contact modules | NO contacts | NC contacts | Number of keys | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | | | |
| ***With RONIS lock, SB30, 2 switch positions*** | | | | | | | | | | |
| Latching, 90° (10:30/ 1:30 o'clock) | All | 1 | 1 | 0 | 2 | 3 | **3SU1150-4BF11-1BA0** | | 1 | 1 unit |
| | All | | 1 | 1 | 2 | 3 | **3SU1150-4BF11-1FA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| | All | 1 | 1 | 0 | 2 | 5 | **3SU1150-4BF11-3BA0** | | 1 | 1 unit |
| | All | | 1 | 1 | 2 | 5 | **3SU1150-4BF11-3FA0** | | 1 | 1 unit |
| | O | 2 | 0 | 2 | 2 | 5 | **3SU1150-4BF01-3PA0** | | 1 | 1 unit |

3SU1150-4BF11-1BA0

### Selection and ordering data

| Number of NO contacts (1 per direction) | Operating principle | Direction of actuation | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Coordinate switches** | | | | | | | |
| ***Without mechanical interlock, 2 switch positions*** | | | | | | | |
| 2 | Momentary contact | Horizontal | 5 | **3SU1150-7AC88-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1150-7AD88-1NA0** | | 1 | 1 unit |
| | Latching | Horizontal | 5 | **3SU1150-7AA88-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1150-7AB88-1NA0** | | 1 | 1 unit |
| ***Without mechanical interlock, 4 switch positions*** | | | | | | | |
| 4 | Momentary contact | Horizontal/Vertical | 3 | **3SU1150-7AF88-1QA0** | | 1 | 1 unit |
| | Latching | Horizontal/Vertical | 5 | **3SU1150-7AE88-1QA0** | | 1 | 1 unit |
| ***With mechanical interlock, 2 switch positions*** | | | | | | | |
| 2 | Momentary contact | Horizontal | 5 | **3SU1150-7BC88-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1150-7BD88-1NA0** | | 1 | 1 unit |
| | Latching | Horizontal | 5 | **3SU1150-7BA88-1NA0** | | 1 | 1 unit |
| | | Vertical | 5 | **3SU1150-7BB88-1NA0** | | 1 | 1 unit |
| ***With mechanical interlock, 4 switch positions*** | | | | | | | |
| 4 | Momentary contact | Horizontal/Vertical | 5 | **3SU1150-7BF88-1QA0** | | 1 | 1 unit |
| | Latching | Horizontal/Vertical | 5 | **3SU1150-7BE88-1QA0** | | 1 | 1 unit |

3SU1150-7AF88-1QA0

3SU1150-7BF88-1QA0

# 3SU1 22 mm, Metal, Shiny — Complete Units

## Indicator lights

### Selection and ordering data

| Operational voltage | | Color | | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| at AC, rated value | at DC, rated value | of actuating element | of light source | | Article No. | Price per PU | | |
| V | V | | | d | | | | |
| **Indicator lights** | | | | | | | | |
| ***With smooth lens and integrated LED*** | | | | | | | | |
| 24 | 24 | Amber | Amber | 5 | **3SU1152-6AA00-1AA0** | | 1 | 1 unit |
| | | Red | Red | ▶ | **3SU1152-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | ▶ | **3SU1152-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1152-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 3 | **3SU1152-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | ▶ | **3SU1152-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1152-6AA70-1AA0** | | 1 | 1 unit |
| 110 | -- | Amber | Amber | 5 | **3SU1153-6AA00-1AA0** | | 1 | 1 unit |
| | | Red | Red | ▶ | **3SU1153-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 3 | **3SU1153-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1153-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1153-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | 3 | **3SU1153-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1153-6AA70-1AA0** | | 1 | 1 unit |
| 230 | -- | Red | Red | ▶ | **3SU1156-6AA20-1AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 3 | **3SU1156-6AA30-1AA0** | | 1 | 1 unit |
| | | Green | Green | ▶ | **3SU1156-6AA40-1AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1156-6AA50-1AA0** | | 1 | 1 unit |
| | | White | White | 3 | **3SU1156-6AA60-1AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1156-6AA70-1AA0** | | 1 | 1 unit |
| | | | | | **Spring-type terminals** | | | |
| 24 | 24 | Red | Red | 3 | **3SU1152-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1152-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 3 | **3SU1152-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 3 | **3SU1152-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 5 | **3SU1152-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1152-6AA70-3AA0** | | 1 | 1 unit |
| 110 | -- | Red | Red | 5 | **3SU1153-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1153-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 5 | **3SU1153-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1153-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 5 | **3SU1153-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1153-6AA70-3AA0** | | 1 | 1 unit |
| 230 | -- | Red | Red | 5 | **3SU1156-6AA20-3AA0** | | 1 | 1 unit |
| | | Yellow | Yellow | 5 | **3SU1156-6AA30-3AA0** | | 1 | 1 unit |
| | | Green | Green | 5 | **3SU1156-6AA40-3AA0** | | 1 | 1 unit |
| | | Blue | Blue | 5 | **3SU1156-6AA50-3AA0** | | 1 | 1 unit |
| | | White | White | 5 | **3SU1156-6AA60-3AA0** | | 1 | 1 unit |
| | | Clear | White | 5 | **3SU1156-6AA70-3AA0** | | 1 | 1 unit |

3SU1152-6AA50-1AA0

3SU1156-6AA60-1AA0

3SU1152-6AA40-3AA0

3SU1156-6AA20-3AA0

# 3SU1 22 mm, Metal, Shiny — Compact Units

## Indicator lights

### Selection and ordering data

| | Operational voltage at AC, rated value | Operational voltage at DC, rated value | Color of actuating element | Color of light source | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | V | V | | | d | | | | |
| **Indicator lights** NEW | | | | | | | | | |
| 3SU1251-6AB50-1AA0 | 24 | 24 | Amber | Amber | 5 | **3SU1251-6AB00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | ▶ | **3SU1251-6AB20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | ▶ | **3SU1251-6AB30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | ▶ | **3SU1251-6AB40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1251-6AB50-1AA0** | | 1 | 1 unit |
| | | | White | White | ▶ | **3SU1251-6AB60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 3 | **3SU1251-6AB70-1AA0** | | 1 | 1 unit |
| 3SU1251-6AC30-1AA0 | 110 | 110 | Amber | Amber | 5 | **3SU1251-6AC00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | 3 | **3SU1251-6AC20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | 5 | **3SU1251-6AC30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | 5 | **3SU1251-6AC40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1251-6AC50-1AA0** | | 1 | 1 unit |
| | | | White | White | 5 | **3SU1251-6AC60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 5 | **3SU1251-6AC70-1AA0** | | 1 | 1 unit |
| 3SU1251-6AF30-1AA0 | 230 | 230 | Amber | Amber | 5 | **3SU1251-6AF00-1AA0** | | 1 | 1 unit |
| | | | Red | Red | 3 | **3SU1251-6AF20-1AA0** | | 1 | 1 unit |
| | | | Yellow | Yellow | 5 | **3SU1251-6AF30-1AA0** | | 1 | 1 unit |
| | | | Green | Green | 5 | **3SU1251-6AF40-1AA0** | | 1 | 1 unit |
| | | | Blue | Blue | 5 | **3SU1251-6AF50-1AA0** | | 1 | 1 unit |
| | | | White | White | 5 | **3SU1251-6AF60-1AA0** | | 1 | 1 unit |
| | | | Clear | Clear | 5 | **3SU1251-6AF70-1AA0** | | 1 | 1 unit |
| **Indicator lights with "traffic light" LED** | | | | | | | | | |
| 3SU1251-6AG24-1AA0 | 6 ... 24 | 6 ... 24 | Clear | Red/Yellow/Green | ▶ | **3SU1251-6AG24-1AA0** | | 1 | 1 unit |
| | 110 | -- | Clear | Red/Yellow/Green | ▶ | **3SU1251-6AC24-1AA0** | | 1 | 1 unit |
| | 230 | -- | Clear | Red/Yellow/Green | ▶ | **3SU1251-6AF24-1AA0** | | 1 | 1 unit |

## Selection and ordering data

| | Operational voltage at AC, rated value | Operational voltage at DC, rated value | Volume level | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | V | dB | d | | | | |
| **Acoustic signaling devices** | | | | | | | | |
| | 24 | 24 | 90 | 5 | **3SU1250-6KB10-1AA0** | | 1 | 1 unit |
| | 110 | -- | 90 | 5 | **3SU1250-6KC10-1AA0** | | 1 | 1 unit |
| | 230 | -- | 90 | 5 | **3SU1250-6KF10-1AA0** | | 1 | 1 unit |

3SU1250-6KB10-1AA0

## Selection and ordering data

| | Version of actuating element | Operating principle | Adjustable resistance | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | kΩ | d | | | | |
| **Potentiometers** | | | | | | | | |
| | **Rotary knob** | Stepless | 1 | ▶ | **3SU1250-2PQ10-1AA0** | | 1 | 1 unit |
| | | | 4.7 | ▶ | **3SU1250-2PR10-1AA0** | | 1 | 1 unit |
| | | | 10 | ▶ | **3SU1250-2PS10-1AA0** | | 1 | 1 unit |
| | | | 47 | ▶ | **3SU1250-2PT10-1AA0** | | 1 | 1 unit |
| | | | 100 | ▶ | **3SU1250-2PU10-1AA0** | | 1 | 1 unit |
| | | | 470 | ▶ | **3SU1250-2PV10-1AA0** | | 1 | 1 unit |

3SU1250-2PQ10-1AA0

Labeling plates for potentiometers, see page 10/153.

# 3SU1 22 mm, Metal, Shiny — Compact Units

## Pushbuttons with extended stroke

### Selection and ordering data

| | Version | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Pushbuttons with extended stroke** | | | | | | | |
| | For actuating relays, can only be combined with extension plunger, no contact module or LED module required | | | | | | |
| 3SU1250-0EB40-0AA0 | **Pushbuttons with flat button** | Red<br>Green<br>Blue | 5<br>5<br>7 | **3SU1250-0EB20-0AA0**<br>**3SU1250-0EB40-0AA0**<br>**3SU1250-0EB50-0AA0** | | 1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit |
| 3SU1250-0FB10-0AA0 | **Pushbuttons with raised button** | Black | ▶ | **3SU1250-0FB10-0AA0** | | 1 | 1 unit |
| 3SU1251-0EB20-0AA0 | **Pushbuttons with flat transparent button for insertion of insert labels** | Red<br>Clear | 3<br>3 | **3SU1251-0EB20-0AA0**<br>**3SU1251-0EB70-0AA0** | | 1<br>1 | 1 unit<br>1 unit |

| | Version | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Accessories** | | | | | | | | |
| 3SU1900-0KG10-0AA0 | **Extension plungers**<br>For compensation of the distance between the pushbutton and the unlatching button of an overload relay | Plastic | Gray | ▶ | **3SU1900-0KG10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Pushbuttons

### Selection and ordering data

| | Version of actuating element<br>Front ring version | Operating principle<br>Unlatching method | Color, marking | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | |
| 3SU1050-0AB40-0AC0 | **Pushbuttons with flat button**<br>Standard | Momentary contact | Black | ▶ | **3SU1050-0AB10-0AA0** | | 1 | 1 unit |
| | | | Black, "O" | ▶ | **3SU1050-0AB10-0AD0** | | 1 | 1 unit |
| | | | Red | ▶ | **3SU1050-0AB20-0AA0** | | 1 | 1 unit |
| | | | Red, "O" | ▶ | **3SU1050-0AB20-0AD0** | | 1 | 1 unit |
| | | | Yellow | 3 | **3SU1050-0AB30-0AA0** | | 1 | 1 unit |
| | | | Green | ▶ | **3SU1050-0AB40-0AA0** | | 1 | 1 unit |
| | | | Green, "I" | ▶ | **3SU1050-0AB40-0AC0** | | 1 | 1 unit |
| | | | Blue | 3 | **3SU1050-0AB50-0AA0** | | 1 | 1 unit |
| | | | Blue, "R" | 5 | **3SU1050-0AB50-0AR0** | | 1 | 1 unit |
| | | | White | 3 | **3SU1050-0AB60-0AA0** | | 1 | 1 unit |
| | | | White, "⏻" | 5 | **3SU1050-0AB60-0AB0** | | 1 | 1 unit |
| | | | White, "I" | ▶ | **3SU1050-0AB60-0AC0** | | 1 | 1 unit |
| | | | Clear | 3 | **3SU1050-0AB70-0AA0** | | 1 | 1 unit |
| | | | Gray | ▶ | **3SU1050-0AB80-0AA0** | | 1 | 1 unit |
| 3SU1050-0AA30-0AA0 | | Latching<br>Push to unlatch | Black | ▶ | **3SU1050-0AA10-0AA0** | | 1 | 1 unit |
| | | | Red | ▶ | **3SU1050-0AA20-0AA0** | | 1 | 1 unit |
| | | | Yellow | ▶ | **3SU1050-0AA30-0AA0** | | 1 | 1 unit |
| | | | Green | ▶ | **3SU1050-0AA40-0AA0** | | 1 | 1 unit |
| | | | Blue | ▶ | **3SU1050-0AA50-0AA0** | | 1 | 1 unit |
| | | | White | ▶ | **3SU1050-0AA60-0AA0** | | 1 | 1 unit |
| 3SU1050-0BB20-0AA0 | **Pushbuttons with raised button**<br>Standard | Momentary contact | Black | 3 | **3SU1050-0BB10-0AA0** | | 1 | 1 unit |
| | | | Red | ▶ | **3SU1050-0BB20-0AA0** | | 1 | 1 unit |
| | | | Yellow | ▶ | **3SU1050-0BB30-0AA0** | | 1 | 1 unit |
| | | | Green | ▶ | **3SU1050-0BB40-0AA0** | | 1 | 1 unit |
| | | | Blue | ▶ | **3SU1050-0BB50-0AA0** | | 1 | 1 unit |
| | | | White | ▶ | **3SU1050-0BB60-0AA0** | | 1 | 1 unit |
| | | Latching<br>Push to unlatch | Red | 5 | **3SU1050-0BA20-0AA0** | | 1 | 1 unit |
| 3SU1050-0CB50-0AA0 | **Pushbuttons with flat button**<br>Raised | Momentary contact | Black | 5 | **3SU1050-0CB10-0AA0** | | 1 | 1 unit |
| | | | Red | 5 | **3SU1050-0CB20-0AA0** | | 1 | 1 unit |
| | | | Yellow | 5 | **3SU1050-0CB30-0AA0** | | 1 | 1 unit |
| | | | Green | 5 | **3SU1050-0CB40-0AA0** | | 1 | 1 unit |
| | | | Blue | 5 | **3SU1050-0CB50-0AA0** | | 1 | 1 unit |
| | | | White | 5 | **3SU1050-0CB60-0AA0** | | 1 | 1 unit |
| 3SU1051-0CB40-0AA0 | **Illuminated pushbuttons with flat button**<br>Raised | Momentary contact | Green | X | **3SU1051-0CB40-0AA0** | | 1 | 20 units |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Pushbuttons

| | Version of actuating element<br>Front ring version | Operating principle<br>Unlatching method | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | |
| 3SU1051-0AB30-0AA0 | **Illuminated pushbuttons with flat button**<br>Standard | Momentary contact | Amber | 5 | **3SU1051-0AB00-0AA0** | | 1 | 1 unit |
| | | | Red ▶ | | **3SU1051-0AB20-0AA0** | | 1 | 1 unit |
| | | | Yellow | 3 | **3SU1051-0AB30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1051-0AB40-0AA0** | | 1 | 1 unit |
| | | | Blue | 3 | **3SU1051-0AB50-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1051-0AB60-0AA0** | | 1 | 1 unit |
| | | | Clear ▶ | | **3SU1051-0AB70-0AA0** | | 1 | 1 unit |
| 3SU1051-0AA20-0AA0 | | Latching<br>Push to unlatch | Red ▶ | | **3SU1051-0AA20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1051-0AA30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1051-0AA40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1051-0AA50-0AA0** | | 1 | 1 unit |
| | | | White ▶ | | **3SU1051-0AA60-0AA0** | | 1 | 1 unit |
| | | | Clear | 5 | **3SU1051-0AA70-0AA0** | | 1 | 1 unit |
| 3SU1051-0BB20-0AA0 | **Illuminated pushbuttons with raised button**<br>Standard | Momentary contact | Amber | 5 | **3SU1051-0BB00-0AA0** | | 1 | 1 unit |
| | | | Red ▶ | | **3SU1051-0BB20-0AA0** | | 1 | 1 unit |
| | | | Yellow ▶ | | **3SU1051-0BB30-0AA0** | | 1 | 1 unit |
| | | | Green ▶ | | **3SU1051-0BB40-0AA0** | | 1 | 1 unit |
| | | | Blue ▶ | | **3SU1051-0BB50-0AA0** | | 1 | 1 unit |
| | | | White | 5 | **3SU1051-0BB60-0AA0** | | 1 | 1 unit |
| | | | Clear | 3 | **3SU1051-0BB70-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Twin pushbuttons

### Selection and ordering data

| | Version of actuating element | Operating principle | Color | Marking Symbol No. | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Twin pushbuttons** | | | | | | | | | |
| 3SU1050-3AB66-0AL0 | **Twin pushbuttons** flat, flat | Momentary contact | Green/Red | -- | 3 | **3SU1050-3AB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 3 | **3SU1050-3AB42-0AK0** | | 1 | 1 unit |
| | | | White/Black | -- | 3 | **3SU1050-3AB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 3 | **3SU1050-3AB61-0AK0** | | 1 | 1 unit |
| | | | White/White | -- | 3 | **3SU1050-3AB66-0AA0** | | 1 | 1 unit |
| | | | | "–"/"+" | 5 | **3SU1050-3AB66-0AL0** | | 1 | 1 unit |
| | | | | Arrows, hor. | 5 | **3SU1050-3AB66-0AM0** | | 1 | 1 unit |
| | | | Black/Black | -- | 3 | **3SU1050-3AB11-0AA0** | | 1 | 1 unit |
| | | | | ⊙ ○ 5264/5265 (IEC 60417) | 5 | **3SU1050-3AB11-0AQ0** | | 1 | 1 unit |
| 3SU1050-3BB42-0AK0 | **Twin pushbuttons** flat, raised | Momentary contact | Green/Red | -- | 3 | **3SU1050-3BB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 3 | **3SU1050-3BB42-0AK0** | | 1 | 1 unit |
| | | | White/Black | -- | 3 | **3SU1050-3BB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 5 | **3SU1050-3BB61-0AK0** | | 1 | 1 unit |
| 3SU1051-3AB42-0AN0 | **Twin pushbuttons** flat, flat, illuminated | Momentary contact | Green/Red | -- | ▶ | **3SU1051-3AB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1051-3AB42-0AK0** | | 1 | 1 unit |
| | | | | Arrows, vert. | 5 | **3SU1051-3AB42-0AN0** | | 1 | 1 unit |
| | | | White/Black | -- | ▶ | **3SU1051-3AB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 3 | **3SU1051-3AB61-0AK0** | | 1 | 1 unit |
| 3SU1051-3BB61-0AA0 | **Twin pushbuttons** flat, raised, illuminated | Momentary contact | Green/Red | -- | 3 | **3SU1051-3BB42-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | ▶ | **3SU1051-3BB42-0AK0** | | 1 | 1 unit |
| | | | White/Black | -- | 3 | **3SU1051-3BB61-0AA0** | | 1 | 1 unit |
| | | | | "I"/"O" | 5 | **3SU1051-3BB61-0AK0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Mushroom pushbuttons

### Selection and ordering data

| Version of actuating element | Operating principle / Unlatching method | Color | SD / d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Mushroom pushbuttons** | | | | | | | |
| ***2 switch positions*** | | | | | | | |
| 3SU1050-1AD20-0AA0 | | | | | | | |
| **Mushroom pushbuttons** 30 mm diameter, 2 positions | Momentary contact | Black | ▶ | **3SU1050-1AD10-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1050-1AD20-0AA0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1050-1AD30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1050-1AD40-0AA0** | | 1 | 1 unit |
| | Latching / Pull to unlatch | Black | ▶ | **3SU1050-1AA10-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1050-1AA20-0AA0** | | 1 | 1 unit |
| 3SU1050-1BD30-0AA0 | | | | | | | |
| **Mushroom pushbuttons** 40 mm diameter, 2 positions | Momentary contact | Black | 3 | **3SU1050-1BD10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1050-1BD20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1050-1BD30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1050-1BD40-0AA0** | | 1 | 1 unit |
| | Latching / Pull to unlatch | Black | 3 | **3SU1050-1BA10-0AA0** | | 1 | 1 unit |
| | | Red | 3 | **3SU1050-1BA20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1050-1BA30-0AA0** | | 1 | 1 unit |
| 3SU1050-1CD40-0AA0 | | | | | | | |
| **Mushroom pushbuttons** 60 mm diameter, 2 positions | Momentary contact | Black | 5 | **3SU1050-1CD10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1050-1CD20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1050-1CD30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1050-1CD40-0AA0** | | 1 | 1 unit |
| | Latching / Pull to unlatch | Black | 5 | **3SU1050-1CA10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1050-1CA20-0AA0** | | 1 | 1 unit |
| 3SU1051-1AD60-0AA0 | | | | | | | |
| **Mushroom pushbuttons** 30 mm diameter, 2 positions, illuminated | Momentary contact | Yellow | 5 | **3SU1051-1AD30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1051-1AD40-0AA0** | | 1 | 1 unit |
| | | Blue | NEW 5 | **3SU1051-1AD50-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1051-1AD60-0AA0** | | 1 | 1 unit |
| | Latching / Pull to unlatch | Amber | 5 | **3SU1051-1AA00-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1051-1AA20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1051-1AA30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1051-1AA40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1051-1AA50-0AA0** | | 1 | 1 unit |
| | | Clear | 5 | **3SU1051-1AA70-0AA0** | | 1 | 1 unit |
| 3SU1051-1BD40-0AA0 | | | | | | | |
| **Mushroom pushbuttons** 40 mm diameter, 2 positions, illuminated | Momentary contact | Amber | 5 | **3SU1051-1BD00-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1051-1BD30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1051-1BD40-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1051-1BD60-0AA0** | | 1 | 1 unit |
| | Latching / Pull to unlatch | Amber | 5 | **3SU1051-1BA00-0AA0** | | 1 | 1 unit |
| | | Red | 3 | **3SU1051-1BA20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1051-1BA30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1051-1BA40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1051-1BA50-0AA0** | | 1 | 1 unit |
| | | Clear | 5 | **3SU1051-1BA70-0AA0** | | 1 | 1 unit |
| 3SU1051-1CA50-0AA0 | | | | | | | |
| **Mushroom pushbuttons** 60 mm diameter, 2 positions, illuminated | Momentary contact / None | Amber | 5 | **3SU1051-1CD00-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1051-1CD30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1051-1CD40-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1051-1CD60-0AA0** | | 1 | 1 unit |
| | Latching / Pull to unlatch | Red | 5 | **3SU1051-1CA20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1051-1CA30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1051-1CA40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1051-1CA50-0AA0** | | 1 | 1 unit |
| | | Clear | 5 | **3SU1051-1CA70-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Mushroom pushbuttons / EMERGENCY STOP mushroom pushbuttons

### Mushroom pushbuttons

| Version of actuating element | Operating principle / Unlatching method | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| ***2 switch positions*** | | | | | | | |
| 3SU1050-1HB10-0AA0 **Mushroom pushbuttons** with raised mushroom, 40 mm diameter, 2 positions | With positive latching<br>Rotate to unlatch | Black<br>Yellow | 5<br>5 | **3SU1050-1HB10-0AA0**<br>**3SU1050-1HB30-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| ***3 switch positions*** | | | | | | | |
| 3SU1050-1EA20-0AA0 **Mushroom pushbuttons** 40 mm diameter, 3 positions | Momentary contact | Black<br>Red | 5<br>5 | **3SU1050-1ED10-0AA0**<br>**3SU1050-1ED20-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| | Latching<br>Pull to unlatch | Black<br>Red | 5<br>5 | **3SU1050-1EA10-0AA0**<br>**3SU1050-1EA20-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| 3SU1051-1EA40-0AA0 **Mushroom pushbuttons** 40 mm diameter, 3 positions, illuminated | Momentary contact | Red<br>White | 5<br>5 | **3SU1051-1ED20-0AA0**<br>**3SU1051-1ED60-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| | Latching<br>Pull to unlatch | Red<br>Green | 5<br>5 | **3SU1051-1EA20-0AA0**<br>**3SU1051-1EA40-0AA0** | | 1<br>1 | 1 unit<br>1 unit |

## Selection and ordering data

### EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5

| Version of actuating element | Outer diameter of mushroom | Make of lock | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| ***With pull-to-unlatch mechanism*** | | | | | | | | |
| 3SU1050-1HA20-0AA0 With positive latching, 2 positions | 40 | -- | Red | 3 | **3SU1050-1HA20-0AA0** | | 1 | 1 unit |
| ***With rotate-to-unlatch mechanism*** | | | | | | | | |
| 3SU1050-1GB20-0AA0 With positive latching, 2 positions | 33.8 | -- | Red | 3 | **3SU1050-1GB20-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## EMERGENCY STOP mushroom pushbuttons

### EMERGENCY STOP mushroom pushbuttons, in accordance with ISO 13850 and IEC 60947-5-5

| Version of actuating element | Outer diameter of mushroom | Make of lock | Color | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| ***With rotate-to-unlatch mechanism*** | | | | | | | | | |
| With positive latching, 2 positions | 40 | -- | Red | -- | ▶ | **3SU1050-1HB20-0AA0** | | 1 | 1 unit |
| | 60 | -- | Red | -- | 5 | **3SU1050-1JB20-0AA0** | | 1 | 1 unit |
| With latching, 2 positions | 40 | -- | Red | -- | NEW 3 | **3SU1050-1LB20-0AA0** | | 1 | 1 unit |
| ***With rotate-to-unlatch mechanism, can be illuminated*** | | | | | | | | | |
| With positive latching, 2 positions | 33.8 | -- | Red | -- | ▶ | **3SU1051-1GB20-0AA0** | | 1 | 1 unit |
| | 40 | | | | ▶ | **3SU1051-1HB20-0AA0** | | 1 | 1 unit |
| | 60 | | | | ▶ | **3SU1051-1JB20-0AA0** | | 1 | 1 unit |
| ***With key-operated release*** | | | | | | | | | |
| With positive latching, 2 positions | 40 | RONIS SB30 | Red | 2 | 3 | **3SU1050-1HF20-0AA0** | | 1 | 1 unit |
| | | RONIS 455 | | 2 | 5 | **3SU1050-1HG20-0AA0** | | 1 | 1 unit |
| | | RONIS 421 | | 2 | 5 | **3SU1050-1HH20-0AA0** | | 1 | 1 unit |
| | | BKS S1 | Red | 2 | 5 | **3SU1050-1HK20-0AA0** | | 1 | 1 unit |
| | | BKS E7 | | 0 | 5 | **3SU1050-1HM20-0AA0** | | 1 | 1 unit |
| | | BKS E9 | | 0 | 5 | **3SU1050-1HN20-0AA0** | | 1 | 1 unit |
| | | O.M.R. 73037 | Red | 2 | 5 | **3SU1050-1HQ20-0AA0** | | 1 | 1 unit |
| | | CES SSG10 | Red | 2 | 3 | **3SU1050-1HR20-0AA0** | | 1 | 1 unit |
| | | CES SSP9 | | 2 | 5 | **3SU1050-1HS20-0AA0** | | 1 | 1 unit |
| | | CES VL5 | Black | 2 | 5 | **3SU1050-1HU10-0AA0** | | 1 | 1 unit |
| | | | Red | 2 | 5 | **3SU1050-1HU20-0AA0** | | 1 | 1 unit |
| | | CES VL1 | | 2 | 5 | **3SU1050-1HV20-0AA0** | | 1 | 1 unit |
| | | IKON 360012K1 | Red | 2 | 5 | **3SU1050-1HX20-0AA0** | | 1 | 1 unit |

3SU1050-1HB20-0AA0

3SU1050-1JB20-0AA0

3SU1051-1HB20-0AA0

3SU1050-1HF20-0AA0

3SU1050-1HQ20-0AA0

3SU1050-1HR20-0AA0

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Toggle switches / Selector switches

### Selection and ordering data

| Number of switching positions | Number of command points | Color of actuating element | Operating principle of the actuating element | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Toggle switches** | | | | | | | | |
| 2 | 1 | Black | Latching | 5 | **3SU1050-3EA10-0AA0** | | 1 | 1 unit |
| | | | Momentary contact, reset from above | 5 | **3SU1050-3EC10-0AA0** | | 1 | 1 unit |

3SU1050-3EA10-0AA0

### Selection and ordering data

| Version of actuating element | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | |
| ***2 switch positions, can be illuminated*** | | | | | | | |
| Selector, short black actuator | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | Black | 3 | **3SU1052-2BC10-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1052-2BC20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1052-2BC30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1052-2BC40-0AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1052-2BC50-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1052-2BC60-0AA0** | | 1 | 1 unit |
| | Latching, 90° (10:30/1:30 o'clock) | Amber | 5 | **3SU1052-2BF00-0AA0** | | 1 | 1 unit |
| | | Black | ▶ | **3SU1052-2BF10-0AA0** | | 1 | 1 unit |
| | | Red | 3 | **3SU1052-2BF20-0AA0** | | 1 | 1 unit |
| | | Yellow | NEW 7 | **3SU1052-2BF30-0AA0** | | 1 | 1 unit |
| | | Green | 3 | **3SU1052-2BF40-0AA0** | | 1 | 1 unit |
| | | Blue | NEW 7 | **3SU1052-2BF50-0AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1052-2BF60-0AA0** | | 1 | 1 unit |
| Selector, long black actuator | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | Black | 5 | **3SU1052-2CC10-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1052-2CC30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1052-2CC40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1052-2CC50-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1052-2CC60-0AA0** | | 1 | 1 unit |
| | Latching, 90° (10:30/1:30 o'clock)  | Black | 5 | **3SU1052-2CF10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1052-2CF20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1052-2CF30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1052-2CF40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1052-2CF50-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1052-2CF60-0AA0** | | 1 | 1 unit |

3SU1052-2BC20-0AA0

3SU1052-2BF40-0AA0

3SU1052-2CF60-0AA0

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Selector switches

| Version of actuating element | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | |
| ***3 switch positions, can be illuminated*** | | | | | | | |
| 3SU1052-2BM50-0AA0 | | | | | | | |
| Selector, short black actuator | Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right | Amber | 5 | **3SU1052-2BM00-0AA0** | | 1 | 1 unit |
| | | Black | ▶ | **3SU1052-2BM10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1052-2BM20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1052-2BM30-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1052-2BM40-0AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1052-2BM50-0AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1052-2BM60-0AA0** | | 1 | 1 unit |
| 3SU1052-2BL30-0AA0 | Latching, 2x45° (10:30/12/1:30 o'clock) | Amber | 5 | **3SU1052-2BL00-0AA0** | | 1 | 1 unit |
| | | Black | ▶ | **3SU1052-2BL10-0AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1052-2BL20-0AA0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1052-2BL30-0AA0** | | 1 | 1 unit |
| | | Green | 3 | **3SU1052-2BL40-0AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1052-2BL60-0AA0** | | 1 | 1 unit |
| 3SU1052-2BN20-0AA0 | Momentary contact/ latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right | Black | 5 | **3SU1052-2BP10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1052-2BP20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1052-2BP40-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1052-2BP60-0AA0** | | 1 | 1 unit |
| | Latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left | Black | 3 | **3SU1052-2BN10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1052-2BN20-0AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1052-2BN40-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1052-2BN60-0AA0** | | 1 | 1 unit |
| 3SU1052-2CL40-0AA0 | Selector, long black actuator | Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right | Black | 3 | **3SU1052-2CM10-0AA0** | | 1 | 1 unit |
| | | | Red | 5 | **3SU1052-2CM20-0AA0** | | 1 | 1 unit |
| | | | Green | 5 | **3SU1052-2CM40-0AA0** | | 1 | 1 unit |
| | | | White | 3 | **3SU1052-2CM60-0AA0** | | 1 | 1 unit |
| | | Latching, 2x45° (10:30/12/1:30 o'clock) | Black | 5 | **3SU1052-2CL10-0AA0** | | 1 | 1 unit |
| | | | Red | 5 | **3SU1052-2CL20-0AA0** | | 1 | 1 unit |
| | | | Green | 5 | **3SU1052-2CL40-0AA0** | | 1 | 1 unit |
| | | | White | 5 | **3SU1052-2CL60-0AA0** | | 1 | 1 unit |
| | | Momentary contact/ latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right | Black | 5 | **3SU1052-2CP10-0AA0** | | 1 | 1 unit |
| | | | Red | 5 | **3SU1052-2CP20-0AA0** | | 1 | 1 unit |
| | | | White | 5 | **3SU1052-2CP60-0AA0** | | 1 | 1 unit |
| | Lockable with 2 padlocks or car-abiner hooks | Latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left | Black | 5 | **3SU1052-2CN10-0AA0** | | 1 | 1 unit |
| | | | Red | 5 | **3SU1052-2CN20-0AA0** | | 1 | 1 unit |
| | | | White | 5 | **3SU1052-2CN60-0AA0** | | 1 | 1 unit |
| | | | Black | NEW 5 | **3SU1042-2GL10-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Selector switches

| | Version of actuating element | Operating principle | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | | |
| | ***4 switch positions*** | | | | | | | |
| 3SU1050-2AS60-0AA0 | Rotary knob | Latching, 4x90° (3/6/9/12 o'clock) | White | 3 | **3SU1050-2AS60-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Key-operated switches

### Selection and ordering data

| Operating principle | Make of lock | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | |
| ***2 switch positions*** | | | | | | | | |
| 3SU1050-4BC01-0AA0 | | | | | | | | |
| Momentary contact, 45° (10:30/12 o'clock), reset from center to left | RONIS, SB30 | O | 2 | 3 | **3SU1050-4BC01-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1050-4CC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73037, red | O | 2 | 5 | **3SU1050-4FC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1050-4GC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1050-4HC01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | O | 2 | 5 | **3SU1050-4JC01-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | 3 | **3SU1050-5BC01-0AA0** | | 1 | 1 unit |
| | CES, LSG1 | O | 2 | 5 | **3SU1050-5HC01-0AA0** | | 1 | 1 unit |
| | CES, VL5 | O | 2 | 5 | **3SU1050-5KC01-0AA0** | | 1 | 1 unit |
| | CES, STGH10 | O | 2 | 5 | **3SU1050-5LC01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 5 | **3SU1050-5PC01-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 5 | **3SU1050-5XC01-0AA0** | | 1 | 1 unit |
| 3SU1050-4BF01-0AA0 | | | | | | | | |
| Latching, 90° (10:30/1:30 o'clock) | RONIS, SB30 | O | 2 | 3 | **3SU1050-4BF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1050-4BF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4BF21-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1050-4CF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-4CF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4CF21-0AA0** | | 1 | 1 unit |
| | RONIS, 421 | O+I | 2 | 5 | **3SU1050-4DF11-0AA0** | | 1 | 1 unit |
| 3SU1050-4GF11-0AA0 | | | | | | | | |
| | O.M.R. 73037, red | O | 2 | 5 | **3SU1050-4FF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-4FF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4FF21-0AA0** | | 1 | 1 unit |
| | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1050-4GF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-4GF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4GF21-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1050-4HF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-4HF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4HF21-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | O | 2 | 5 | **3SU1050-4JF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-4JF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4JF21-0AA0** | | 1 | 1 unit |
| 3SU1050-5BF01-0AA0 | | | | | | | | |
| | CES, SSG10 | O | 2 | 3 | **3SU1050-5BF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 3 | **3SU1050-5BF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-5BF21-0AA0** | | 1 | 1 unit |
| | CES, SSG10 with key monitoring | O | 2 | NEW 5 | **3SU1050-5JF01-0AA0** | | 1 | 1 unit |
| | CES, LSG1 | O | 2 | 5 | **3SU1050-5HF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-5HF11-0AA0** | | 1 | 1 unit |
| | CES, VL5 | O | 2 | 5 | **3SU1050-5KF01-0AA0** | | 1 | 1 unit |
| | CES, STGH10 | O+I | 2 | 5 | **3SU1050-5LF11-0AA0** | | 1 | 1 unit |
| 3SU1050-5PF01-0AA0 | | | | | | | | |
| | BKS, S1 | O | 2 | 5 | **3SU1050-5PF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-5PF11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-5PF21-0AA0** | | 1 | 1 unit |
| | BKS, E1 | O | 0 | 5 | **3SU1050-5QF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 5 | **3SU1050-5QF11-0AA0** | | 1 | 1 unit |
| | BKS, E2 | O | 0 | 3 | **3SU1050-5RF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 5 | **3SU1050-5RF11-0AA0** | | 1 | 1 unit |
| | BKS, E7 | O | 0 | 5 | **3SU1050-5SF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 5 | **3SU1050-5SF11-0AA0** | | 1 | 1 unit |
| | BKS, E9 | O | 0 | 5 | **3SU1050-5TF01-0AA0** | | 1 | 1 unit |
| | | O+I | 0 | 5 | **3SU1050-5TF11-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 5 | **3SU1050-5XF01-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-5XF11-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Key-operated switches

| Operating principle | Make of lock | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | |
| ***3 switch positions*** | | | | | | | | |
| 3SU1050-4BM01-0AA0 | | | | | | | | |
| Momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from left + right | RONIS, SB30 | O | 2 | 5 | **3SU1050-4BM01-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1050-4CM01-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1050-4HM01-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | 5 | **3SU1050-5BM01-0AA0** | | 1 | 1 unit |
| | CES, STGH10 | O | 2 | 5 | **3SU1050-5LM01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 5 | **3SU1050-5PM01-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 5 | **3SU1050-5XM01-0AA0** | | 1 | 1 unit |
| Latching, 2x45° (10:30/12/ 1:30 o'clock) | RONIS, SB30 | O | 2 | 5 | **3SU1050-4BL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1050-4BL11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4BL21-0AA0** | | 1 | 1 unit |
| | | II | 2 | 5 | **3SU1050-4BL31-0AA0** | | 1 | 1 unit |
| | | I+II | 2 | 5 | **3SU1050-4BL41-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-4BL51-0AA0** | | 1 | 1 unit |
| | RONIS, 455 | O | 2 | 5 | **3SU1050-4CL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 5 | **3SU1050-4CL11-0AA0** | | 1 | 1 unit |
| | RONIS, 421 | | 2 | 5 | **3SU1050-4DL11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73037, red | I+O+II | 2 | 5 | **3SU1050-4FL11-0AA0** | | 1 | 1 unit |
| 3SU1050-4FL11-0AA0 | O.M.R. 73038, light blue | O | 2 | 5 | **3SU1050-4GL01-0AA0** | | 1 | 1 unit |
| | | I+O+III | 2 | 5 | **3SU1050-4GL11-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | O | 2 | 5 | **3SU1050-4HL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 5 | **3SU1050-4HL11-0AA0** | | 1 | 1 unit |
| 3SU1050-5BL01-0AA0 | CES, SSG10 | O | 2 | 5 | **3SU1050-5BL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 3 | **3SU1050-5BL11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-5BL21-0AA0** | | 1 | 1 unit |
| | | II | 2 | 5 | **3SU1050-5BL31-0AA0** | | 1 | 1 unit |
| | | I+II | 2 | 5 | **3SU1050-5BL41-0AA0** | | 1 | 1 unit |
| | CES, SSG10 with key monitoring | O | 2 | NEW 5 | **3SU1050-5JL01-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 5 | **3SU1050-5PL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 5 | **3SU1050-5PL11-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-5PL21-0AA0** | | 1 | 1 unit |
| | | I+II | 2 | 5 | **3SU1050-5PL41-0AA0** | | 1 | 1 unit |
| | IKON, 360012K1 | O | 2 | 5 | **3SU1050-5XL01-0AA0** | | 1 | 1 unit |
| | | I+O+II | 2 | 5 | **3SU1050-5XL11-0AA0** | | 1 | 1 unit |
| Momentary contact/ latching, 2x45° (10:30/12/ 1:30 o'clock), reset from left, latching to the right | RONIS, SB30 | O | 2 | 5 | **3SU1050-4BP01-0AA0** | | 1 | 1 unit |
| | | O+II | 2 | 5 | **3SU1050-4BP61-0AA0** | | 1 | 1 unit |
| | O.M.R. 73034, black | II | 2 | 5 | **3SU1050-4HP31-0AA0** | | 1 | 1 unit |
| | O.M.R. 73033, yellow | II | 2 | 5 | **3SU1050-4JP31-0AA0** | | 1 | 1 unit |
| 3SU1050-4BP01-0AA0 | CES, SSG10 | O | 2 | 5 | **3SU1050-5BP01-0AA0** | | 1 | 1 unit |
| | | II | 2 | 5 | **3SU1050-5BP31-0AA0** | | 1 | 1 unit |
| | | O+II | 2 | 5 | **3SU1050-5BP61-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 5 | **3SU1050-5PP01-0AA0** | | 1 | 1 unit |
| Latching/momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from right, latching to the left | RONIS, SB30 | O | 2 | 5 | **3SU1050-4BN01-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-4BN21-0AA0** | | 1 | 1 unit |
| | | O+IO+I | 2 | 5 | **3SU1050-4BN51-0AA0** | | 1 | 1 unit |
| | CES, SSG10 | O | 2 | 5 | **3SU1050-5BN01-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-5BN21-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-5BN51-0AA0** | | 1 | 1 unit |
| | CES, STGH10 | O+I | 2 | 5 | **3SU1050-5LN51-0AA0** | | 1 | 1 unit |
| | BKS, S1 | O | 2 | 5 | **3SU1050-5PN01-0AA0** | | 1 | 1 unit |
| | | I | 2 | 5 | **3SU1050-5PN21-0AA0** | | 1 | 1 unit |
| | | O+I | 2 | 5 | **3SU1050-5PN51-0AA0** | | 1 | 1 unit |

# 3SU1 22 mm, Metal, Shiny — Actuating and Signaling Elements

## Key-operated switches / Indicator lights

### Selection and ordering data

| Number of NO contacts (1 per direction) | Operating principle | Direction of actuation | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Coordinate switches** | | | | | | | |
| ***Without mechanical interlock, 2 switch positions*** | | | | | | | |
| 2 | Momentary contact | Horizontal | ▶ | **3SU1050-7AC88-0AA0** | | 1 | 1 unit |
| | | Vertical | ▶ | **3SU1050-7AD88-0AA0** | | 1 | 1 unit |
| | Latching | Horizontal | ▶ | **3SU1050-7AA88-0AA0** | | 1 | 1 unit |
| | | Vertical | ▶ | **3SU1050-7AB88-0AA0** | | 1 | 1 unit |
| ***Without mechanical interlock, 4 switch positions*** | | | | | | | |
| 4 | Momentary contact | Horizontal/Vertical | ▶ | **3SU1050-7AF88-0AA0** | | 1 | 1 unit |
| | Latching | Horizontal/Vertical | ▶ | **3SU1050-7AE88-0AA0** | | 1 | 1 unit |
| ***With mechanical interlock, 2 switch positions*** | | | | | | | |
| 2 | Momentary contact | Horizontal | ▶ | **3SU1050-7BC88-0AA0** | | 1 | 1 unit |
| | | Vertical | ▶ | **3SU1050-7BD88-0AA0** | | 1 | 1 unit |
| | Latching | Horizontal | ▶ | **3SU1050-7BA88-0AA0** | | 1 | 1 unit |
| | | Vertical | ▶ | **3SU1050-7BB88-0AA0** | | 1 | 1 unit |
| ***With mechanical interlock, 4 switch positions*** | | | | | | | |
| 4 | Momentary contact | Horizontal/Vertical | ▶ | **3SU1050-7BF88-0AA0** | | 1 | 1 unit |
| | Latching | Horizontal/Vertical | ▶ | **3SU1050-7BE88-0AA0** | | 1 | 1 unit |

3SU1050-7AC88-0AA0

3SU1050-7BC88-0AA0

### Selection and ordering data

| Type of product | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Indicator lights** | | | | | | |
| **With smooth lens** | Amber | 3 | **3SU1051-6AA00-0AA0** | | 1 | 1 unit |
| | Red | ▶ | **3SU1051-6AA20-0AA0** | | 1 | 1 unit |
| | Yellow | ▶ | **3SU1051-6AA30-0AA0** | | 1 | 1 unit |
| | Green | ▶ | **3SU1051-6AA40-0AA0** | | 1 | 1 unit |
| | Blue | 3 | **3SU1051-6AA50-0AA0** | | 1 | 1 unit |
| | White | ▶ | **3SU1051-6AA60-0AA0** | | 1 | 1 unit |
| | Clear | 3 | **3SU1051-6AA70-0AA0** | | 1 | 1 unit |

3SU1051-6AA40-0AA0

# 3SU1 30 mm, Round, Metal, Matte — Actuating & Signaling Elements

## Pushbuttons

### Overview

Actuators and indicators, flat, 30 mm, metal, matte, including adapter (adapter included in scope of supply)

### Selection and ordering data

| | Version | Operating principle | Unlatching method | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Pushbuttons** | | | | | | | | | |
| 3SU1060-0JB50-0AA0 | **Pushbuttons** with flat button | Momentary contact | -- | Amber | 3 | **3SU1060-0JB00-0AA0** | | 1 | 1 unit |
| | | | | Black | 3 | **3SU1060-0JB10-0AA0** | | 1 | 1 unit |
| | | | | Red | 3 | **3SU1060-0JB20-0AA0** | | 1 | 1 unit |
| | | | | Yellow | 3 | **3SU1060-0JB30-0AA0** | | 1 | 1 unit |
| | | | | Green | 3 | **3SU1060-0JB40-0AA0** | | 1 | 1 unit |
| | | | | Blue | 3 | **3SU1060-0JB50-0AA0** | | 1 | 1 unit |
| | | | | White | 3 | **3SU1060-0JB60-0AA0** | | 1 | 1 unit |
| | | | | Gray | X | **3SU1060-0JB80-0AA0** | | 1 | 10 units |
| 3SU1060-0JA20-0AA0 | | Latching | Push to unlatch | Black | 5 | **3SU1060-0JA10-0AA0** | | 1 | 1 unit |
| | | | | Red | 5 | **3SU1060-0JA20-0AA0** | | 1 | 1 unit |
| | | | | Yellow | 5 | **3SU1060-0JA30-0AA0** | | 1 | 1 unit |
| | | | | Green | 5 | **3SU1060-0JA40-0AA0** | | 1 | 1 unit |
| | | | | Blue | 5 | **3SU1060-0JA50-0AA0** | | 1 | 1 unit |
| | | | | White | 5 | **3SU1060-0JA60-0AA0** | | 1 | 1 unit |
| 3SU1061-0JB40-0AA0 | **Illuminated pushbuttons** with flat button | Momentary contact | -- | Red | 3 | **3SU1061-0JB20-0AA0** | | 1 | 1 unit |
| | | | | Yellow | 3 | **3SU1061-0JB30-0AA0** | | 1 | 1 unit |
| | | | | Green | 3 | **3SU1061-0JB40-0AA0** | | 1 | 1 unit |
| | | | | Blue | 3 | **3SU1061-0JB50-0AA0** | | 1 | 1 unit |
| | | | | Clear | 3 | **3SU1061-0JB70-0AA0** | | 1 | 1 unit |
| 3SU1061-0JA30-0AA0 | | Latching | Push to unlatch | Red | 5 | **3SU1061-0JA20-0AA0** | | 1 | 1 unit |
| | | | | Yellow | 5 | **3SU1061-0JA30-0AA0** | | 1 | 1 unit |
| | | | | Green | 5 | **3SU1061-0JA40-0AA0** | | 1 | 1 unit |
| | | | | Blue | 5 | **3SU1061-0JA50-0AA0** | | 1 | 1 unit |
| | | | | Clear | 5 | **3SU1061-0JA70-0AA0** | | 1 | 1 unit |

# 3SU1 30 mm, Round, Metal, Matte — Actuating & Signaling Elements

## Selector switches

### Selection and ordering data

| Version | Operating principle | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Selector switches** | | | | | | | |
| ***2 switch positions, can be illuminated*** | | | | | | | |
| 3SU1062-2DC40-0AA0 | | | | | | | |
| Selector, short black actuator and front ring for flat mounting | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | Black | 5 | **3SU1062-2DC10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2DC20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2DC40-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1062-2DC60-0AA0** | | 1 | 1 unit |
| | Latching, 90° (10:30/1:30 o'clock) | Black | 3 | **3SU1062-2DF10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2DF20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2DF40-0AA0** | | 1 | 1 unit |
| | | Blue | 5 | **3SU1062-2DF50-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1062-2DF60-0AA0** | | 1 | 1 unit |
| 3SU1062-2EC20-0AA0 | | | | | | | |
| Selector, long black actuator and front ring for flat mounting | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | Black | 5 | **3SU1062-2EC10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2EC20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2EC40-0AA0** | | 1 | 1 unit |
| | | White | 5 | **3SU1062-2EC60-0AA0** | | 1 | 1 unit |
| | Latching, 90° (10:30/1:30 o'clock) | Black | 3 | **3SU1062-2EF10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2EF20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2EF40-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1062-2EF60-0AA0** | | 1 | 1 unit |
| ***3 switch positions (I+O+II), can be illuminated*** | | | | | | | |
| 3SU1062-2DL60-0AA0 | | | | | | | |
| Selector, short black actuator and front ring for flat mounting | Momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from left + right | Black | 3 | **3SU1062-2DM10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2DM20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2DM40-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1062-2DM60-0AA0** | | 1 | 1 unit |
| | Latching, 2x45° (10:30/12/ 1:30 o'clock) | Black | 3 | **3SU1062-2DL10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2DL20-0AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1062-2DL30-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2DL40-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1062-2DL60-0AA0** | | 1 | 1 unit |
| | Momentary contact to the right, latching to the left, 2x45° (10:30/12/ 1:30 o'clock) | Black | NEW 5 | **3SU1062-2DN60-0AA0** | | 1 | 1 unit |
| 3SU1062-2EL20-0AA0 | | | | | | | |
| Selector, long black actuator and front ring for flat mounting | Momentary contact, 2x45° (10:30/12/ 1:30 o'clock), reset from left + right | Black | 3 | **3SU1062-2EM10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2EM20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2EM40-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1062-2EM60-0AA0** | | 1 | 1 unit |
| | Latching, 2x45° (10:30/12/ 1:30 o'clock) | Black | 3 | **3SU1062-2EL10-0AA0** | | 1 | 1 unit |
| | | Red | 5 | **3SU1062-2EL20-0AA0** | | 1 | 1 unit |
| | | Green | 5 | **3SU1062-2EL40-0AA0** | | 1 | 1 unit |
| | | White | 3 | **3SU1062-2EL60-0AA0** | | 1 | 1 unit |

# 3SU1 30 mm, Round, Metal, Matte — Actuating & Signaling Elements

## Key-operated switches / Indicator lights

### Selection and ordering data

| Make of lock | Operating principle | Switch position for key removal | Number of keys | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Key-operated switches** | | | | | | | | |
| | ***2 switch positions*** | | | | | | | |
| RONIS, SB30 and front ring for flat installation | Momentary contact, 45° (10:30/12 o'clock), reset from center to left | O | 2 | 5 | **3SU1060-4LC01-0AA0** | | 1 | 1 unit |
| 3SU1060-4LF11-0AA0 | Latching, 90° (10:30/1:30 o'clock) | O+I<br>I | 2<br>2 | 3<br>3 | **3SU1060-4LF11-0AA0**<br>**3SU1060-4LF21-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| | ***3 switch positions*** | | | | | | | |
| RONIS, SB30 and front ring for flat installation | Latching, 2x45° (10:30/12/ 1:30 o'clock) | I+O+II | 2 | 5 | **3SU1060-4LL11-0AA0** | | 1 | 1 unit |
| 3SU1060-4LL11-0AA0 | | | | | | | | |
| | ***3 switch positions*** | | | | | | | |
| RONIS, SB30 and front ring for flat installation | Latching, 2x45° (10:30/12/ 1:30 o'clock) | I+O+II | 2 | 5 | **3SU1060-4LL11-0AA0** | | 1 | 1 unit |
| 3SU1060-4LL11-0AA0 | Momentary contact, 2x45° (10:30/12/ 1:30 o'clock) | O | 2 | NEW 5 | **3SU1060-4LM01-0AA0** | | 1 | 1 unit |

### Selection and ordering data

| Version | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Indicator lights** | | | | | | |
| With flat lens | Red | 3 | **3SU1061-0JD20-0AA0** | | 1 | 1 unit |
| | Yellow | 3 | **3SU1061-0JD30-0AA0** | | 1 | 1 unit |
| | Green | 3 | **3SU1061-0JD40-0AA0** | | 1 | 1 unit |
| | Blue | 3 | **3SU1061-0JD50-0AA0** | | 1 | 1 unit |
| | Clear | 3 | **3SU1061-0JD70-0AA0** | | 1 | 1 unit |

3SU1061-0JD40-0AA0

# Actuators and Indicators, Customized Designs

## Special locks

### Options

#### *Special locks for key-operated switches*

The plastic and metal key-operated switches of type RONIS, BKS, CES and IKON can be optionally ordered with additional locks.

In this case **"–Z"**, the order code **"Y01"** and the required lock number must be added to the article number of the relevant key-operated switch for standard locking.

| Order code | Y01 |
|---|---|
| Standard delivery time | 25 working days |
| Additional price per unit | On request |
| Ordering example | 3SU1000–5BF01–0AA0-Z<br>Y01<br>Z = SSG18 |

#### *Ordering notes*

- For all special locks, an additional price applies.
- The order code **"Y01"** must be quoted in accordance with the above table. Automated processing of the order with a defined delivery time can be guaranteed only for correctly submitted orders.
- For applications in which access security is important and several lock numbers are used, we recommend the use of BKS or CES key-operated switches.
- Special locks for VW (E1, E2, ...) will be delivered without keys, all others with 2 keys.
- With RONIS, the special locks SB31, 421 and 455 are possible.

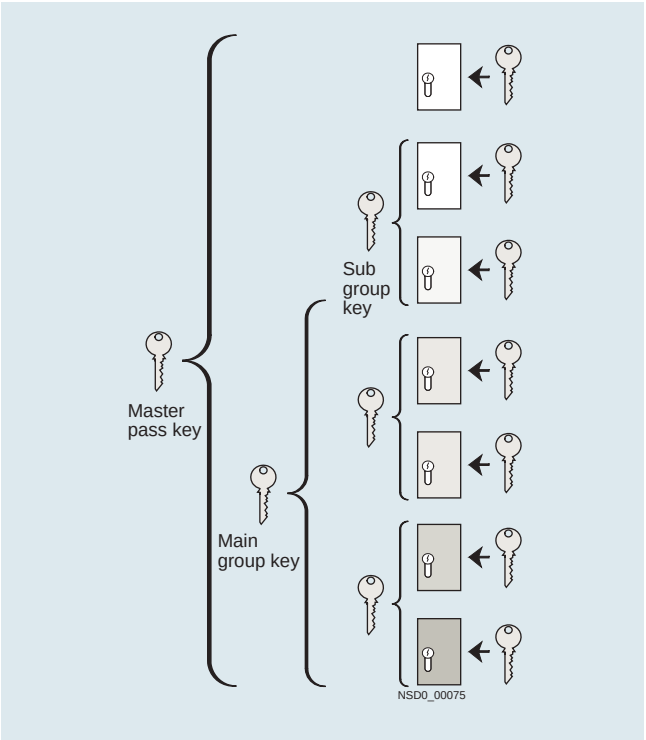
#### *Master and master-pass key systems*

The following key systems can be supplied with BKS, CES or IKON key-operated switches:

- Central lock systems
- Master key systems
- Central master key systems
- Master-pass key systems

When placing an order you must supplement the article number of the matching key-operated switches with **"–Z"** and quote the order code **"Y03"**.

Price and delivery time on request.
Email: sirius-attach.aud@siemens.com




Example of master-pass key system

# Actuators and Indicators, Customized Designs

## Contact Block Selection Table for Selector Switches, Key-operated Switches, and 3-position push-pull

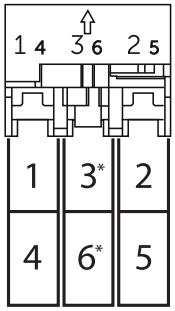
### Selection and Ordering Data

| Switch Position (front of switch) Left | Right | Contact Block Circuit | Contact Block Position[1] | Contact Block Order No. |
|---|---|---|---|---|
| **Two-Position Selector Switch Contact Block Selection** | | | | |
| O | X | 1 NO | Any Position | **3SU1400-1AA10-1BA0** |
| X | O | 1 NC | Any Position | **3SU1400-1AA10-1CA0** |
| O<br>X | X<br>O | 1 NO/1 NC | Any Position | **3SU1400-1AA10-1FA0** |
| O<br>O | X<br>X | 2 NO | Any Position | **3SU1400-1AA10-1DA0** |
| X<br>X | O<br>O | 2 NC | Any Position | **3SU1400-1AA10-1EA0** |

| Switch Position (front of switch) Left | Center | Right | Contact Block Circuit | Contact Block Position[1] On Holder | Stacked | Contact Block Order No. |
|---|---|---|---|---|---|---|
| **Three-Position Selector Switch Contact Block Selection** | | | | | | |
| X | O | O | 1 NO | 2 or 3A | 5 or 6A | **3SU1400-1AA10-1BA0** |
| X | O | X | 1 NO | 3 | 6 | **3SU1400-1AA10-1BA0** |
| O | O | X | 1 NO | 1 or 3B | 4 or 6B | **3SU1400-1AA10-1BA0** |
| O | X | X | 1 NC | 2 or 3A | 5 or 6A | **3SU1400-1AA10-1CA0** |
| O | X | O | 1 NC | 3 | 6 | **3SU1400-1AA10-1CA0** |
| X | X | O | 1 NC | 1 or 3B | 4 or 6B | **3SU1400-1AA10-1CA0** |
| X<br>O | O<br>X | O<br>X | 1 NO/1 NC | 2 or 3A | -- | **3SU1400-1AA10-1FA0** |
| X<br>O | O<br>X | X<br>O | 1 NO/1 NC | 3 | -- | **3SU1400-1AA10-1FA0** |
| O<br>X | O<br>X | X<br>O | 1 NO/1 NC | 1 or 3B | -- | **3SU1400-1AA10-1FA0** |
| X<br>X | O<br>O | O<br>O | 2 NO | 2 or 3A | -- | **3SU1400-1AA10-1DA0** |
| X<br>X | O<br>O | X<br>X | 2 NO | 3 | -- | **3SU1400-1AA10-1DA0** |
| O<br>O | O<br>O | X<br>X | 2 NO | 1 or 3B | -- | **3SU1400-1AA10-1DA0** |
| O<br>O | X<br>X | X<br>X | 2 NC | 2 or 3A | -- | **3SU1400-1AA10-1EA0** |
| O<br>O | X<br>X | O<br>O | 2 NC | 3 | -- | **3SU1400-1AA10-1EA0** |
| X<br>X | X<br>X | O<br>O | 2 NC | 1 or 3B | -- | **3SU1400-1AA10-1EA0** |
| **Three-Position Push-Pull Contact Block Selection** | | | | | | |
| Out | Center | In | | | | |
| X | O | O | 1 NO | 2 or 3A | 5 or 6A | **3SU1400-1AA10-1BA0** |
| O | O | X | 1 NO | 1 or 3B | 4 or 6B | **3SU1400-1AA10-1BA0** |
| X | X | O | 1 NC | 1 or 3B | 4 or 6B | **3SU1400-1AA10-1CA0** |
| O | X | X | 1 NC | 2 or 3A | 5 or 6A | **3SU1400-1AA10-1CA0** |
| O<br>X | X<br>O | X<br>O | 1 NO/1 NC | 2 or 3A | -- | **3SU1400-1AA10-1FA0** |
| X<br>O | X<br>O | O<br>X | 1 NO/1 NC | 1 or 3B | -- | **3SU1400-1AA10-1FA0** |
| O<br>X | X<br>O | O<br>X | 2 NC | 3 | -- | **3SU1400-1AA10-1FA0** |

[1] Single-element Contact Blocks are stackable (2 deep). Dual Contact Blocks are not stackable.

In order to attach a Light Module to the actuator, both plungers must be removed and Light Module placed in position #3.



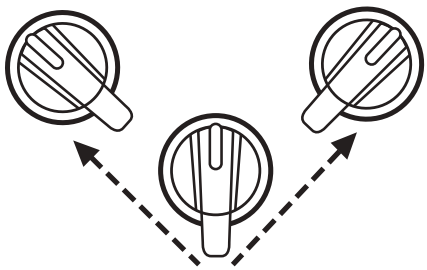

| Rear View | Plungers Inserted | Center Module Position Numbers | Replace the asterisks in center position numbers 3* or 6*: |
|---|---|---|---|
| | Both | 3 or 6 | Contact Blocks Position Number will be (3 or 6) when "Both" plungers are installed. |
| | Right | 3B or 6B | Contact Blocks Position Number will be (3B or 6B) when "Right" plunger only is installed. |
| | Left | 3A or 6A | Contact Blocks Position Number will be (3A or 6A) when "Left" plunger only is installed. |
| | None | None | Both plungers are removed if Center Module Position 3 is used with LED Light Module |

X ---------- Contact Closed
O ---------- Contact Open
3 or 6 ------ Both Plungers Inserted
3A or 6A --- Left Plunger Inserted
3B or 6B --- Right Plunger Inserted

# Actuators and Indicators, Customized Designs

## Contact Block Selection Table for Selector – Switches and Key-operated Switches

### Function Table



| Plunger Position | | Selector Switch Position[1] | | | | | |
|---|---|---|---|---|---|---|---|
| | | Left Position | | | Right Position | | |
| Rear View | Front View | 2 | 3 | 1 | 2 | 3 | 1 |
| | | ▮ | ▮ | □ | □ | ▮ | ▮ |
| | | ▮ | □ | □ | □ | ▮ | ▮ |
| | | ▮ | ▮ | □ | □ | □ | ▮ |
| | | ▮ | ⊗ | □ | □ | ⊗ | ▮ |

▮ Activated
□ Not Activated
⊗ LED Available
Plunger

[1] The selector switch position is viewed from the front.

All selector switches are packaged with two plungers, which can be removed manually.

## Options

### *Inscription of actuating and signaling elements*

Actuating and signaling elements of plastic as well as metal can be optionally inscribed with a laser.

Example of laser inscription

The actuators of the pushbuttons, illuminated pushbuttons, twin pushbuttons, mushroom pushbuttons, illuminated mushroom pushbuttons, EMERGENCY STOP mushroom pushbuttons (without lock), the lenses of the indicator lights, and the acoustic signaling devices can all be inscribed.

Version

Text inscriptions have centered alignment and a font height of 4 mm as standard.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

The maximum possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

Note:

Selected pushbuttons and twin pushbuttons can be supplied as standard with inscribed letters or symbols.

Selector switches, key-operated switches and toggle switches can be inscribed on the front ring only if they are made of plastic (only one text line and the supplement Y19).

Assignment of the positions on the actuator

### *Ordering notes*

To order, the inscribed actuating and signaling elements can be selected via the SIRIUS ACT Configurator. An electronic order form is then generated.

For configurator, see
- www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD or
- Industry Mall: www.siemens.com/industrymall

When ordering, add **–Z** and an order code to the article number of the actuator or the indicator light:

- **Y10:** Text line in upper/lower case, all lines begin with upper case letters (e.g. line 1: Text/line 2: Text)
- **Y11:** Text in upper case (e.g. LIFT)
- **Y12:** Text in lower case (e.g. lift/off/lower)
- **Y15:** Text in upper/lower case, all words begin with upper case letters (e.g. On/Off)
- **Y13:** Symbol with number according to ISO 7000 or IEC 60417
- **Y19:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, in addition to the article number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language. In the case of symbols with number, quote the corresponding standard (see ordering example 1).

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. Z1=Lift, Z2=Lower.

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Y19). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Ordering example 1

A round pushbutton with the inscription Reset is required:

**3SU1030–0AB20–0AA0-Z**
Y10
Z1=Reset

Ordering example 2

A pushbutton inscribed with symbol No. 5389 according to IEC 60417 is required:

**3SU1030–0AB20–0AA0-Z**
Y13
Z=5389 IEC

Ordering example 3

A selector switch with 2 switch positions and multi-line inscription on the front ring is required:

**3SU1002-2BF10-0AA0-Z**
Z8=0
Z2=I

# Holders

## Holders without module

### Overview

Holders made of plastic can only be attached to actuators and indicators made of plastic (3SU100) or plastic with metal front ring (3SU103).
Metal holders can be attached to all versions of actuators and indicators. Metal holders are automatically grounded by their fastening screw, but a grounding stud can also be fitted.

### Selection and ordering data

| | Version | Holder material | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Holders without module** | | | | | | |
| 3SU1500-0AA10-0AA0 | **3x without module** | Plastic | A | **3SU1500-0AA10-0AA0** | 1 | 1 unit |
| 3SU1500-0BA10-0AA0 | **4x without module** For selector switch with 4 switch positions and for coordinate switches | Plastic | A | **3SU1500-0BA10-0AA0** | 1 | 1 unit |

| | Version | Holder material | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Holders without module** | | | | | | |
| 3SU1550-0AA10-0AA0 | **3x without module** | Metal | A | **3SU1550-0AA10-0AA0** | 1 | 1 unit |
| 3SU1550-0BA10-0AA0 | **4x without module** For selector switch with 4 switch positions and for coordinate switches | Metal | A | **3SU1550-0BA10-0AA0** | 1 | 1 unit |

# Holders

## Holders with module

### Selection and ordering data

#### Holders with module, plastic

3SU1500-1AA10-1BA0

3SU1501-1AG20-1CA0

3SU1501-1AG20-1LA0

| Number of Contact modules | Number of LED modules | NO contacts | NC contacts | Color of light source | | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| ***3x with module*** | | | | | | | | | | |
| 1 | 0 | 1 | 0 | -- | | ▶ | **3SU1500-1AA10-1BA0** | | 1 | 1 unit |
| | | 0 | 1 | | ⊖ | ▶ | **3SU1500-1AA10-1CA0** | | 1 | 1 unit |
| | | 1 | 1 | | ⊖ | 3 | **3SU1500-1AA10-1FA0** | | 1 | 1 unit |
| 2 | 0 | 2 | 0 | -- | ⊖ | 3 | **3SU1500-1AA10-1NA0** | | 1 | 1 unit |
| | | 0 | 2 | | ⊖ | 3 | **3SU1500-1AA10-1PA0** | | 1 | 1 unit |
| | | 2 | 2 | | ⊖ | 3 | **3SU1500-1AA10-1LA0** | | 1 | 1 unit |
| ***3x with contact and LED module[1] (6 ... 24 V AC/DC)*** | | | | | | | | | | |
| 1 | 1 | 1 | 0 | Amber | | 3 | **3SU1501-1AG00-1BA0** | | 1 | 1 unit |
| | | | | Red | | 3 | **3SU1501-1AG20-1BA0** | | 1 | 1 unit |
| | | | | Yellow | | 3 | **3SU1501-1AG30-1BA0** | | 1 | 1 unit |
| | | | | Green | | 3 | **3SU1501-1AG40-1BA0** | | 1 | 1 unit |
| | | | | Blue | | 3 | **3SU1501-1AG50-1BA0** | | 1 | 1 unit |
| | | | | White | | 3 | **3SU1501-1AG60-1BA0** | | 1 | 1 unit |
| | | 0 | 1 | Amber | ⊖ | 3 | **3SU1501-1AG00-1CA0** | | 1 | 1 unit |
| | | | | Red | ⊖ | 3 | **3SU1501-1AG20-1CA0** | | 1 | 1 unit |
| | | | | Yellow | ⊖ | 3 | **3SU1501-1AG30-1CA0** | | 1 | 1 unit |
| | | | | Green | ⊖ | 3 | **3SU1501-1AG40-1CA0** | | 1 | 1 unit |
| | | | | Blue | ⊖ | 3 | **3SU1501-1AG50-1CA0** | | 1 | 1 unit |
| | | | | White | ⊖ | 3 | **3SU1501-1AG60-1CA0** | | 1 | 1 unit |
| | | 1 | 1 | Amber | ⊖ | 3 | **3SU1501-1AG00-1FA0** | | 1 | 1 unit |
| | | | | Red | ⊖ | 3 | **3SU1501-1AG20-1FA0** | | 1 | 1 unit |
| | | | | Yellow | ⊖ | 3 | **3SU1501-1AG30-1FA0** | | 1 | 1 unit |
| | | | | Green | ⊖ | 3 | **3SU1501-1AG40-1FA0** | | 1 | 1 unit |
| | | | | Blue | ⊖ | 3 | **3SU1501-1AG50-1FA0** | | 1 | 1 unit |
| | | | | White | ⊖ | 3 | **3SU1501-1AG60-1FA0** | | 1 | 1 unit |
| 2 | 1 | 2 | 0 | Amber | ⊖ | 3 | **3SU1501-1AG00-1NA0** | | 1 | 1 unit |
| | | | | Red | ⊖ | 3 | **3SU1501-1AG20-1NA0** | | 1 | 1 unit |
| | | | | Yellow | ⊖ | 3 | **3SU1501-1AG30-1NA0** | | 1 | 1 unit |
| | | | | Green | ⊖ | 3 | **3SU1501-1AG40-1NA0** | | 1 | 1 unit |
| | | | | Blue | ⊖ | 3 | **3SU1501-1AG50-1NA0** | | 1 | 1 unit |
| | | | | White | ⊖ | 3 | **3SU1501-1AG60-1NA0** | | 1 | 1 unit |
| | | 2 | 2 | Amber | ⊖ | 3 | **3SU1501-1AG00-1LA0** | | 1 | 1 unit |
| | | | | Red | ⊖ | 3 | **3SU1501-1AG20-1LA0** | | 1 | 1 unit |
| | | | | Yellow | ⊖ | 3 | **3SU1501-1AG30-1LA0** | | 1 | 1 unit |
| | | | | Green | ⊖ | 3 | **3SU1501-1AG40-1LA0** | | 1 | 1 unit |
| | | | | Blue | ⊖ | 3 | **3SU1501-1AG50-1LA0** | | 1 | 1 unit |
| | | | | White | ⊖ | 3 | **3SU1501-1AG60-1LA0** | | 1 | 1 unit |

[1] Only for use with SIRIUS commanding and signaling devices.

#### Holders with module, metal

3SU1550-1AA10-1BA0

| Number of Contact modules | NO contacts | NC contacts | | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| ***3x with module*** | | | | | | | | |
| 1 | 1 | 0 | | 3 | **3SU1550-1AA10-1BA0** | | 1 | 1 unit |
| | 0 | 1 | ⊖ | 3 | **3SU1550-1AA10-1CA0** | | 1 | 1 unit |
| | 1 | 1 | ⊖ | 3 | **3SU1550-1AA10-1FA0** | | 1 | 1 unit |
| 2 | 2 | 0 | ⊖ | 3 | **3SU1550-1AA10-1NA0** | | 1 | 1 unit |
| | 0 | 2 | ⊖ | 3 | **3SU1550-1AA10-1PA0** | | 1 | 1 unit |
| | 2 | 2 | ⊖ | 3 | **3SU1550-1AA10-1LA0** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Annex K. Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate: DVE

# Modules for Actuators and Indicators

## Contact modules

### Overview

***Contact modules and LED modules***

The contact modules are fitted with slow-action contacts (NO contacts or NC contacts). These ensure a high switching reliability even with small voltages and currents, such as 5 V/1 mA. They are suitable for use in electronic systems as well as conventional controls. The contact pieces of the NC contacts are positively driven.

Only LED modules with permanently integrated LEDs are available for illumination.

Contact modules and LED modules bear terminal designations according to EN 50013.

Mounting the modules

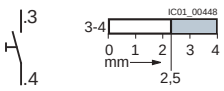
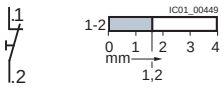
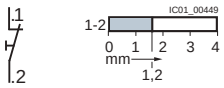
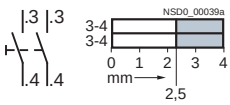
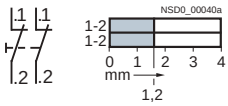
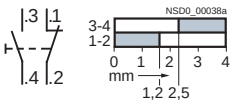
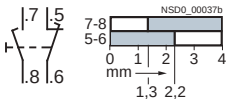
With SIRIUS ACT, the modules are mounted on the holder without any further accessories. Holders in plastic or metal versions are available for mounting three modules.

Connection methods

The modules are available with:

- Screw terminals
- Spring-type terminals or
- Solder pin connections (0.8 mm × 0.8 mm solder pins) for assembly on printed circuit boards

### Selection and ordering data

| Contact version | Number of NO contacts | Number of NC contacts | | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Contact modules for front plate mounting** | | | | | | | | |
| Silver alloy | 1 | 0 |  | ▶ | **3SU1400-1AA10-1BA0** | | 1 | 1 unit |
| | 0 | 1 |  | ▶ | **3SU1400-1AA10-1CA0** | | 1 | 1 unit |
| | 0 | 1 with installation monitoring[1)] |  | ▶ | **3SU1400-1AA10-1HA0** | | 1 | 1 unit |
| | 2 | 0 |  | ▶ | **3SU1400-1AA10-1DA0** | | 1 | 1 unit |
| | 0 | 2 |  | ▶ | **3SU1400-1AA10-1EA0** | | 1 | 1 unit |
| | 1 | 1 |  | ▶ | **3SU1400-1AA10-1FA0** | | 1 | 1 unit |
| | 1 leading switching | 1 lagging switching |  | 5 | **3SU1400-1AA10-1GA0** | | 1 | 1 unit |

3SU1400-1AA10-1BA0

3SU1400-1AA10-1HA0

3SU1400-1AA10-1FA0

[1)] The contact module has 1 NO internal contact + 1 NC internal contact. The NO contact is connected in series with the NC contact and brought out at terminal 1-2. When the module is snapped onto the holder, the NO contact closes. It opens when the module is detached from the holder again (the NC contact remains closed). The NC contact opens when the EMERGENCY STOP device is actuated (the NO contact remains closed). The contact is closed only when both the NC and NO contacts are closed. Unsuitable for mounting in 3SU18 enclosure.

⊖ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

# Modules for Actuators and Indicators

## Contact modules

### Contact modules for front plate mounting

3SU1400-1AA10-1LA0

| Contact version | Number of NO contacts | Number of NC contacts | | | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| Gold-plated | 1 | 0 | | | 3 | 3SU1400-1AA10-1LA0 | | 1 | 1 unit |
| | 0 | 1 | ⊖ | | 5 | 3SU1400-1AA10-1MA0 | | 1 | 1 unit |
| | 2 | 0 | | | 5 | 3SU1400-1AA10-1NA0 | | 1 | 1 unit |
| | 0 | 2 | ⊖ | | 5 | 3SU1400-1AA10-1PA0 | | 1 | 1 unit |
| | 1 | 1 | ⊖ | | 5 | 3SU1400-1AA10-1QA0 | | 1 | 1 unit |
| | 1 leading | 1 lagging | ⊖ | | 5 | 3SU1400-1AA10-1RA0 | | 1 | 1 unit |

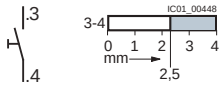
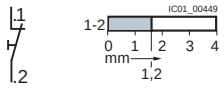
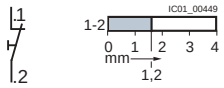
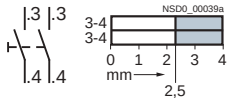
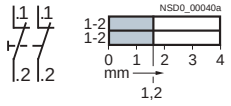
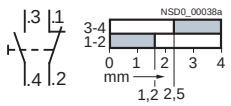
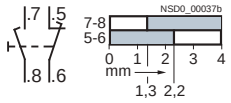
⊖Positive opening according to IEC 60947-5-1, Annex K.

Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

# Modules for Actuators and Indicators

## Contact modules

| Contact version | Number of NO contacts | Number of NC contacts | | | SD d | Spring-type terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Contact modules for front plate mounting** | | | | | | | | | |
| Silver alloy | 1 | 0 | |  | ▶ | **3SU1400-1AA10-3BA0** | | 1 | 1 unit |
| | 0 | 1 | ⊖ |  | ▶ | **3SU1400-1AA10-3CA0** | | 1 | 1 unit |
| | 0 | 1 with installation monitoring[1] | ⊖ |  | ▶ | **3SU1400-1AA10-3HA0** | | 1 | 1 unit |
| | 2 | 0 | |  | ▶ | **3SU1400-1AA10-3DA0** | | 1 | 1 unit |
| | 0 | 2 | ⊖ |  | ▶ | **3SU1400-1AA10-3EA0** | | 1 | 1 unit |
| | 1 | 1 | ⊖ |  | ▶ | **3SU1400-1AA10-3FA0** | | 1 | 1 unit |
| | 1 leading | 1 lagging | ⊖ |  | 5 | **3SU1400-1AA10-3GA0** | | 1 | 1 unit |

3SU1400-1AA10-3BA0

3SU1400-1AA10-3HA0

3SU1400-1AA10-3DA0

3SU1400-1AA10-3FA0

[1] The contact module has 1 NO internal contact + 1 NC internal contact. The NO contact is connected in series with the NC contact and brought out at terminal 1-2. When the module is snapped onto the holder, the NO contact closes. It opens when the module is detached from the holder again (the NC contact remains closed). The NC contact opens when the EMERGENCY STOP device is actuated (the NO contact remains closed). The contact is closed only when both the NC and NO contacts are closed. Not suitable for installation in 3SU18 enclosure.

⊖ Positive opening according to IEC 60947-5-1, Annex K.

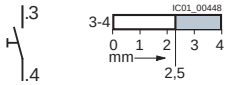
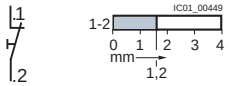
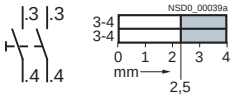
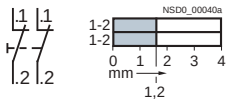
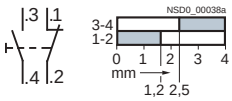
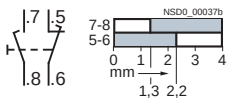
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

# Modules for Actuators and Indicators

## Contact modules

### Contact modules for front plate mounting

| Contact version | Number of NO contacts | Number of NC contacts | | | SD d | Spring-type terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| Gold-plated | 1 | 0 | |  | 5 | 3SU1400-1AA10-3LA0 | | 1 | 1 unit |
| | 0 | 1 | ⊖ |  | 5 | 3SU1400-1AA10-3MA0 | | 1 | 1 unit |
| | 2 | 0 | |  | 5 | 3SU1400-1AA10-3NA0 | | 1 | 1 unit |
| | 0 | 2 | ⊖ |  | 5 | 3SU1400-1AA10-3PA0 | | 1 | 1 unit |
| | 1 | 1 | ⊖ |  | 5 | 3SU1400-1AA10-3QA0 | | 1 | 1 unit |
| | 1 leading | 1 lagging | ⊖ |  | 5 | 3SU1400-1AA10-3RA0 | | 1 | 1 unit |

3SU1400-1AA10-3LA0

⊖ Positive opening according to IEC 60947-5-1, Annex K.

Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

| Contact version | Number of NO contacts | Number of NC contacts | | SD d | Socket terminals (THT) Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Contact modules for mounting on printed-circuit boards** NEW | | | | | | | | |
| Silver alloy | 1 | 0 | | ▶ | 3SU1400-3AA10-5BA0 | | 1 | 1 unit |
| Gold-plated | 0 | 1 | ⊖ | 3 | 3SU1400-3AA10-5CA0 | | 1 | 1 unit |

3SU1400-3AA10-5BA0

⊖ Positive opening according to IEC 60947-5-1, Annex K.

Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

# Modules for Actuators and Indicators

## LED modules

### Selection and ordering data

| Operational voltage at AC V | Operational voltage at DC V | Color | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **LED modules[1] for front plate mounting** | | | | | | | |
| 3SU1401-1BB30-1AA0 | | | | | | | |
| 24 | 24 | Amber | ▶ | **3SU1401-1BB00-1AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-1BB20-1AA0** | | 1 | 1 unit |
| | | Yellow | ▶ | **3SU1401-1BB30-1AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-1BB40-1AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-1BB50-1AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1401-1BB60-1AA0** | | 1 | 1 unit |
| 110 | — | Amber | 5 | **3SU1401-1BC00-1AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-1BC20-1AA0** | | 1 | 1 unit |
| | | Yellow | 3 | **3SU1401-1BC30-1AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-1BC40-1AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-1BC50-1AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1401-1BC60-1AA0** | | 1 | 1 unit |
| 230 | — | Amber | 5 | **3SU1401-1BF00-1AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-1BF20-1AA0** | | 1 | 1 unit |
| | | Yellow | 3 | **3SU1401-1BF30-1AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-1BF40-1AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-1BF50-1AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1401-1BF60-1AA0** | | 1 | 1 unit |
| | | | | **Spring-type terminals** | | | |
| 3SU1401-1BB30-3AA0 | | | | | | | |
| 24 | 24 | Amber | 3 | **3SU1401-1BB00-3AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-1BB20-3AA0** | | 1 | 1 unit |
| | | Yellow | 3 | **3SU1401-1BB30-3AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-1BB40-3AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-1BB50-3AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1401-1BB60-3AA0** | | 1 | 1 unit |
| 110 | — | Amber | 5 | **3SU1401-1BC00-3AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-1BC20-3AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-1BC30-3AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-1BC40-3AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-1BC50-3AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1401-1BC60-3AA0** | | 1 | 1 unit |
| 230 | — | Amber | 5 | **3SU1401-1BF00-3AA0** | | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-1BF20-3AA0** | | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-1BF30-3AA0** | | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-1BF40-3AA0** | | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-1BF50-3AA0** | | 1 | 1 unit |
| | | White | ▶ | **3SU1401-1BF60-3AA0** | | 1 | 1 unit |

| Operational voltage at AC V | Operational voltage at DC V | Color | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **LED modules[1] for front plate mounting with "traffic light" LED** | | | | | | | |
| 3SU1401-1BB24-1AA0 | | | | | | | |
| 24 | 24 | Red / Yellow / Green | | **3SU1401-1BB24-1AA0** | | 1 | 1 unit |
| 110 | — | Red / Yellow / Green | | **3SU1401-1BC24-1AA0** | | 1 | 1 unit |
| 230 | — | Red / Yellow / Green | | **3SU1401-1BF24-1AA0** | | 1 | 1 unit |
| 6-24 | 6-24 | Red / Yellow / Green | | **3SU1401-1BG24-1AA0** | | 1 | 1 unit |
| | | | | **Spring-type terminals** | | | |
| 3SU1401-1BB24-3AA0 | | | | | | | |
| 24 | 24 | Red / Yellow / Green | | **3SU1401-1BB24-3AA0** | | 1 | 1 unit |
| 110 | — | Red / Yellow / Green | | **3SU1401-1BC24-3AA0** | | 1 | 1 unit |
| 230 | — | Red / Yellow / Green | | **3SU1401-1BF24-3AA0** | | 1 | 1 unit |
| 6-24 | 6-24 | Red / Yellow / Green | | **3SU1401-1BG24-3AA0** | | 1 | 1 unit |

[1] Only for use with SIRIUS commanding and signaling devices.

# Modules for Actuators and Indicators

## LED modules

### LED modules[1] for front plate mounting

| Operational voltage at AC V | Operational voltage at DC V | Color | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| 6 … 24 | 6 … 24 | Amber | ▶ | 3SU1401-1BG00-1AA0 | | 1 | 1 unit |
| | | Red | ▶ | 3SU1401-1BG20-1AA0 | | 1 | 1 unit |
| | | Yellow | ▶ | 3SU1401-1BG30-1AA0 | | 1 | 1 unit |
| | | Green | ▶ | 3SU1401-1BG40-1AA0 | | 1 | 1 unit |
| | | Blue | ▶ | 3SU1401-1BG50-1AA0 | | 1 | 1 unit |
| | | White | ▶ | 3SU1401-1BG60-1AA0 | | 1 | 1 unit |
| 24 … 240 | 24 … 240 | Amber | 5 | 3SU1401-1BH00-1AA0 | | 1 | 1 unit |
| | | Red | ▶ | 3SU1401-1BH20-1AA0 | | 1 | 1 unit |
| | | Yellow | 3 | 3SU1401-1BH30-1AA0 | | 1 | 1 unit |
| | | Green | ▶ | 3SU1401-1BH40-1AA0 | | 1 | 1 unit |
| | | Blue | ▶ | 3SU1401-1BH50-1AA0 | | 1 | 1 unit |
| | | White | ▶ | 3SU1401-1BH60-1AA0 | | 1 | 1 unit |
| | | **Spring-type terminals** | | | | | |
| 6 … 24 | 6 … 24 | Amber | 3 | 3SU1401-1BG00-3AA0 | | 1 | 1 unit |
| | | Red | ▶ | 3SU1401-1BG20-3AA0 | | 1 | 1 unit |
| | | Yellow | 5 | 3SU1401-1BG30-3AA0 | | 1 | 1 unit |
| | | Green | ▶ | 3SU1401-1BG40-3AA0 | | 1 | 1 unit |
| | | Blue | ▶ | 3SU1401-1BG50-3AA0 | | 1 | 1 unit |
| | | White | ▶ | 3SU1401-1BG60-3AA0 | | 1 | 1 unit |
| 24 … 240 | 24 … 240 | Amber | 5 | 3SU1401-1BH00-3AA0 | | 1 | 1 unit |
| | | Red | ▶ | 3SU1401-1BH20-3AA0 | | 1 | 1 unit |
| | | Yellow | 5 | 3SU1401-1BH30-3AA0 | | 1 | 1 unit |
| | | Green | ▶ | 3SU1401-1BH40-3AA0 | | 1 | 1 unit |
| | | Blue | ▶ | 3SU1401-1BH50-3AA0 | | 1 | 1 unit |
| | | White | ▶ | 3SU1401-1BH60-3AA0 | | 1 | 1 unit |

3SU1401-1BG30-1AA0

3SU1401-1BG30-3AA0

[1] Only for use with SIRIUS commanding and signaling devices.

### LED test modules[1] for front plate mounting

| Operational voltage at AC V | Operational voltage at DC V | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| 6 … 240 | 6 … 240 | 3 | 3SU1400-1CK10-1AA0 | | 1 | 1 unit |

3SU1400-1CK10-1AA0

[1] Only to be used for SIRIUS ACT LED modules (6 ... 24 V AC/DC, 24 V AC/DC, 24 ... 240 V AC/DC).

### LED modules[1] for mounting on printed-circuit boards

| Operational voltage at AC V | Operational voltage at DC V | Color | SD d | Socket terminals (THT) Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| -- | 5 | Amber | 5 | 3SU1401-3BA00-5AA0 | | 1 | 1 unit |
| | | Red | 5 | 3SU1401-3BA20-5AA0 | | 1 | 1 unit |
| | | Yellow | 5 | 3SU1401-3BA30-5AA0 | | 1 | 1 unit |
| | | Green | 3 | 3SU1401-3BA40-5AA0 | | 1 | 1 unit |
| | | Blue | 5 | 3SU1401-3BA50-5AA0 | | 1 | 1 unit |
| | | White | 3 | 3SU1401-3BA60-5AA0 | | 1 | 1 unit |

3SU1401-3BA20-5AA0

[1] Only for use with SIRIUS commanding and signaling devices.

# Modules for Actuators and Indicators

## AS-Interface modules

### Selection and ordering data

| | Operational voltage | Slave type | Number of digital inputs: Standard | Number of digital inputs: Safety-related | Number of digital outputs | SD | Screw terminals + Spring-type terminals: Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | V | | | | | d | | | | |
| **AS-Interface modules for front plate mounting** | | | | | | | | | | |
| 3SU1400-1EA10-2AA0 | 30 | 2 F-DI | -- | 2 | -- | 5 | **3SU1400-1EA10-2AA0** | | 1 | 1 unit |
| | | 2 F-DI + 1 LED | -- | 2 | 1 | 5 | **3SU1401-1EE20-2AA0** | | 1 | 1 unit |
| 3SU1400-1EC10-2AA0 | | 2 F-DI + 1 DQ | -- | 2 | 1 | 5 | **3SU1400-1EC10-2AA0** | | 1 | 1 unit |
| | | | | | | | **Insulation piercing method** | | | |
| 3SU1400-1EA10-4AA0 | | 2 F-DI | -- | 2 | -- | 5 | **3SU1400-1EA10-4AA0** | | 1 | 1 unit |
| | | 2 F-DI + 1 LED | -- | 2 | 1 | ▶ | **3SU1401-1EE20-4AA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals + Insulation piercing method** | | | |
| 3SU1400-1EC10-4AA0 | | 2 F-DI + 1 DQ | -- | 2 | 1 | 5 | **3SU1400-1EC10-4AA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals (push-in)** | | | |
| 3SU1400-1EJ10-6AA0 | 30 | 4 DI/3 DQ AB | 4 | -- | 3 | 5 | **3SU1400-1EJ10-6AA0** | | 1 | 1 unit |
| | | 4 DI/4 DQ | 4 | -- | 4 | 5 | **3SU1400-1EK10-6AA0** | | 1 | 1 unit |

# Modules for Actuators and Indicators

## Electronic modules for IO-Link/support terminals

### Selection and ordering data

| | Operational voltage | Slave type | Number of digital inputs | Number of digital outputs | SD | Spring-type terminals (push-in) | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | | | | d | Article No. / Price per PU | | |
| **Electronic modules for IO-Link, front panel mounting** | | | | | | | | |
| 3SU1400-1HL10-6AA0 | 24 | Freely programmable (default (6 DI/2 DQ) | 0 ... 8 | 0 ... 8 | 5 | **3SU1400-1HL10-6AA0** | 1 | 1 unit |

### Selection and ordering data

| | Color | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | Article No. / Price per PU | | |
| **Support terminals** | | | | | |
| 3SU1400-1DA10-1AA0 | Black | 3 | **3SU1400-1DA10-1AA0** | 1 | 1 unit |
| | Blue | 5 | **3SU1400-1DA50-1AA0** | 1 | 1 unit |
| | Green/Yellow | 3 | **3SU1400-1DA43-1AA0** | 1 | 1 unit |
| | | | **Spring-type terminals** | | |
| 3SU1400-1DA50-3AA0 | Black | 5 | **3SU1400-1DA10-3AA0** | 1 | 1 unit |
| | Blue | 5 | **3SU1400-1DA50-3AA0** | 1 | 1 unit |
| | Green/Yellow | 5 | **3SU1400-1DA43-3AA0** | 1 | 1 unit |

# Modules for Actuators and Indicators

## Electronic modules for ID key-operated switches

### Technical specifications

| | | 3SU1400-1GC10-1AA0 | 3SU1400-1GD10-1AA0 |
|---|---|---|---|
| **Communication/protocol** | | | |
| **Protocol is supported by IO-Link protocol** | | No | Yes |
| **Product function** | | Group ID 24 V DC | IO-Link 24 V DC |
| **IO-Link transfer rate** | | -- | COM2 (38.4 kBaud) |
| **Point-to-point cycle time between the master and the IO-Link device, minimum** | ms | -- | 10 |
| **Type of power supply via IO-Link master** | | -- | Yes |
| **Data volume** | | | |
| • Of the address area of the inputs with cyclic transfer total | bytes | -- | 2 |
| • Of the address area of the outputs with cyclic transfer total | bytes | -- | 0 |
| **Number of NO contacts** | | 5 | |
| **General data** | | | |
| **Impulse withstand voltage, rated value** | kV | 0.8 | |
| **Rated insulation voltage** | V | 30 | |
| **Pollution degree** | | 3 | |
| **Type of voltage** | | | |
| • Of operational voltage | | DC | |
| • Of input voltage | | DC | |
| **Operational voltage** | | | |
| • At DC, rated value | V | 24 | |
| • Rated value | V | 18 … 30 | |
| **Current consumed, maximum** | mA | 49 | |
| **Ambient temperature** | | | |
| • During operation | °C | -25 … +70 | |
| • During storage | °C | -40 … +80 | |
| **Connections** | | | |
| **Type of electrical connection** | | **Screw terminals** ⊕ | |
| **Connectable conductor cross-section for auxiliary contacts** | | | |
| • Solid - With end sleeves | $mm^2$ | 1 x (0.2 … 2.5), 2 x (0.2 … 0.75) | |
| - Without end sleeves | $mm^2$ | 1 x (0.2 … 2.5), 2 x (0.2 … 0.75) | |
| • Finely stranded - With end sleeves | $mm^2$ | 1 x (0.2 … 2.5), 2 x (0.25 … 0.75) | |
| - Without end sleeves | $mm^2$ | 1 x (0.2 … 2.5), 2 x (0.2 … 0.75) | |
| **AWG number as coded connectable conductor cross-section** | | 26 … 14 | |
| **Tightening torque for screw terminals** | Nm | 0.35 … 0.4 | |

### Selection and ordering data

| | Type of power supply via IO-Link master | Protocol is supported IO-Link protocol | Number of NO contacts | IO-Link transfer rate | SD | Screw terminals ⊕ Article No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|---|---|---|
| **Electronic modules for ID key-operated switches**[1] | | | | | | | | | | |
| 3SU1400-1GC10-1AA0 | -- | No | 5 | -- | ► | **3SU1400-1GC10-1AA0** | | 1 | 1 unit | 41J |
| 3SU1400-1GD10-1AA0 | Yes | Yes | 5 | COM2 (38.4 kBaud) | ► | **3SU1400-1GD10-1AA0** | | 1 | 1 unit | 41J |

[1] Only use in conjunction with plastic holder 3SU1500-0AA10-0AA0.

# SIRIUS ACT DIGITALIZATION @ YOUR FINGERTIPS™

## Interface modules for PROFINET/terminal modules

### Selection and ordering data

| Supply voltage at DC | Number of interfaces according to PROFINET | Number of digital inputs | | Number of digital outputs | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | SIL claim limit acc. to EN 62061 | Standard | Safety-related | | | | | | |
| V | | | | | d | | | | |
| **Interface modules for PROFINET** | | | | | | | | | |
| | | | | | | **Screw terminals** | | | |
| | ***Interface modules*** | | | | | | | | |
| 24 | 1 | 0 | 0 | 0 | 5 | **3SU1400-1LK10-1AA1** | | 1 | 1 unit |
| | -- | 4 | 0 | 1 | 5 | **3SU1400-1LK10-1BA1** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| 24 | 1 | 0 | 0 | 0 | 5 | **3SU1400-1LK10-3AA1** | | 1 | 1 unit |
| | -- | 4 | 0 | 1 | 5 | **3SU1400-1LK10-3BA1** | | 1 | 1 unit |
| | | | | | | **Screw terminals** | | | |
| | ***Fail-safe interface modules*** | | | | | | | | |
| 24 | 1 SIL CL 3 | 4 | 0 | 1 | 5 | **3SU1400-1LL10-1BA1** | | 1 | 1 unit |
| | | | | | | **Spring-type terminals** | | | |
| 24 | 1 SIL CL 3 | 4 | 0 | 1 | 5 | **3SU1400-1LL10-3BA1** | | 1 | 1 unit |

3SU1400-1LK10-1AA1

3SU1400-1LL10-3BA1

### Selection and ordering data

| Type of product | Color of light source | SD | Insulation displacement connection | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | d | | | | | |
| **Terminal modules** | | | | | | | |
| With 2 contacts | -- | 5 | | **3SU1400-1MA10-1BA1** | | 1 | 1 unit |
| With 2 contacts and integrated LED | Amber | 5 | | **3SU1401-1MC00-1CA1** | | 1 | 1 unit |
| | Red | 5 | | **3SU1401-1MC20-1CA1** | | 1 | 1 unit |
| | Yellow | 5 | | **3SU1401-1MC30-1CA1** | | 1 | 1 unit |
| | Green | 5 | | **3SU1401-1MC40-1CA1** | | 1 | 1 unit |
| | Blue | 5 | | **3SU1401-1MC50-1CA1** | | 1 | 1 unit |
| | White | 5 | | **3SU1401-1MC60-1CA1** | | 1 | 1 unit |
| With integrated LED | Amber | 5 | | **3SU1401-1ME00-1DA1** | | 1 | 1 unit |
| | Red | 5 | | **3SU1401-1ME20-1DA1** | | 1 | 1 unit |
| | Yellow | 5 | | **3SU1401-1ME30-1DA1** | | 1 | 1 unit |
| | Green | 5 | | **3SU1401-1ME40-1DA1** | | 1 | 1 unit |
| | Blue | 5 | | **3SU1401-1ME50-1DA1** | | 1 | 1 unit |
| | White | 5 | | **3SU1401-1ME60-1DA1** | | 1 | 1 unit |

3SU1401-1ME60-1DA1

| Type of product | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Memory modules for 3SK2** | | | | | |
| For backing up the complete parameterization of the 3SK2 safety system without a PC/PG through the system interface | 2 | **3RK3931-0AA00** | | 1 | 1 unit |

3RK3931-0AA00

Flat ribbon cable, see page 10/165. onwards.

LED modules for mounting on printed-circuit boards, see page 10/117 onwards.

# Enclosures

## General data

### Overview

#### *Design*

Enclosures with standard fittings

Enclosed SIRIUS ACT pushbuttons and indicator lights are used as hand-operated control devices for separately allocated control units and cabinets. The devices are suitable for use in any climate and all have IP66, IP67, IP69 (IP69K) degree of protection, including those with cable glands.

#### *Standards*

IEC/EN 60947-5-1

#### *Versions*

The enclosed pushbuttons and indicator lights are available with conventional controls as well as for connection to AS-Interface. The following versions are available:

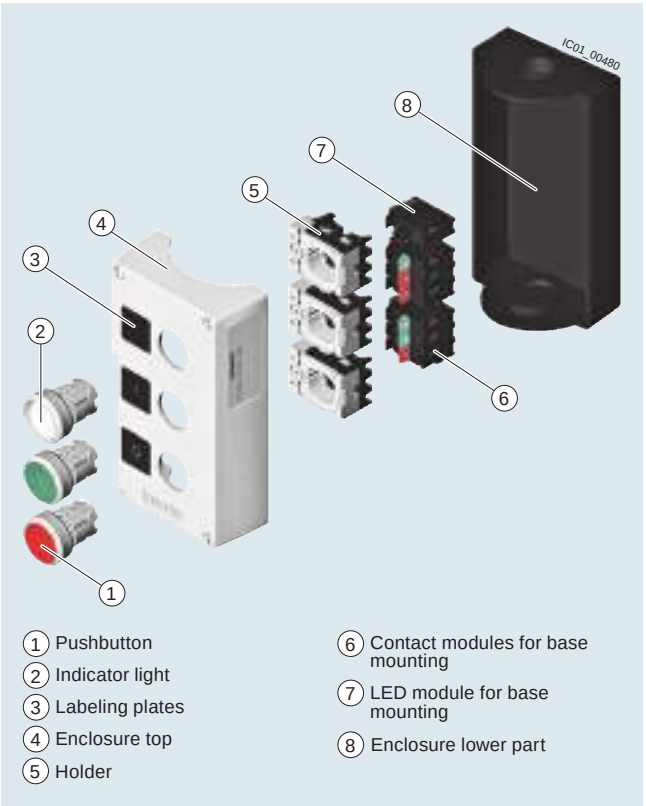
- Empty enclosures with between 1 and 6 command points (the installed components must be ordered separately; modules for base mounting or 1-pole contact and LED modules can be used)
- Enclosures with standard fittings with 1 to 3 command points, e.g. EMERGENCY STOP enclosure with EMERGENCY STOP mushroom pushbutton
- Enclosures with customized fittings with 1 to 6 command points
- Special enclosure for 4-position selector switches, coordinate switches, ID key-operated switches and sensor switches

Color of the enclosures

Top:
- Gray, RAL 7035
- Yellow, RAL 1004 for EMERGENCY STOP

Base:
- Black, RAL 9005

#### *Enclosures with standard fittings*




1 Pushbutton
2 Indicator light
3 Labeling plates
4 Enclosure top
5 Holder
6 Contact modules for base mounting
7 LED module for base mounting
8 Enclosure lower part

Pushbuttons and indicator lights in the enclosure

#### *Customized enclosures*

The fittings and labeling of the command point can be chosen using the Configurator on the Internet. The prices depend on the equipment selected, see www.siemens.com/sirius-act/configurator.

### Application

The enclosures are climate-proof (KTW 24) according to EN ISO 6270-2 and suitable for stationary use, and for use in marine applications.

# Enclosures

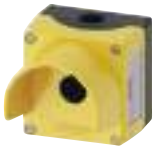
## Empty enclosures

### Selection and ordering data

| Color of enclosure top | Number of command points | Enclosure version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Enclosures for surface mounting** | | | | | | | |
| ***Plastic*** | | | | | | | |
| Yellow | 1 | Center command point | ▶ | **3SU1801-0AA00-0AA2** | | 1 | 1 unit |
| | | With protective collar | ▶ | **3SU1801-0AA00-0AC2** | | 1 | 1 unit |
| | | With recess for labeling plate | ▶ | **3SU1801-0AA00-0AB2** | | 1 | 1 unit |
| | 2 | With recess for labeling plate | ▶ | **3SU1802-0AA00-0AB2** | | 1 | 1 unit |
| Gray | 1 | With recess for labeling plate | ▶ | **3SU1801-0AA00-0AB1** | | 1 | 1 unit |
| | 2 | With recess for labeling plate | ▶ | **3SU1802-0AA00-0AB1** | | 1 | 1 unit |
| | 3 | With recess for labeling plate | ▶ | **3SU1803-0AA00-0AB1** | | 1 | 1 unit |
| | 4 | With recess for labeling plate | ▶ | **3SU1804-0AA00-0AB1** | | 1 | 1 unit |
| | 6 | With recess for labeling plate | ▶ | **3SU1806-0AA00-0AB1** | | 1 | 1 unit |
| ***Metal*** [1] | | | | | | | |
| Yellow | 1 | Center command point | ▶ | **3SU1851-0AA00-0AA2** | | 1 | 1 unit |
| | | With protective collar | 3 | **3SU1851-0AA00-0AC2** | | 1 | 1 unit |
| | | With recess for labeling plate | ▶ | **3SU1851-0AA00-0AB2** | | 1 | 1 unit |
| | | With protective collar for 5 padlocks, mushroom 40 mm | 3 | **3SU1851-0AA00-0AF2** | | 1 | 1 unit |
| | | With protective collar for 5 padlocks, mushroom 40 mm with key-operated release | 3 | **3SU1851-0AA00-0AG2** | | 1 | 1 unit |
| | | With protective collar for 5 padlocks, mushroom 60 mm | 3 | **3SU1851-0AA00-0AH2** | | 1 | 1 unit |
| | 1 | With protective collar for 5 padlocks, mushroom 60 mm | NEW 5 | **3SU1851-0AA00-0AJ2** | | 1 | 1 unit |
| Gray | 1 | With protective collar for 5 padlocks, mushroom 60 mm | 3 | **3SU1851-0AA00-0AH1** | | 1 | 1 unit |
| | 1 | With protective collar for 5 padlocks, mushroom 60 mm | NEW 5 | **3SU1851-0AA00-0AJ1** | | 1 | 1 unit |
| | | With recess for labeling plate | ▶ | **3SU1851-0AA00-0AB1** | | 1 | 1 unit |
| | | With protective collar | 5 | **3SU1851-0AA00-0AC1** | | 1 | 1 unit |
| | 2 | With recess for labeling plate | ▶ | **3SU1852-0AA00-0AB1** | | 1 | 1 unit |
| | 3 | With recess for labeling plate | ▶ | **3SU1853-0AA00-0AB1** | | 1 | 1 unit |
| | 4 | With recess for labeling plate | ▶ | **3SU1854-0AA00-0AB1** | | 1 | 1 unit |
| | 6 | With recess for labeling plate | ▶ | **3SU1856-0AA00-0AB1** | | 1 | 1 unit |
| **Enclosure for 4-position selector switches, coordinate switches, ID key-operated switches and sensor switches** | | | | | | | |
| ***Plastic, front plate mounting*** | | | | | | | |
| Gray | 1 | Center command point | 3 | **3SU1801-1AA00-1AA1** | | 1 | 1 unit |
| ***Metal, front plate mounting*** | | | | | | | |
| Gray | 1 | Center command point | 5 | **3SU1851-1AA00-1AA1** | | 1 | 1 unit |

3SU1801-0AA00-0AA2

3SU1802-0AA00-0AB1


3SU1851-0AA00-0AC2

3SU1851-0AA00-0AH1

3SU1853-0AA00-0AB1

3SU1854-0AA00-0AB1

3SU1801-1AA00-1AA1

[1] Only 3SU185, Metal Enclosure adaptors available to convert Metric Conduit Opening to 1/2" NPT Conduit:
> 3SX1998, 1/2" NPT Metal Adaptor for metal enclosures with M20 x 1.5 (IP65 Max.)
> 3SX1999, 1/2" NPT Metal Adaptor for metal enclosures with M25 x 1.5 (IP65 Max.)

# Enclosures

## Pushbuttons and indicator lights in the enclosure

### Overview

Pushbuttons and indicator lights in the enclosure (standard fittings) are available with:

- 1 to 3 command points (equipped, for example, with A, B, C, in each case from bottom to top)
- Operational voltage up to 400 V
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators
- Contact modules and LED modules for base mounting (are snapped into the enclosure base); screw terminals as standard; some versions also with spring-type terminals

***Palm pushbuttons***

Palm pushbuttons have a particularly large button surface. This means that they can be actuated quickly and easily with the hand, arm or foot.

### Selection and ordering data

| Color of enclosure top | Number of command points | Enclosure version<br>Pushbutton and signaling device equipment | Color of actuating element<br>Marking | Number of NC contacts | Number of NO contacts | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Enclosures with standard fittings** | | | | | | | | | | |
| | | | | | | | **Screw terminals** | | | |
| | | ***Plastic*** | | | | | | | | |
| Yellow | 1 | Center command point<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red | 1 | 0 | ▶ | **3SU1801-0NA00-2AA2** | | 1 | 1 unit |
| | | | | 2 | 0 | NEW 5 | **3SU1801-0NB00-2AA2** | | 1 | 1 unit |
| | | | | 1 | 1 | NEW X | **3SU1801-0NP00-2AA2** | | 1 | 1 unit |
| | | Center command point<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, with RONIS SB30 lock with key-operated release | Red | 1 | 1 | NEW X | **3SU1801-0NN00-2AA2** | | 1 | 1 unit |
| | | With protective collar<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red<br>A = I | 1 | 0 | ▶ | **3SU1801-0NA00-2AC2** | | 1 | 1 unit |
| | | | | 2 | 0 | ▶ | **3SU1801-0NB00-2AC2** | | 1 | 1 unit |
| | 2 | With recess for labeling plate<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch<br>B = Indicator light 24 V AC/DC | A = Red<br>B = Red<br>A = Emergency Stop<br>B = "without inscription" | 1 | 1 | NEW 5 | **3SU1802-0NA00-2AB2** | | 1 | 1 unit |
| | | | A = Red<br>B = Red<br>A = "Without inscription"<br>B = "Without inscription" | 2 | 1 | NEW 3 | **3SU1802-0NB00-2AB2** | | 1 | 1 unit |
| | 1 | Center command point<br>A = EMERGENCY STOP palm pushbuttons with positive latching acc. to ISO 13850, pull to unlatch | Red | 1 | 1 | 3 | **3SU1801-2NG00-2AA2** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| | | With recess for labeling plate<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red<br>A = I | 2 | 1 | 5 | **3SU1801-0NE00-4AB2** | | 1 | 1 unit |

3SU1801-0NA00-2AA2

3SU1801-0NA00-2AC2

3SU1802-0NA00-2AB2

3SU1801-2NG00-2AA2

# Enclosures

## Pushbuttons and indicator lights in the enclosure

| Color of enclosure top | Number of command points | Enclosure version<br>Pushbutton and signaling device equipment | Color of actuating element<br>Marking | Number of NC contacts | Number of NO contacts | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Enclosures with standard fittings** | | | | | | | | | | |
| | | | | | | | **Screw terminals** | | | |
| ***Plastic*** | | | | | | | | | | |
| Gray | 1 | With recess for labeling plate<br>A = Pushbutton | Green A = I<br>Red A = O<br>White A = I<br>Black A = O | 0<br>1<br>0<br>1 | 1<br>0<br>1<br>0 | 3<br>▶<br>5<br>5 | **3SU1801-0AB00-2AB1**<br>**3SU1801-0AC00-2AB1**<br>**3SU1801-0AD00-2AB1**<br>**3SU1801-0AE00-2AB1** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| | | With recess for labeling plate<br>A = Selector switch | Black | 0<br>0 | 2 NEW<br>1 NEW | 5<br>5 | **3SU1801-0BA00-4AB1**<br>**3SU1801-0BE00-4AB1** | | 1<br>1 | 1 unit<br>1 unit |
| | | With recess for labeling plate<br>A = Pushbutton | Green A = I | 1<br>0 | 0 NEW<br>1 NEW | 5<br>5 | **3SU1801-0BC00-4AB1**<br>**3SU1801-0BD00-4AB1** | | 1<br>1 | 1 unit<br>1 unit |
| | | | | | | | **Screw terminals** | | | |
| | 2 | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton | A = Red/<br>B = Green<br>A = O/<br>B = I | 1 | 1 | 3 | **3SU1802-0AB00-2AB1** | | 1 | 1 unit |
| | | | A = Black/<br>B = Black<br>A = O/<br>B = I | 1 | 1 | 5 | **3SU1802-0AC00-2AB1** | | 1 | 1 unit |
| | 3 | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton/<br>C = Indicator light | A = Red/<br>B = Green/<br>C = Clear<br>A = O/<br>B = I/<br>C = "Without inscription" | 1 | 1 | ▶ | **3SU1803-0AB00-2AB1** | | 1 | 1 unit |
| | | | A = Black/<br>B = White/<br>C = Clear<br>A = O/<br>B = I/<br>C = "Without inscription" | 1 | 1 | 5 | **3SU1803-0AC00-2AB1** | | 1 | 1 unit |
| | | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton/<br>C = Pushbutton | A = Red/<br>B = Black/<br>C = Black<br>A = O/<br>B = I/<br>C = II | 1 | 2 | 5 | **3SU1803-0AD00-2AB1** | | 1 | 1 unit |
| | 1 | Center command point<br>A = Palm pushbutton, momentary-contact type | Black | 0 | 1 | 3 | **3SU1801-2GA00-2AA1** | | 1 | 1 unit |

3SU1801-0AB00-2AB1

3SU1802-0AB00-2AB1

3SU1803-0AB00-2AB1

3SU1801-2GA00-2AA1

# Enclosures

## Pushbuttons and indicator lights in the enclosure

| | Color of enclosure | Number of command points | Enclosure version<br>Pushbutton and signaling device equipment | Color of actuating element | Marking | Number of NC contacts | Number of NO contacts | | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|---|---|
| **Enclosures with standard fittings** | | | | | | | | | | |
| | | | | | | | | | **Screw terminals** | |
| | ***Plastic*** | | | | | | | | | |
| 3SU1801-0AT00-2AB1 | Gray | 1 | With recess for labeling plate<br>A = Pushbutton, Flush, Momentary Action | Green | A = Start | 1 | 1 | NEW | **3SU1801-0AT00-2AB1** | |
| 3SU1801-0AS00-2AB1 | | | With recess for labeling plate<br>A = Mushroom Pushbutton, 40mm Momentary Action | Red | A = Stop | 1 | 1 | NEW | **3SU1801-0AS00-2AB1** | |
| 3SU1801-0AQ00-2AB1 | | | With recess for labeling plate<br>A = Selector Switch, 3 Switch Position I-O-II, Maintained | White | A = Hand / Off / Auto | 0 | 2 | NEW | **3SU1801-0AQ00-2AB1** | |
| 3SU1801-0AR00-2AB1 | | | With recess for labeling plate<br>A = Selector Switch, 2 Switch Position O-I, Maintained | White | A = On / Off | 0 | 2 | NEW | **3SU1801-0AR00-2AB1** | |

# Enclosures

## Pushbuttons and indicator lights in the enclosure

| Color of enclosure | Number of command points | Enclosure version<br>Pushbutton and signaling device equipment | Color of actuating element | Marking | Number of NC contacts | Number of NO contacts | | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|---|
| **Enclosures with standard fittings** | | | | | | | | | |
| | | | | | | | | **Screw terminals** | |
| ***Plastic*** | | | | | | | | | |
| Gray | 2 | With recess for labeling plate<br>A = Pushbutton, Flush<br>B = Pushbutton, Flush | A = Red<br>B = Green | A = Stop<br>B = Start | 1<br>0 | 0<br>1 | NEW | **3SU1802-0AL00-2AB1** | |
| | | | A = Black<br>B = Green | A = Down<br>B = Up | 0<br>0 | 1<br>1 | NEW | **3SU1802-0AM00-2AB1** | |
| | | | A = Black<br>B = Green | A = Close<br>B = Open | 0<br>0 | 1<br>1 | NEW | **3SU1802-0AQ00-2AB1** | |
| | | | A = Black<br>B = Green | A = Reverse<br>B = Forward | 0<br>0 | 1<br>1 | NEW | **3SU1802-0AR00-2AB1** | |
| <br>3SU1802-0AL00-2AB1 | | | | | | | | | |
| | | With recess for labeling plate<br>A = Pushbutton, Raised<br>B = Pushbutton, Flush | A = Red<br>B = Green | A = Stop<br>B = Start | 1<br>0 | 0<br>1 | NEW | **3SU1802-0AP00-2AB1** | |
| <br>3SU1802-0AP00-2AB1 | | | | | | | | | |
| | | With recess for labeling plate<br>A = Mushroom Pushbutton, 40mm Momentary<br>B = Pushbutton, Flush | A = Red<br>B = Green | A = Stop<br>B = Start | 1<br>0 | 0<br>1 | NEW | **3SU1802-0AN00-2AB1** | |
| <br>3SU1802-0AN00-2AB1 | | | | | | | | | |
| ***Plastic*** | | | | | | | | | |
| Gray | 3 | With recess for labeling plate<br>A = Pushbutton, Flush<br>B = Pushbutton, Flush<br>C = Pushbutton, Flush | A = Red<br>B = Black<br>C = Green | A = Stop<br>B = Close<br>C = Open | 1<br>1<br>1 | 1<br>1<br>1 | NEW | **3SU1803-0AR00-2AB1** | |
| | | | A = Red<br>B = Black<br>C = Green | A = Stop<br>B = Down<br>C = Up | 1<br>1<br>1 | 1<br>1<br>1 | NEW | **3SU1803-0AS00-2AB1** | |
| | | | A = Red<br>B = Black<br>C = Green | A = Stop<br>B = Reverse<br>C = Forward | 1<br>1<br>1 | 1<br>1<br>1 | NEW | **3SU1803-0AT00-2AB1** | |
| <br>3SU1803-0AR00-2AB1 | | | | | | | | | |

# Enclosures

## Pushbuttons and indicator lights in the enclosure

| Color of enclosure top | Number of command points | Enclosure version<br>Pushbutton and signaling device equipment | Color of actuating element<br>Marking | Number of NC contacts | Number of NO contacts | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Enclosures with standard fittings** | | | | | | | | | | |
| | | | | | | | **Screw terminals** | | | |
| ***Metal*** [1] | | | | | | | | | | |
| Yellow | 1 | Center command point<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red | 1<br>2 | 0<br>0 | 3<br>5 | **3SU1851-0NA00-2AA2**<br>**3SU1851-0NB00-2AA2** | | 1<br>1 | 1 unit<br>1 unit |
| | | With protective collar<br>A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red | 1<br>2<br>2<br>2 | 0<br>0<br>0<br>1 | ▶ 3<br>3<br>NEW 5<br>5 | **3SU1851-0NA00-2AC2**<br>**3SU1851-0NB00-2AC2**<br>**3SU1851-0NC00-2AC2**<br>**3SU1851-0ND00-2AC2** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | 1 | Center command point<br>A = EMERGENCY STOP palm pushbuttons with positive latching acc. to ISO 13850<br>Pull to unlatch | Red | 1 | 1 | 3 | **3SU1851-2NG00-2AA2** | | 1 | 1 unit |
| Gray | 1 | With recess for labeling plate<br>A = Pushbutton | Green A = I<br>Red A = O<br>White A = I<br>Black A = O | 0<br>1<br>0<br>1 | 1<br>0<br>1<br>0 | 5<br>5<br>5<br>5 | **3SU1851-0AB00-2AB1**<br>**3SU1851-0AC00-2AB1**<br>**3SU1851-0AD00-2AB1**<br>**3SU1851-0AE00-2AB1** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| | 2 | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton | A = Red/<br>B = Green<br>A = O/<br>B = I | 1 | 1 | 5 | **3SU1852-0AB00-2AB1** | | 1 | 1 unit |
| | | | A = Black/<br>B = White<br>A = O/<br>B = I | 1 | 1 | 5 | **3SU1852-0AC00-2AB1** | | 1 | 1 unit |
| | 3 | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton/<br>C = Indicator light | A = Red/<br>B = Green/<br>C = Clear<br>A = O/<br>B = I/<br>C = "Without inscription" | 1 | 1 | 5 | **3SU1853-0AB00-2AB1** | | 1 | 1 unit |
| | | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton/<br>C = Pushbutton | A = Red/<br>B = Black/<br>C = Black<br>A = O/<br>B = I/<br>C = II | 1 | 2 | 5 | **3SU1853-0AD00-2AB1** | | 1 | 1 unit |
| | 1 | Center command point<br>A = Palm pushbutton, momentary-contact type | Black | 0 | 1 | 3 | **3SU1851-2GA00-2AA1** | | 1 | 1 unit |

3SU1851-0NA00-2AA2

3SU1851-0NA00-2AC2

3SU1851-2NG00-2AA2

3SU1851-0AC00-2AB1

3SU1852-0AB00-2AB1

3SU1853-0AB00-2AB1

3SU1851-2GA00-2AA1

[1] Only 3SU185, Metal Enclosure adaptors available to convert Metric Conduit Opening to 1/2" NPT Conduit:
> 3SX1998, 1/2" NPT Metal Adaptor for metal enclosures with M20 x 1.5 (IP65 Max.)
> 3SX1999, 1/2" NPT Metal Adaptor for metal enclosures with M25 x 1.5 (IP65 Max.)

# Enclosures

## Pushbuttons and indicator lights in the enclosure

| Number of command points | Product function/ EMERGENCY STOP function | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Customized enclosures**[1] | | | | | | |
| | ***Plastic*** | | | | | |
| 1 | No | | **3SU1801-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1801-0NZ00 K0Y** | | 1 | 1 unit |
| 2 | No | | **3SU1802-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1802-0NZ00 K0Y** | | 1 | 1 unit |
| 3 | No | | **3SU1803-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1803-0NZ00 K0Y** | | 1 | 1 unit |
| 4 | No | | **3SU1804-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1804-0NZ00 K0Y** | | 1 | 1 unit |
| 6 | No | | **3SU1806-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1806-0NZ00 K0Y** | | 1 | 1 unit |
| | ***Metal*** [2] | | | | | |
| 1 | No | | **3SU1851-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1851-0NZ00 K0Y** | | 1 | 1 unit |
| 2 | No | | **3SU1852-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1852-0NZ00 K0Y** | | 1 | 1 unit |
| 3 | No | | **3SU1853-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1853-0NZ00 K0Y** | | 1 | 1 unit |
| 4 | No | | **3SU1854-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1854-0NZ00 K0Y** | | 1 | 1 unit |
| 6 | No | | **3SU1856-0AZ00 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1856-0NZ00 K0Y** | | 1 | 1 unit |

3SU1801-0AZ00 K0Y

3SU1851-0AZ00 K0Y

1) The fittings and labeling of the command point can be chosen using the Configurator on the Internet. The prices depend on the equipment selected. When ordering, always add the article number and the code K0Y and the CIN number from the Configurator.
Ordering example:
3SU1801-0AZ00 K0Y, CIN20150609140858154554,
see www.siemens.com/sirius-act/configurator.

2) Only 3SU185, Metal Enclosure adaptors available to convert Metric Conduit Opening to 1/2" NPT Conduit:
> 3SX1998, 1/2" NPT Metal Adaptor for metal enclosures with M20 x 1.5 (IP65 Max.)
> 3SX1999, 1/2" NPT Metal Adaptor for metal enclosures with M25 x 1.5 (IP65 Max.)

# Enclosures

## Pushbuttons and indicator lights in the enclosure for AS-Interface

### Overview

With AS-Interface enclosures, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system.
Using suitable components you can make your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.

Enclosures for AS-Interface

#### *Enclosures*

Color of enclosure top:

- Gray, RAL 7035
- Yellow, RAL 1004 for EMERGENCY STOP

Color of enclosure base:

- Black, RAL 9005

#### *Equipping with AS-Interface slaves*

The following slaves are available for connecting the command points:

- Slave in A/B technology with 4 digital inputs and 3 digital outputs (4 DI/3 DQ)
- Slave with 4 digital inputs and 4 digital outputs (4 DI/4 DQ)
- F slave with 2 safe inputs for EMERGENCY STOP mushroom pushbutton (2 F-DI), also with integrated red LED for the illuminated EMERGENCY STOP mushroom pushbutton.

The following table shows the maximum number of slaves possible:

| Number of command points | Number of slaves for enclosures without EMERGENCY STOP | Number of slaves for enclosures with EMERGENCY STOP |
|---|---|---|
| 1 | -- | 1 x F slave 2 F-DI |
| 2 | 1 x slave 4 DI/4 DQ or 4 DI/3 DQ | -- |
| 3 | 1 x slave 4 DI/4 DQ or 4 DI/3 DQ | 1 x slave 4 DI/4 DQ or 4 DI/3 DQ + 1 x F slave |
| 4 | 2 x slave 4 DI/4 DQ or 4 DI/3 DQ | 2 x slave 4 DI/4 DQ or 4 DI/3 DQ + 1 x F slave |
| 6 | 2 x slave 4 DI/4 DQ or 4 DI/3 DQ | 2 x slave 4 DI/4 DQ or 4 DI/3 DQ + 1 x F slave |

#### *Connection*

One set of links is required in each case to connect a slave to contact modules, LED modules, and the connection element.

The connection elements are mounted in the front-end cable glands and are used to connect the AS-Interface or bring unused inputs or outputs out of the enclosure.

For connection to AS-Interface, the following options are available:

- Terminal for shaped AS-Interface cable. The cable is contacted by the insulation piercing method and routed past the enclosure on the outside (possible only with plastic enclosure).
- Cable gland for the shaped AS-Interface cable or round cable. The cable is routed into the enclosure (preferable for metal enclosure).
- Connection using M12 plug.

If less than all inputs/outputs of the installed slaves in an enclosure are used for connecting the command devices, free inputs and outputs can be routed on request to the outside through an M12 socket on the top or bottom side of the enclosure.

To supply inputs with power, the S+ connection of the slave must be assigned to the socket, for outputs the OUT– connection must be assigned. Addressing is performed using the AS-Interface connections or the integrated addressing socket. An external power supply is not required.

#### *Enclosures with standard fittings*

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators

The enclosures without EMERGENCY STOP each have one module with 4I/3O; the enclosures with EMERGENCY STOP mushroom pushbuttons have a safe AS-Interface slave integrated in the enclosure. Enclosures with EMERGENCY STOP mushroom pushbuttons are fitted with two NC contact modules, which are wired to the safe F slave.

The contact modules and LED modules (with spring-type terminals) of the command devices and the AS-Interface slaves are mounted in the base of the enclosure and connected using cables. The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is run along the outside of the enclosure). For metal enclosures, the AS-Interface cable is run inside the enclosure.

The enclosures with EMERGENCY STOP mushroom pushbuttons are also available with an M12 connector.

#### *Customized enclosures (selection by configurator)*

To order customized 3SU18 AS-Interface enclosures with pushbuttons and indicator lights, the configurator must be used to select the fittings.
An electronic order form will be generated for the options.

For the Configurator, see www.siemens.com/sirius-act/configurator.

# Enclosures

## Pushbuttons and indicator lights in the enclosure for AS-Interface

### Selection and ordering data

| | Color of enclosure top | Number of command points | Enclosure version<br>Command point fittings | Color<br>Marking | SD<br>d | Insulation piercing method<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Enclosures with standard fittings** | | | | | | | | | |
| | ***Plastic*** | | | | | | | | |
| <br>3SU1801-0NB10-4HB2 | Yellow | 1 | With recess for labeling plate<br>A = EMERGENCY STOP mushroom push-buttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red | 5 | **3SU1801-0NB10-4HB2** | | 1 | 1 unit |
| <br>3SU1801-0NB10-4HC2 | | | With protective collar<br>A = EMERGENCY STOP mushroom push-buttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red NEW<br>A = I | 3 | **3SU1801-0NB10-4HC2** | | 1 | 1 unit |
| <br>3SU1802-0AB10-4HB1 | Gray | 2 | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton | A = Red/<br>B = Green<br>A = O/<br>B = I | 5 | **3SU1802-0AB10-4HB1** | | 1 | 1 unit |
| | | | | A = Black/<br>B = White<br>A = O/<br>B = I | 5 | **3SU1802-0AC10-4HB1** | | 1 | 1 unit |
| <br>3SU1803-0AB10-4HB1 | | 3 | With recess for labeling plate<br>A = Pushbutton/<br>B = Pushbutton/<br>C = Indicator light | A = Red/<br>B = Green/<br>C = Clear<br>A = O/<br>B = I/<br>C = "Without inscription" | 5 | **3SU1803-0AB10-4HB1** | | 1 | 1 unit |
| | ***Metal*** [1] | | | | | | | | |
| <br>3SU1851-0NB10-4GB2 | Yellow | 1 | With recess for labeling plate<br>A = EMERGENCY STOP mushroom push-buttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red NEW<br>A = I | 5 | **3SU1851-0NB10-4GB2** | | 1 | 1 unit |
| <br>3SU1851-0NB10-4GC2 | | | With protective collar<br>A = EMERGENCY STOP mushroom push-buttons, 40 mm, with positive latching acc. to ISO 13850, rotate to unlatch | Red NEW<br>A = I | 5 | **3SU1851-0NB10-4GC2** | | 1 | 1 unit |

[1] Only 3SU185, Metal Enclosure adaptors available to convert Metric Conduit Opening to 1/2" NPT Conduit:
> 3SX1998, 1/2" NPT Metal Adaptor for metal enclosures with M20 x 1.5 (IP65 Max.)
> 3SX1999, 1/2" NPT Metal Adaptor for metal enclosures with M25 x 1.5 (IP65 Max.)

# Enclosures

## Pushbuttons and indicator lights in the enclosure for AS-Interface

### Customized enclosures for AS-Interface[1)]

3SU1801-0NZ10 K0Y

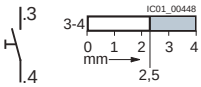
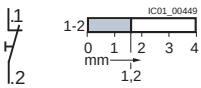
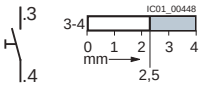
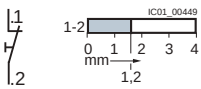
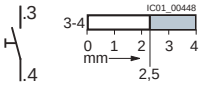
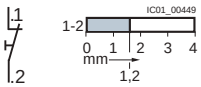
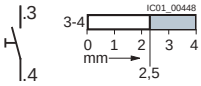
3SU1851-0NZ10 K0Y

| Number of command points | Product function/ EMERGENCY STOP function | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| ***Plastic*** | | | | | | |
| 1 | Yes | | **3SU1801-0NZ10 K0Y** | | 1 | 1 unit |
| 2 | No | | **3SU1802-0AZ10 K0Y** | | 1 | 1 unit |
| | No | | **3SU1802-0NZ10 K0Y** | | 1 | 1 unit |
| 3 | No | | **3SU1803-0AZ10 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1803-0NZ10 K0Y** | | 1 | 1 unit |
| 4 | No | | **3SU1804-0AZ10 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1804-0NZ10 K0Y** | | 1 | 1 unit |
| 6 | No | | **3SU1806-0AZ10 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1806-0NZ10 K0Y** | | 1 | 1 unit |
| ***Metal*** [2)] | | | | | | |
| 1 | Yes | | **3SU1851-0NZ10 K0Y** | | 1 | 1 unit |
| 2 | No | | **3SU1852-0AZ10 K0Y** | | 1 | 1 unit |
| | No | | **3SU1852-0NZ10 K0Y** | | 1 | 1 unit |
| 3 | No | | **3SU1853-0AZ10 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1853-0NZ10 K0Y** | | 1 | 1 unit |
| 4 | No | | **3SU1854-0AZ10 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1854-0NZ10 K0Y** | | 1 | 1 unit |
| 6 | No | | **3SU1856-0AZ10 K0Y** | | 1 | 1 unit |
| | Yes | | **3SU1856-0NZ10 K0Y** | | 1 | 1 unit |

1) The fittings and labeling of the command point can be chosen using the Configurator on the Internet. The prices depend on the equipment selected, see www.siemens.com/sirius-act/configurator.

2) Only 3SU185, Metal Enclosure adaptors available to convert Metric Conduit Opening to 1/2" NPT Conduit:
> 3SX1998, 1/2" NPT Metal Adaptor for metal enclosures with M20 x 1.5 (IP65 Max.)
> 3SX1999, 1/2" NPT Metal Adaptor for metal enclosures with M25 x 1.5 (IP65 Max.)

## Selection and ordering data

| | Contact version | Number of NO contacts | Number of NC contacts | | | SD d | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Contact modules for base mounting** | | | | | | | | | | |
| 3SU1400-2AA10-1BA0 | Silver alloy | 1 | 0 | |  | ▶ | **3SU1400-2AA10-1BA0** | | 1 | 1 unit |
| | | 0 | 1 | ⊖ |  | ▶ | **3SU1400-2AA10-1CA0** | | 1 | 1 unit |
| 3SU1400-2AA10-1LA0 | Gold-plated | 1 | 0 | |  | 5 | **3SU1400-2AA10-1LA0** | | 1 | 1 unit |
| | | 0 | 1 | ⊖ |  | 5 | **3SU1400-2AA10-1MA0** | | 1 | 1 unit |
| | | | | | | | **Spring-type terminals** | | | |
| 3SU1400-2AA10-3BA0 | Silver alloy | 1 | 0 | |  | ▶ | **3SU1400-2AA10-3BA0** | | 1 | 1 unit |
| | | 0 | 1 | ⊖ |  | ▶ | **3SU1400-2AA10-3CA0** | | 1 | 1 unit |
| 3SU1400-2AA10-3LA0 | Gold-plated | 1 | 0 | |  | 5 | **3SU1400-2AA10-3LA0** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Annex K.

Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see Section 13.

Certificate:

# Enclosures

## Modules for enclosures

### LED modules[1] for base mounting

3SU1401-2BB60-1AA0

| Operational voltage at AC | Operational voltage at DC | Color | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| V | V | | d | Article No. | Price per PU | |
| 24 | 24 | Amber | 3 | **3SU1401-2BB00-1AA0** | 1 | 1 unit |
| | | Red | 3 | **3SU1401-2BB20-1AA0** | 1 | 1 unit |
| | | Yellow | 3 | **3SU1401-2BB30-1AA0** | 1 | 1 unit |
| | | Green | 3 | **3SU1401-2BB40-1AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BB50-1AA0** | 1 | 1 unit |
| | | White | 3 | **3SU1401-2BB60-1AA0** | 1 | 1 unit |
| 110 | -- | Amber | 5 | **3SU1401-2BC00-1AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BC20-1AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BC30-1AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BC40-1AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BC50-1AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BC60-1AA0** | 1 | 1 unit |
| 230 | -- | Amber | 5 | **3SU1401-2BF00-1AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BF20-1AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BF30-1AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BF40-1AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BF50-1AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BF60-1AA0** | 1 | 1 unit |

[1] Only for use with SIRIUS commanding and signaling devices.

### LED modules[1] for base mounting

3SU1401-2BB20-3AA0

| Operational voltage at AC | Operational voltage at DC | Color | SD | Spring-type terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| V | V | | d | Article No. | Price per PU | |
| 24 | 24 | Amber | 5 | **3SU1401-2BB00-3AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BB20-3AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BB30-3AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BB40-3AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BB50-3AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BB60-3AA0** | 1 | 1 unit |
| 110 | -- | Amber | 5 | **3SU1401-2BC00-3AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BC20-3AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BC30-3AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BC40-3AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BC50-3AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BC60-3AA0** | 1 | 1 unit |
| 230 | -- | Amber | 5 | **3SU1401-2BF00-3AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BF20-3AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BF30-3AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BF40-3AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BF50-3AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BF60-3AA0** | 1 | 1 unit |

[1] Only for use with SIRIUS commanding and signaling devices.

# Enclosures

## Modules for enclosures

### LED modules[1] for base mounting · wide voltage range

| Operational voltage at AC | Operational voltage at DC | Color | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| V | V | | d | Article No. | Price per PU | |
| 6 … 24 | 6 … 24 | Amber | 3 | **3SU1401-2BG00-1AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BG20-1AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BG30-1AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BG40-1AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BG50-1AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BG60-1AA0** | 1 | 1 unit |
| 24 … 240 | 24 … 240 | Amber | 5 | **3SU1401-2BH00-1AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BH20-1AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BH30-1AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BH40-1AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BH50-1AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BH60-1AA0** | 1 | 1 unit |

3SU1401-2BG60-1AA0

| | | | | Spring-type terminals | | |
|---|---|---|---|---|---|---|
| 6 … 24 | 6 … 24 | Amber | 5 | **3SU1401-2BG00-3AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BG20-3AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BG30-3AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BG40-3AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BG50-3AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BG60-3AA0** | 1 | 1 unit |
| 24 … 240 | 24 … 240 | Amber | 5 | **3SU1401-2BH00-3AA0** | 1 | 1 unit |
| | | Red | ▶ | **3SU1401-2BH20-3AA0** | 1 | 1 unit |
| | | Yellow | 5 | **3SU1401-2BH30-3AA0** | 1 | 1 unit |
| | | Green | ▶ | **3SU1401-2BH40-3AA0** | 1 | 1 unit |
| | | Blue | ▶ | **3SU1401-2BH50-3AA0** | 1 | 1 unit |
| | | White | ▶ | **3SU1401-2BH60-3AA0** | 1 | 1 unit |

3SU1401-2BG20-3AA0

[1] Only for use with SIRIUS commanding and signaling devices.

### LED test modules[1] for base mounting

| Operational voltage at AC | Operational voltage at DC | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| V | V | d | Article No. | Price per PU | |
| 6 … 240 | 6 … 240 | ▶ | **3SU1400-2CK10-1AA0** | 1 | 1 unit |

3SU1400-2CK10-1AA0

[1] Only to be used for SIRIUS ACT LED modules (6 ... 24 V AC/DC, 24 V AC/DC, 24 ... 240 V AC/DC).

# Enclosures

## Modules for enclosures

| | Operational voltage | Slave type | Number of digital inputs: Standard | Number of digital inputs: Safety-related | Number of digital outputs | SD | Spring-type terminals (push-in) Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | V | | | | | d | | | | |
| **AS-Interface modules, base mounting** | | | | | | | | | | |
| 3SU1400-2EJ10-6AA0 | 30 | 4 DI/3 DQ AB | 4 | 0 | 3 | 5 | **3SU1400-2EJ10-6AA0** | | 1 | 1 unit |
| | | 4 DI/4 DQ | 4 | 0 | 4 | ▶ | **3SU1400-2EK10-6AA0** | | 1 | 1 unit |
| | | 2 F-DI | 0 | 2 | 0 | 5 | **3SU1400-2EA10-6AA0** | | 1 | 1 unit |
| | | 2 F-DI + 1 LED | 0 | 2 | 1 For controlling the LEDs | 5 | **3SU1401-2EE20-6AA0** | | 1 | 1 unit |
| **Electronic module for IO-Link, base mounting** | | | | | | | | | | |
| 3SU1400-2HL10-6AA0 | 24 | Freely programmable (default 6 DI/2 DQ) | 0-8 | 0 | 0-8 | 5 | **3SU1400-2HL10-6AA0** | | 1 | 1 unit |

| | Color | SD | Screw terminals Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Support terminals** | | | | | | |
| 3SU1400-2DA10-1AA0 | Black | 3 | **3SU1400-2DA10-1AA0** | | 1 | 1 unit |
| | Blue | 5 | **3SU1400-2DA50-1AA0** | | 1 | 1 unit |
| | Green/Yellow | 3 | **3SU1400-2DA43-1AA0** | | 1 | 1 unit |
| | | | **Spring-type terminals** | | | |
| 3SU1400-2DA50-3AA0 | Black | 5 | **3SU1400-2DA10-3AA0** | | 1 | 1 unit |
| | Blue | 5 | **3SU1400-2DA50-3AA0** | | 1 | 1 unit |
| | Green/Yellow | 5 | **3SU1400-2DA43-3AA0** | | 1 | 1 unit |

# Enclosures

## Two-hand operation consoles

### Overview

***Equipment***

The two-hand operation consoles are pre-equipped with commanding devices. In the case of plastic enclosures the command points are equipped as standard with actuators and indicators made of plastic and in the case of metal enclosures they are equipped with actuators and indicators made of metal.

The standard equipment comprises:

- 2 black mushroom pushbuttons, diameter 40 mm, 1 NO + 1 NC
- 1 red EMERGENCY STOP mushroom pushbutton according to ISO 13850, diameter 40 mm, with positive latching, 2 NC

The plastic version can be retrofitted with up to 8 customized command points. The surface of the console has premachined breaking points for this purpose.

### Application

The two-hand operation consoles are required for use with machines and systems that have hazardous areas, in order to direct both hands of the operator to one position.

The operation consoles are primarily used on presses, stamping machines, printing presses and paper converting machines, in the chemical industry and in the rubber and plastics industries.

The control command is given by pressing the two mushroom pushbuttons on the sides simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

For the further processing of control commands, evaluation units are used, e.g. 3SK11 safety relays or the 3RK3, 3SK2 Modular Safety System.

***Standards***

The two-hand operation consoles comply with the requirements of EN 574.

### Selection and ordering data

| | Version of actuating element/ unlatching method/ operating principle | Color of actuating element | Number of NO contacts | Number of NC contacts | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Two-hand operation consoles** | | | | | | | | | |
| | ***Plastic*** | | | | | | | | |
| | None | -- | 0 | 0 | 5 | **3SU1803-3AA00-0AA1** | | 1 | 1 unit |
| 3SU1803-3NB00-1AE1 | A = Mushroom pushbutton/ momentary contact<br>B = EMERGENCY STOP mushroom pushbutton/ rotate to unlatch<br>C = Mushroom pushbutton/ momentary contact | A = Black/ B = Red/ C = Black | 2 | 4 | 5 | **3SU1803-3NB00-1AE1** | | 1 | 1 unit |
| | ***Metal*** | | | | | | | | |
| 3SU1853-3AA00-0AA1 | None | -- | 0 | 0 | 5 | **3SU1853-3AA00-0AA1** | | 1 | 1 unit |
| 3SU1853-3NB00-1AA1 | A = Mushroom pushbutton/ momentary contact<br>B = EMERGENCY STOP mushroom pushbutton/ rotate to unlatch<br>C = Mushroom pushbutton/ momentary contact | A = Black/ B = Red/ C = Black | 2 | 4 | 5 | **3SU1853-3NB00-1AA1** | | 1 | 1 unit |
| 3SU1853-3NB00-1AD1 | | | 2 | 4 | 5 | **3SU1853-3NB00-1AD1** | | 1 | 1 unit |

| | Version | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Accessories** | | | | | | | | |
| | ***Stands for two-hand operation consoles*** | | | | | | | |
| 3SU1950-0HN10-0AA0 | | Metal | Black | 5 | **3SU1950-0HN10-0AA0** | | 1 | 1 unit |

# Labels

## Insert labels

### Overview

Labels can be inserted for identification purposes in pushbuttons (clear) and in illuminated pushbuttons with a flat button. These insert labels are made of semi-transparent plastic with black inscription; they can be fitted in any 90° angle.

***Inscription***

The inscription is in upper/lower case, all words begin with upper case letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

The insert labels without inscription are suitable for user marking with permanent pen.

For customized inscription, see "Options" on page 10/140.

### Selection and ordering data

3SU1900-0AB71-0AA0

3SU1900-0AB71-0DN0

| Color | Marking | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Insert labels** | | | | | |
| **For self-inscription** | | | | | |
| Clear/Black (label/lettering) | None | B | **3SU1900-0AB71-0AA0** | 100 | 10 units |
| **For customized inscription** | | | | | |
| Clear/Black (label/lettering) | None | B | **3SU1900-0AB71-0AZ0** | 100 | 10 units |
| **Inscription in English** | | | | | |
| Clear/Black (label/lettering) | On | B | **3SU1900-0AB71-0DJ0** | 100 | 10 units |
| | Off | B | **3SU1900-0AB71-0DK0** | 100 | 10 units |
| | Up | B | **3SU1900-0AB71-0DL0** | 100 | 10 units |
| | Down | B | **3SU1900-0AB71-0DM0** | 100 | 10 units |
| | Forward+ | B | **3SU1900-0AB71-0DN0** | 100 | 10 units |
| | Right | B | **3SU1900-0AB71-0DQ0** | 100 | 10 units |
| | Left | B | **3SU1900-0AB71-0DR0** | 100 | 10 units |
| | Stop | B | **3SU1900-0AB71-0DS0** | 100 | 10 units |
| | Start | B | **3SU1900-0AB71-0DT0** | 100 | 10 units |
| | Reset | B | **3SU1900-0AB71-0DU0** | 100 | 10 units |
| | Test | B | **3SU1900-0AB71-0DV0** | 100 | 10 units |
| | Open | B | **3SU1900-0AB71-0DW0** | 100 | 10 units |
| | Close | B | **3SU1900-0AB71-0DX0** | 100 | 10 units |
| | Running | B | **3SU1900-0AB71-0EB0** | 100 | 10 units |
| | Fast | B | **3SU1900-0AB71-0EE0** | 100 | 10 units |
| | Slow | B | **3SU1900-0AB71-0EF0** | 100 | 10 units |

# Labels

## Insert labels

| | Color | Marking | Symbol No. | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Insert labels** | | | | | | | | |
| 3SU1900-0AB71-0QC0 | **With symbol (ON/OFF)** | | | | | | | |
| | Milky white/ black (label/lettering) | O | 5008 IEC | ▶ | **3SU1900-0AB71-0QA0** | | 100 | 10 units |
| | | I | 5007 IEC | ▶ | **3SU1900-0AB71-0QB0** | | 100 | 10 units |
| | | II | -- | 5 | **3SU1900-0AB71-0QC0** | | 100 | 10 units |
| | | III | -- | 5 | **3SU1900-0AB71-0QD0** | | 100 | 10 units |
| 3SU1900-0AB71-0QT0 | **With symbol (graphic)** | | | | | | | |
| | Milky white/ black (label/lettering) | ARROW DIRECTION TO RIGHT | 5022 IEC | ▶ | **3SU1900-0AB71-0QR0** | | 100 | 10 units |
| | | ARROW DIRECTION UP AND TO LEFT | -- | ▶ | **3SU1900-0AB71-0QS0** | | 100 | 10 units |
| | | CLOCKWISE ROTATION | 0004 ISO | 5 | **3SU1900-0AB71-0QT0** | | 100 | 10 units |
| | | COUNTERCLOCK-WISE ROTATION | -- | 5 | **3SU1900-0AB71-0QU0** | | 100 | 10 units |
| 3SU1900-0AB71-0RB0 | | RAPID TRAVERSE | 0266 ISO | 5 | **3SU1900-0AB71-0QV0** | | 100 | 10 units |
| | | FEED | 0259 ISO | 5 | **3SU1900-0AB71-0QW0** | | 100 | 10 units |
| | | INCREASE, PLUS | 5005 IEC | 5 | **3SU1900-0AB71-0QX0** | | 100 | 10 units |
| | | DECREASE, MINUS | 5006 IEC | 5 | **3SU1900-0AB71-0QY0** | | 100 | 10 units |
| | | ELECTRIC MOTOR | 0011 ISO | 5 | **3SU1900-0AB71-0RA0** | | 100 | 10 units |
| | | HORN | 5014 IEC | 5 | **3SU1900-0AB71-0RB0** | | 100 | 10 units |
| 3SU1900-0AB71-0RN0 | | WATER INLET | -- | 5 | **3SU1900-0AB71-0RC0** | | 100 | 10 units |
| | | PUMP | 0134 ISO | 5 | **3SU1900-0AB71-0RD0** | | 100 | 10 units |
| | | COOLANT PUMP | 0355 ISO | 5 | **3SU1900-0AB71-0RE0** | | 100 | 10 units |
| | | LOCK, TIGHTEN | 5653 IEC | 5 | **3SU1900-0AB71-0RF0** | | 100 | 10 units |
| | | UNLOCK, UNCLAMP | 5652 IEC | 5 | **3SU1900-0AB71-0RG0** | | 100 | 10 units |
| | | BRAKE | -- | 5 | **3SU1900-0AB71-0RH0** | | 100 | 10 units |
| | | RELEASE BRAKE | 0021 ISO | 5 | **3SU1900-0AB71-0RJ0** | | 100 | 10 units |
| | | INTERLOCK | 0022 ISO | 5 | **3SU1900-0AB71-0RK0** | | 100 | 10 units |
| | | UNLOCK | 0023 ISO | 5 | **3SU1900-0AB71-0RL0** | | 100 | 10 units |
| | | SET UP | 0910 ISO | 5 | **3SU1900-0AB71-0RM0** | | 100 | 10 units |
| | | ON/OFF, MOMENTARY CONTACT TYPE | 5011 IEC | 5 | **3SU1900-0AB71-0RN0** | | 100 | 10 units |
| | | MANUAL OPERATION | 0096 ISO | 5 | **3SU1900-0AB71-0RP0** | | 100 | 10 units |
| | | AUTOMATIC CYCLE | 0017 ISO | ▶ | **3SU1900-0AB71-0RQ0** | | 100 | 10 units |
| | | SUCTION | -- | 5 | **3SU1900-0AB71-0RR0** | | 100 | 10 units |
| | | BLOWING | -- | 5 | **3SU1900-0AB71-0RS0** | | 100 | 10 units |

# Labels

## Insert labels

### Options

***Customized inscriptions***

The labels can be inscribed with text and symbols not listed in the ordering data.

By default, a letter height of 4 mm (for a single line of text) or 3 mm (for two or three lines of text) is used for text inscriptions.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round insert labels, the maximum possible number of characters per line is:

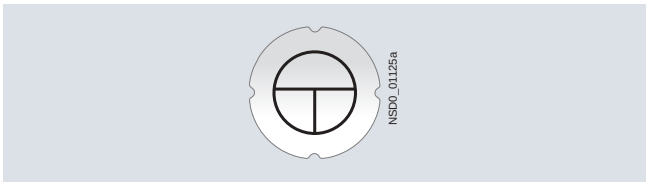
- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

Examples for customized inscription

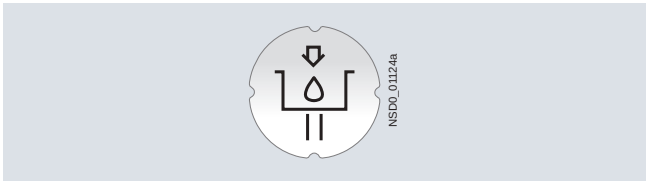
Two-line inscription in upper/lower case lettering (Q0Y)

Single-line inscription in upper case lettering (Q1Y)

Three-line inscription in lower case letters (Q2Y)




Symbol number 5011 according to IEC 60417 (Q3Y)




Any symbol according to order form supplement (Q9Y)

***Ordering notes***

Append the following order codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift / Off"): **Q0Y**
- Text line(s) in upper case (e.g. "LIFT"): **Q1Y**
- Text line(s) in lower case (e.g. "lift / off / lower"): **Q2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "On Off"): **Q5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **Q3Y**
- Any inscription or symbol according to order form supplement: **Q9Y**

When ordering, specify the required inscription in plain text in addition to the article number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language. In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division; see ordering example 1

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417; see ordering examples 2 and 3

The SIRIUS ACT Configurator must be used to select customized inscriptions and symbols (order code Q9Y).
In this case a "CIN" (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard order channels.

Standard ordering channels:
- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.usa.siemens.com/industrymall

Ordering example 1

A label with 2 lines of text is required:

3SU1900-0AB71-0AZ0
Q1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SU1900-0AB71-0AZ0
Q3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SU1900-0AB71-0AZ0
Q3Y
Z = 1118 ISO

# Labels

## Label holders for labeling plates

### Selection and ordering data

| Material<br>Label holder shape | Label holder color | Label fastening method | Labeling plate size<br>Height<br>mm | <br>Width<br>mm | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **Label holders for labeling plates** | | | | | | | | | |
| Plastic<br>With rounded bottom | Black | Self-adhesive | 12.5 | 27 | ▶ | **3SU1900-0AG10-0AA0** | | 100 | 10 units |
| | | | 17.5 | 27 | ▶ | **3SU1900-0AH10-0AA0** | | 100 | 10 units |
| | | | 27 | 27 | ▶ | **3SU1900-0AJ10-0AA0** | | 100 | 10 units |
| | | Snap-on | 12.5 | 27 | ▶ | **3SU1900-0AR10-0AA0** | | 100 | 10 units |
| | | | 17.5 | 27 | ▶ | **3SU1900-0AS10-0AA0** | | 100 | 10 units |
| | | | 27 | 27 | ▶ | **3SU1900-0AT10-0AA0** | | 100 | 10 units |
| 3SU1900-0AG10-0AA0 | | | | | | | | | |
| Plastic,<br>with square bottom | Black | Self-adhesive | 12.5 | 27 | 3 | **3SU1900-0AN10-0AA0** | | 100 | 10 units |
| | | | 17.5 | 27 | ▶ | **3SU1900-0AP10-0AA0** | | 100 | 10 units |
| | | | 27 | 27 | 5 | **3SU1900-0AQ10-0AA0** | | 100 | 10 units |
| 3SU1900-0AN10-0AA0 | | | | | | | | | |
| ***For 2 labeling plates*** | | | | | | | | | |
| Plastic,<br>with rounded bottom | Black | Self-adhesive | 17.5 | 27 | ▶ | **3SU1900-0BQ10-0AA0** | | 1 | 1 unit |
| | | Snap-on | 17.5 | 27 | ▶ | **3SU1900-0BR10-0AA0** | | 1 | 1 unit |
| 3SU1900-0BQ10-0AA0 | | | | | | | | | |
| ***For 4 labeling plates*** | | | | | | | | | |
| Plastic,<br>with rounded bottom | Black | Self-adhesive | 17.5 | 27 | ▶ | **3SU1900-0BS10-0AA0** | | 1 | 1 unit |
| | | Snap-on | 17.5 | 27 | ▶ | **3SU1900-0BT10-0AA0** | | 1 | 1 unit |
| 3SU1900-0BT10-0AA0 | | | | | | | | | |
| ***For actuators and indicators, 30 mm*** NEW | | | | | | | | | |
| Metal, matte<br>With rounded bottom | Black | Self-adhesive | 17.5 | 27 | ▶ | **3SU1960-0AH10-0AA0** | | 1 | 10 units |
| | | Snap-on | 17.5 | 27 | ▶ | **3SU1960-0AS10-0AA0** | | 1 | 10 units |
| 3SU1960-0AH10-0AA0 | | | | | | | | | |
| **Label holders for labeling plates, coordinate switches** | | | | | | | | | |
| Plastic,<br>with square bottom | Black | Self-adhesive | 27 | 27 | ▶ | **3SU1900-0AL10-0AA0** | | 1 | 1 unit |
| 3SU1900-0AL10-0AA0 | | | | | | | | | |
| Plastic,<br>cross | Black | Self-adhesive | 27 | 27 | ▶ | **3SU1900-0AM10-0AA0** | | 1 | 1 unit |
| 3SU1900-0AM10-0AA0 | | | | | | | | | |

# Labels

## Label holders for labeling plates

| | Material<br>Label holder shape | Label holder color | Label fastening method | Labeling plate size<br>Height | <br>Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | mm | mm | d | | | | |
| **Label holders for labeling plates, twin pushbuttons** | | | | | | | | | | |
| 3SU1900-0AK10-0AA0 | Plastic, rectangular | Black | Self-adhesive | 12.5 | 27 | ► | **3SU1900-0AK10-0AA0** | | 100 | 10 units |
| **Single frames** | | | | | | | | | | |
| 3SU1900-0AX10-0AA0 | Plastic, square | Black | -- | 29.8 | 29.8 | ► | **3SU1900-0AX10-0AA0** | | 1 | 10 units |

# Labels

## Labeling plates

### Overview

The backing plates consist of a black molded-plastic label holder and a labeling plate (black with white print or silver-colored with black print) for sticking or snapping in place. They are not suitable for EMERGENCY STOP buttons. Note mounting dimensions!

***Inscription***

The inscription is in upper/lower case, all words begin with upper case letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

For customized inscription, see "Options" on page 10/148.

***Labeling plates for sticking/snapping in place***

The labels are available in three sizes:

- 12.5 mm × 27 mm
- 17.5 mm × 27 mm
- 27 mm × 27 mm

For mounting the labeling plates, you can choose between label holders for stick-on or snap-on mounting.

### Selection and ordering data

| Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Labeling plates 12.5 mm x 27 mm** | | | | | | |
| **For self-inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ▶ | **3SU1900-0AC16-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ▶ | **3SU1900-0AC16-0AZ0** | 100 | 10 units |
| **Inscription in English** | | | | | | |
| Black/White (label/lettering) | On | -- | B | **3SU1900-0AC16-0DJ0** | 100 | 10 units |
| | Off | -- | B | **3SU1900-0AC16-0DK0** | 100 | 10 units |
| | Up | -- | B | **3SU1900-0AC16-0DL0** | 100 | 10 units |
| | Down | -- | B | **3SU1900-0AC16-0DM0** | 100 | 10 units |
| | Forward | -- | ▶ | **3SU1900-0AC16-0DN0** | 100 | 10 units |
| | Reverse | -- | B | **3SU1900-0AC16-0DP0** | 100 | 10 units |
| | Right | -- | B | **3SU1900-0AC16-0DQ0** | 100 | 10 units |
| | Left | -- | B | **3SU1900-0AC16-0DR0** | 100 | 10 units |
| | Stop | -- | ▶ | **3SU1900-0AC16-0DS0** | 100 | 10 units |
| | Start | -- | ▶ | **3SU1900-0AC16-0DT0** | 100 | 10 units |
| | Reset | -- | B | **3SU1900-0AC16-0DU0** | 100 | 10 units |
| | Test | -- | B | **3SU1900-0AC16-0DV0** | 100 | 10 units |
| | Open | -- | ▶ | **3SU1900-0AC16-0DW0** | 100 | 10 units |
| | Close | -- | ▶ | **3SU1900-0AC16-0DX0** | 100 | 10 units |
| | Jog | -- | B | **3SU1900-0AC16-0DE0** | 100 | 10 units |
| | Running | -- | B | **3SU1900-0AC16-0EB0** | 100 | 10 units |
| | Fault | -- | B | **3SU1900-0AC16-0EC0** | 100 | 10 units |
| | Run | -- | B | **3SU1900-0AC16-0ED0** | 100 | 10 units |
| | Stop Start | -- | B | **3SU1900-0AC16-0DC0** | 100 | 10 units |
| | Off On | -- | ▶ | **3SU1900-0AC16-0DH0** | 100 | 10 units |
| | Power off | -- | B | **3SU1900-0AC16-0DF0** | 100 | 10 units |
| | Power on | -- | B | **3SU1900-0AC16-0DG0** | 100 | 10 units |
| | Man O Auto | -- | B | **3SU1900-0AC16-0DY0** | 100 | 10 units |
| | Man Auto | -- | B | **3SU1900-0AC16-0EA0** | 100 | 10 units |
| | Hand Auto | -- | B | **3SU1900-0AC16-0DB0** | 100 | 10 units |
| | Hand O Auto | -- | B | **3SU1900-0AC16-0DD0** | 100 | 10 units |
| **With symbol** | | | | | | |
| Black/White (label/lettering) | O | -- | B | **3SU1900-0AC16-0QA0** | 100 | 10 units |
| | I | -- | B | **3SU1900-0AC16-0QB0** | 100 | 10 units |
| | O I | -- | B | **3SU1900-0AC16-0QG0** | 100 | 10 units |
| | 1 2 | -- | B | **3SU1900-0AC16-0QJ0** | 100 | 10 units |
| | ↑ ARROW DIRECTION UP | -- | B | **3SU1900-0AC16-0QS0** | 100 | 10 units |

3SU1900-0AC16-0AA0

3SU1900-0AC16-0DN0

3SU1900-0AC16-0QG0

# Labels

## Labeling plates

| Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Labeling plates 12.5 mm x 27 mm** | | | | | | |
| **For self-inscription** | | | | | | |
| Silver/Black (label/lettering) | None | | A | **3SU1900-0AC81-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Silver/Black (label/lettering) | None | | A | **3SU1900-0AC81-0AZ0** | 100 | 10 units |
| **Inscription in English** | | | | | | |
| Silver/Black (label/lettering) | On | -- | B | **3SU1900-0AC81-0DJ0** | 100 | 10 units |
| | Off | -- | B | **3SU1900-0AC81-0DK0** | 100 | 10 units |
| | Up | -- | B | **3SU1900-0AC81-0DL0** | 100 | 10 units |
| | Down | -- | B | **3SU1900-0AC81-0DM0** | 100 | 10 units |
| | Stop | -- | B | **3SU1900-0AC81-0DS0** | 100 | 10 units |
| | Start | -- | B | **3SU1900-0AC81-0DT0** | 100 | 10 units |
| | Reset | -- | B | **3SU1900-0AC81-0DU0** | 100 | 10 units |
| | Test | -- | B | **3SU1900-0AC81-0DV0** | 100 | 10 units |
| | Open | -- | B | **3SU1900-0AC81-0DW0** | 100 | 10 units |
| | Close | -- | B | **3SU1900-0AC81-0DX0** | 100 | 10 units |
| | Man O Auto | -- | B | **3SU1900-0AC81-0DY0** | 100 | 10 units |
| | Man Auto | -- | B | **3SU1900-0AC81-0EA0** | 100 | 10 units |
| | Running | -- | B | **3SU1900-0AC81-0EB0** | 100 | 10 units |
| | Fault | -- | B | **3SU1900-0AC81-0EC0** | 100 | 10 units |
| | Fast | -- | B | **3SU1900-0AC81-0EE0** | 100 | 10 units |
| | Slow | -- | B | **3SU1900-0AC81-0EF0** | 100 | 10 units |
| | Hand Auto | -- | B | **3SU1900-0AC81-0DB0** | 100 | 10 units |
| | Stop Start | -- | B | **3SU1900-0AC81-0DC0** | 100 | 10 units |
| | Hand O Auto | -- | B | **3SU1900-0AC81-0DD0** | 100 | 10 units |
| **With symbol** | | | | | | |
| Silver/Black (label/lettering) | O | 5008 IEC | B | **3SU1900-0AC81-0QA0** | 100 | 10 units |
| | I | 5007 IEC | B | **3SU1900-0AC81-0QB0** | 100 | 10 units |
| | II | -- | B | **3SU1900-0AC81-0QC0** | 100 | 10 units |
| | III | -- | B | **3SU1900-0AC81-0QD0** | 100 | 10 units |
| | O I | -- | B | **3SU1900-0AC81-0QG0** | 100 | 10 units |
| | I O II | -- | B | **3SU1900-0AC81-0QK0** | 100 | 10 units |
| | 1 O 2 | -- | B | **3SU1900-0AC81-0QL0** | 100 | 10 units |
| | → ARROW DIRECTION TO RIGHT | 5022 IEC | B | **3SU1900-0AC81-0QR0** | 100 | 10 units |
| | ↑ ARROW DIRECTION UP | -- | B | **3SU1900-0AC81-0QS0** | 100 | 10 units |

3SU1900-0AC81-0AA0

3SU1900-0AC81-0DK0

3SU1900-0AC81-0QK0

# Labels

## Labeling plates

### Labeling plates 17.5 mm x 27 mm

3SU1900-0AD16-0AA0

3SU1900-0AD16-0DK0

3SU1900-0AD16-0QR0

| Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **For self-inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ▶ | **3SU1900-0AD16-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ▶ | **3SU1900-0AD16-0AZ0** | 100 | 10 units |
| **Inscription in English** | | | | | | |
| Black/White (label/lettering) | Stop Start | -- | B | **3SU1900-0AD16-0DC0** | 100 | 10 units |
| | On | -- | B | **3SU1900-0AD16-0DJ0** | 100 | 10 units |
| | Off | -- | B | **3SU1900-0AD16-0DK0** | 100 | 10 units |
| | Up | -- | B | **3SU1900-0AD16-0DL0** | 100 | 10 units |
| | Down | -- | B | **3SU1900-0AD16-0DM0** | 100 | 10 units |
| | Forward | -- | B | **3SU1900-0AD16-0DN0** | 100 | 10 units |
| | Reverse | -- | B | **3SU1900-0AD16-0DP0** | 100 | 10 units |
| | Right | -- | B | **3SU1900-0AD16-0DQ0** | 100 | 10 units |
| | Stop | -- | B | **3SU1900-0AD16-0DS0** | 100 | 10 units |
| | Start | -- | B | **3SU1900-0AD16-0DT0** | 100 | 10 units |
| | Open | -- | B | **3SU1900-0AD16-0DW0** | 100 | 10 units |
| | Close | -- | B | **3SU1900-0AD16-0DX0** | 100 | 10 units |
| | Man Auto | -- | B | **3SU1900-0AD16-0EA0** | 100 | 10 units |
| | Running | -- | B | **3SU1900-0AD16-0EB0** | 100 | 10 units |
| | Fault | -- | B | **3SU1900-0AD16-0EC0** | 100 | 10 units |
| | Hand Auto | -- | B | **3SU1900-0AD16-0DB0** | 100 | 10 units |
| **With symbol** | | | | | | |
| Black/White (label/lettering) | O | 5008 IEC | B | **3SU1900-0AD16-0QA0** | 100 | 10 units |
| | I | 5007 IEC | B | **3SU1900-0AD16-0QB0** | 100 | 10 units |
| | O I | -- | B | **3SU1900-0AD16-0QG0** | 100 | 10 units |
| | → ARROW DIRECTION TO RIGHT | 5022 IEC | B | **3SU1900-0AD16-0QR0** | 100 | 10 units |
| | ↑ ARROW DIRECTION UP | -- | B | **3SU1900-0AD16-0QS0** | 100 | 10 units |

# Labels

## Labeling plates

| | Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Labeling plates 17.5 mm x 27 mm** | | | | | | | |
| 3SU1900-0AD81-0AA0 | **For self-inscription** | | | | | | |
| | Silver/Black (label/lettering) | None | -- | A | **3SU1900-0AD81-0AA0** | 100 | 10 units |
| | **For custom inscription** | | | | | | |
| | Silver/Black (label/lettering) | None | -- | A | **3SU1900-0AD81-0AZ0** | 100 | 10 units |
| 3SU1900-0AD81-0EC0 | **Inscription in English** | | | | | | |
| | Silver/Black (label/lettering) | On | -- | B | **3SU1900-0AD81-0DJ0** | 100 | 10 units |
| | | Off | -- | B | **3SU1900-0AD81-0DK0** | 100 | 10 units |
| | | Stop | -- | B | **3SU1900-0AD81-0DS0** | 100 | 10 units |
| | | Start | -- | B | **3SU1900-0AD81-0DT0** | 100 | 10 units |
| | | Reset | -- | B | **3SU1900-0AD81-0DU0** | 100 | 10 units |
| | | Man O Auto | -- | B | **3SU1900-0AD81-0DY0** | 100 | 10 units |
| | | Fault | -- | B | **3SU1900-0AD81-0EC0** | 100 | 10 units |
| | | Hand Auto | -- | B | **3SU1900-0AD81-0DB0** | 100 | 10 units |
| | | Hand O Auto | -- | B | **3SU1900-0AD81-0DD0** | 100 | 10 units |
| 3SU1900-0AD81-0QG0 | **With symbol** | | | | | | |
| | Silver/Black (label/lettering) | O | 5008 IEC | B | **3SU1900-0AD81-0QA0** | 100 | 10 units |
| | | I | 5007 IEC | B | **3SU1900-0AD81-0QB0** | 100 | 10 units |
| | | O I | -- | B | **3SU1900-0AD81-0QG0** | 100 | 10 units |
| | | I O II | -- | B | **3SU1900-0AD81-0QK0** | 100 | 10 units |
| | | 1 O 2 | -- | B | **3SU1900-0AD81-0QL0** | 100 | 10 units |
| | | → ARROW DIRECTION TO RIGHT | 5022 IEC | B | **3SU1900-0AD81-0QR0** | 100 | 10 units |
| | | ↑ ARROW DIRECTION UP | -- | B | **3SU1900-0AD81-0QS0** | 100 | 10 units |

# Labels

## Labeling plates

### Labeling plates 27 mm x 27 mm

| Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **For self-inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ► | **3SU1900-0AE16-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ► | **3SU1900-0AE16-0AZ0** | 100 | 10 units |

3SU1900-0AE16-0AA0

| | | | | | | |
|---|---|---|---|---|---|---|
| **For self-inscription** | | | | | | |
| Silver/Black (label/lettering) | | | A | **3SU1900-0AE81-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Silver/Black (label/lettering) | | -- | A | **3SU1900-0AE81-0AZ0** | 100 | 10 units |

3SU1900-0AE81-0AA0

| | | | | | | |
|---|---|---|---|---|---|---|
| **Inscription in English** | | | | | | |
| Black/White (label/lettering) | On | -- | B | **3SU1900-0AE16-0DJ0** | 100 | 10 units |
| | Off | -- | B | **3SU1900-0AE16-0DK0** | 100 | 10 units |
| | Up | -- | B | **3SU1900-0AE16-0DL0** | 100 | 10 units |
| | Down | -- | B | **3SU1900-0AE16-0DM0** | 100 | 10 units |
| | Forward | -- | B | **3SU1900-0AE16-0DN0** | 100 | 10 units |
| | Reverse | -- | B | **3SU1900-0AE16-0DP0** | 100 | 10 units |
| | Stop | -- | B | **3SU1900-0AE16-0DS0** | 100 | 10 units |
| | Start | -- | B | **3SU1900-0AE16-0DT0** | 100 | 10 units |
| | EMERGENCY STOP | -- | B | **3SU1900-0AE16-0DA0** | 100 | 10 units |
| | Stop Start | -- | B | **3SU1900-0AE16-0DC0** | 100 | 10 units |
| | Hand Auto | -- | B | **3SU1900-0AE16-0DB0** | 100 | 10 units |

3SU1900-0AE16-0DK0

| | | | | | | |
|---|---|---|---|---|---|---|
| **With symbol** | | | | | | |
| Black/White (label/lettering) | O I | -- | B | **3SU1900-0AE16-0QG0** | 100 | 10 units |
| | → ARROW DIRECTION TO RIGHT | 5022 IEC | B | **3SU1900-0AE16-0QR0** | 100 | 10 units |

3SU1900-0AE16-0QG0

# Labels

## Labeling plates

### Options

#### *Customized inscriptions*

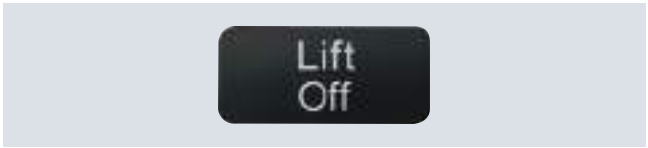
The labels can be inscribed with text and symbols not listed in the ordering data.

The following letter heights are used as standard for text inscriptions:

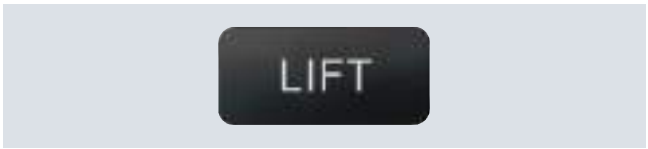
- Label size 12.5 mm × 27 mm: 3 lines with letter height 4 mm (1-line), 3.5 mm (2-line) or 2.5 mm (3-line)
- Label size 17.5 mm × 27 mm: 3 lines with letter height 4 mm (1- to 2-line) or 3 mm (3-line)
- Label size 27 mm × 27 mm: 5 lines with letter height 4 mm (1- to 5-line)

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

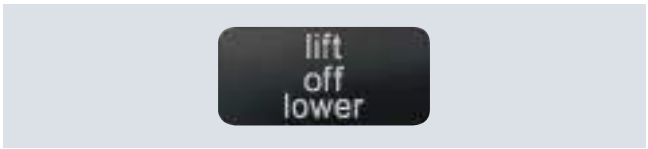
Examples for customized inscription




Two-line inscription in upper/lower case lettering (Q0Y)

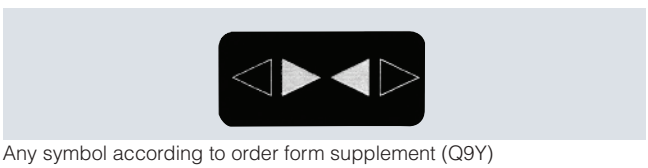



Single-line inscription in upper case lettering (Q1Y)




Three-line inscription in lower case letters (Q2Y)

Symbol number 5011 according to IEC 60417 (Q3Y)



Any symbol according to order form supplement (Q9Y)

#### *Ordering notes*

Append the following order codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift / Off"): **Q0Y**
- Text line(s) in upper case (e.g. "LIFT"): **Q1Y**
- Text line(s) in lower case (e.g. "lift / off / lower"): **Q2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "On  Off"): **Q5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **Q3Y**
- Any inscription or symbol according to order form supplement: **Q9Y**

When ordering, specify the required inscription in plain text in addition to the article number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower".
For long words you can also specify the end-of-line division; see ordering example 1

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417; see ordering examples 2 and 3

For special symbols (order code Q9Y), a CAD drawing in BMP, GIF, JEPG, PDF, PNG or TIFF format must be submitted. For special inscriptions (order code Q9Y): document in DOC or XLS format.

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a "CIN" (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard order channels.

Standard ordering channels:
- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.usa.siemens.com/industrymall

Ordering example 1

A label with 2 lines of text is required:

3SU1900–0AC16-0AZ0
Q1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SU1900–0AC16-0AZ0
Q3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SU1900–0AC16-0AZ0
Q3Y
Z = 1118 ISO

# Labels

## Labeling plates for enclosures

### Overview

The labeling plates in size 22 mm x 22 mm can be attached to enclosures with cutouts for labels. There are versions in black with white print or silver-colored with black print.

***Inscription***

The inscription is in upper/lower case, all words begin with upper case letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

For customized inscription, see "Options" on page 10/151.

### Selection and ordering data

3SU1900-0AF16-0AA0

3SU1900-0AF16-0DM0

3SU1900-0AF16-0EC0

3SU1900-0AF16-0QQ0

3SU1900-0AF16-0RW0

| Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Labeling plates 22 mm x 22 mm** | | | | | | |
| **For self-inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ▶ | **3SU1900-0AF16-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Black/White (label/lettering) | None | -- | ▶ | **3SU1900-0AF16-0AZ0** | 100 | 10 units |
| **Inscription in English** | | | | | | |
| Black/White (label/lettering) | On | -- | B | **3SU1900-0AF16-0DJ0** | 1 | 10 units |
| | Off | -- | B | **3SU1900-0AF16-0DK0** | 1 | 10 units |
| | Up | -- | ▶ | **3SU1900-0AF16-0DL0** | 1 | 10 units |
| | Down | -- | ▶ | **3SU1900-0AF16-0DM0** | 1 | 10 units |
| | Forward | -- | B | **3SU1900-0AF16-0DN0** | 1 | 10 units |
| | Right | -- | B | **3SU1900-0AF16-0DQ0** | 1 | 10 units |
| | Left | -- | B | **3SU1900-0AF16-0DR0** | 1 | 10 units |
| | Stop | -- | ▶ | **3SU1900-0AF16-0DS0** | 1 | 10 units |
| | Start | -- | ▶ | **3SU1900-0AF16-0DT0** | 1 | 10 units |
| | Reset | -- | B | **3SU1900-0AF16-0DU0** | 1 | 10 units |
| | Test | -- | ▶ | **3SU1900-0AF16-0DV0** | 1 | 10 units |
| | Open | -- | B | **3SU1900-0AF16-0DW0** | 1 | 10 units |
| | Close | -- | B | **3SU1900-0AF16-0DX0** | 1 | 10 units |
| | Running | -- | B | **3SU1900-0AF16-0EB0** | 1 | 10 units |
| | Fault | -- | B | **3SU1900-0AF16-0EC0** | 1 | 10 units |
| | Fast | -- | B | **3SU1900-0AF16-0EE0** | 1 | 10 units |
| | Slow | -- | B | **3SU1900-0AF16-0EF0** | 1 | 10 units |
| | EMERGENCY STOP | -- | ▶ | **3SU1900-0AF16-0DA0** | 1 | 10 units |
| **With symbol (ON/OFF)** | | | | | | |
| Black/White (label/lettering) | O | 5008 IEC | ▶ | **3SU1900-0AF16-0QA0** | 1 | 10 units |
| | I | 5007 IEC | ▶ | **3SU1900-0AF16-0QB0** | 1 | 10 units |
| | II | -- | ▶ | **3SU1900-0AF16-0QC0** | 1 | 10 units |
| | III | -- | B | **3SU1900-0AF16-0QD0** | 1 | 10 units |
| | O I | -- | B | **3SU1900-0AF16-0QG0** | 1 | 10 units |
| | I O II | -- | B | **3SU1900-0AF16-0QK0** | 1 | 10 units |
| | I O (one below the other) | -- | B | **3SU1900-0AF16-0QP0** | 1 | 10 units |
| | II O I (one below the other) | -- | B | **3SU1900-0AF16-0QQ0** | 1 | 10 units |
| **With symbol (graphic)** | | | | | | |
| Black/White (label/lettering) | → ARROW DIRECTION TO RIGHT | 5022 IEC | ▶ | **3SU1900-0AF16-0QR0** | 1 | 10 units |
| | PUMP | 0134 ISO | B | **3SU1900-0AF16-0RD0** | 1 | 10 units |
| | FAN | -- | B | **3SU1900-0AF16-0RV0** | 1 | 10 units |
| | COOLING | -- | B | **3SU1900-0AF16-0RW0** | 1 | 10 units |
| | ILLUMINATION | -- | B | **3SU1900-0AF16-0RX0** | 1 | 10 units |
| | MOTOR | -- | B | **3SU1900-0AF16-0RY0** | 1 | 10 units |

# Labels

## Labeling plates for enclosures

| Color | Marking | Symbol No. | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Labeling plates 22 mm x 22 mm** | | | | | | |
| **For self-inscription** | | | | | | |
| Silver/Black (label/lettering) | None | -- | A | **3SU1900-0AF81-0AA0** | 100 | 10 units |
| **For custom inscription** | | | | | | |
| Silver/Black (label/lettering) | None | -- | A | **3SU1900-0AF81-0AZ0** | 100 | 10 units |
| **Inscription in English** | | | | | | |
| Silver/Black (label/lettering) | Stop | -- | B | **3SU1900-0AF81-0DS0** | 1 | 10 units |
| | Start | -- | B | **3SU1900-0AF81-0DT0** | 1 | 10 units |
| | Reset | -- | B | **3SU1900-0AF81-0DU0** | 1 | 10 units |
| | Test | -- | B | **3SU1900-0AF81-0DV0** | 1 | 10 units |
| | Open | -- | B | **3SU1900-0AF81-0DW0** | 1 | 10 units |
| | Hand O Auto | -- | B | **3SU1900-0AF81-0DD0** | 1 | 10 units |
| **With symbol (ON/OFF)** | | | | | | |
| Silver/Black (label/lettering) | O | 5008 IEC | B | **3SU1900-0AF81-0QA0** | 1 | 10 units |
| | I | 5007 IEC | B | **3SU1900-0AF81-0QB0** | 1 | 10 units |
| | II | -- | B | **3SU1900-0AF81-0QC0** | 1 | 10 units |
| | III | -- | B | **3SU1900-0AF81-0QD0** | 1 | 10 units |
| | O I | -- | B | **3SU1900-0AF81-0QG0** | 1 | 10 units |
| | I O II | -- | B | **3SU1900-0AF81-0QK0** | 1 | 10 units |
| | I O (one below the other) | -- | B | **3SU1900-0AF81-0QP0** | 1 | 10 units |
| | II O I (one below the other) | -- | B | **3SU1900-0AF81-0QQ0** | 1 | 10 units |
| **With symbol (graphic)** | | | | | | |
| Silver/Black (label/lettering) | → ARROW DIRECTION TO RIGHT | 5022 IEC | B | **3SU1900-0AF81-0QR0** | 1 | 10 units |

3SU1900-0AF81-0AA0

3SU1900-0AF81-0DU0

3SU1900-0AF81-0DD0

3SU1900-0AF81-QK0

3SU1900-0AF81-0QR0

## Options

### *Customized inscriptions*

The labels can be inscribed with texts and symbols not listed in the ordering data.

A letter height of 4 mm is used for text inscriptions (1 to 3 lines).

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

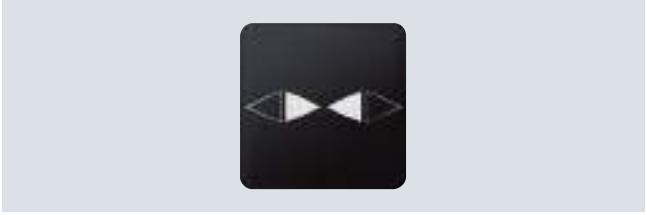
Examples for customized inscription

Two-line inscription in upper/lower case lettering (Q0Y)

Single-line inscription in upper case lettering (Q1Y)

3SB39 backing plate for enclosures, customized inscription (Q2Y)

Symbol number 5011 according to IEC 60417 (Q3Y)



Any symbol according to order form supplement (Q9Y)

### *Ordering notes*

Append the following order codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift / Off"): **Q0Y**
- Text line(s) in upper case (e.g. "LIFT"): **Q1Y**
- Text line(s) in lower case (e.g. "lift / off / lower"): **Q2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "On  Off"): **Q5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **Q3Y**
- Any inscription or symbol according to order form supplement: **Q9Y**

When ordering, specify the required inscription in plain text in addition to the article number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code Q9Y), a CAD drawing in DXF format can be submitted.

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a "CIN" (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard order channels.

Standard ordering channels:
- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.usa.siemens.com/industrymall

Ordering example 1

A label with 2 lines of text is required:

3SU1900–0AF16-0AZ0
Q1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SU1900–0AF16–0AZ0
Q3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SU1900–0AF16–0AZ0
Q3Y
Z = 1118 ISO

# Labels

## Labels for laser printers

### Overview

***Label inscriptions***

Using the *Label Designer* software, which can be downloaded from the Internet, and the labeling plates for laser inscription you can create your own customized labels with a standard laser printer. The self-adhesive or snap-on labels can be stuck or snapped onto the corresponding label holders. Round labels are provided for inserting in illuminated pushbuttons and switches.

The labels are suitable for inscription with one to three lines of text or symbols.

For applications with more exacting requirements we recommend factory-printed labeling plates and insert labels (laser-printed or engraved depending on the type).

For the *Label Designer* software see:
www.siemens.com/sirius-label-designer

### Selection and ordering data

| | Fastening method | Height | Width | DT | Order No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | mm | mm | | | | |
| **Labels for printing - insert labels** | | | | | | | |
| 3SU1900-0BH60-0AA0 | Insert | -- | -- | B | **3SU1900-0BH60-0AA0** | 100 | 480 units |
| **Labels for printing - labeling plates** | | | | | | | |
|  3SU1900-0BJ61-0AA0 | Self-adhesive | 12.5 | 27.5 | A | **3SU1900-0BJ61-0AA0** | 100 | 480 units |
| | | 17.5 | 27 | A | **3SU1900-0BK61-0AA0** | 100 | 720 units |
| | | 27 | 27 | A | **3SU1900-0BL61-0AA0** | 100 | 480 units |
| | | 22 | 22 | A | **3SU1900-0BM61-0AA0** | 100 | 700 units |

# Labels

## Other labels

### Selection and ordering data

| | Color | Fastening method | Outer diameter | Marking | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | mm | | d | | | | |
| **EMERGENCY STOP backing plates** | | | | | | | | | |
| 3SU1900-0BB31-0AT0 | Yellow/black (label/lettering) | None | 45 | None | ▶ | **3SU1900-0BA31-0AA0** | | 1 | 10 units |
| | | | 45 | EMERGENCY STOP (pl) NEW | 5 | **3SU1900-0BA31-0ND0** | | 1 | 10 units |
| | | | 60 | NOT-HALT, EMERGENCY STOP, ARRÊT D'URGENCE, EMERGENZA (de, en, fr, it) | 5 | **3SU1900-0BN31-0NC0** | | 1 | 10 units |
| | | | 75 | None | ▶ | **3SU1900-0BB31-0AA0** | | 1 | 10 units |
| | | | | NOT-AUS | 3 | **3SU1900-0BB31-0AS0** | | 1 | 10 units |
| | | | | NOT-HALT | 3 | **3SU1900-0BB31-0AT0** | | 1 | 10 units |
| | | | | EMERGENCY STOP | 5 | **3SU1900-0BB31-0DA0** | | 1 | 10 units |
| | | | 75 | EMERGENCY STOP (pl) NEW | 5 | **3SU1900-0BB31-0ND0** | | 1 | 10 units |
| | ***With customized inscription*** | | | | | | | | |
| | Yellow/black (label/lettering) | None | 45 | For inscriptions or symbols, see "Options", page 13/133. | | **3SU1900-0BA31-0AZ0** | | 1 | 1 unit |
| | | | 75 | | | **3SU1900-0BB31-0AZ0** | | 1 | 1 unit |
| **EMERGENCY STOP backing plates, illuminated (24 V AC/DC) NEW** | | | | | | | | | |
| 3SU1901-0BD31-0AA0 | Yellow/black (label/lettering) | Self-adhesive | 60 | None | 5 | **3SU1901-0BD31-0AA0** | | 1 | 1 unit |
| | | | | NOT-AUS | 5 | **3SU1901-0BD31-0AS0** | | 1 | 1 unit |
| | | | | NOT-HALT | 5 | **3SU1901-0BD31-0AT0** | | 1 | 1 unit |
| | | | | EMERGENCY STOP | 5 | **3SU1901-0BD31-0DA0** | | 1 | 1 unit |
| | | | | NOT-HALT, EMERGENCY STOP, EMERGENZA, EMERGENCIA (de, en, it, sp) | 5 | **3SU1901-0BD31-0NB0** | | 1 | 1 unit |
| | ***With customized inscription*** | | | | | | | | |
| | Yellow/black (label/lettering) | None | 60 | For inscriptions or symbols, see page 10/154. | | **3SU1901-0BD31-0AZ0** | | 1 | 1 unit |
| **EMERGENCY STOP backing plates** | | | | | | | | | |
| 3SU1900-0BC31-0NB0 | Yellow/black (label/lettering) | Self-adhesive | 75 | None | ▶ | **3SU1900-0BC31-0AA0** | | 1 | 10 units |
| | | | | NOT-AUS | 3 | **3SU1900-0BC31-0AS0** | | 1 | 10 units |
| | | | | NOT-HALT | ▶ | **3SU1900-0BC31-0AT0** | | 1 | 10 units |
| | | | | EMERGENCY STOP | ▶ | **3SU1900-0BC31-0DA0** | | 1 | 10 units |
| | | | | ARRÊT D'URGENCE | 3 | **3SU1900-0BC31-0GQ0** | | 1 | 10 units |
| | | | | EMERGENZA | 3 | **3SU1900-0BC31-0JA0** | | 1 | 10 units |
| | | | | Nodstop | 5 | **3SU1900-0BC31-0LA0** | | 1 | 10 units |
| | | | | EMERGENCY STOP in Chinese | 5 | **3SU1900-0BC31-0MA0** | | 1 | 10 units |
| | | | | NOT-HALT, EMERGENCY STOP, EMERGENZA, EMERGENCIA (de, en, it, sp) | ▶ | **3SU1900-0BC31-0NB0** | | 1 | 10 units |
| | ***With customized inscription*** | | | | | | | | |
| | Yellow/black (label/lettering) | Self-adhesive | 75 | For inscriptions or symbols, see "Options", page 13/133. | | **3SU1900-0BC31-0AZ0** | | 1 | 1 unit |
| **Labeling plates for potentiometers** | | | | | | | | | |
| 3SU1900-0BG16-0RU0 | Black/white (label/lettering) | None | 40 | -- | ▶ | **3SU1900-0BG16-0AA0** | | 1 | 10 units |
| | | | | SYMBOL: 0 ...9 | ▶ | **3SU1900-0BG16-0RT0** | | 1 | 10 units |
| | | | | SYMBOL: 0 ... 10 | 3 | **3SU1900-0BG16-0SA0** | | 1 | 10 units |
| | | | | SYMBOL: Power up | ▶ | **3SU1900-0BG16-0RU0** | | 1 | 10 units |

| | Color | Label fastening method | Height | Width | Marking | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | mm | mm | | d | | | | |
| **Labeling plates for enclosures with EMERGENCY STOP** | | | | | | | | | | |
| 3SU1900-0BE31-0AS0 | Yellow/black (label/lettering) | Self-adhesive | 38 | 150 | None | ▶ | **3SU1900-0BE31-0AA0** | | 1 | 10 units |
| | | | | | NOT-AUS | 3 | **3SU1900-0BE31-0AS0** | | 1 | 10 units |
| | | | | | NOT-HALT NEW | 3 | **3SU1900-0BE31-0AT0** | | 1 | 10 units |
| **Labeling plates for enclosures with EMERGENCY STOP with recess** | | | | | | | | | | |
| 3SU1900-0BF31-0AA0 | Yellow/black (label/lettering) | Self-adhesive | 38 | 150 | None | 3 | **3SU1900-0BF31-0AA0** | | 1 | 10 units |
| **Device labeling plates for modules with front-plate mounting** | | | | | | | | | | |
|  3SU1900-0AY61-0AA0 | White/black (label/lettering) | Insert | 9.5 | 10.5 | None | 5 | **3SU1900-0AY61-0AA0** | | 100 | 10 units |

## Options

### *Customized inscriptions*

The labels can be inscribed with text and symbols not listed in the ordering data.

The EMERGENCY STOP backing plates can be divided into as many as four radial segments. Each segment can be custom-labeled.

The default typeface used for inscriptions with text is Arial and the text is centered.

EMERGENCY STOP backing plate 75 mm:

The font height is 5 mm.
With two radial segments up to 20 characters are permissible.
With four radial segments up to 10 characters are permissible.

EMERGENCY STOP backing plate 60 mm:

The font height is 4 mm.
With two radial segments up to 16 characters are permissible.
With four radial segments up to 8 characters are permissible.

EMERGENCY STOP backing plate 45 mm:

The font height is 4 mm.
With two radial segments up to 10 characters are permissible.

### *Ordering notes*

Append the following order codes to the article number:

- **Q0Y:** Segment(s) in upper/lower case, always upper case for beginning of segment, e.g. Z1=Not halt Z2=Emergency stop
- **Q1Y:** Segment(s) in upper case, e.g. Z1=NOT HALT Z2=EMERGENCY STOP
- **Q2Y:** Segment(s) in lower case, e.g. Z1=not halt Z2=emergency stop
- **Q5Y:** Segment(s) in upper/lower case, all words begin with upper case letters, e.g. Z1=Not Halt Z2=Emergency Stop
- **Q3Y:** Symbol with number according to ISO 7000 or IEC 60417
- **Q9Y:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, in addition to the article number and order code.

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Standard ordering channels:
- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.siemens.com/industrymall

With ordering options Q0Y, Q1Y, Q2Y, Q3Y and Q5Y a single-line inscription of two or four radial segments can be implemented. The text or symbol must be assigned to the respective radial segments as follows:

Ordering example 1, two radial segments

An EMERGENCY STOP backing plate,
diameter 75 mm, with two radial segments is required

**3SU1900-0BB31-0AZ0**
**Q1Y**
Z1=EMERGENCY
Z2=STOP

Ordering example 2, four radial segments

An EMERGENCY STOP backing plate,
diameter 75 mm, with four radial segments is required

**3SU1900-0BB31-0AZ0**
**Q1Y**
Z1=E-STOP
Z2=EMERGENCIA
Z3=NOT-HALT
Z4=EMERGENZA

# Accessories

## Protection/access protection

### Overview

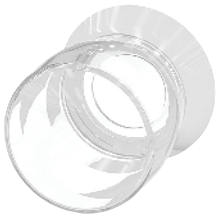
- Protection and access protection are for actuators and indicators with diameter 22 mm.
- The protective collars cannot be used in conjunction with label holders or single frames.

### Selection and ordering data

| | Product designation<br>Product version | Material | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Protective caps** | | | | | | | | |
| <br>3SU1900-0DA10-0AA0 | **Sealable caps for pushbuttons, flat and raised** | Plastic | Black<br>Clear | 3<br>3 | **3SU1900-0DA10-0AA0**<br>**3SU1900-0DA70-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| <br>3SU1900-0EL70-0AA0 | **Sealable caps for**<br>• Pushbuttons, raised<br>• Pushbuttons with front ring, raised<br>• Pushbuttons with front ring, raised, castellated | Plastic | Black<br>Clear | 3<br>3 | **3SU1900-0EL10-0AA0**<br>**3SU1900-0EL70-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| <br>3SU1900-0DB70-0AA0 | **Silicone protective caps for pushbuttons, flat** | Plastic | Clear | ▶ | **3SU1900-0DB70-0AA0** | | 1 | 1 unit |
| | **Silicone-free protective caps for pushbuttons, flat** | Plastic | Clear | ▶ | **3SU1900-0ED70-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0DC70-0AA0 | **Silicone protective caps for pushbuttons, raised** | Plastic | Clear | ▶ | **3SU1900-0DC70-0AA0** | | 1 | 1 unit |
| | **Silicone-free protective caps for pushbuttons, raised** | Plastic | Clear | ▶ | **3SU1900-0EE70-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0DD70-0AA0 | **Silicone protective caps for selectors, short** | Plastic | Clear | 3 | **3SU1900-0DD70-0AA0** | | 1 | 1 unit |
| | **Silicone-free protective caps for selectors, short** | Plastic | Clear | ▶ | **3SU1900-0EF70-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0DE70-0AA0 | **Silicone protective caps for mushroom pushbuttons 40 mm** | Plastic | Clear | 5 | **3SU1900-0DE70-0AA0** | | 1 | 1 unit |
| | **Silicone-free protective caps for mushroom pushbuttons 40 mm** | Plastic | Clear | ▶ | **3SU1900-0EG70-0AA0** | | 1 | 1 unit |

# Accessories

## Protection/access protection

| | Product designation<br>Product version | Material | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Protective caps** | | | | | | | | |
|  <br>3SU1900-0DF70-0AA0 | **Silicone protective caps for EMERGENCY STOP, 40 mm** | Plastic | Clear | 5 | **3SU1900-0DF70-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0DG70-0AA0 | **Silicone protective caps for twin pushbuttons, flat** | Plastic | Clear | ▶ | **3SU1900-0DG70-0AA0** | | 1 | 1 unit |
| | **Silicone protective caps for twin pushbuttons, raised** | Plastic | Clear | ▶ | **3SU1900-0DH70-0AA0** | | 1 | 1 unit |
| | **Silicone-free protective caps for twin pushbuttons, raised** | Plastic | Clear | ▶ | **3SU1900-0EK70-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0EB10-0AA0 | **Dust caps for key-operated switches** | Plastic | Clear | ▶ | **3SU1900-0EB10-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0EM70-0AA0 | **Protective caps for ID key-operated switches** | Plastic | Clear | NEW 5 | **3SU1900-0EM70-0AA0** | | 1 | 1 unit |
| | **Covers for modules** | Plastic | Clear | NEW 5 | **3SU1900-0EW70-0AA0** | | 1 | 1 unit |
| **Protective collars** | | | | | | | | |
| <br>3SU1900-0DJ10-0AA0 | **Sun collar for illuminated push-buttons** | Plastic | Black | 5 | **3SU1900-0DJ10-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0DW10-0AA0 | **360° protective collars for pushbuttons and selectors, short** | Plastic | Black | 3 | **3SU1900-0DW10-0AA0** | | 1 | 1 unit |

# Accessories

## Protection/access protection

### Protective collars

| | Product designation<br>Product version | Material | Color | | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| <br>3SU1950-0DK80-0AA0 | **360° protective collars for pushbuttons, 22 mm Round flush & raised Actuators, Indicator Lights**<br>visibility from the side | Metal | Silver | | 5 | **3SU1950-0DK80-0AA0** | | 1 | 1 unit |
| <br>3SU1950-0DL80-0AA0 | **360° protective collars for mushroom pushbuttons Ø 33.3 mm & 40 mm**<br>visibility from the side | Metal | Silver | | 5 | **3SU1950-0DL80-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0DY30-0AA0 | **Protective collars for EMERGENCY STOP mushroom pushbutton Ø up-to 60 mm**<br>without lock or with RONIS lock | Plastic | Yellow<br>Gray | | ▶<br>▶ | **3SU1900-0DY30-0AA0**<br>**3SU1900-0DY80-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| | Includes text:<br>EMERGENCY STOP | Plastic | Yellow | | ▶ | **3SU1900-0DY30-0DA0** | | 1 | 1 unit |
| | Protective Collar fits mushroom pushbutton up to 60 mm (Note: For mushroom pushbuttons > 40 mm we suggest that you add text to the mushroom head cap instead of the protective collar). | | | | | | | | |
| <br>3SU1950-0DX30-0AA0 | **Protective collars for mushroom pushbuttons Ø 40 mm, for 5 padlocks** | Plastic | Yellow | NEW | 5 | **3SU1900-0JH30-0AA0** | | 1 | 1 unit |
| | | Metal | Yellow<br>Gray | | 3<br>5 | **3SU1950-0DX30-0AA0**<br>**3SU1950-0DX80-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| | **Ø 60 mm, for 3 padlocks** | Plastic | Yellow | NEW | 5 | **3SU1900-0EX30-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0EA30-0AA0 | **360° protective collars for EMERGENCY STOP, SEMI-industry mushroom pushbutton Ø up-to 60 mm** | Plastic | Yellow | | 5 | **3SU1900-0EA30-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0EC10-0AA0 | **Protection for sensor switches** | Plastic | Black | | ▶ | **3SU1900-0EC10-0AA0** | | 1 | 1 unit |

# Accessories

## Protection/access protection

| | Product version | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Locking devices** | | | | | | | | |
| 3SU1950-0DM80-0AA0 | **Locking devices for pushbuttons** Flat, for raised front ring and raised, castellated front ring | Metal | Silver | 5 | **3SU1950-0DM80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DN80-0AA0 | **Locking devices for pushbuttons** Raised | Metal | Silver | 5 | **3SU1950-0DN80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DP80-0AA0 | **Locking devices for mushroom pushbuttons D30, D40** | Metal | Silver | 5 | **3SU1950-0DP80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DQ80-0AA0 | **Locking devices for selectors** Short/long actuator, in the left position | Metal | Silver | 5 | **3SU1950-0DQ80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DR80-0AA0 | **Locking devices for selectors** Short/long actuator, in the center position | Metal | Silver | 5 | **3SU1950-0DR80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DS80-0AA0 | **Locking devices for selectors** Short/long actuator, in the right position | Metal | Silver | 5 | **3SU1950-0DS80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DT80-0AA0 | **Locking devices for selectors** Short/long actuator, window from center to right, blocked on left | Metal | Silver | 5 | **3SU1950-0DT80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DU80-0AA0 | **Locking devices for selectors** Short/long actuator, window from center to left, blocked on right | Metal | Silver | 5 | **3SU1950-0DU80-0AA0** | | 1 | 1 unit |
| 3SU1950-0DV80-0AA0 | **Locking device with cover** | Metal | Silver | 5 | **3SU1950-0DV80-0AA0** | | 1 | 1 unit |

# Accessories

## Actuators

### Selection and ordering data

| | Material | Mounting diameter | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | mm | | d | | | | |
| **Sealing plugs[1], 22 mm** | | | | | | | | |
| 3SU1900-0FA10-0AA0 | Plastic | 22 | Black | ▶ | **3SU1900-0FA10-0AA0** | | 1 | 1 unit |
| 3SU1950-0FA80-0AA0 | Metal, matte | 22 | Sand gray | ▶ | **3SU1930-0FA80-0AA0** | | 1 | 1 unit |
| | Metal, shiny | 22 | Silver | ▶ | **3SU1950-0FA80-0AA0** | | 1 | 1 unit |
| | Metal, matte | 30 | Sand gray | ▶ | **3SU1960-0FA80-0AA0** | | 1 | 1 unit |

[1] The sealing plug is mounted with a holder. Modules might already be mounted on the holder.

| | Type of product | Mounting diameter | Accessory color | Accessory material | SD | **Screw terminals** | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | mm | | | d | Article No. / Price per PU | | |
| **USB port** | | | | | | | | |
| 3SU1930-0GA80-0AA0 | USB 3.0 | 22 | Black | Plastic | 3 | **3SU1900-0GA10-0AA0** | 1 | 1 unit |
| | | | Sand gray | Metal/plastic | 3 | **3SU1930-0GA80-0AA0** | 1 | 1 unit |
| | | | Silver | Metal, shiny | 3 | **3SU1950-0GA80-0AA0** | 1 | 1 unit |
| | | 30 | Sand gray | Metal, matte | 3 | **3SU1960-0GA80-0AA0** | 1 | 1 unit |
| 3SU1960-0GA80-0AA0 | | | | | | | | |
| **RJ45 connection** | | | | | | | | |
| 3SU1900-0GB10-0AA0 | RJ-45 Cat. 6 | 22 | Black | Plastic | 3 | **3SU1900-0GB10-0AA0** | 1 | 1 unit |
| | | | Sand gray | Metal/plastic | 3 | **3SU1930-0GB80-0AA0** | 1 | 1 unit |
| | | | Silver | Metal, shiny | 3 | **3SU1950-0GB80-0AA0** | 1 | 1 unit |
| | | 30 | Sand gray | Metal, matte | 3 | **3SU1960-0GB80-0AA0** | 1 | 1 unit |
| 3SU1950-0GB80-0AA0 | | | | | | | | |

# Accessories

## Actuators

| | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Buttons, flat**[1] | | | | | | | |
| 3SU1900-0FT20-0AA0 | ***For pushbuttons*** | | | | | | |
| | Plastic | Black | ▶ | **3SU1900-0FT10-0AA0** | | 100 | 10 units |
| | | Red | ▶ | **3SU1900-0FT20-0AA0** | | 100 | 10 units |
| | | Yellow | ▶ | **3SU1900-0FT30-0AA0** | | 100 | 10 units |
| | | Green | ▶ | **3SU1900-0FT40-0AA0** | | 100 | 10 units |
| | | Blue | ▶ | **3SU1900-0FT50-0AA0** | | 100 | 10 units |
| | | White | ▶ | **3SU1900-0FT60-0AA0** | | 100 | 10 units |
| 3SU1901-0FT30-0AA0 | ***For illuminated pushbuttons*** | | | | | | |
| | Plastic | Amber | 5 | **3SU1901-0FT00-0AA0** | | 100 | 10 units |
| | | Red | ▶ | **3SU1901-0FT20-0AA0** | | 100 | 10 units |
| | | Yellow | ▶ | **3SU1901-0FT30-0AA0** | | 100 | 10 units |
| | | Green | ▶ | **3SU1901-0FT40-0AA0** | | 100 | 10 units |
| | | Blue | ▶ | **3SU1901-0FT50-0AA0** | | 100 | 10 units |
| | | White | ▶ | **3SU1901-0FT60-0AA0** | | 100 | 10 units |
| | | Clear | ▶ | **3SU1901-0FT70-0AA0** | | 100 | 10 units |
| **Buttons, raised**[1] | | | | | | | |
| 3SU1900-0FS30-0AA0 | ***For pushbuttons*** | | | | | | |
| | Plastic | Black | 5 | **3SU1900-0FS10-0AA0** | | 1 | 10 units |
| | | Red | 5 | **3SU1900-0FS20-0AA0** | | 1 | 10 units |
| | | Yellow | 5 | **3SU1900-0FS30-0AA0** | | 1 | 10 units |
| | | Green | 5 | **3SU1900-0FS40-0AA0** | | 1 | 10 units |
| 3SU1901-0FS40-0AA0 | ***For illuminated pushbuttons*** | | | | | | |
| | Plastic | Red | ▶ | **3SU1901-0FS20-0AA0** | | 1 | 10 units |
| | | Yellow | 5 | **3SU1901-0FS30-0AA0** | | 1 | 10 units |
| | | Green | 5 | **3SU1901-0FS40-0AA0** | | 1 | 10 units |
| | | Blue | 5 | **3SU1901-0FS50-0AA0** | | 1 | 10 units |
| | | Clear | 5 | **3SU1901-0FS70-0AA0** | | 1 | 10 units |

[1] Buttons are not interchangeable between pushbuttons and illuminated pushbuttons with a raised front ring and with a raised front ring, castellated.

# Accessories

## Actuators

| | Material | Key number | Version of RFID coding | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| **RONIS keys** | | | | | | | | | |
| <br>3SU1950-0FB80-0AA0 | Metal | SB30[1)]<br>455 | -- | Silver | ▶<br>5 | **3SU1950-0FB80-0AA0**<br>**3SU1950-0FC80-0AA0** | | 1<br>1 | 1 unit<br>1 unit |
| **BKS keys** | | | | | | | | | |
| <br>3SU1950-0FD80-0AA0 | Metal | S1[1)] | -- | Silver | 5 | **3SU1950-0FD80-0AA0** | | 1 | 1 unit |
| **O.M.R. keys** | | | | | | | | | |
| <br>3SU1950-0FJ50-0AA0 | Metal | 73038<br>73037<br>73034<br>73033 | -- | Blue<br>Red<br>Black<br>Yellow | 3<br>5<br>5<br>5 | **3SU1950-0FJ50-0AA0**<br>**3SU1950-0FK20-0AA0**<br>**3SU1950-0FL10-0AA0**<br>**3SU1950-0FM30-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |
| **CES keys** | | | | | | | | | |
| <br>3SU1950-0FP80-0AA0 | Metal | LSG1<br>SSG10[1)]<br>VL5 | -- | Silver | 5<br>▶<br>5 | **3SU1950-0FN80-0AA0**<br>**3SU1950-0FP80-0AA0**<br>**3SU1950-0FQ80-0AA0** | | 1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit |
| **IKON keys** | | | | | | | | | |
| <br>3SU1950-0FR80-0AA0 | Metal | 360012K1[1)] | -- | Silver | 5 | **3SU1950-0FR80-0AA0** | | 1 | 1 unit |
| **ID keys ID group individual** | | | | | | | | | |
| <br>3SU1900-0FU60-0AA0 | Plastic | -- | Individually coded, programmable several times | White | ▶ | **3SU1900-0FU60-0AA0** | | 1 | 1 unit |
| **ID keys** | | | | | | | | | |
| <br>3SU1900-0FV40-0AA0 | Plastic | -- | ID group 1<br>ID group 2<br>ID group 3<br>ID group 4 | Green<br>Yellow<br>Red<br>Blue | ▶<br>▶<br>▶<br>▶ | **3SU1900-0FV40-0AA0**<br>**3SU1900-0FW30-0AA0**<br>**3SU1900-0FX20-0AA0**<br>**3SU1900-0FY50-0AA0** | | 1<br>1<br>1<br>1 | 1 unit<br>1 unit<br>1 unit<br>1 unit |

[1)] Also available with special lock. Supplement the Article No. with **"–Z"** and the order code **"Y04"** and specify the required lock in plain text. Additional price on request.

# Accessories

## Enclosures

### Selection and ordering data

| Product version | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Metric cable glands** | | | | | | | |
| 3SU1900-0HG10-0AA0 | | | | | | | |
| **M20 for round cable and enclosures** With 1 to 3 command points | Plastic | Black | ▶ | **3SU1900-0HG10-0AA0** | | 1 | 1 unit |
| **M25 for round cable and enclosure** With 4 and 6 command points | Plastic | Black | 5 | **3SU1900-0HH10-0AA0** | | 1 | 1 unit |
| **M20 for round cable and AS-i enclosure** With 1 to 3 command points with 2-pin connector plug for AS-i module | Plastic | Black | 3 | **3SU1900-0JA10-0AA0** | | 1 | 1 unit |
| **M25 for round cable and AS-i enclosure** With 4 and 6 command points with 2-pin connector plug for AS-i module | Plastic | Black | 3 | **3SU1900-0JB10-0AA0** | | 1 | 1 unit |
| **M20 for round cable and IO-Link enclosure** With 1 to 3 command points with 10-pin connector plug for IO-Link | Plastic | Black | ▶ | **3SU1900-0JC10-0AA0** | | 1 | 1 unit |
| **M25 for round cable and IO-Link enclosure** With 4 and 6 command points with 10-pin connector plug for IO-Link | Plastic | Black | ▶ | **3SU1900-0JD10-0AA0** | | 1 | 1 unit |
| **M20 for AS-i profile cable and AS-i enclosure** With 1 to 3 command points with 2-pin connector plug for AS-i module | Plastic | Black | 5 | **3SU1900-0HE10-0AA0** | | 1 | 1 unit |
| **M25 for AS-i profile cable and AS-i enclosure** With 4 and 6 command points with 2-pin connector plug for AS-i module | Plastic | Black | 5 | **3SU1900-0HF10-0AA0** | | 1 | 1 unit |
| **Connection pieces** | | | | | | | |
| *For plastic enclosures* | | | | | | | |
| 3SU1900-0HJ10-0AA0 | | | | | | | |
| **M20/M20 connection piece** For connecting 2 enclosures | Plastic | Black | ▶ | **3SU1900-0HJ10-0AA0** | | 1 | 1 unit |
| **M20/M25 connection piece** For connecting 2 enclosures | Plastic | Black | 5 | **3SU1900-0HK10-0AA0** | | 1 | 1 unit |
| **M25/M25 connection piece** For connecting 2 enclosures | Plastic | Black | 5 | **3SU1900-0HL10-0AA0** | | 1 | 1 unit |
| *For metal enclosures* | | | | | | | |
| 3SU1950-0HJ10-0AA0 | | | | | | | |
| **M20/M20 connection piece** For connecting 2 enclosures | Metal | Silver | 5 | **3SU1950-0HJ10-0AA0** | | 1 | 1 unit |
| **M20/M25 connection piece** For connecting 2 enclosures | Plastic | Silver | 5 | **3SU1950-0HK10-0AA0** | | 1 | 1 unit |
| **M25/M25 connection piece** For connecting 2 enclosures | Plastic | Silver | 5 | **3SU1950-0HL10-0AA0** | | 1 | 1 unit |

# Accessories

## Enclosures

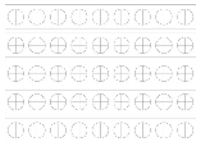
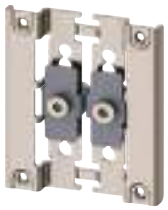
| | Product version | Material | Color | SD d | Insulation piercing method<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Adapters for AS-i shaped cable** | | | | | | | | |
| <br>3SU1900-0HX10-0AA0 | M20 | Plastic | Black | 3 | **3SU1900-0HX10-0AA0** | | 1 | 1 unit |
| | M25 | | | 3 | **3SU1900-0HY10-0AA0** | | 1 | 1 unit |
| **Adapters for tab connection** | | | | | | | | |
| | ***For plastic enclosures*** | | | | | | | |
| <br>3SU1930-0HS10-0AA0 | Adapter, M12 socket, 4-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1930-0HA10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1930-0HB10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 connector, 4-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1930-0HC10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1930-0HD10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 socket, 5-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1930-0HP10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1930-0HQ10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 connector, 5-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1930-0HR10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1930-0HS10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 socket, 8-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1930-0HT10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1930-0HU10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 connector, 8-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1930-0HV10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1930-0HW10-0AA0** | | 1 | 1 unit |
| | ***For metal enclosures*** | | | | | | | |
| <br>3SU1950-0HA10-0AA0 | Adapter, M12 socket, 4-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1950-0HA10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1950-0HB10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 connector, 4-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1950-0HC10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1950-0HD10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 socket, 5-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1950-0HP10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1950-0HQ10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 connector, 5-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1950-0HR10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1950-0HS10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 socket, 8-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1950-0HT10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1950-0HU10-0AA0** | | 1 | 1 unit |
| | Adapter, M12 connector, 8-pin<br>M20 cable entry | Plastic | Black | 5 | **3SU1950-0HV10-0AA0** | | 1 | 1 unit |
| | M25 cable entry | | | 5 | **3SU1950-0HW10-0AA0** | | 1 | 1 unit |
| **Enclosure cover monitoring**[1)] | | | | | | | | |
| <br>3SU1900-0HM10-0AA0 | Module with extension plunger | Plastic | Black | 3 | **3SU1900-0HM10-0AA0** | | 1 | 1 unit |

[1)] In addition, a 3SU1400-2AA10-.BA0 contact module is required.

# Accessories

## Miscellaneous accessories

### Selection and ordering data

| | Product designation<br>Product version | Material | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Miscellaneous accessories** | | | | | | | | |
| 3SU1900-0KA10-0AA0 | **PCB carriers** | Plastic | Black | 5 | **3SU1900-0KA10-0AA0** | | 100 | 10 units |
| 3SU1900-0CK10-0AA0 | **Pressure plates for selectors and locks** | Plastic | White | ► | **3SU1900-0KC10-0AA0** | | 100 | 10 units |
|  3SU1900-0KF10-0AA0 | **Drilling template for grid**<br>30 x 40, horizontal | Plastic | Black | 5 | **3SU1900-0KF10-0AA0** | | 1 | 1 unit |
| 3SU1900-0KG10-0AA0 | **Extension plungers**<br>For compensation of the distance between the pushbutton and the unlatching button of an overload relay | Plastic | Gray | ► | **3SU1900-0KG10-0AA0** | | 1 | 1 unit |
|  3SU1950-0JE80-0AA0 | **Strut profile mounting adapters** | Metal | Sand gray | 3 | **3SU1950-0JE80-0AA0** | | 1 | 1 unit |
| 3SU1900-0JF10-0AA0 | **Adapters for enclosures with 1 command point**<br>Between enclosure top and bottom, for installation of 2-pole or two 1-pole contact modules with front plate mounting. Not suitable for 3SU1801-1AA00-1AA1. | Plastic | Black | 5 | **3SU1900-0JF10-0AA0** | | 1 | 1 unit |
| 3SU1900-0JG10-0AA0 | **Adapters for modules with base mounting** | Plastic | Black | 30 | **3SU1900-0JG10-0AA0** | | 1 | 100 units |

# Accessories

## Miscellaneous accessories

| Product designation<br>Product version | Material | Color | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Miscellaneous accessories** | | | | | | | |
| <br>3SU1900-0KH80-0AA0 | **Adapters for standard rail mounting** | Plastic | Black | ► | **3SU1900-0KH80-0AA0** | | 1 | 1 unit |
| | **Covers for modules**<br>Degree of protection IP54 | Plastic | Clear | 5 | **3SU1900-0EW70-0AA0** | | 1 | 1 unit |
| <br>3SU1950-0KJ80-0AA0 | **Adapters for actuators and indicators**<br>With front ring for flat mounting | Metal | Silver | ► | **3SU1950-0KJ80-0AA0** | | 1 | 1 unit |
| <br>3SU1950-0KB10-0AA0 | **Adapters for 30.5 mm to 22.5 mm mounting hole** | Metal, shiny | Silver | ► | **3SU1950-0KB10-0AA0** | | 1 | 1 unit |
| | | Metal, matte | Sand gray | ► | **3SU1960-0KB10-0AA0** | | 1 | 1 unit |
| <br>3SU1950-0KK80-0AA0 | **Grounding studs** | Metal | Silver | 5 | **3SU1950-0KK80-0AA0** | | 100 | 50 units |
| <br>3SU1900-0KL10-0AA0 | **Connectors for sensor switches, angled socket with screw terminal connection** | Plastic | Black | ► | **3SU1900-0KL10-0AA0** | | 1 | 1 unit |
| <br>3SU1900-0KP80-0AA0 | **Flat ribbon cable**<br>7 cores | | | | | | | |
| | • Length 5 m | Plastic | Gray | 5 | **3SU1900-0KQ80-0AA0** | | 1 | 1 unit |
| | • Length 10 m | Plastic | Gray | 5 | **3SU1900-0KP80-0AA0** | | 1 | 1 unit |

## Standards and approvals

### Approvals, test certificates, characteristic curves

An overview of the certificates available for Industrial Control products along with more technical documentation can be consulted daily on the Internet at:

www.siemens.com/sirius/approvals

Product support: Approvals/certificates

Product support: Characteristics

### Safety characteristics

In the following standards, the so-called B10 values for calculating the safety integrity or safety integrity level (SIL) in functional safety at a high or continuous demand rate are required also for electromechanical switchgear:

- IEC 62061 "Safety of machines – Functional safety of safety-related electrical, electronic and programmable electronic control systems",
- ISO 13849-1 "Safety of machines – Safety-related components of controls – Part 1: General principles".

Failure rates of electromechanical components are required for calculating the safety integrity or safety integrity level (SIL) in functional safety:
- in the manufacturing industry at a high demand rate
- in the process industry at a low demand rate

Further requirements are laid down in IEC 61511-1 "Functional safety – Safety instrumented systems for the process industry sector – Part 1: Framework, definitions, system, hardware and software requirements".

The German versions of the above standards are:

- EN 62061 (VDE 0113-50), 2005 + AMD 1:2013, which since 31.12.2005 has been harmonized as EN 62061 under the Machinery Directive
- EN ISO 13849-1:2008
- EN 61511-1 (VDE 810-1)

The TÜV-tested Safety Evaluation Tool assists in calculating the safety function as verification for the machine documentation. It is available on the Internet at www.siemens.com/safety-evaluation-tool.

At www.siemens.com/safety-integrated you will also find examples of functions with calculations according to the current standards.

Definitions

$\lambda\ (t)\ dt$ is the probability that a unit which has not failed by a certain time $t$ will fail in the following interval $(t;\ t+dt)$.
Failure rates have the dimension 1/time unit, e.g. 1/h.
Failure rates for components are often specified in FIT (failures in time unit): 1 FIT equals $10^{-9}$/h.
From the failure rate it is possible to derive a (mathematical) distribution function of the failure probability:

$F(t) = 1 - \exp(-\lambda t)$, with $\lambda$ as constant failure rate

- The mean value of this exponential distribution is also referred to as:
  - Mean Time To Failure (MTTF) in the case of irreparable components; 63.2 % of components fail by the MTTF.
  - Mean Operating Time Between Failures (MTBF) in the case of reparable components.
- $MTTF = 1/\lambda$
  (MTTF is a statistical mean value but no guarantee for endurance)

Electromechanical components are often irreparable components. In general, the failure rate of monitored units changes with age.

## Standards and approvals

The B10 value for devices subject to wear is expressed in number of operating cycles:

- it is the number of operating cycles after which 10 % of the test specimens fail in the course of an endurance test (or: the number of operating cycles after which 10 % of the devices have failed).

For low demand rates (mainly in the process industry), the failure rate and not the B10 value is used to determine the failure probability.

Standard B10 values at a high demand rate

With the help of the B10 value and a simplified formula (see section 6.7.8.2.1 of EN 62061), the user can then calculate the total failure rate of an electromechanical component:

$\lambda = 0.1 \times C/B10$

with C = operating cycles per hour. C is specified by the user.

The failure rate is made up of safe ($\lambda_S$) and dangerous ($\lambda_D$) failures:

$\lambda = \lambda_S + \lambda_D$

or

$\lambda_D$ = [share of dangerous failures in %] x $\lambda$

$\lambda_S$ = [share of safe failures in %] x $\lambda$

The failure rate of the dangerous failures $\lambda_D$ of the components used is needed for further calculations.

Listed in the following table are the standard B10 values and the share of dangerous failures for SIRIUS product groups at a high demand rate.

**Standard B10 values (at a high demand rate)**

| SIRIUS ACT product group (electromechanical components) | Standard B10 value[1] (operating cycles) | Share of dangerous failures |
|---|---|---|
| 3SU1 EMERGENCY-STOP mushroom pushbuttons (with positive-opening contacts) | 100 000 | 20 % |
| 3SU1 pushbuttons (non-latching, with positive-opening contacts) | 10 000 000 | 20 % |

[1] Only applies under the conditions specified in the technical specifications.

The $B10_d$ value used in EN ISO 13849-1:2008 is determined as follows:

$$B10_d = \frac{B10}{\text{Share of dangerous failures}}$$

Calculation example

A protective door is monitored by a position switch with a separate actuator.

The protective door is opened 4 times an hour.

The overall failure rate of the position switch is:

$\lambda = 0.1 \cdot C/B10$ [failures/h]
$\lambda = 0.1 \cdot 4/1000000 = 4 \cdot 10^{-7}$ [failures/h]

The dangerous failure rate is calculated with:

$\lambda_D$ = 20 % of $\lambda = 0.2 \cdot 4 \cdot 10^{-7}$ [failures/h]
$\lambda_D = 8 \cdot 10^{-8}$ [failures/h]

Standard failure rates (at a low demand rate)

On the basis of the failure rates, it is possible to calculate the average probability of failure on demand ($PFD_{avg}$) of a PLT protective device.

A so-called low demand rate is assumed, meaning the rate of demand on the safety-related system amounts to no more than once a year and is not greater than double the frequency of the repeat test.

A repeat test once a year is recommended for electromechanical components in order to reveal passive faults.

For special applications it is possible, in agreement with the inspecting institution (e.g. a technical inspectorate, government agency or the like) to extend the test intervals by using suitable solutions (e.g. a multi-channel version etc.).

Listed in the following table are the standard failure rates and the share of dangerous failures for SIRIUS product groups at a low demand rate.

**Standard failure rates at a low demand rate**

| SIRIUS ACT product group (electromechanical components) | Standard failure rates (in FIT)[1] | Share of dangerous failures |
|---|---|---|
| 3SU1 EMERGENCY-STOP mushroom pushbuttons (with positive-opening contacts) | 100 | 20 % |
| 3SU1 pushbuttons (non-latching, with positive-opening contacts) | 100 | 20 % |

[1] The failure rates specified in the table were limited to 100 FIT.

# 3SE2, 3SE3 Foot Switches

## Plastic and metal enclosures

### Overview

3SE29 foot switch with metal enclosure

**More information**

Homepage, see www.siemens.com/sirius-commanding
Industry Mall, see www.siemens.com/product?3SE2
Manual, see https://support.industry.siemens.com/cs/ww/en/view/107194954

#### *Standard switches*

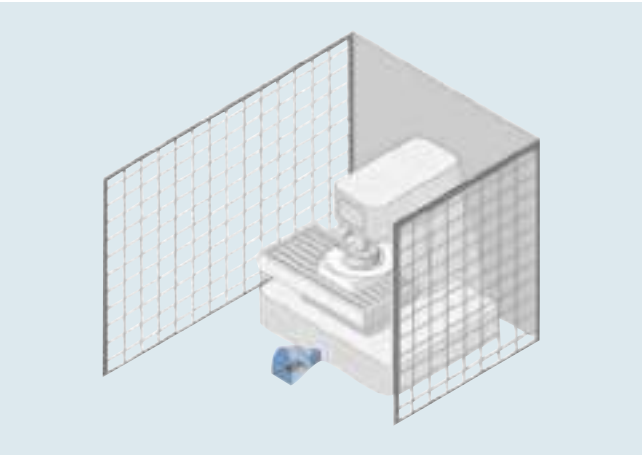
The 3SE29 and 3SE39 foot switch range encompasses versions in a metal enclosure for rugged applications as well as versions with plastic enclosure for less harsh environments. The devices can be supplied with or without a cover and have fixing holes for them to be screwed to the floor.

Depending on the particular application, the metal enclosures can be ordered with contact blocks in latching or momentary-contact versions. The momentary-contact pedal switch in the plastic enclosure has one microswitch (changeover contact) per actuating pedal.

#### *Safety foot switches*

The 3SE2924-3AA20 single-pedal safety foot switches are used on machines and plants as OK switches when operation by hand is not possible. The switches have an interlocking function.

The safety foot switches are protected by a guard hood against accidental operation.



Application example

The switches have two contact blocks, each with one NO contact and one NC contact. The NO contacts and NC contacts of the two contact blocks are connected for easy connection of a single-phase motor. The normal workflow is initiated by pressing down the pedal as far as the pressure point so that the two NO contacts close and the motor starts to run.

If in the event of danger the pedal is pressed beyond the resistance of the pressure point, the positively driven NC contacts will open and the motor is stopped. At the same time the independent latching takes effect and holds the NC contacts in open position. This prevents the machine parts from continuing to run out of control or from being restarted.

After the hazard is eliminated, the machine can only be restarted after manually releasing the switch using a pushbutton on the top of the enclosure. The contacts are then released again and return to their initial position (the NO contacts are open and the NC contacts are closed).

### Technical specifications

| Type | | 3SE29 | 3SE39 |
|---|---|---|---|
| **Metal and plastic enclosures** | | | |
| **Standards** | | IEC 60947-5-1 | |
| **Electrical load** | | | |
| • At AC-15, 400 V | | | |
| - 1 NO + 1 NC | A | 10 | -- |
| - 2 NO + 2 NC | A | 6 | -- |
| - 3SE2924-3AA20 (2 NO + 2 NC) | A | 10 | -- |
| • At 250 V AC | A | – | 5 |
| **Short-circuit protection** | | | |
| - 1 NO + 1 NC | A | 10 (slow) | -- |
| - 2 NO + 2 NC | A | 6 (slow) | -- |
| - 3SE2924-3AA20 (2 NO + 2 NC) | A | 10 (slow) | -- |
| - 1 CO contact | A | -- | 5 (slow) |
| **Mechanical endurance** | | > $10^6$ operating cycles | |
| **Material** | | | |
| • Enclosures | | Aluminum casting | Impact-resistant thermoplast, self-extinguishing according to UL 94 VO |
| • Covers | | Thermoplast | – |
| • Guard hoods | | Aluminum casting | Metal |
| **Degree of protection** | | IP65 | IP65 |
| **Ambient temperature** | °C | -25 ... +80 | -10 ... +75 |
| **Connection** | | Cable entry, metric | Cable AWG20, UL Style 2464, length 3 m |

# 3SE2, 3SE3 Foot Switches

## Plastic and metal enclosures

### Selection and ordering data

| | Version | Slow-action contacts for each pedal | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Metal enclosures, degree of protection IP65** | | | | | | | |
| <br>3SE290.-.AA20<br>3SE291.-.AA20 | **Momentary-contact foot switches, single pedal, non-latching**<br>M20 x 1.5 cable entry | | | | | | |
| | • Without hood | 1 NO + 1 NC ⊖ | 2 | **3SE2902-0AB20** | | 1 | 1 unit |
| | | 2 NO + 2 NC ⊖ | 10 | **3SE2903-1AB20** | | 1 | 1 unit |
| | • With hood | 1 NO + 1 NC ⊖ | 2 | **3SE2902-0AA20** | | 1 | 1 unit |
| | | 2 NO + 2 NC ⊖ | 2 | **3SE2903-1AA20** | | 1 | 1 unit |
| <br>3SE2932-.AB20 | **Momentary-contact foot switches, single pedal, latching**<br>M20 x 1.5 cable entry | | | | | | |
| | • Without hood | 1 NO + 1 NC ⊖ | 15 | **3SE2912-2AB20** | | 1 | 1 unit |
| | • With hood | 1 NO + 1 NC ⊖ | 15 | **3SE2912-2AA20** | | 1 | 1 unit |
| <br>3SE2932-.AA20 | **Momentary-contact foot switches, two pedals, non-latching**<br>M25 x 1.5 cable entry | | | | | | |
| | • Without hood | 1 NO + 1 NC ⊖ | 15 | **3SE2932-0AB20** | | 1 | 1 unit |
| | | 2 NO + 2 NC ⊖ | 15 | **3SE2932-1AB20** | | 1 | 1 unit |
| | • With hood | 1 NO + 1 NC ⊖ | 5 | **3SE2932-0AA20** | | 1 | 1 unit |
| | | 2 NO + 2 NC ⊖ | 5 | **3SE2932-1AA20** | | 1 | 1 unit |
| <br>3SE2924-3AA20 | **Safety momentary-contact foot switches, non-latching, single pedal**<br>With hood<br>M20 x 1.5 cable entry<br>with interlocking function<br>NO closes as momentary contact type<br>NC opens with automatic latching<br>(safety function) | 2 NO + 2 NC ⊖ | 15 | **3SE2924-3AA20** | | 1 | 1 unit |
| **Plastic enclosures, degree of protection IP65** | | | | | | | |
| <br>3SE3902-4CA20 | **Momentary-contact pedal switches**, 3 m cable | Microswitch | | | | | |
| | • Single pedal | | | | | | |
| | - Without hood | 1 CO contact | 5 | **3SE3902-4CB20** | | 1 | 1 unit |
| | - With hood | 1 CO contact | 10 | **3SE3902-4CA20** | | 1 | 1 unit |
| <br>3SE3934-5CB20 | • Two pedals, without hood | 2 × 1 CO | 10 | **3SE3934-5CB20** | | 1 | 1 unit |
| **Accessories** | | | | | | | |
| | **Protection cover**<br>Single pedal foot switch for 3SE2912-2AA20, 3SE2902-0AA20 and 3SE2903-1AA20 | -- | 20 | **3SE3980-8M** | | 1 | 1 unit |
| | **Contact block**,<br>Supersedes momentary-contact foot switch 3SE2903-1A.20[1] and 3SE2932-1A.20[3] | 1 NO + 1 NC | X | **3SE3982-0K** | | 1 | 1 unit |
| | **Contact block**,<br>Supersedes momentary-contact foot switch 3SE2902-0A.20 and 3SE2932-0A.20[2] | 1 NO + 1 NC | X | **3SE3982-0L** | | 1 | 1 unit |
| | **Contact block**, 16 A,<br>Supersedes momentary-contact foot switch 3SE2924-3AA20[1] | 1 NO + 1 NC | X | **3SE3982-7J** | | 1 | 1 unit |
| | **Contact block**, 16 A,<br>Supersedes momentary-contact foot switch 3SE2912-2A.20 | 1 NO + 1 NC | 30 | **3SE3982-7L** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Annex K.

[1] Number of contact blocks required for the foot switch = 2.

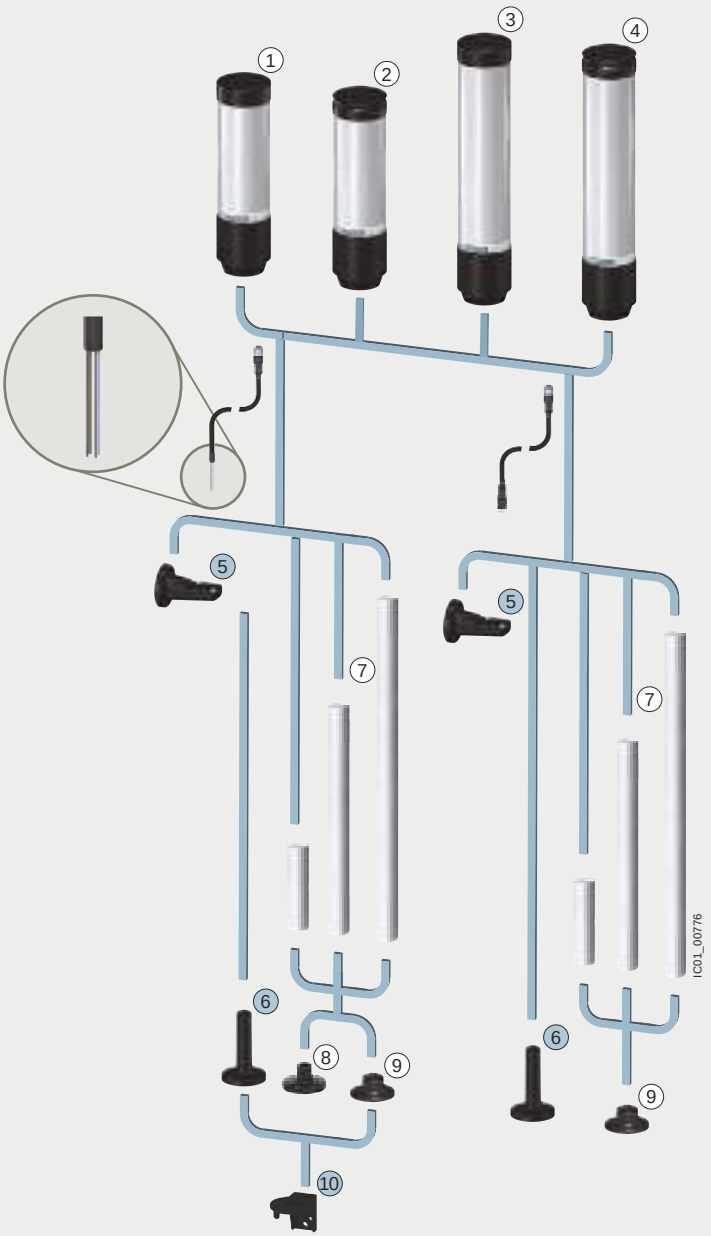
[2] Number of contact blocks required per pedal = 1.

[3] Number of contact blocks required per pedal = 2.

# SIRIUS 8WD4 signaling columns

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

### Overview




Signaling column with 9 segments

(1) Without acoustic signaling:
Conventional signaling column 8WD4613-5HH37/
Signaling column for IO-Link 8WD4613-5HH47

(2) With acoustic signaling:
Conventional signaling column 8WD4613-5JH37/
Signaling column for IO-Link 8WD4613-5JH47

Signaling column with 15 segments

(3) Without acoustic signaling:
Conventional signaling column 8WD4615-5HH37/
Signaling column for IO-Link 8WD4615-5HH47

(4) With acoustic signaling:
Conventional signaling column 8WD4615-5JH37/
Signaling column for IO-Link 8WD4615-5JH47

Accessories

(5) Bracket for wall mounting 8WD4618-0CA

(6) Foot with tube 8WD4618-0DA

(7) Tube 8WD4208-0EF/8WD4308-0E

(8) Foot for tube mounting (≤ 400 mm)

(9) Foot for tube mounting (> 400 mm)

(10) Bracket for mounting on feet

Degree of protection IP66/IP69 (IP69K)

8WD46 signaling column with up to 15 segments

**More information**

Homepage, see www.siemens.com/sirius-signaling-columns
Industry Mall, see www.siemens.com/product?8WD4
Manual, see
https://support.industry.siemens.com/cs/ww/en/view/109810633
Operating Instructions, see
https://support.industry.siemens.com/cs/ww/en/view/109810488

Video:
SIRIUS 8WD46 signaling column – Electronics can be individually configured

# SIRIUS 8WD4 signaling columns

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

The electronically configurable 8WD46 signaling columns are flexible in design and versatile in use thanks to their new compact and electronically modular design.

Features:

- Thermoplast enclosure, diameter 70 mm
- With 9 or 15 segments (number of segments adjustable for each block)
- With or without acoustic element
- Degree of protection IP66/IP69 (IP69K)

Two product series are available:

- Conventional signaling columns
  - Configuration of signaling column via USB interface
  - Fast connection of the signaling column to the application via 8-pole M12 plug
- Signaling columns for IO-Link
  - Configuration of signaling column via IO-Link interface (IODD)
  - Fast connection of the signaling column to the application via 4-pole M12 plug

***Mounting options***

| Tube mounting | Wall mounting | Floor mounting |
|---|---|---|
| | | |
| Foot with integrated tube | Bracket for single-sided mounting | Floor mounting without accessories |

## Benefits

- Choice of various light and acoustic signals with different functions:
  Continuous light, blinklight, flashlight and rotating light; siren
- Light elements with particularly long-lasting LEDs
- Variety of colors: > 1 million colors
- Optimized homogeneous illumination thanks to improved diffuser technology
- Acoustic signals can be adjusted in tone and volume
- Extremely resistant to shock and vibrations
- Simple configuration and fast connection using M12 plugs
- No wiring required
- No special tools needed
- Fewer versions thanks to electronic modularity
- Communication-capable through connection to IO-Link

## Application

8WD46 signaling columns are used in machines or in automatic processes for monitoring complex procedures or as visual or acoustic warning devices in emergency situations, e.g. for displaying individual assembly stages.

***Communication capability***

IODD (IO Device Description)

The IO Device Description (IODD) has been defined to provide a full, transparent description of system characteristics as far as the IO-Link device. The IODD contains information on communication characteristics, device parameters, identification, process and diagnostics data.

The IODD for signaling columns for IO-Link is available at the link below, see

https://support.industry.siemens.com/cs/ww/en/view/109807683.

***Connection***

Conventional signaling columns

Wiring of the signaling elements using screw or spring-loaded terminals is not required. The signaling column is connected via an 8-pole M12 plug.

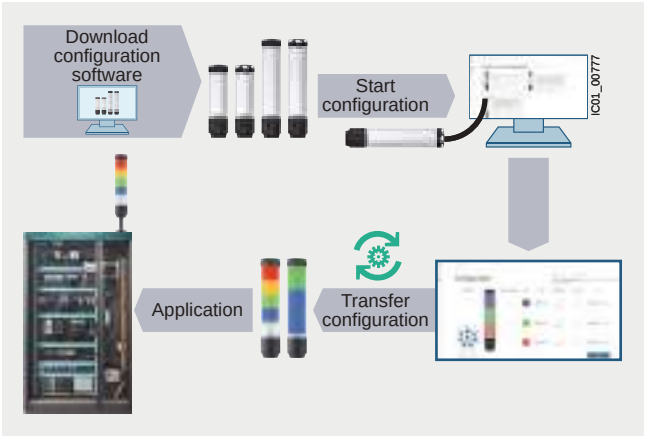
Signaling columns for IO-Link

The signaling column is connected via a 4-pole M12 plug.

# SIRIUS 8WD4 signaling columns

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

### *Configuration*




Simple and fast configuration

Conventional signaling columns

Configuration options via configuration software and transfer via USB interface, see https://support.industry.siemens.com/cs/ww/en/view/109807684.

Signaling columns for IO-Link

Configuration options via IO-Link. The setting is made via the IO Device Description (IODD), see Communication capability.

Optical configuration options

| Colors | Intensity | Light pattern |
|---|---|---|
| Ten different colors<br>• Eight preset colors:<br>- Red<br>- Green<br>- Yellow<br>- Blue<br>- White<br>- Turquoise<br>- Violet<br>- Light yellow<br>• > 1 million colors can be configured | The brightness can be adjusted for each block. | Optical signal profiles:<br>• Blinklights<br>• Flashlights (single, double and triple-flash lights)<br>• Continuous lights<br>• Rotating lights<br>One light pattern per block can be selected. |

Acoustic configuration options (siren)

| Tones | Volume |
|---|---|
| Ten different tones can be set | • 80 to 105 dB<br>• Four different volume levels can be set |

### *Various operating modes*

| Signaling column mode | Automatic scaling mode | Level mode | Individual mode |
|---|---|---|---|
| | | | |

Individual configuration of light pattern, color, brightness and acoustic signals

Signaling column mode

Individual segments can be connected to form a block. The blocks have fixed positions and may be off if the corresponding block and the optical signal are not activated.

Automatic scaling mode

The segments are automatically and uniformly distributed among the number of controlled pins and status messages. If the segments cannot be uniformly distributed, the color with the highest priority will be assigned to the last segment.

Level mode

- The segments are used as level indicators.
- From 0% (all segments are switched off) up to 100% (all segments are activated).

Examples: Order progress, liquid tank, material quantity

Individual mode

Each segment can be set and controlled individually, thus allowing for a maximum range of individual signaling options.

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

### Technical specifications

| Version | | Conventional signaling columns | | | | Signaling columns for IO-Link | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type | | 8WD4613-5HH37 | 5JH37 | 8WD4615-5HH37 | 5JH37 | 8WD4613-5HH47 | 5JH47 | 8WD4615-5HH47 | 5JH47 |
| **General data** | | | | | | | | | |
| **Approvals** | | cULus, EAC, CE | | | | | | | |
| **Operational voltage type** | | DC | | | | | | | |
| **Operational voltage at DC** | V | 24 | | | | | | | |
| **Relative positive tolerance of the operational voltage** | % | 10 | | | | 20 | | | |
| **Relative negative tolerance of the operational voltage** | % | 10 | | | | 20 | | | |
| **Insulation voltage ($U_i$)** | V | 50 | | | | | | | |
| **Impulse withstand voltage ($U_{imp}$)** | V | 330 | | | | | | | |
| **Operational current** | mA | 335 | 405 | 555 | 620 | 335 | 405 | 555 | 620 |
| **Current consumed, minimum** | mA | 65 | | 95 | | 65 | | 95 | |
| **Inrush current** | mA | 800 | | | | | | | |
| **Type of external power supply required** | | SELV/PELV extra-low voltage | | | | | | | |
| **Overvoltage category** | | I | | | | | | | |
| **Pollution degree** | | 3 | | | | | | | |
| **Letter code according to IEC 81346-2:2019** | | P | | | | | | | |
| **Equipment protection class according to IEC 61140** | | III | | | | | | | |
| **Type of interface for parameterization** | | USB-C | | | | IO-Link | | | |
| **Type of parameterization** | | Software | | | | IODD | | | |
| **Optical signal** | | | | | | | | | |
| **Light source integrated in product** | | Yes | | | | | | | |
| **Type of light source** | | RGB-LED, multi-color | | | | | | | |
| **LED service life** | h | 50 000 | | | | | | | |
| **Color of calotte** | | Clear | | | | | | | |
| **Number of light segments** | | 9 | | 15 | | 9 | | 15 | |
| **Number of settable colors** | | 1 000 000 | | | | | | | |
| **Type of optical signal** | | Blink, flash, continuous, double flash, triple flash, rotating | | | | | | | |
| **Product function: Settable optical signal** | | Yes | | | | | | | |
| **Product function: Settable luminous intensity** | | Yes | | | | | | | |
| **Default number of signal blocks** | | 3 | | 5 | | 3 | | 5 | |
| **Default type of signal blocks** | | | | | | | | | |
| • 1 | | Green/ continuous light/ 3 light segments | | White/ continuous light/ 3 light segments | | Green/ continuous light/ 3 light segments | | White/ continuous light/ 3 light segments | |
| • 2 | | Yellow/ continuous light/ 3 light segments | | Blue/ continuous light/ 3 light segments | | Yellow/ continuous light/ 3 light segments | | Blue/ continuous light/ 3 light segments | |
| • 3 | | Red/ continuous light/ 3 light segments | | Green/ continuous light/ 3 light segments | | Red/ continuous light/ 3 light segments | | Green/ continuous light/ 3 light segments | |
| • 4 | | -- | | Yellow/ continuous light/ 3 light segments | | -- | | Yellow/ continuous light/ 3 light segments | |
| • 5 | | -- | | Red/ continuous light/ 3 light segments | | -- | | Red/ continuous light/ 3 light segments | |
| **Flash frequency** | Hz | 1 | | | | | | | |
| **Blink frequency** | | | | | | | | | |
| • 1 | Hz | 1 | | | | | | | |
| • 2 | Hz | 2 | | | | | | | |
| • 3 | Hz | 3 | | | | | | | |

# SIRIUS 8WD4 signaling columns

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

| Version | | Conventional signaling columns | | | | Signaling columns for IO-Link | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type | | 8WD4613-5HH37 | 5JH37 | 8WD4615-5HH37 | 5JH37 | 8WD4613-5HH47 | 5JH47 | 8WD4615-5HH47 | 5JH47 |
| **Acoustic signal** | | | | | | | | | |
| **Type of acoustic signal** | | -- | Multi-tone | -- | Multi-tone | -- | Multi-tone | -- | Multi-tone |
| **Default type of acoustic signal** | | -- | Continu-ous tone | -- | Continu-ous tone | -- | Continu-ous tone | -- | Continu-ous tone |
| **Product function: Settable acoustic signal** | | No | Yes | No | Yes | No | Yes | No | Yes |
| **Service life of the acoustic signaling device** | h | -- | 5 000 | -- | 5 000 | -- | 5 000 | -- | 5 000 |
| **Volume level** | dB | -- | 80 ... 105 | -- | 80 ... 105 | -- | 80 ... 105 | -- | 80 ... 105 |
| **Default volume level** | dB | -- | 80 | -- | 80 | -- | 80 | -- | 80 |
| **Number of settable tones** | | -- | 10 | -- | 10 | -- | 10 | -- | 10 |
| **Default tone frequency** | kHz | -- | 2.7 | -- | 2.7 | -- | 2.7 | -- | 2.7 |
| **Tone frequency of alternating tone** | kHz | -- | 0.245 ... 6 | -- | 0.245 ... 6 | -- | 0.245 ... 6 | -- | 0.245 ... 6 |
| **Communication** | | | | | | | | | |
| **IO-Link mode** | | -- | | | | 24-bit output | | | |
| **Type of connectable IO device** | | -- | | | | Signaling column | | | |
| **IO-Link transfer rate** | | -- | | | | COM 3 | | | |
| **Protocol is supported IO-Link protocol** | | No | | | | Yes | | | |
| **Number of IO-Link ports** | | -- | | | | 1 | | | |
| **Point-to-point cycle time between the master and the IO-Link device, minimum** | | -- | | | | 6 | | | |
| **Enclosures** | | | | | | | | | |
| **Height** | in. | 10.66 | | 14.64 | | 10.66 | | 14.64 | |
| **Width** | in. | 2.83 | | | | | | | |
| **Outer diameter** | in. | ∅ 2.83 | | | | | | | |
| **Material** | | PC | | | | | | | |
| **Color of enclosure** | | Black | | | | | | | |
| **Mounting type** | | Floor mounting, tube mounting, bracket mounting | | | | | | | |
| **Degree of protection IP** | | IP66/IP69K | | | | | | | |
| **Degree of protection according to NEMA** | | 4/4X/12/13 | | | | | | | |
| **Type of electrical connection** | | M12 plug, 8-pole | | | | M12 plug, 4-pole | | | |
| **Ambient conditions** | | | | | | | | | |
| **Ambient temperature during operation** | °F | -22 ... +140 | | | | | | | |

# SIRIUS 8WD4 signaling columns

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

### Selection and ordering data

| | Type of acoustic signal | Number of light segments | Default number of signal blocks | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Conventional signaling columns · With M12 plug, 8-pole · 24 V DC** | | | | | | | |
| | ***Without acoustics*** | | | | | | |
| 8WD4613-5HH37 8WD4615-5HH37 | -- | 9 | 3 | **8WD4613-5HH37** | | 1 | 1 unit |
| | | 15 | 5 | **8WD4615-5HH37** | | 1 | 1 unit |
| | ***With acoustics*** | | | | | | |
| 8WD4613-5JH37 8WD4615-5JH37 | Multi-tone | 9 | 3 | **8WD4613-5JH37** | | 1 | 1 unit |
| | | 15 | 5 | **8WD4615-5JH37** | | 1 | 1 unit |
| **Signaling columns for IO-Link · With M12 plug, 4-pole · 24 V DC** | | | | | | | |
| | ***Without acoustics*** | | | | | | |
| 8WD4613-5HH47 8WD4615-5HH47 | -- | 9 | 3 | **8WD4613-5HH47** | | 1 | 1 unit |
| | | 15 | 5 | **8WD4615-5HH47** | | 1 | 1 unit |
| | ***With acoustics*** | | | | | | |
| 8WD4613-5JH47 8WD4615-5JH47 | Multi-tone | 9 | 3 | **8WD4613-5JH47** | | 1 | 1 unit |
| | | 15 | 5 | **8WD4615-5JH47** | | 1 | 1 unit |

# SIRIUS 8WD4 signaling columns

## Electronically configurable 8WD46 signaling columns, 70 mm diameter NEW

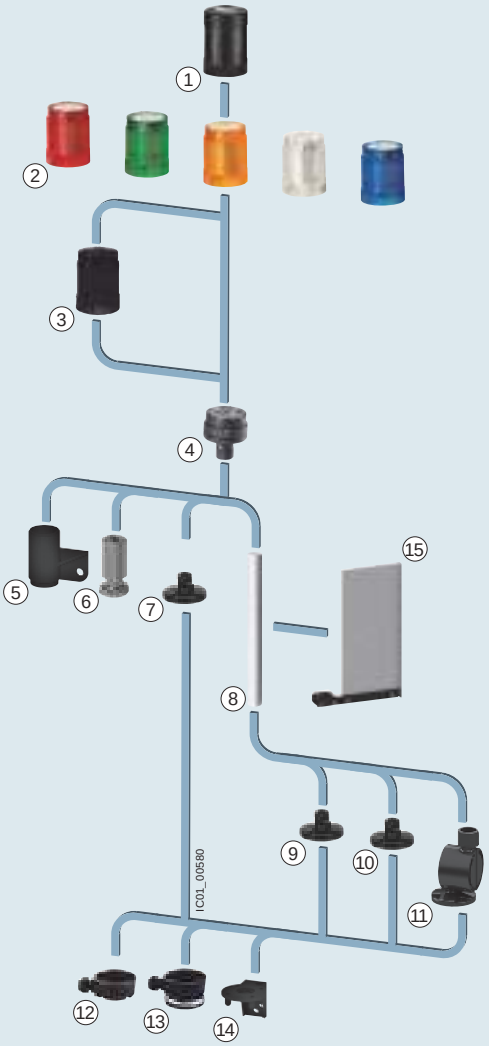
| | Version | Color | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Accessories** | | | | | | |
| 8WD4..8-0DA | **Foot with tube** | | | | | |
| | Tube length 100 mm | | | | | |
| | • Standard | Black | **8WD4308-0DA** | | 1 | 1 unit |
| | • Degree of protection IP66/IP69 (IP69K) | Black | **8WD4618-0DA** | | 1 | 1 unit |
| 8WD4308-0DB | **Foot, single** | | | | | |
| | • Plastic, for tube mounting, for tube lengths 400 mm | Black | **8WD4308-0DB** | | 1 | 1 unit |
| 8WD4308-0DC | • Metal, for tube lengths > 400 mm | Black | **8WD4308-0DC** | | 1 | 1 unit |
| 8WD4208-0EF | **Tubes, single** | | | | | |
| | • Length 100 mm | Silver | **8WD4208-0EF** | | 1 | 1 unit |
| | • Length 150 mm | Silver | **8WD4308-0EE** | | 1 | 1 unit |
| | • Length 250 mm | Silver | **8WD4308-0EA** | | 1 | 1 unit |
| | • Length 400 mm | Silver | **8WD4308-0EB** | | 1 | 1 unit |
| | • Length 1 000 mm | Silver | **8WD4308-0ED** | | 1 | 1 unit |
| 8WD4408-0CC | **Brackets for mounting on feet** | Black | **8WD4408-0CC** | | 1 | 1 unit |
| 8WD4..8-0CA | **Brackets for wall mounting** (mounting without feet and tube) | | | | | |
| | For single-sided mounting | | | | | |
| | • Standard | Black | **8WD4308-0CA** | | 1 | 1 unit |
| | • Degree of protection IP66/IP69 (IP69K) | Black | **8WD4618-0CA** | | 1 | 1 unit |
| | **Connecting cables** | | | | | |
| | • Length 5 m | | | | | |
| 3SX5601-3SB54 | - With M12 socket, 4-pole and open end | | **3SX5601-3SB54** | | 1 | 1 unit |
| | • Length 1 m | | | | | |
| 3SX5601-3SV15 | - With M12 socket, 5-pole and M12 plug, 5-pole | | **3SX5601-3SV15** | | 1 | 1 unit |
| 3SX5601-3SV18 | - With M12 socket, 8-pole and M12 plug, 8-pole | | **3SX5601-3SV18** | | 1 | 1 unit |

# 8WD4 Signaling Columns

## General Data

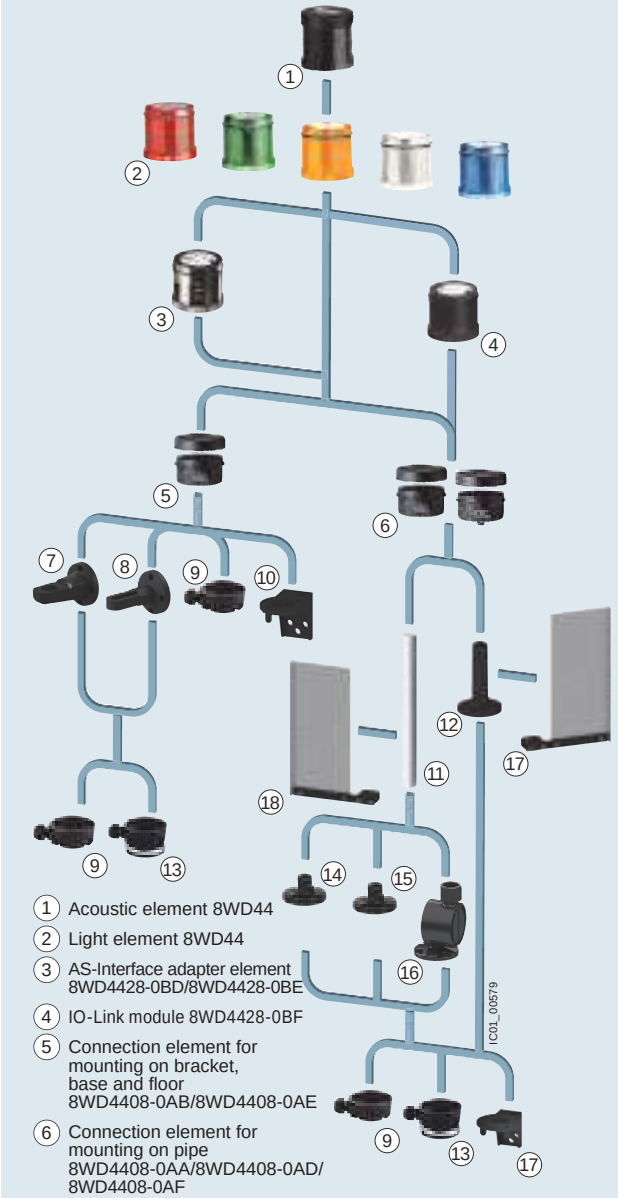
### Overview

The 8WD4 signaling columns are flexible in design and versatile in use.




1. Acoustic element 8WD42.0-0FA
2. Light element 8WD42
3. AS-Interface adapter element 8WD4228-0BB
4. Connection element 8WD4208-0AA
5. Bracket for wall mounting 8WD4208-0CD
6. Adapter for single-hole mounting 8WD4208-0EH
7. Foot for base mounting 8WD4208-0DE
8. Pipe 8WD4208-0EF/8WD4308-0E.
9. Foot for mounting with pipe 8WD4308-0DB
10. Foot for mounting with pipe (> 400 mm) 8WD4308-0DC
11. Adjustable-angle foot for mounting on pipes 8WD4408-0DF
12. Socket 8WD4308-0DD
13. Socket (magnetic fixing) 8WD4308-0DE
14. Bracket for mounting with foot 8WD4408-0CC
15. Optional 8WD4408-0FA labeling panel

8WD42 signaling column (width 50 mm) with up to 4 elements




1. Acoustic element 8WD44
2. Light element 8WD44
3. AS-Interface adapter element 8WD4428-0BD/8WD4428-0BE
4. IO-Link module 8WD4428-0BF
5. Connection element for mounting on bracket, base and floor 8WD4408-0AB/8WD4408-0AE
6. Connection element for mounting on pipe 8WD4408-0AA/8WD4408-0AD/ 8WD4408-0AF
7. Bracket for wall mounting 8WD4308-0CA
8. Bracket for wall mounting (two-sided) 8WD4308-0CB
9. Socket 8WD4308-0DD
10. Bracket for base mounting 8WD4408-0CD
11. Pipe 8WD4208-0EF/8WD4308-0E.
12. Foot with pipe 8WD4308-0DA
13. Socket (magnetic fixing) 8WD4308-0DE
14. Foot for mounting with pipe 8WD4308-0DB
15. Foot for mounting with pipe (> 400 mm) 8WD4308-0DC
16. Adjustable-angle foot for mounting on pipes 8WD4408-0DF
17. Bracket for mounting with foot 8WD4408-0CC
18. Optional 8WD4408-0FA labeling panel

8WD44 signaling column (width 70 mm) with up to 5 elements

# 8WD4 Signaling Columns

## General Data

**More information**

Homepage, see www.siemens.com/sirius-commanding
Industry Mall, see www.siemens.com/product?8WD4
Manual, see https://support.industry.siemens.com/cs/ww/en/view/107194954

Two product series are available:

- 8WD42
  - Thermoplast enclosure, diameter 50 mm
  - Degree of protection IP54
  - Up to 4 elements can be mounted between the connection element and the cover
- 8WD44
  - Thermoplast enclosure, diameter 70 mm
  - Advanced design and significantly improved illumination
  - Fast and flexible connection using spring-type terminals
  - Integrated degree of protection IP65
  - Up to 5 elements can be mounted between the connection element and the cover

Signaling columns, mounting examples

The illustrated examples are from the left:

- 8WD42: Cover (without No.), four light elements ②, connection element ④, pipe ⑧, foot ⑨
- 8WD44: Acoustic element with cover ①, two light elements ②, connection element ⑤, foot with pipe ⑪
- 8WD44: Cover (without No.), four light elements ②, AS-Interface adapter element ③, connection element ④, bracket for wall mounting ⑥
- 8WD44: Cover (without No.), three light elements ②, AS-Interface adapter element ③, connection element ⑤, foot with pipe ⑪

Note:

The cover is supplied with the connection element.

### Benefits

- Choice of various light and acoustic elements with different functions:
  Continuous light, blinklight, flashlight and rotating light; buzzer and siren
- Light elements with particularly long-lasting LEDs
- Variety of colors: red, yellow, green, white or blue
- Optimized illumination through improved prism technology with the 8WD44
- Acoustic elements can be adjusted in tone and volume
- Extremely resistant to shock and vibrations
- Easy connection and quick lamp change with secure bayonet mechanism
- Communication capability through connection to AS-Interface

### Application

8WD4 signaling columns are used in machines or in automatic processes for monitoring complex procedures or as visual or acoustic warning devices in emergency situations, e.g. for displaying individual assembly stages.

***Communication capability***

Connection to AS-Interface

The 8WD4 signaling columns can be directly connected to the AS-Interface bus system through an adapter element that can be integrated in the column. Wiring outlay is reduced as the result. The two-wire bus cable is fixed to the terminals in the connection element. Up to four signaling elements can be mounted on it using an adapter element.

A/B technology enables the connection of up to 62 slaves on one AS-Interface system.

***Connection***

The signaling elements are wired up using terminals in the connection element, screw terminals on the 8WD42 and screw or spring-type terminals on the 8WD44.

Cable outlet

The connecting cables can be guided either downwards or sideways through the cable gland using an adapter that can be screwed under the foot. This makes wiring easier if there is no access from below.

Connection to AS-Interface

8WD42

The two-wire bus cable is fixed to the screw terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. A maximum of four signaling elements can then be mounted on it.

The 8WD4228-0BB adapter element is a standard slave.

8WD44

The two-wire bus cable is fixed to the screw or spring-type terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. The signaling elements can then be mounted on it.

The 8WD4428-0BE adapter element is a standard slave.
A maximum of four signaling elements can be mounted on it.

The 8WD4428-0BD adapter element with A/B technology enables the connection of up to 62 slaves on one AS-Interface system. The addressing socket provides user-friendly parameterization of the AS-Interface elements. A maximum of three signaling elements can be mounted on it.

# 8WD4 Signaling Columns

## General Data

### Technical specifications

| Type | | 8WD42 | 8WD44 |
|---|---|---|---|
| **General data** | | | |
| **Approvals** | | UL, CSA | UL, CSA |
| **Light and acoustic elements** | | | |
| **Rated voltage, power consumption** | | | |
| Light elements with incandescent lamp | | (AC values for 50/60 Hz) | (AC values for 50/60 Hz) |
| • Continuous lights | | 12 V, 24 V, 115 V, 230 V AC/DC | 12 V, 24 V, 115 V, 230 V AC/DC |
| • Blinklights | | 24 V AC/DC/125 mA;<br>115 V AC/20 mA; 230 V AC/15 mA | 24 V AC/DC/125 mA;<br>115 V AC/20 mA; 230 V AC/15 mA |
| • Flashlights | | -- | 24 V DC/125 mA;<br>115 V AC/20 mA; 230 V AC/35 mA |
| • Max. inrush current, blinklights/flashlights | | -- | 500 mA |
| Light elements with integrated LED | | | |
| • Continuous lights | | 24 V AC/DC, 60 mA | 24 V AC/DC/25 mA;<br>115 V AC/25 mA; 230 V AC/25 mA |
| • Blinklights | | 24 V AC/DC/60 mA;<br>115 V AC, 60 mA; 230 V AC, 60 mA | 24 V AC/DC, 40 mA |
| • Rotating lights | | -- | 24 V AC/DC/70 mA |
| Acoustic elements | | | |
| • Buzzer element<br>(tone: pulsating or continuous tone) | | 85 dB:<br>24 V AC/DC/30 mA;<br>115 V AC/DC/35 mA; 230 V AC/35 mA | 85 dB:<br>24 V AC/DC/25 mA;<br>115 V AC/25 mA; 230 V AC/25 mA |
| • Siren element<br>(8 tones + amplification can be set, 102 dB) | | -- | 24 V AC/DC/80 mA;<br>115 V AC/30 mA; 230 V AC/16 mA |
| • Siren element (95 ... 105 dB) | | -- | 24 V DC/100 mA |
| **Power consumption** | | | |
| • Incandescent lamps, base BA 15d | W | Max. 5 | 7 |
| • Flashlights, flash energy | Ws | -- | 2 |
| **Service life** | | | |
| • Flashlights | | -- | $4 \times 10^6$ flashes |
| **AS-Interface adapter elements** | | | |
| **IO code/ID code** | | 8/F | 8/E |
| **Power supply** | | Through bus cable | Through bus cable |
| • Operational voltage | V | 18.5 ... 31.6 | 18.5 ... 31.6 |
| • Power consumption $I_{max}$ | mA | 50 | 100 |
| **Protective measures** | | | |
| • Watchdog | | ✓ | ✓ |
| • Short-circuit/overload protection | | External back-up fuse M 1.6 A | ✓ |
| • Reverse polarity protection | | ✓ | ✓ |
| • Induction protection | | N/A | ✓ |
| **Outputs** | | 4 relay outputs | 3 electronic outputs |
| • Load voltage | <br>V<br>V | External auxiliary voltage<br>0 … 30 DC<br>0 ... 230 AC | Through bus cable or external auxiliary voltage, selectable |
| • Current carrying capacity $\Sigma I_{max}$ | | | |
| - With external auxiliary voltage | A | 1.5 | 0.3 |
| - Without external auxiliary voltage | A | -- | 0.2 |
| **Operating temperature** | °C | –20 ... +50 | –20 ... +50 |
| **Enclosures** | | | |
| **Enclosure material** | | Thermoplast (polyamide), impact-resistant, black | Thermoplast (polyamide), impact-resistant, black |
| **Light elements** | | Thermoplast (polycarbonate) | Thermoplast (polycarbonate) |
| **Mounting** | | | |
| • Horizontal (base mounting, foot with 25 mm diameter pipe) | | ✓ | ✓ |
| • Horizontal (single-hole mounting) | | ✓ | -- |
| • Vertical with bracket | | ✓ | ✓ |
| **Degree of protection** | | | |
| • Light elements | | IP54 | IP65 (seal premounted with every module) |
| • Acoustic elements, AS-i adapter elements | | IP54 | IP65 |
| **Operating temperature** | °C | –20 ... +50 | –20 ... +50 |
| **Connection** | | M3 screw terminal | Spring-type terminals/M3 screw terminals |
| • Conductor cross-sections | $mm^2$ | Max. 2.5 | Max. 2.5 |
| • Tightening torque | Nm | Max. 0.4 | --/ Max. 0.4 |

# 8WD4 Signaling Columns

## 8WD42 signaling columns, 50 mm diameter

### Overview

Features:

- Thermoplast enclosure, diameter 50 mm
- Degree of protection IP54
- Up to four elements can be mounted between the connection element and the cover

### Selection and ordering data

| | Version | Rated voltage | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | V | | d | | | | |
| **Acoustic elements**[1] | | | | | | | | |
| 8WD4220-0FA | **Buzzer elements** 85 dB, tone frequency approx. 2 300 Hz, pulsating or continuous tone, adjustable by means of a wire jumper | 24 AC/DC | Black | 2 | **8WD4220-0FA** | | 1 | 1 unit |
| | | 115 AC/DC | Black | 2 | **8WD4240-0FA** | | 1 | 1 unit |
| | | 230 AC | Black | 2 | **8WD4250-0FA** | | 1 | 1 unit |
| **Light elements for incandescent lamps/LEDs, BA 15d bases**[2] | | | | | | | | |
| 8WD4200-1AD | **Continuous light elements** | 24 ... 230 AC/DC | Red | 2 | **8WD4200-1AB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4200-1AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4200-1AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4200-1AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4200-1AF** | | 1 | 1 unit |
| **Light elements with integrated LED** | | | | | | | | |
| 8WD4220-5AB | **Continuous light elements** | 24 AC/DC | Red | 2 | **8WD4220-5AB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4220-5AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4220-5AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4220-5AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4220-5AF** | | 1 | 1 unit |
| | | 115 AC | Red | 2 | **8WD4240-5AB** | | 1 | 1 unit |
| 8WD4240-5AC | | | Green | 2 | **8WD4240-5AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4240-5AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4240-5AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4240-5AF** | | 1 | 1 unit |
| | | 230 AC | Red | 2 | **8WD4250-5AB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4250-5AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4250-5AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4250-5AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4250-5AF** | | 1 | 1 unit |
| | **Blinklight elements** | 24 AC/DC | Red | 2 | **8WD4220-5BB** | | 1 | 1 unit |
| 8WD4220-5BD | | | Green | 2 | **8WD4220-5BC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4220-5BD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4220-5BE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4220-5BF** | | 1 | 1 unit |
| | | 115 AC | Red | 2 | **8WD4240-5BB** | | 1 | 1 unit |
| 8WD4240-5BE | | | Green | 2 | **8WD4240-5BC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4240-5BD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4240-5BE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4240-5BF** | | 1 | 1 unit |
| | | 230 AC | Red | 2 | **8WD4250-5BB** | | 1 | 1 unit |
| 8WD4250-5BF | | | Green | 2 | **8WD4250-5BC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4250-5BD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4250-5BE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4250-5BF** | | 1 | 1 unit |
| | **Flashlight elements** | 24 AC/DC | Red | 2 | **8WD4220-0CB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4220-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4220-0CD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4220-0CE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4220-0CF** | | 1 | 1 unit |
| **Adapter elements for AS-Interface** | | | | | | | | |
| 8WD4228-0BB | **AS-Interface adapter elements** With external auxiliary voltage | For 4 signaling elements 24 V DC | Black | 2 | **8WD4228-0BB** | | 1 | 1 unit |

[1] One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

[2] The lamp is not included in the scope of supply. Please order separately.

# 8WD4 Signaling Columns

## 8WD42 signaling columns, 50 mm diameter

| | Version | Rated voltage V | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Connection elements** | | | | | | | | |
| | **Connection elements with cover**<br>For mounting on pipes, floors and brackets<br>Essential part for assembling the signaling columns | | Black | 2 | **8WD4208-0AA** | | 1 | 1 unit |
| **Mounting** | | | | | | | | |
| | **Feet, single** | Plastic, for mounting on pipes | | 2 | **8WD4308-0DB** | | 1 | 1 unit |
| | | Metal, for pipe lengths > 400 mm | | 2 | **8WD4308-0DC** | | 1 | 1 unit |
| | | Plastic, for floor mounting (without pipe) | | 2 | **8WD4208-0DE** | | 1 | 1 unit |
| | **Adjustable-angle feet**<br>For positioning in 7.5° increments[1] | Plastic, for mounting on pipes, incl. rubber seal | | 2 | **8WD4408-0DF** | | 1 | 1 unit |
|  | **Pipes, single** | Length 100 mm | | 2 | **8WD4208-0EF** | | 1 | 1 unit |
| | | Length 150 mm | | 2 | **8WD4308-0EE** | | 1 | 1 unit |
| | | Length 250 mm | | 2 | **8WD4308-0EA** | | 1 | 1 unit |
| | | Length 400 mm | | 2 | **8WD4308-0EB** | | 1 | 1 unit |
| | | Length 1 000 mm | | 2 | **8WD4308-0ED** | | 1 | 1 unit |
| | **Sockets for feet** | Side cable outlet | | 2 | **8WD4308-0DD** | | 1 | 1 unit |
| | | Side cable outlet, with magnetic fixing[2] | | 2 | **8WD4308-0DE** | | 1 | 1 unit |
| | **Brackets for mounting with foot** | | | 2 | **8WD4408-0CC** | | 1 | 1 unit |
| | **Brackets for wall mounting** (plastic) | Mounting without feet or pipe | | 2 | **8WD4208-0CD** | | 1 | 1 unit |
| | **Adapters for single-hole mounting** | Mounting without feet and pipe, with M18 thread and fixing nut | | 2 | **8WD4208-0EH** | | 1 | 1 unit |
| **Lamps** | | | | | | | | |
| | **Incandescent lamps, 5 W** | | | | | | | |
| | Base BA 15d | 24 AC/DC | Clear | 2 | **8WD4328-1XX** | | 1 | 10 units |
| | | 115 AC | Clear | 2 | **8WD4348-1XX** | | 1 | 10 units |
| | | 230 AC | Clear | 2 | **8WD4358-1XX** | | 1 | 10 units |
| | **LEDs** | | | | | | | |
| | BA 15d bases | 24 AC/DC | Red | 2 | **8WD4428-6XB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4428-6XC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4428-6XD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4428-6XE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4428-6XF** | | 1 | 1 unit |
| | | 115 AC | Red | 2 | **8WD4448-6XB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4448-6XC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4448-6XD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4448-6XE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4448-6XF** | | 1 | 1 unit |
| | | 230 AC | Red | 2 | **8WD4458-6XB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4458-6XC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4458-6XD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4458-6XE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4458-6XF** | | 1 | 1 unit |

For labeling panels see 8WD44, page 10/185.

1) Markings for 30°, 45°, 60° and 90°.

2) For horizontal mounting, only 1 element is recommended.

# 8WD4 Signaling Columns

## 8WD44 signaling columns, 70 mm diameter

### Overview

Features:

- Thermoplast enclosure, diameter 70 mm
- Advanced design and significantly improved illumination
- Fast and flexible connection using spring-type terminals
- Integrated degree of protection IP65
- Up to five elements can be mounted

### Selection and ordering data

| | Version | Rated voltage | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | V | | d | | | | |
| **Acoustic elements**[1] | | | | | | | | |
| | **Buzzer elements** 85 dB, pulsating or continuous tone, adjustable by means of a wire jumper | 24 AC/DC | Black | 2 | **8WD4420-0FA** | | 1 | 1 unit |
| | | 115 AC | Black | 2 | **8WD4440-0FA** | | 1 | 1 unit |
| | | 230 AC | Black | 2 | **8WD4450-0FA** | | 1 | 1 unit |
| | **Siren elements**, multi-tone, 102 dB, 8 tones and volume are adjustable | 24 AC/DC | Black | 2 | **8WD4420-0EA2** | | 1 | 1 unit |
| | | 115 AC | Black | 2 | **8WD4440-0EA2** | | 1 | 1 unit |
| | | 230 AC | Black | 2 | **8WD4450-0EA2** | | 1 | 1 unit |
| | **Siren elements** 95 ... 105 dB, IP40, alternating continuous tone | 24 DC | Black | 2 | **8WD4420-0EA** | | 1 | 1 unit |
| **Light elements for incandescent lamps/LEDs, BA 15d bases**[2] | | | | | | | | |
| | **Continuous light elements** | 12 ... 230 AC/DC | Red | 2 | **8WD4400-1AB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4400-1AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4400-1AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4400-1AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4400-1AF** | | 1 | 1 unit |
| **Light elements with integrated flash lamps**[3] | | | | | | | | |
| | **Flashlight elements** with integrated electronic flash | 24 DC | Red | 2 | **8WD4420-0CB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4420-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4420-0CD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4420-0CE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4420-0CF** | | 1 | 1 unit |
| | | 115 AC | Red | 2 | **8WD4440-0CB** | | 1 | 1 unit |
| | | | Green | 20 | **8WD4440-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4440-0CD** | | 1 | 1 unit |
| | | | Clear | 20 | **8WD4440-0CE** | | 1 | 1 unit |
| | | | Blue | 20 | **8WD4440-0CF** | | 1 | 1 unit |
| | | 230 AC | Red | 2 | **8WD4450-0CB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD4450-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD4450-0CD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD4450-0CE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD4450-0CF** | | 1 | 1 unit |

1) One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

2) The lamp is not included in the scope of supply. Please order separately.

3) The lamp is included in the scope of supply.

# 8WD4 Signaling Columns

## 8WD44 signaling columns, 70 mm diameter

| | Version | | Rated voltage | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | V | | d | | | | |
| **Light elements with integrated LED** | | | | | | | | | |
| | **Continuous light elements** | | 24 AC/DC | Red | 2 | **8WD4420-5AB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4420-5AC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4420-5AD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4420-5AE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4420-5AF** | | 1 | 1 unit |
| | | | 115 AC | Red | 2 | **8WD4440-5AB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4440-5AC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4440-5AD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4440-5AE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4440-5AF** | | 1 | 1 unit |
| | | | 230 AC | Red | 2 | **8WD4450-5AB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4450-5AC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4450-5AD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4450-5AE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4450-5AF** | | 1 | 1 unit |
| | **Blinklight elements** | | 24 AC/DC | Red | 2 | **8WD4420-5BB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4420-5BC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4420-5BD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4420-5BE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4420-5BF** | | 1 | 1 unit |
| | | | 115 AC | Red | 2 | **8WD4440-5BB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4440-5BC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4440-5BD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4440-5BE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4440-5BF** | | 1 | 1 unit |
| | | | 230 AC | Red | 2 | **8WD4450-5BB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4450-5BC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4450-5BD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4450-5BE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4450-5BF** | | 1 | 1 unit |
| | **Rotating light elements** | | 24 AC/DC | Red | 2 | **8WD4420-5DB** | | 1 | 1 unit |
| | | | | Green | 2 | **8WD4420-5DC** | | 1 | 1 unit |
| | | | | Yellow | 2 | **8WD4420-5DD** | | 1 | 1 unit |
| | | | | Clear | 2 | **8WD4420-5DE** | | 1 | 1 unit |
| | | | | Blue | 2 | **8WD4420-5DF** | | 1 | 1 unit |
| **Adapter elements for AS-Interface** | | | | | | | | | |
| | **AS-Interface adapter elements** | | | | | | | | |
| | With/without external auxiliary voltage, switchable | | | | | | | | |
| | • A/B technology | For 3 signaling elements 24 V DC | | Black | 2 | **8WD4428-0BD** | | 1 | 1 unit |
| | • Standard AS-i | For 4 signaling elements 24 V DC | | Black | 2 | **8WD4428-0BE** | | 1 | 1 unit |
| | Adapter elements for IO-Link | | | | | **8WD4428-0BF** | | | |
| **Connection elements**[1)] | | | | | | | | | |
| | **Connection elements with cover** | | | Black | | | | | |
| | Screw terminals | • For mounting on pipes | | | 2 | **8WD4408-0AA** | | 1 | 1 unit |
| | | • For mounting on brackets and floors | | | 2 | **8WD4408-0AB** | | 1 | 1 unit |
| | Spring-type terminals | • For mounting on pipes | | | 2 | **8WD4408-0AD** | | 1 | 1 unit |
| | | • For mounting on brackets and floors | | | 2 | **8WD4408-0AE** | | 1 | 1 unit |
| | IO-Link Connection Element with M12 connector, 5-pole | | | | 2 | **8WD4408-0AF** | | 1 | 1 unit |
| | Cover (replacement) | | | | 2 | **8WD4408-0XA** | | 1 | 1 unit |

[1)] The connection element with cover is an essential part for assembling the signaling columns.

# 8WD4 Signaling Columns

## 8WD44 signaling columns, 70 mm diameter

| | Version | | DT | Order No. | PU (UNIT, SET, M) | PS |
|---|---|---|---|---|---|---|
| **Mounting** | | | | | | |
| | **Foot with pipe** | Plastic foot with pipe length 100 mm | A | **8WD43 08-0DA** | 1 | 1 unit |
| | **Feet, single** | Plastic, for mounting on pipes | A | **8WD43 08-0DB** | 1 | 1 unit |
| | | Metal, for pipe lengths > 400 mm | A | **8WD43 08-0DC** | 1 | 1 unit |
| | **Adjustable-angle feet** for positioning in 7.5° increments[1] | Plastic, for mounting on pipes, incl. rubber seal | X | **8WD44 08-0DF** | 1 | 1 unit |
| | **Pipes, single** | Length 100 mm | A | **8WD42 08-0EF** | 1 | 1 unit |
| | | Length 150 mm | A | **8WD43 08-0EE** | 1 | 1 unit |
| | | Length 250 mm | A | **8WD43 08-0EA** | 1 | 1 unit |
| | | Length 400 mm | A | **8WD43 08-0EB** | 1 | 1 unit |
| | | Length 1000 mm | A | **8WD43 08-0ED** | 1 | 1 unit |
| | **Sockets for feet** | Side cable outlet (can also be used without feet) | A | **8WD43 08-0DD** | 1 | 1 unit |
| | | Side cable outlet, with magnetic fixing[2] | A | **8WD43 08-0DE** | 1 | 1 unit |
| | **Brackets for wall mounting** (mounting without feet and pipe) | For single-sided mounting | A | **8WD43 08-0CA** | 1 | 1 unit |
| | | For double-sided mounting | A | **8WD43 08-0CB** | 1 | 1 unit |
| | **Brackets for mounting with foot** | | A | **8WD44 08-0CC** | 1 | 1 unit |
| | **Brackets for base mounting** | Mounting without feet and pipe | A | **8WD44 08-0CD** | 1 | 1 unit |
| | **Adapter for mounting on pipes according to NPT** | Mounting on pipes, Ø 25 mm, with NPT 1/2" thread | A | **8WD43 08-0DF** | 1 | 1 unit |

[1] Markings for 30°, 45°, 60° and 90°.

[2] For horizontal mounting, only 1 element is recommended.

Note:

For mounting and configuring aid see the publication "Versatile, robust, communication-capable: SIRIUS signaling columns and integrated signal lamps", Order No. E20001-A670-P305.

# 8WD4 Signaling Columns

## 8WD44 signaling columns, 70 mm diameter

| | Version | Rated voltage | Color | DT | Order No. | PU (UNIT, SET, M) | PS |
|---|---|---|---|---|---|---|---|
| | | V | | | | | |
| **Lamps** | | | | | | | |
| | **Incandescent lamps, 5 W** | | | | | | |
| | Base BA 15d | 24 AC/DC | | A | **8WD43 28-1XX** | 1 | 10 units |
| | | 115 AC | | A | **8WD43 48-1XX** | 1 | 10 units |
| | | 230 AC | | A | **8WD43 58-1XX** | 1 | 10 units |
| | **LEDs** | | | | | | |
| | Base BA 15d | 24 AC/DC | Red | A | **8WD44 28-6XB** | 1 | 1 unit |
| | | | Green | A | **8WD44 28-6XC** | 1 | 1 unit |
| | | | Yellow | A | **8WD44 28-6XD** | 1 | 1 unit |
| | | | Clear | A | **8WD44 28-6XE** | 1 | 1 unit |
| | | | Blue | A | **8WD44 28-6XF** | 1 | 1 unit |
| | | 115 AC | Red | A | **8WD44 48-6XB** | 1 | 1 unit |
| | | | Green | A | **8WD44 48-6XC** | 1 | 1 unit |
| | | | Yellow | A | **8WD44 48-6XD** | 1 | 1 unit |
| | | | Clear | A | **8WD44 48-6XE** | 1 | 1 unit |
| | | | Blue | A | **8WD44 48-6XF** | 1 | 1 unit |
| | | 230 AC | Red | A | **8WD44 58-6XB** | 1 | 1 unit |
| | | | Green | A | **8WD44 58-6XC** | 1 | 1 unit |
| | | | Yellow | A | **8WD44 58-6XD** | 1 | 1 unit |
| | | | Clear | A | **8WD44 58-6XE** | 1 | 1 unit |
| | | | Blue | A | **8WD44 58-6XF** | 1 | 1 unit |
| **Inscriptions** | | | | | | | |
| | **Labeling panels**<br>With fixing accessories for mounting on pipe ∅ 25 mm<br>Inscription area/ step 50 mm x 140 mm<br>Suitable for standard labels, e.g.<br>• Zweckform 3425<br>• Herma 4457 | | | A | **8WD44 08-0FA** | 1 | 1 unit |
| **Pre-assembled 8WD44 Signal Columns** | | | | | | | |
| | Pre-assembled Connection Element, Foot and Pipe | | | A | **8WD4421-0GA05-0AG0** | 1 | 1 unit |
| | Pre-assembled Signal Column | | | A | **8WD4423-5AK05-0AE0** | 1 | 1 unit |
| | Pre-assembled Signal Column | | | A | **8WD4423-5AK05-0AF0** | 1 | 1 unit |

# 8WD5 Integrated Signal Lamps

## 8WD53 integrated signal lamps, 70 mm diameter

### Overview

8WD53 integrated signal lamps

| More information |
|---|
| Homepage, see www.siemens.com/sirius-commanding |
| Industry Mall, see www.siemens.com/product?8WD5 |
| Manual, see https://support.industry.siemens.com/cs/ww/en/view/107194954 |

#### *Design*

Features:

- Thermoplast enclosures, diameter 70 mm
- Degree of protection IP65
- Rated voltage 24 V, 115 V, 230 V AC/DC
- Ambient temperature -20 to +50 °C, incandescent lamp up to 60 °C

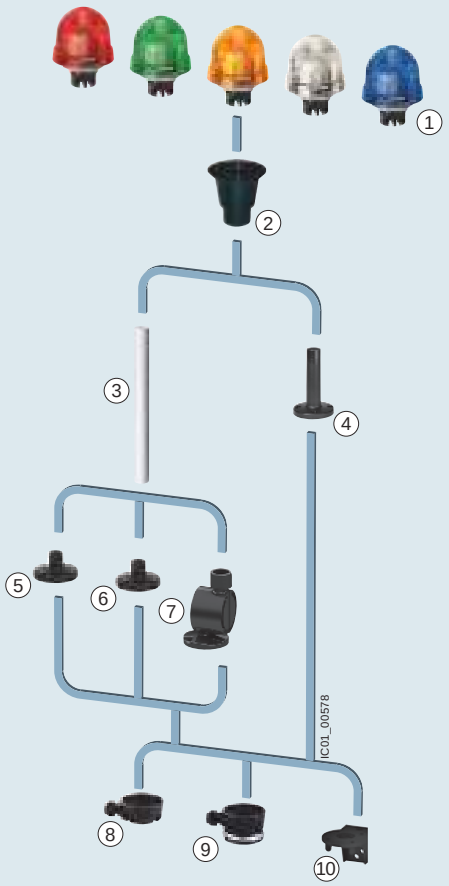
The special shape of the integrated signal lamps means that the light is emitted optimally in every direction (to the sides and upwards). Continuous lights (with incandescent lamp or LED) and single-flash lights are available in five colors. As well as the continuous-light version, a flashing-light or all-round light version is also available.

The LED versions of the integrated signal lamps offer a considerably longer endurance than the incandescent lamp versions.

They all have the high degree of protection IP65 and are made of a material highly resistant to impact.

#### *Mounting*

8WD53 integrated signal lamps can be mounted at any point of the machine for the purpose of giving visual signals. They are mounted by means of a PG-29 screw base with nut.




1. Integrated signal lamp 8WD53
2. Pipe adapter 8WD5308-0EG
3. Pipe 8WD4208-0EF/8WD4308-0E.
4. Foot with pipe 8WD4308-0DA
5. Foot for mounting with pipe 8WD4308-0DB
6. Foot for mounting with pipe (> 400 mm) 8WD4308-0DC
7. Adjustable-angle foot for mounting on pipes 8WD4408-0DF
8. Socket 8WD4308-0DD
9. Socket (magnetic fixing) 8WD4308-0DE
10. Bracket for mounting with foot 8WD4408-0CC

### Application

SIRIUS 8WD53 integrated signal lamps can be used as visual signaling devices in harsh ambient conditions and in outdoor installations.

Visual signaling devices for indicating operating conditions can be used for the following applications:

- Manufacturing plants
- Injection molding machines
- Conveyors
- Assembly systems for electronic components

# 8WD5 Integrated Signal Lamps

## 8WD53 integrated signal lamps, 70 mm diameter

### Selection and ordering data

| | Version | Rated voltage | Color | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | V | | d | | | | |
| **Luminaires for incandescent lamps/LED[1], BA 15d base** | | | | | | | | |
| | **Continuous lights**[2] | 12 ... 230 AC/DC | Red | 2 | **8WD5300-1AB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD5300-1AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5300-1AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5300-1AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD5300-1AF** | | 1 | 1 unit |
| **Luminaires with integrated flash lamp** | | | | | | | | |
| | **Single-flash lights** with integrated electronic flash | 24 AC/DC | Red | 2 | **8WD5320-0CB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD5320-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5320-0CD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5320-0CE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD5320-0CF** | | 1 | 1 unit |
| | | 115 AC | Red | 2 | **8WD5340-0CB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD5340-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5340-0CD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5340-0CE** | | 1 | 1 unit |
| | | | Blue | 20 | **8WD5340-0CF** | | 1 | 1 unit |
| | | 230 AC | Red | 2 | **8WD5350-0CB** | | 1 | 1 unit |
| | | | Green | 20 | **8WD5350-0CC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5350-0CD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5350-0CE** | | 1 | 1 unit |
| | | | Blue | 20 | **8WD5350-0CF** | | 1 | 1 unit |
| **Luminaires with integrated LED[1]** | | | | | | | | |
| | **Continuous lights** | 24 AC/DC | Red | 2 | **8WD5320-5AB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD5320-5AC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5320-5AD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5320-5AE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD5320-5AF** | | 1 | 1 unit |
| | **Blinklight lamps** | 24 AC/DC | Red | 2 | **8WD5320-5BB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD5320-5BC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5320-5BD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5320-5BE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD5320-5BF** | | 1 | 1 unit |
| | **Rotating lights** | 24 AC/DC | Red | 2 | **8WD5320-5DB** | | 1 | 1 unit |
| | | | Green | 2 | **8WD5320-5DC** | | 1 | 1 unit |
| | | | Yellow | 2 | **8WD5320-5DD** | | 1 | 1 unit |
| | | | Clear | 2 | **8WD5320-5DE** | | 1 | 1 unit |
| | | | Blue | 2 | **8WD5320-5DF** | | 1 | 1 unit |
| **Accessories for mounting (optional)** | | | | | | | | |
| | **Pipe adapters** For mounting on pipes[3] | | | 2 | **8WD5308-0EG** | | 1 | 1 unit |

1) Only for use with SIRIUS commanding and signaling devices.

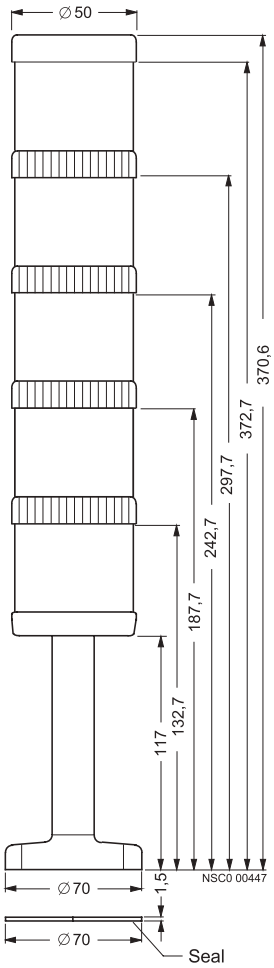
2) Lamp not included in scope of supply, see Signaling Columns, page 10/185..

3) For pipes and feet, see Signaling Columns, page 10/184.

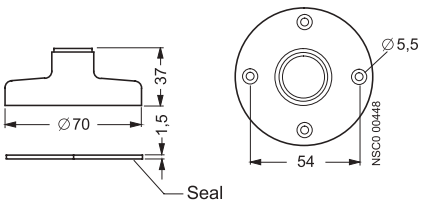
# 8WD4 Signaling Columns

## Dimension drawings

**Signaling column (4-tier)**

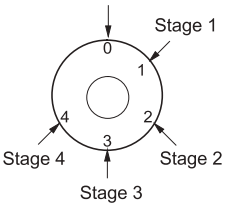



**Foot**

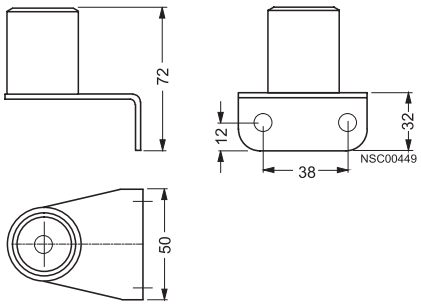


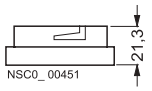

**Connection element**

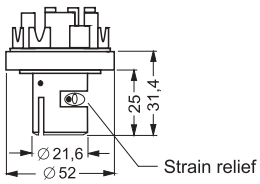
Connection diagram
Common conductor



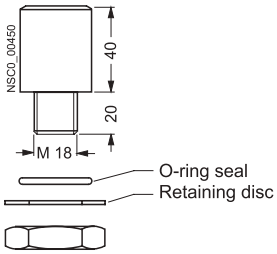

**Bracket for wall mounting**



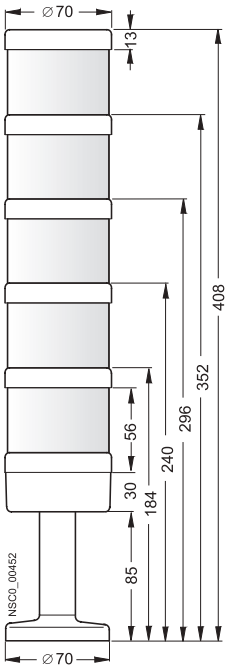




**Adapter for single-hole mounting**

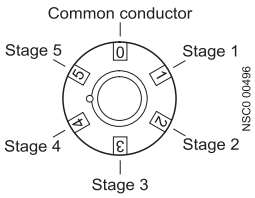


## Dimension drawings

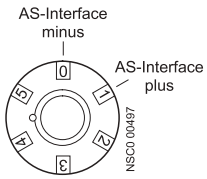
### Signaling column (5-tier)



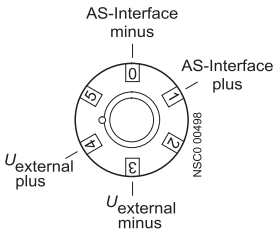

### Connection diagrams




conventional

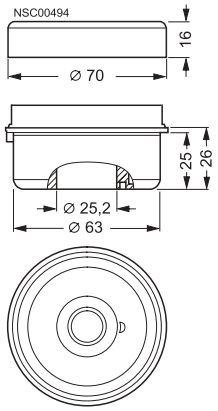



with AS-Interface, without external auxiliary voltage

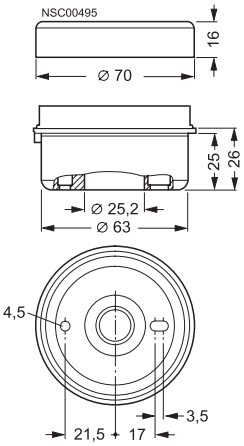



with external auxiliary voltage

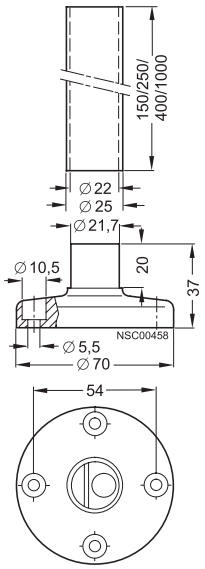
### Connection element and cover for mounting on pipes



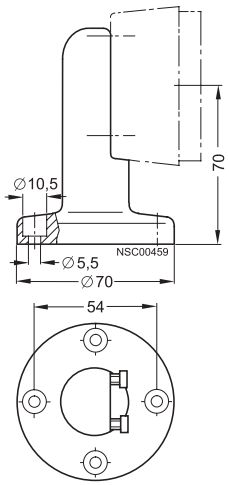

### Connection element and cover for mounting on floor/bracket



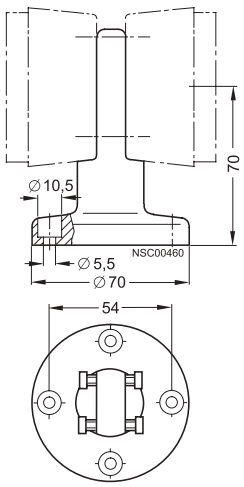

### Foot with pipe




### Bracket for single-sided mounting



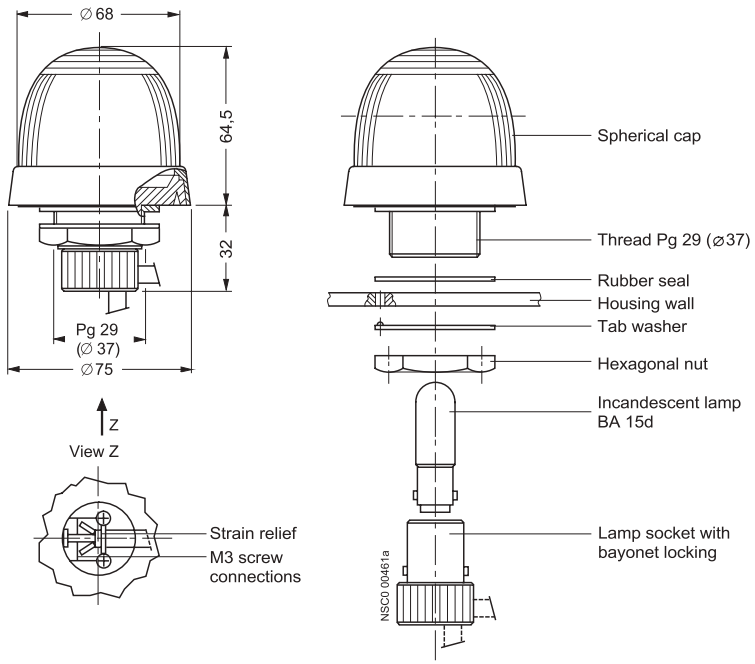

### Bracket for double-sided mounting



# 8WD53 Beacons

## Dimension drawings

### Dimension drawings



# 30 mm Heavy Duty, Watertight/Oiltight, Class 52

## Pushbutton complete units

### Features

- Octagonal Mounting Nuts
- Meets Type 1, 3, 3R, 4, 4X, 12, 13 and Automotive Standards
- Heavy Duty Rated NEMA A600/P600 Contacts
- ⊖ Direct Opening Action Contacts
- Positive Indexing Selectors
- Bifurcated Movable Contacts
- Attractive Chrome Plating
- Boots Not Required for Type 4
- cULus Listed File #E22655
- E-STOP cULus Listed FIle #E524906
- Touchsafe Terminals
- Hazardous Location CL1, DIV2 Contact Blocks
- Hazardous Location CL1, DIV2 Light Modules

### Application

Oil tight pilot controls and accessories are designed to provide long, trouble free service in the most demanding industrial applications. These controls are oil and dust tight and meet Type 3, 4, 4X, 12 and 13 specifications.

#### *Rugged*

Industrial control operators are durable one piece castings. Heavy duty plastic buttons resist oils and corrosion. Silver contacts carry heavy duty ratings.

#### *Flexible*

Accessories modify standard push buttons, selector switches and pilot lights. Building block construction of contact blocks makes possible many circuitry combinations.

#### *Industrial Appearance*

Pilot controls add luster to panels. Chrome plating covers exposed metal parts.

#### *Push Button Operators*

The Operator Base consists of a durable, one piece casting equipped with a heavy duty actuator with a stainless steel spring, a neoprene actuator sealing ring to prevent oil and dust from penetrating to the contact blocks, a neoprene gasket to seal operator mounting hole and a chrome plated lock nut.

#### *Mushroom Head Push Button Operators*

The Mushroom Head base construction is identical to the push button base. The actuator is molded of high impact material for either a 1 5⁄8 inch or 2 1⁄2 inch diameter molded head.

#### *E-STOP*

E-STOP Mushroom Head Operators according to EN 60947-5-5 Cat. No. 52BP, 52BR, 52PP, and 52PR, 2 Position, Twist-To-Release & 2 Position, Push Pull Maintained operators provided with red operating heads and 52BJK contact blocks meets the requirements of EN 60947-5-5 Siemens listing number E524906 for Electrical Emergency Stop Device With Mechanical Latching function (E-Stop). The E-Stop device series has a special application nomenclature of “S” specifically for this device series.

#### *Contact Blocks*

Standard Contact Blocks have double break bifurcated silver contacts as standard. Versions with gold flashing are available for improved contact reliability. Contact blocks are heavy duty rated NEMA A600 and suitable for applications down to 5V/1MA solid state outputs. 52BAJ and 52BJK versions offers ⊖ Direct Opening Action Contacts according to IEC 60947-5-1, Appendix K. Molded bodies and pushers resist arcing and tracking. All units have stainless steel springs that resist corrosion and provide strong contact pressure. Captive mounting screws speed panel assembly. New HL Series Contact Blocks are also rated for Hazardous Locations Class 1, Division 2.

#### *Push Pull Operators*

Push Pull Operators combine two or three functions in one unit. The maintained operator has two positions, typically pull to start, push to stop. The momentary operator with three positions provides spring return from both pull and push positions. In addition, a three position push maintained, pull momentary operator is available. The actuator come is 1 3/4 inch or 2 1/2 inch diameter and is available in an illuminated version.

#### *2 Button Maintained Operator*

Maintained Push Buttons consist of two push buttons and a latching assembly. When actuated the button remains depressed and is freed only by the release operator to which it is linked. The button assembly adjusts for mounting from a 1 13⁄16 inch to a 2 5⁄8 inch center.

#### *Transformer Type Pilot Lights*

Transformer Type Pilot Lights are available with a 120, 240, 480 or 600 Volt primary (50/60 Hertz) and a separate secondary winding which supplies reduced voltage to a miniature bayonet base 6 Volt lamp. These units are suitable for applications where vibration is present and long bulb life is desirable.

### Electrical Ratings

NEMA AC Ratings 50/60Hz

NEMA A600 10 Continuous Amps

| Volts | Make | Break |
|---|---|---|
| 120 | 60 | 6 |
| 240 | 30 | 3 |
| 480 | 15 | 1.5 |
| 600 | 12 | 1.2 |
| VA | 7200 | 720 |

### Ordering Information

- Accessories: pages 10/214 – 10/218
- Selector Position and Contact Operation: page 10/212 – 10/213.
- Legend Plates: page 10/227.
- Enclosures: page 10/229.
- Technical Specifications: page 10/228.

#### *Full Voltage Type Pilot Lights*

Full Voltage Pilot Lights are available for 6,12, 24 and 120 Volt AC and DC applications.

#### *Resistor Type Pilot Lights*

Resistor Type Pilot Lights are available for 240 Volt AC and DC applications. The 240 Volt pilot light is supplied with a 120 Volt lamp and a voltage dropping resistor.

#### *LED Type Pilot Lights*

LED’s (light emitting diodes) can be used in pilot lights instead of incandescent bulbs because of their long life (up to 10 years), resistance to vibration and ambient sensitivity. Clusted LED options are available for standard pilot lights only. Cluster LED options are not available on Push to test Pilot Lights, Illuminated Pushbuttons, Push-pull, or Twist-to-Release Operators.

#### *Integrated LED Module Type Pilot Lights*

The integrated LED module is available for 24, 120, 240 and 24-240V. LED modules are vibration resistant and have a long life (up to 10 years).

#### *Selector Operators*

Selector Operators have positive action indexing. Operators are available with either a short or long lever. The molded black lever is designed to accept a color insert. A white insert is provided as standard. Each operator is equipped with a cam to actuate plungers of contact blocks assembled behind the operator. Two, three and four position operators are available with seven different cams.

Lever color inserts are available in 8 colors.

Indicator Light

Push Button

Selector Switch

Selector Push Button

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Push Button

### Selection Guid

## Momentary Push Button - Non-Illuminated

Flush Head

Extended Head

Large Mushroom Head 2 1/2″

Small Mushroom Head 1 3/4″

| Part Number | 52 | a | M<br>b | c | d | e[1] |
|---|---|---|---|---|---|---|

**a**

| Code | Finish |
|---|---|
| P | Chrome - Command 52 |
| B | Epoxy Coated - Black Max |

**b**

| Code | Type |
|---|---|
| M | Momentary Push Button |

**c**

| Code | Style / Head Type |
|---|---|
| | **Flush / Extended Cap** |
| 8A | Flush |
| 8B | Extended |
| | **Mushroom Head Metal** |
| 9A | Small Mushroom Head 1 3/4" (44.5mm) |
| | **Mushroom Head Plastic** |
| 9W | Small Mushroom Head 1 3/4" (44.5mm) |
| 9V | Large Mushroom Head 2 1/2" (63.5mm) |

**d**

| Code | Plastic | Metal |
|---|---|---|
| 1 | Black | — |
| 2 | Red | Red |
| 3 | Green | Green |
| 4 | Yellow | — |
| 5 | Blue | — |
| 6 | Gray | — |
| 7 | All Color Caps | — |
| 8 | Orange | — |
| C | — | Chrome |

**e[1]**

| Code | Contact Blocks[2] |
|---|---|
| A | 1 NO + 1 NC |
| B | 2 NO + 2 NC |
| C | 3 NO + 3 NC |
| D | 4 NO + 4 NC |
| E | 1 NC (LB) |
| F | 2 NO |
| G | 2 NC |
| H | 1NO (EM) |
| J | 1 NC |
| K | 1 NO |

1 For operator without contact blocks leave position e blank.

2 Complete Pushbutton Operators with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

## Selection Tables

### Momentary Push Button - Non-Illumniated[1]

| Head Style | Contacts | Color | Finish | |
|---|---|---|---|---|
| | | | Chrome | Black Max |
| Flush | — | Less cap | **52PM8** | **52BM8** |
| | | Black | **52PM8A1** | **52BM8A1** |
| | | Red | **52PM8A2** | **52BM8A2** |
| | | Green | **52PM8A3** | **52BM8A3** |
| | | Yellow | **52PM8A4** | **52BM8A4** |
| | 1 NO - 1 NC | Black | **52PM8A1A** | **52BM8A1A** |
| | | Red | **52PM8A2A** | **52BM8A2A** |
| | | Green | **52PM8A3A** | **52BM8A3A** |
| | 1 NO | Black | **52PM8A1K** | **52BM8A1K** |
| | | Red | **52PM8A2K** | **52BM8A2K** |
| | | Green | **52PM8A3K** | **52BM8A3K** |
| | 1 NC | Red | **52PM8A2J** | **52BM8A2J** |
| Extended | — | Black | **52PM8B1** | **52BM8B1** |
| | | Red | **52PM8B2** | **52BM8B2** |
| | | Green | **52PM8B3** | **52BM8B3** |
| | 1 NO | Black | **52PM8B1K** | **52BM8B1K** |
| | | Red | **52PM8B2K** | **52BM8B2K** |
| | 1 NC | Red | **52PM8B2J** | **52BM8B2J** |
| Mushroom Head Plastic Ø 1 3/4” | — | Less cap | **52PM9** | **52BM9** |
| | | Red | **52PM9W2** | **52BM9W2** |
| | 1 NO | Green | **52PM9W3K** | **52BM9W3K** |
| | 1 NO - 1 NC | Black | **52PM9W1A** | **52BM9W1A** |
| | | Red | **52PM9W2A** | **52BM9W2A** |
| | 1 NO - 1 NC | Green | **52PM9W3A** | **52BM9W3A** |
| Mushroom Head Plastic Ø 2 1/2” | — | Red | **52PM9V2** | **52BM9V2** |
| | 1 NO - 1 NC | Black | **52PM9V1A** | **52BM9V1A** |
| | | Red | **52PM9V2A** | **52BM9V2A** |
| | | Green | **52PM9V3A** | **52BM9V3A** |

Readily available items are in **bold**.
This is a small representation of stocked items.

1 Complete Operators with 1 to 2 Contact Blocks are available with CL1, DIV2 Ratings when Suffix "HL" is added to the part number.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Non-Illuminated Push Pull

### Selection Guide

## 2 & 3 Position Push-Pull Mushroom Head Devices - Non-Illuminated

Mushroom Head Metal Ø 1 3/4″

Mushroom Head Plastic Ø 2 1/2″

Mushroom Head Plastic Ø 1 3/4″

| Part Number | 52 | ____ a | P b | ____ c | ____ d | ____ e | ____ f[3] |
|---|---|---|---|---|---|---|---|

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Type |
|---|---|
| P | Push Pull |

**c**

| Code | Function |
|---|---|
| 2 | 2 positions - maintained[1] |
| 3 | 3 positions - momentary in - momentary out |
| 7 | 3 positions - maintained in - momentary out |

**d**

| Code | Style |
|---|---|
| A | Small metal 1-3/4" (44.5 mm) |
| W | Small plastic 1-3/4" (44.5 mm) |
| V | Large plastic 2-1/2" (63.5 mm) |

**e**

| Code | Color | |
|---|---|---|
| | Plastic | Metal |
| 1 | Black | — |
| 2 | Red[1] | Red[1] |
| 3 | Green | Green |
| 4 | Yellow | — |
| 5 | Blue | — |
| 6 | Gray | — |
| 8 | Orange | — |
| C | — | Chrome |
| | **No Operating Head** | |
| Z | No head | |

**f[3]**

| Code | Contact Blocks[4] |
|---|---|
| | **2 Position** |
| A | 1 NO + 1 NC[1] |
| B | 2 NO + 2 NC[1] |
| C | 3 NO + 3 NC[1] |
| D | 4 NO + 4 NC[1] |
| E | 1 NC (LB) |
| F | 2 NO |
| G | 2 NC[1] |
| H | 1 NO (EM) |
| J | 1 NC[1] |
| K | 1 NO |
| Q | 1 NO - 1 NC (ELB) |
| | **3 Position** |
| U | 1 NO - 1 NC extra late break[2] |

1 EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and direct opening action NC contact blocks. Direct opening action contacts according to IEC 60947-5-1, Appendix K. Add at the end of the Siemens part number a special application nomenclature of "S" specifically for Emergency Stop Control Devices.

2 Blocks cannot be interchanged (stop-start circuit - pull to start, push to stop).

3 For operator without contact blocks leave position f blank.

4 Complete Push-Pull, 2-Position Operators with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Non-Illuminated Push Pull

### Selection Tables

## 2 & 3 Position Push-Pull Mushroom Head Devices - Non-Illuminated

**2 pos - maintained**

| | | Metal Ø 1 3/4" | | Plastic Ø 1 3/4" | | Plastic Ø 2 1/2" | |
|---|---|---|---|---|---|---|---|
| **Contacts** | **Color** | **Chrome** | **Black Max** | **Chrome** | **Black Max** | **Chrome** | **Black Max** |
| — | Black | — | — | **52PP2W1** | 52BP2W1 | 52PP2V1 | 2BP2V1 |
| | Red | **52PP2A2** | 52BP2A2 | **52PP2W2** | **52BP2W2** | **52PP2V2** | 52BP2V2 |
| | Green | 52PP2A3 | 52BP2A3 | **52PP2W3** | 52BP2W3 | 52PP2V3 | 52BP2V3 |
| | Yellow | — | — | 52PP2W4 | 52BP2W4 | 52PP2V4 | 52BP2V4 |
| 1 NO - 1 NC | Red | **52PP2A2A**[1] | **52BP2A2A**[1] | **52PP2W2A**[1] | **52BP2W2A**[1] | **52PP2V2A**[1] | 52BP2V2A[1] |
| | Green | **52PP2A3A** | 52BP2A3A | **52PP2W3A** | 52BP2W3A | **52PP2V3A** | — |
| | Yellow | — | — | **52PP2W4A** | 52BP2W4A | 52BP2V4A | 52BP2V4A |
| | Chrome | **52PP2ACA** | 52BP2ACA | — | — | — | — |

**3 pos - momentary in - momentary out**

| | | Metal Ø 1 3/4" | | Plastic Ø 1 3/4" | | Plastic Ø 2 1/2" | |
|---|---|---|---|---|---|---|---|
| **Contacts** | **Color** | **Chrome** | **Black Max** | **Chrome** | **Black Max** | **Chrome** | **Black Max** |
| — | Black | — | — | 52PP3W1 | 52BP3W1 | 52PP3V1 | 52BP3V1 |
| | Red | 52PP3A2 | 52BP3A2 | **52PP3W2** | 52BP3W2 | 52PP3V2 | 52BP3V2 |
| | Green | 52PP3A3 | 52BP3A3 | 52PP3W3 | 52BP3W3 | 52PP3V3 | 2BP3V3 |
| | Chrome | 52PP3AC | 52BP3AC | — | — | — | — |
| 1 NO - 1 NCELB | Red | 52PP3A2U | 52BP3A2U | 52PP3W2U | 52BP3W2U | 52PP3V2U | 52BP3V2U |
| | Green | 52PP3A3U | 52BP3A3U | 52PP3W3U | 52BP3W3U | 52PP3V3U | 52BP3V3U |

**3 pos - maintained in - momentary out**

| | | Metal Ø 1 3/4" | | Plastic Ø 1 3/4" | | Plastic Ø 2 1/2" | |
|---|---|---|---|---|---|---|---|
| **Contacts** | **Color** | **Chrome** | **Black Max** | **Chrome** | **Black Max** | **Chrome** | **Black Max** |
| — | Black | — | — | 52PP7W1 | 52BP7W1 | 52PP7V1 | 52BP7V1 |
| | Red | **52PP7A2** | 52BP7A2 | 52PP7W2 | 52BP7W2 | 52PP7V2 | 52BP7V2 |
| | Green | 52PP7A3 | 52BP7A3 | 52PP7W3 | 52BP7W3 | 52PP7V3 | 52BP7V3 |
| | Chrome | 52PP7AC | 52BP7AC | — | — | — | — |
| 1 NO - 1 NCELB | Red | 52PP7A2U | 52BP7A2U | 52PP7W2U | 52BP7W2U | 52PP7V2U | 52BP7V2U |
| | Green | 52PP7A3U | 52BP7A3U | 52PP7W3U | 52BP7W3U | 52PP7V3U | 52BP7V3U |

Readily available items are in **bold**.
This is a small representation of stocked items.

[1] EMERGENCY-STOP control devices according to IEC 60947-5-5. Add at the end of the Siemens part number a special application nomenclature of "S" specifically for Emergency Stop Control Devices.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Illuminated Push Pull & Push Button

### Selection Guide

## 2 & 3 Position Push-Pull Mushroom Head Devices - Illuminated

Mushroom Head Metal Ø 1 3/4”

Mushroom Head Plastic Ø 2 1/2”

Mushroom Head Plastic Ø 1 3/4”

| Part Number | 52 | ____ a | P b | ____ c | ____ d | ____ e | ____ f | ____ g |
|---|---|---|---|---|---|---|---|---|

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Type |
|---|---|
| P | Push Pull Operator |

**c**

| Code | Function |
|---|---|
| 2 | 2 positions - maintained[1] |
| 3 | 3 positions - momentary in - momentary out[2] |
| 7 | 3 positions - maintained in - momentary out[2] |

**d**

| Code | Operation | |
|---|---|---|
| | Full Voltage[3 6] (AC/DC) | |
| | Incandescent | LED[4] |
| B | 6-8V | 6V |
| C | 12-13V | — |
| D | 24-28V | 24-28V |
| E | 120V | 120V |
| | Transformer[3 6] | |
| G | 120V AC | |
| H | 240V AC | |
| J | 480V AC | |
| K | 600V AC | |
| | Integrated LED Light Module[6] | |
| L | 6-24V AC/DC | |
| U | 24-240V AC/DC | |

**e**

| Code | Style / Color |
|---|---|
| | Mushroom Head Metal Ø 1 3/4” (44.5mm) |
| 2 | Red[1] |
| 3 | Green |
| 5 | Blue |
| 9 | Amber |
| A | Clear |
| B | White |
| | Mushroom Head Plastic Ø 1 3/4” (44.5 mm) |
| R | Red[1] |
| S | Green |
| T | Amber |
| | Mushroom Head Plastic Ø 2 1/2” (63.5mm) |
| D | Red[1] |
| E | Green |
| F | Amber |
| | No Head (full voltage & transformer only) |
| Z | No head |

**f**

| Code | Contact Blocks[7] |
|---|---|
| | 2 Position |
| A | 1 NO + 1 NC[1] |
| B | 2 NO - 2 NC[1] |
| F | 2 NO |
| G | 2 NC[1] |
| J | 1 NC[1] |
| K | 1 NO |
| Q | 1 NO - 1 NC (ELB) |
| | 3 Position |
| U | 1 NO - 1 NC extra late break[2] |

**g**

| Code | Bulb Type |
|---|---|
| Blank | Incandescent |
| B | LED |
| Y | Super-Bright LED[5] |

1 EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and direct opening action NC contact blocks. Direct opening action contacts according to IEC 60947-5-1, Appendix K. Add at the end of the Siemens part number a special application nomenclature of “S” specifically for Emergency Stop Control Devices.

2 Blocks cannot be interchanged (stop-start circuit - pull to start, push to stop).

3 Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold “no head”.

4 LED voltages apply to table g option code B and Y.

5 Not available in 120V or 240V.

6 New for January 2021, Light Modules are dual rated for UL Ordinary Location and Hazardous Location CL1, DIV2 Ratings..

7 Complete Illuminated Push-Pull, 2-Position Operators with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Illuminated Push Pull

### Selection Tables

| Type | Lamp Type | Voltage | Color | Contacts | Operator Type: 2 pos - maintained — Metal Ø 1 3/4" Chrome | Metal Ø 1 3/4" Black Max | Plastic Ø 1 3/4" Chrome | Plastic Ø 1 3/4" Black Max |
|---|---|---|---|---|---|---|---|---|
| Full Voltage (AC/DC) | LED | 24V | Red | 1 NO - 1 NC | **52PP2D2AB**[1] | **52BP2D2AB**[1] | **52PP2DRAB**[1] | 52BP2DRAB[1] |
| | | | Green | 1 NO - 1 NC | **52PP2D3AB** | 52BP2D3AB | 52PP2DSAB | 52BP2DSAB |
| | Incandescent | 24V | Red | 1 NO - 1 NC | **52PP2D2A**[1] | 52BP2D2A[1] | **52PP2DRA**[1] | 52BP2DRA[1] |
| | | | Green | 1 NO - 1 NC | **52PP2D3A** | 52BP2D3A | **52PP2DSA** | 52BP2DSA |
| | | 120V | Red | 1 NO - 1 NC | 52PP2E2A[1] | 52BP2E2A[1] | 52PP2ERA[1] | 52BP2ERA[1] |
| | | | | — | 52PP2E2 | 52BP2E2 | 52PP2ER | 52BP2ER |
| Transformer (AC) | LED | 120V | Red | 1 NO - 1 NC | **52PP2G2AB**[1] | 52BP2G2AB[1] | 52PP2GRAB[1] | 52BP2GRAB[1] |
| | | | Green | 1 NO - 1 NC | **52PP2G3AB** | 52BP2G3AB | 52PP2GSAB | 52BP2GSAB |
| | Incandescent | 120V | Red | 1 NO - 1 NC | **52PP2G2A**[1] | 52BP2G2A[1] | **52PP2GRA**[1] | 52BP2GRA[1] |
| | | | Green | 1 NO - 1 NC | **52PP2G3A** | **52BP2G3A** | **52PP2GSA** | 52BP2GSA |

| Type | Lamp Type | Voltage | Color | Contacts | Operator Type: 3 pos - momentary in - momentary out — Metal Ø 1 3/4" Chrome | Metal Ø 1 3/4" Black Max | Plastic Ø 1 3/4" Chrome | Plastic Ø 1 3/4" Black Max |
|---|---|---|---|---|---|---|---|---|
| Full Voltage (AC/DC) | LED | 24V | Green | 1 NO - 1 NCELB | 52PP3D3UB | 52BP3D3UB | 52PP3DRUB | 52BP3DRUB |
| | Incandescent | 24V | Green | 1 NO - 1 NCELB | 52PP3D3U | 52BP3D3U | 52PP3DSU | 52BP3DSU |
| | | | Red | 1 NO - 1 NCELB | 52PP3D2U | 52BP3D2U | 52PP3DRU | 52BP3DRU |
| | | 120V | Red | — | 52PP3E2 | 52BP3E2 | 52PP3ER | 52BP3ER |
| Transformer (AC) | LED | 120V | Red | 1 NO - 1 NCELB | 52PP3G2UB | 52BP3G2UB | 52PP3GRUB | 52BP3GRUB |
| | | | Green | 1 NO - 1 NCELB | **52PP3G3UB** | 52BP3G3UB | 52PP3GSUB | 52BP3GSUB |
| | Incandescent | 120V | Red | 1 NO - 1 NCELB | 52PP3G2U | 52BP3G2U | 52PP3GRU | 52BP3GRU |
| | | | Green | 1 NO - 1 NCELB | 52PP3G3U | 52BP3G3U | 52PP3GRU | 52BP3GRU |

| Type | Lamp Type | Voltage | Color | Contacts | Operator Type: 3 pos - maintained in - momentary out — Metal Ø 1 3/4" Chrome | Metal Ø 1 3/4" Black Max | Plastic Ø 1 3/4" Chrome | Plastic Ø 1 3/4" Black Max |
|---|---|---|---|---|---|---|---|---|
| Full Voltage (AC/DC) | LED | 24V | Green | 1 NO - 1 NCELB | 52PP7D3UB | 52BP7D3UB | 52PP7DSUB | 52BP7DSUB |
| | Incandescent | 24V | Green | 1 NO - 1 NCELB | 52PP7D3U | 52BP7D3U | 52PP7DSU | 52BP7DSU |
| | | | Red | 1 NO - 1 NCELB | 52PP7D2U | 52BP7D2U | 52PP7DRU | 52BP7DRU |
| | | 120V | Red | — | 52PP7E2 | 52BP7E2 | 52PP7ER | 52BP7ER |
| Transformer (AC) | LED | 120V | Red | 1 NO - 1 NCELB | 52PP7G2UB | 52BP7G2UB | 52PP7GRUB | 52BP7GRUB |
| | | | Green | 1 NO - 1 NCELB | 52PP7G3UB | 52BP7G3UB | 52PP7GSUB | 52BP7GSUB |
| | Incandescent | 120V | Red | 1 NO - 1 NCELB | 52PP7G2U | 52BP7G2U | 52PP7GRU | 52BP7GRU |
| | | | Green | 1 NO - 1 NCELB | 52PP7G3U | 52BP7G3U | 52PP7GRU | 52BP7GRU |

Readily available items are in **bold**.
This is a small representation of stocked items.

1 EMERGENCY-STOP control devices according to IEC 60947-5-5. Add at the end of the Siemens part number a special application nomenclature of "S" specifically for Emergency Stop Control Devices.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Non-Illuminated Twist-to-Release

### Selection Guide

## 2 Position Twist-to-Release Devices Mushroom Head - Non-Illuminated

Plastic 1 3/4" Mushroom Head - Chrome

Plastic 1 3/4" Mushroom Head - Black Max

| Part Number | 52 | _____ a | R b | 8 c | W d | _____ e | _____ f[2] |
|---|---|---|---|---|---|---|---|

| Finish | Function | Style | Color | Contacts | Part Number |
|---|---|---|---|---|---|
| Chrome | 2 Position Twist-to-Release | Plastic 1 3/4" Mushroom Head | Red | 1 NO - 1 NC | **52PR8W2A** |
| Black Max | 2 Position Twist-to-Release | Plastic 1 3/4" Mushroom Head | Red | 1 NO - 1 NC | **52BR8W2A** |
| Chrome | 2 Position Twist-to-Release | Plastic 1 3/4" Mushroom Head | Red | None | **52PR8W2** |

Readily available items are in **bold**.
This is a small representation of stocked items.

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Function |
|---|---|
| R | 2 Position Twist-to-Release, Maintained[1] |

**c**

| Code | Style |
|---|---|
| 8 | Plastic 1 3/4" Mushroom Head |

**d**

| Code | Lamp Type |
|---|---|
| W | Non-Illuminated |

**e**

| Code | Color |
|---|---|
| 2 | Red[1] |
| 3 | Green |
| 4 | Yellow |
| Z | No head |

**f[2]**

| Code | Contact Blocks[3] |
|---|---|
| A | 1 NO + 1 NC[1] |
| B | 2 NO + 2 NC[1] |
| C | 3 NO + 3 NC[1] |
| D | 4 NO + 4 NC[1] |
| E | 1 NC (LB) |
| F | 2 NO |
| G | 2NC[1] |
| H | 1NO (EM) |
| J | 1 NC[1] |
| K | 1 NO |

1 EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and direct opening action NC contact blocks. Direct opening action contacts according to IEC 60947-5-1, Appendix K. Add at the end of the Siemens part number a special application nomenclature of "S" specifically for Emergency Stop Control Devices.

2 For operator without contact blocks leave position f blank.

3 Complete Twist release Operators with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Ratings when Suffix "HL" is added to the part number.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Illuminated Twist-to-Release

### Selection Guide

## 2 Position Twist-to-Release Mushroom Head Devices - Illuminated

Plastic 1 3/4" Mushroom Head - Chrome

Plastic 1 3/4" Mushroom Head - Black Max

| Part Number | 52 | ____ a | R b | 8 c | ____ d | ____ e | ____ f | ____ g |
|---|---|---|---|---|---|---|---|---|

| Finish | Style | Voltage | Bulb Type | Color | Contacts | Part Number |
|---|---|---|---|---|---|---|
| Chrome | Plastic 1 3/4" Mushroom Head | 24V | LED | Red | 1 NO - 1 NC | 52PR8DRAB |
| Chrome | Plastic 1 3/4" Mushroom Head | 120V | Incandescent | Red | 1 NO - 1 NC | 52PR8ERA |
| Chrome | Plastic 1 3/4" Mushroom Head | 120V | LED | Red | 1 NO - 1 NC | 52PR8GRAB |

Readily available items are in **bold**.
This is a small representation of stocked items.

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Function |
|---|---|
| R | 2 Position Twist-to-Release, Maintained |

**c**

| Code | Style |
|---|---|
| 8 | Plastic 1 3/4" Mushroom Head |

**d**

| Code | Operation | |
|---|---|---|
| | Full Voltage[2] [6] (AC/DC) | |
| | Incandescent | LED[3] |
| B | 6-8V | 6V |
| C | 12-13V | — |
| D | 24-28V | 24-28V |
| E | 120V | 120V |
| | Transformer[2] [6] | |
| G | 120V AC | |
| H | 240V AC | |
| J | 480V AC | |
| K | 600V AC | |
| | Integrated LED Light Module[6] | |
| L | 6-24V AC/DC | |
| U | 24-240V AC/DC | |

**e**

| Code | Color |
|---|---|
| R | Red[1] |
| S | Green |
| T | Amber |
| Z | No head |

**f**

| Code | Contact Blocks[5] |
|---|---|
| A | 1 NO + 1 NC[1] |
| B | 2 NO + 2 NC[1] |
| C | 3 NO + 3 NC[1] |
| D | 4 NO + 4 NC[1] |
| E | 1 NC (LB) |
| F | 2 NO |
| G | 2NC[1] |
| H | 1NO (EM) |
| J | 1 NC[1] |
| K | 1 NO |

**g**

| Code | Bulb Type |
|---|---|
| Blank | Incandescent |
| B | LED |
| Y | Super-Bright LED[4] |

1 EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and direct opening action NC contact blocks. Direct opening action contacts according to IEC 60947-5-1, Appendix K. Add at the end of the Siemens part number a special application nomenclature of "S" specifically for Emergency Stop Control Devices.

2 Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold "no head."

3 LED voltages apply to table g option code B and Y.

4 Not available in 120V or 240V.

5 Complete Illuminated Twist Release Operators with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Ratings when Suffix "HL" is added to the part number.

6 New for January 2021, Light Modules are dual rated for UL Ordinary Location and Hazardous Location CL1, DIV2 Ratings.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Indicator Light

### Selection Guide

## Indicator Light

Plastic Lens

Glass Lens

| Part Number | 52 | _____ a | L b | _____ c | _____ d | _____ e | _____ f |
|---|---|---|---|---|---|---|---|

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Type |
|---|---|
| L | Indicator Light |

**c**

| Code | Style |
|---|---|
| 4 | Plastic Lens |
| 5 | Glass Lens |

**d**

| Code | Operation | |
|---|---|---|
| | Full Voltage[1] [4] (AC/DC) | |
| | Incandescent | LED[2] |
| B | 6-8V | 6V |
| C | 12-13V | — |
| D | 24-28V | 24-28V |
| E | 120V | 120V |
| | Transformer[1] [4] | |
| G | 120V AC | |
| H | 240V AC | |
| J | 480V AC | |
| K | 600V AC | |
| T | 277V AC | |
| | Integrated LED Light Module[4] | |
| L | 6-24V AC/DC | |
| U | 24-240V AC/DC | |

**e**

| Code | Color |
|---|---|
| 2 | Red |
| 3 | Green |
| 5 | Blue |
| 7 | All Colors |
| 9 | Amber |
| A | Clear |
| B | White |
| N | No Lens |

**f**

| Code | Bulb Type |
|---|---|
| Blank | Incandescent |
| XB | LED |
| XY | Super-Bright LED[3] |

1 Default bulb type is incandescent. For LED options, append field f. LED option not available on units sold "No Lens".

2 LED voltages apply to table f option code XB and XY.

3 Not available in 120V or 240V.

4 New for January 2021, Light Modules are dual rated for UL Ordinary Location and Hazardous Location CL1, DIV2 Ratings.

## Selection Tables

### Indicator Light

| Type | Lamp Type | Voltage | Color | Plastic Lens | |
|---|---|---|---|---|---|
| | | | | Chrome | Black Max |
| Full Voltage (AC/DC) | LED | 24V | Red | **52PL4D2XB** | **52BL4D2XB** |
| | | | Green | **52PL4D3XB** | **52BL4D3XB** |
| | | | Blue | **52PL4D5XB** | **52BL4D5XB** |
| | | | Amber | **52PL4D9XB** | **52BL4D9XB** |
| | | | White | **52PL4DBXB** | **52BL4DBXB** |
| | | 120V | Red | **52PL4E2XB** | **52BL4E2XB** |
| | | | Green | **52PL4E3XB** | **52BL4E3XB** |
| | | | Amber | **52PL4E9XB** | **52BL4E9XB** |
| | | | Clear | **52PL4EAXB** | **52BL4EAXB** |
| | | | White | **52PL4EBXB** | **52BL4EBXB** |
| | Incandescent | 24V | Red | **52PL4D2** | **52BL4D2** |
| | | | Green | **52PL4D3** | **52BL4D3** |
| | | | Blue | **52PL4D5** | **52BL4D5** |
| | | | Amber | **52PL4D9** | **52BL4D9** |
| | | | White | **52PL4DB** | **52BL4DB** |
| | | | No Lens | **52PL4DN** | **52BL4DN** |
| | | 120V | Red | **52PL4E2** | **52BL4E2** |
| | | | Green | **52PL4E3** | **52BL4E3** |
| | | | Amber | **52PL4E9** | **52BL4E9** |
| | | | No Lens | **52PL4EN** | **52BL4EN** |
| Transformer (AC) | LED | 120V | Red | **52PL4G2XB** | **52BL4G2XB** |
| | | | Green | **52PL4G3XB** | **52BL4G3XB** |
| | | | Amber | **52PL4G9XB** | **52BL4G9XB** |
| | | | White | **52PL4GBXB** | **52BL4GBXB** |
| | | 480V | Red | **52PL4J2XB** | **52BL4J2XB** |
| | | | Green | **52PL4J3XB** | **52BL4J3XB** |
| | | | White | **52PL4JBXB** | **52BL4JBXB** |
| | Incandescent | 120V | Red | **52PL4G2** | **52BL4G2** |
| | | | Green | **52PL4G3** | **52BL4G3** |
| | | | Amber | **52PL4G9** | **52BL4G9** |
| | | | White | **52PL4GB** | **52BL4GB** |
| | | | No Lens | **52PL4GN** | **52BL4GN** |
| | | 240V | Red | **52PL4H2** | **52BL4H2** |
| | | | Green | **52PL4H3** | **52BL4H3** |
| | | 480V | Red | **52PL4J2** | **52BL4J2** |
| | | | Green | **52PL4J3** | **52BL4J3** |
| | | | Amber | **52PL4J9** | **52BL4J9** |

Readily available items are in **bold**.
This is a small representation of stocked items.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Illuminated Push Button & Push-to-Test

### Selection Guide

## Push Button & Push-to-Test - Illuminated

Extended Lens

Flush Lens

| Part Number | 52 | _____ a | T b | _____ c | _____ d | _____ e | _____ f | _____ g |
|---|---|---|---|---|---|---|---|---|

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Function |
|---|---|
| T | Illuminated Push Button / Push-to-Test[1] |

**c**

| Code | Style |
|---|---|
| 6 | Extended Lens |
| 8 | Flush Lens |

**d**

| Code | Operation | |
|---|---|---|
| | Full Voltage[2 5] (AC/DC) | |
| | Incandescent | LED[3] |
| B | 6-8V | 6V |
| C | 12-13V | — |
| D | 24-28V | 24-28V |
| E | 120V | 120V |
| | Transformer[2 5] | |
| G | 120V AC | |
| H | 240V AC | |
| J | 480V AC | |
| K | 600V AC | |
| | Integrated LED Light Module[5] | |
| L | 6-24V AC/DC | |
| U | 24-240V AC/DC | |

**e**

| Code | Color |
|---|---|
| 2 | Red |
| 3 | Green |
| 5 | Blue |
| 7 | All Colors |
| 9 | Amber |
| A | Clear |
| B | White |
| N | No Lens |

**f**

| Code | Contact Blocks[6] |
|---|---|
| A | 1 NO - 1 NC |
| B | 2 NO + 2 NC |
| C | 3 NO + 3 NC |
| D | 4 NO + 4 NC |
| E | 1 NC (LB) |
| F | 2 NO |
| G | 2 NC |
| H | 1NO (EM) |
| J | 1 NC |
| K | 1 NO |

**g**

| Code | Bulb Type |
|---|---|
| Blank | Incandescent |
| B | LED |
| Y | Super-Bright LED[4] |

1 For push-to-test functionality, wire according to wiring diagram below.

2 Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold "No Lens".

3 LED voltages apply to table g option code B and Y.

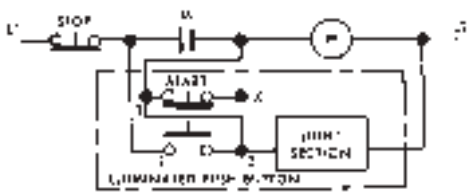
4 Not available in 120V or 240V.

5 New for January 2021, Light Modules are dual rated for UL Ordinary Location and Hazardous Location CL1, DIV2 Ratings.

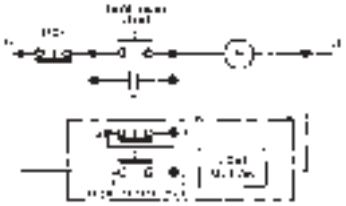
6 Complete PTT/Illuminated Pushbuttons with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

### Wiring Diagrams

Illuminated Push Button



Push to Test



## Selection Tables

### Push Button & Push-to-Test - Illuminated

| Type | Lamp Type | Voltage | Color | Contacts | Extended Lens | |
|---|---|---|---|---|---|---|
| | | | | | Chrome | Black Max |
| Full Voltage (AC/DC) | LED | 24V | Red | 1 NO - 1 NC | **52PT6D2AB** | **52BT6D2AB** |
| | | | Green | 1 NO - 1 NC | **52PT6D3AB** | **52BT6D3AB** |
| | | | Blue | 1 NO - 1 NC | **52PT6D5AB** | **52BT6D5AB** |
| | | | Amber | 1 NO - 1 NC | **52PT6D9AB** | **52BT6D9AB** |
| | | | White | 1 NO - 1 NC | **52PT6DBAB** | **52BT6DBAB** |
| | | 120V | Red | 1 NO - 1 NC | **52PT6E2AB** | **52BT6E2AB** |
| | | | Green | 1 NO - 1 NC | **52PT6E3AB** | **52BT6E3AB** |
| | Incandescent | 24V | Red | 1 NO - 1 NC | **52PT6D2A** | **52BT6D2A** |
| | | | Green | 1 NO - 1 NC | **52PT6D3A** | **52BT6D3A** |
| | | | Blue | 1 NO - 1 NC | **52PT6D5A** | **52BT6D5A** |
| | | | Amber | 1 NO - 1 NC | **52PT6D9A** | **52BT6D9A** |
| | | | White | 1 NO - 1 NC | **52PT6DBA** | **52BT6DBA** |
| | | 120V | Red | 1 NO - 1 NC | **52PT6E2A** | **52BT6E2A** |
| | | | Green | 1 NO - 1 NC | **52PT6E3A** | **52BT6E3A** |
| Transformer (AC) | LED | 120V | Red | 1 NO - 1 NC | **52PT6G2AB** | **52BT6G2AB** |
| | | | Green | 1 NO - 1 NC | **52PT6G3AB** | **52BT6G3AB** |
| | | | Amber | 1 NO - 1 NC | **52PT6G9AB** | **52BT6G9AB** |
| | | | White | 1 NO - 1 NC | **52PT6GBAB** | **52BT6GBAB** |
| | | 240V | Red | 1 NO - 1 NC | **52PT6H2AB** | **52BT6H2AB** |
| | | | Green | 1 NO - 1 NC | **52PT6H3AB** | **52BT6H3AB** |
| | Incandescent | 120V | Red | 1 NO - 1 NC | **52PT6G2A** | **52BT6G2A** |
| | | | Green | 1 NO - 1 NC | **52PT6G3A** | **52BT6G3A** |
| | | | Amber | 1 NO - 1 NC | **52PT6G9A** | **52BT6G9A** |
| | | | White | 1 NO - 1 NC | **52PT6GBA** | **52BT6GBA** |
| | | | No Lens | 1 NO - 1 NC | **52PT6GNA** | **52BT6GNA** |
| | | 240V | Green | 1 NO - 1 NC | **52PT6H3A** | **52BT6H3A** |
| | | 480V | Clear | 1 NO - 1 NC | **52PT6JAA** | **52BT6JAA** |

Readily available items are in **bold**.
This is a small representation of stocked items.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Illuminated Push Button

### Selection Guide

## Push Button Mushroom Head Devices – Illuminated

Mushroom Head Metal Ø 1 3/4”

Mushroom Head Plastic Ø 2 1/2”

Mushroom Head Plastic Ø 1 3/4”

| Part Number | 52 | a | T<br>b | 9<br>c | d | e | f | g |
|---|---|---|---|---|---|---|---|---|

**a**

| Code | Finish |
|---|---|
| P | Chrome-Command 52 |
| B | Epoxy Coated-Black Max |

**b**

| Code | Type |
|---|---|
| T | Push Button Operator |

**c**

| Code | Function |
|---|---|
| 9 | 2 positions – momentary in |

**d**

| Code | Operation | |
|---|---|---|
| | Full Voltage[2] [5] (AC/DC) | |
| | Incandescent | LED[3] |
| B | 6-8V | 6V |
| C | 12-13V | — |
| D | 24-28V | 24-28V |
| E | 120V | 120V |
| | Transformer[2] [5] | |
| G | 120V AC | |
| H | 240V AC | |
| J | 480V AC | |
| K | 600V AC | |
| | Integrated LED Light Module[5] | |
| L | 6-24V AC/DC | |
| U | 24-240V AC/DC | |

**e**

| Code | Style / Color |
|---|---|
| | Mushroom Head Metal Ø 1 3/4” (44.5mm) |
| 2 | Red[1] |
| 3 | Green |
| 5 | Blue |
| 9 | Amber |
| A | Clear |
| B | White |
| | Mushroom Head Plastic Ø 1 3/4” (44.5 mm) |
| R | Red |
| S | Green |
| T | Amber |
| | Mushroom Head Plastic Ø 2 1/2” (63.5mm) |
| D | Red[1] |
| E | Green |
| F | Amber |
| | No Head (full voltage & transformer only) |
| Z | No head |

**f**

| Code | Contact Blocks[6] |
|---|---|
| A | 1 NO + 1 NC |
| B | 2 NO + 2 NC |
| C | 3 NO + 3 NC |
| D | 4 NO + 4 NC |
| E | 1 NC (LB) |
| F | 2 NO |
| G | 2 NC |
| H | 1NO (EM) |
| J | 1 NC |
| K | 1 NO |

**g**

| Code | Bulb Type |
|---|---|
| Blank | Incandescent |
| B | LED |
| Y | Super-Bright LED[4] |

1 Positive opening according to IEC 60947-5-1, Appendix K.

2 Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold “no head”.

3 LED voltages apply to table g option code B and Y.

4 Not available in 120V or 240V.

5 New for January 2021, Light Modules are dual rated for UL Ordinary Location and Hazardous Location CL1, DIV2 Ratings.

6 Complete Illuminated Pushbuttons with Contact Block Codes: A, B, F, G, J & K are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Illuminated Selector Switches

### Selection Guide

## Selector Switches – Illuminated

Short Lever – Chrome

Short Lever – Black Max

| Part Number | 52 | S<br>a | b | 7<br>c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|---|---|

| Finish | Style | Cam Type | Function | Color | Contacts | Part Number |
|---|---|---|---|---|---|---|
| Chrome | Maintained | 2 Position: CAM A | 24-28V AC/DC | No Insert | None | 52SA7ADN |
| Chrome | Maintained | 2 Position: CAM A | 120V AC (Transformer) | No Insert | None | **52SA7AGN** |
| Chrome | Maintained | 3 Position: CAM C | 120V AC | No Insert | None | **52SA7CGN** |

Readily available items are in **bold**.
This is a small representation of stocked items.

**a**

| Code | Type |
|---|---|
| S | Selector Switch |

**b**

| Code | Finish |
|---|---|
| A | Chrome - Command 52 |
| X | Epoxy Coated - Black Max |

**c**

| Code | Style |
|---|---|
| 7 | Maintained |

**d**

| Code | Function |
|---|---|
| A | 2 Position: CAM A |
| B | 3 Position: CAM B |
| C | 3 Position: CAM C |

**e**

| Code | Operation | |
|---|---|---|
| | Full Voltage[1] (AC/DC) | |
| | Incandescent | LED[2] |
| B | 6-8V | 6V |
| C | 12-13V | — |
| D | 24-28V | 24-28V |
| E | 120V | 120V |
| | Transformer[1] | |
| G | 120V AC | |
| H | 240V AC | |
| J | 480V AC | |
| K | 600V AC | |
| | Integrated LED Light Module | |
| L | 6-24V AC/DC | |
| U | 24-240V AC/DC | |

**f**

| Code | Color |
|---|---|
| 2 | Red |
| 3 | Green |
| 5 | Blue |
| 9 | Amber |
| A | Clear |
| N | No Insert |

**g**

| Code | Contact Blocks |
|---|---|
| A | 1 NO - 1 NC |
| E | 1 NC (LB) |
| H | 1 NO (EM) |
| J | 1 NC |
| K | 1 NO |

**h**

| Code | Contact Quantity & Location | |
|---|---|---|
| | A CAM & C CAM Left | B CAM Right |
| 0 | 1 | — |
| 1 | — | 1 |
| 3 | 2 | — |
| 4 | — | 2 |

**i**

| Code | Bulb Type |
|---|---|
| Blank | Incandescent |
| B | LED |
| Y | Super-Bright LED[3] |

1 Default bulb type is incandescent. For LED options, append field i. LED option not available on units sold "no head".

2 LED voltages apply to table i option code B and Y.

3 Not available in 120V or 240V.

For CAM selection see page 10/212.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Non-Illuminated Selector Switch

### Selection Guide

## Selector Switch – Non-Illuminated

Short Lever

Long Lever

| Part Number | 52 | S | | 2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f | $g^2$ | $h^2$ |

**a**

| Code | Type |
|---|---|
| S | Selector Switch |

**b**

| Code | Finish |
|---|---|
| A | Chrome - Short Lever |
| B | Chrome - Long Lever |
| X | BlackMax - Short Lever |
| W | BlackMax - Long Lever |

**c**

| Code | Style |
|---|---|
| 2 | Non-Illuminated |

**d**

| Code | Function[3] |
|---|---|
| A | 2 Position: CAM A[3] |
| B | 3 Position: CAM B |
| C | 3 Position: CAM C[1 3] |
| D | 3 Position: CAM D |
| E | 3 Position: CAM E |
| G | 3 Position: CAM G |
| H | 4 Position: CAM H |

**e**

| Code | Type | |
|---|---|---|
| | 2 Position | |
| | Maintained | Spring Return |
| A | All | — |
| C | Left | Right |
| | 3 Position | |
| | Maintained | Spring Return |
| A | All | — |
| B | Center, Right | Left |
| C | Center, Left | Right |
| D | Center | Left, Right |
| | 4 Position | |
| | Maintained Position | Spring Return |
| A | All | — |

**f**

| Code | Color |
|---|---|
| 2 | Red |
| 3 | Green |
| 4 | Yellow |
| 5 | Blue |
| 6 | Gray |
| 8 | Orange |
| B | White |
| N | No Insert (Black) |

**$g^2$**

| Code | Contact Blocks[3] |
|---|---|
| A | 1 NO - 1 NC |
| E | 1 NC (LB) |
| H | 1 NO (EM) |
| J | 1 NC |
| K | 1 NO |

**$h^2$**

| Code | Contact Quantity & Location[3] | |
|---|---|---|
| | Left | Right |
| 0 | 1 | — |
| 1 | — | 1 |
| 2 | 1 | 1 |
| 3 | 2 | — |
| 4 | — | 2 |
| 5 | 2 | 1 |
| 6 | 1 | 2 |
| 7 | 2 | 2 |
| 8 | 3 | — |
| 9 | — | 3 |

1 C CAM on spring return selectors is limited to 4 contact blocks. For CAM selection see page 10/212.

2 For operator without contact blocks leave positions g and h blank.

3 Non-Illuminated Selector Switches with CAM types: A or C with Contact Block Codes: A0, A1, A2, A3, A4, J0, J1, J2, J3, J4, K0, K1, K2, K3 or K4 are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

## Selector Switch, Non-Illuminated[1)]

| Contact Type | Contact | Switch Position Left | Switch Position Right | Type M = Maintained S = Spring Return | Chrome Short Lever | Chrome Long Lever | Black Max Short Lever | Black Max Long Lever |
|---|---|---|---|---|---|---|---|---|
| | | | | | 2-Position Operator | | | |
| No Contacts | — | — | — | M M | **52SA2AAB** | **52SB2AAB** | **52SX2AAB** | **52SW2AAB** |
| | | | | M<---S | **52SA2ACB** | **52SB2ACB** | **52SX2ACB** | 52SW2ACB |
| 1 N.O. | A | O | X | M M | **52SA2AABK1** | **52SB2AABK1** | **52SX2AABK1** | **52SW2AABK1** |
| | | | | M<---S | **52SA2ACBK1** | **52SB2ACBK1** | **52SX2ACBK1** | **52SW2ACBK1** |
| 1 N.O. | A | O | X | M M | **52SA2AABA1** | **52SB2AABA1** | **52SX2AABA1** | **52SW2AABA1** |
| 1 N.C. | B | X | O | M<---S | **52SA2ACBA1** | **52SB2ACBA1** | **52SX2ACBA1** | **52SW2ACBA1** |

| Contact Type | Contact | Switch Position Left | Switch Position Center | Switch Position Right | Type M = Maintained S = Spring Return | Chrome Short Lever | Chrome Long Lever | Black Max Short Lever | Black Max Long Lever |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 3-Position Operator | | | | |
| No Contacts | — | — | — | — | M M M | **52SA2CAB** | **52SB2CAB** | **52SX2CAB** | **52SW2CAB** |
| | | | | | M M M | **52SA2BAB** | **52SB2BAB** | **52SX2BAB** | **52SW2BAB** |
| | | | | | S--->M M | **52SA2BBB** | 52SB2BBB | **52SX2BBB** | 52SW2BBB |
| | | | | | M M<----S | **52SA2BCB** | **52SB2BCB** | 52SX2BCB | 52SW2BCB |
| | | | | | S--->M<---S | **52SA2BDB** | **52SB2BDB** | **52SX2BDB** | **52SW2BDB** |
| 1 N.O. | A | O | O | X | M M M | **52SA2CABA1** | **52SB2CABA1** | **52SX2CABA1** | **52SW2CABA1** |
| | | | | | S--->M M | **52SA2CBBA1** | **52SB2CBBA1** | **52SX2CBBA1** | 52SW2CBBA1 |
| 1 N.C. | B | X | O | O | M M<----S | **52SA2CCBA1** | **52SB2CCBA1** | **52SX2CCBA1** | **52SW2CCBA1** |
| | | | | | S--->M<---S | **52SA2CDBA1** | **52SB2CDBA1** | **52SX2CDBA1** | **52SW2CDBA1** |
| 1 N.O. | A | O | O | X | M M M | **52SA2CABA2** | **52SB2CABA2** | **52SX2CABA2** | **52SW2CABA2** |
| 1 N.C. | B | X | O | O | S--->M M | **52SA2CBBA2** | **52SB2CBBA2** | **52SX2CBBA2** | 52SW2CBBA2 |
| 1 N.O. | C | O | O | X | M M<----S | **52SA2CCBA2** | **52SB2CCBA2** | **52SX2CCBA2** | **52SW2CCBA2** |
| 1 N.C. | D | X | O | O | S--->M<---S | **52SA2CDBA2** | **52SB2CDBA2** | **52SX2CDBA2** | **52SW2CDBA2** |
| 1 N.O. | A | O | O | X | | | | | |
| 1 N.C. | B | X | O | O | M M M | **52SA2GABJ2K1** | **52SB2GABJ2K1** | **52SX2GABJ2K1** | **52SW2GABJ2K1** |
| 1 N.C. | C | O | X | O | | | | | |

| Contact Type | Contact | Switch Position Left | Switch Position Left Center | Switch Position Right Center | Switch Position Right | Type M = Maintained S = Spring Return | Chrome Short Lever | Chrome Long Lever | Black Max Short Lever | Black Max Long Lever |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 4-Position Operator | | | |
| No Contacts | — | — | — | — | — | M M M M | **52SA2HAB** | **52SB2HAB** | **52SX2HAB** | 52SW2HAB |
| 1 N.O. | A | X | O | O | O | | | | | |
| 1 N.C. | B | O | X | O | O | M M M M | **52SA2HABJ2K1** | 52SB2HABJ2K1 | 52SX2HABJ2K1 | 52SW2HABJ2K1 |
| 1 N.C. | C | O | O | X | O | | | | | |
| 1 N.O. | A | O | O | O | X | | | | | |
| 1 N.O. | B | X | O | O | O | | | | | |
| 1 N.C. | C | O | X | O | O | M M M M | **52SA2HABJ2K2** | **52SB2HABJ2K2** | 52SX2HABJ2K2 | 52SW2HABJ2K2 |
| 1 N.C. | D | O | O | X | O | | | | | |

Note: X = Closed / O = Open

1) Readily available items are in **bold**.

This is a small representation of stocked items.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Keyed Selector Switch

### Selection Guide

## Keyed Selector Switch

| Part Number | 52 | S | C | ____ | ____ | ____ | ____ | ____ | ____ |
|---|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f [3] | g [3] | h |

**a**

| Code | Type |
|---|---|
| S | Selector Switch |

**b**

| Code | Finish |
|---|---|
| C | Chrome – Command 52 |

**c**

| Code | Style |
|---|---|
| 5 | Non-Standard Lock/Key[1a] |
| 6 | Standard Lock/Key |

**d**

| Code | Function[4] |
|---|---|
| A | 2 Position: CAM A[4] |
| B | 3 Position: CAM B |
| C | 3 Position: CAM C[2 4] |
| D | 3 Position: CAM D |
| E | 3 Position: CAM E |
| G | 3 Position: CAM G |
| H | 4 Position: CAM H |

**e**

| Code | Lock Type | | |
|---|---|---|---|
| | 2 Position | | |
| | Maintained / Spring Return | Key Removal | |
| | | Left | Right |
| E | All Maintained | X | X |
| F | All Maintained | X | — |
| G | All Maintained | — | X |
| X | Spring from Right | X | — |

| Code | 3 Position | | | | |
|---|---|---|---|---|---|
| | Maintained Position | Spring Return | Key Removal | | |
| | | | Left | Center | Right |
| E | All | — | X | X | X |
| F | All | — | X | — | — |
| G | All | — | — | — | X |
| H | All | — | — | X | — |
| J | All | — | X | — | X |
| K | All | — | X | X | — |
| M | All | — | — | X | X |
| T | Center, Right | Left | — | X | — |
| U | Left, Center | Right | — | X | — |
| V | Center | Left, Right | — | X | — |
| W | Center, Right | Left | — | — | X |
| Y | Center, Right | Left | — | X | X |
| Z | Left, Center | Right | X | X | X |

| Code | 4 Position | | | | |
|---|---|---|---|---|---|
| | Maintained Position | Key Removal | | | |
| | | Left | Left Center | Right Center | Right |
| E | All | X | X | X | X |
| F | All | X | — | — | — |
| G | All | — | — | — | X |

**f [3]**

| Code | Contact Blocks[4] |
|---|---|
| A | 1 NO - 1 NC |
| J | 1 NC |
| K | 1 NO |
| E | 1 NC (LB) |
| H | 1 NO (EM) |

**g [3]**

| Code | Contact Quantity & Location[4] | |
|---|---|---|
| | Left | Right |
| 0 | 1 | — |
| 1 | — | 1 |
| 2 | 1 | 1 |
| 3 | 2 | — |
| 4 | — | 2 |
| 5 | 2 | 1 |
| 6 | 1 | 2 |
| 7 | 2 | 2 |
| 8 | 3 | — |
| 9 | — | 3 |

**h**

| Code | Key Type[1b] |
|---|---|
| Blank | 501CH |
| X298 | 550CH |
| X299 | 549CH |
| X300 | 548CH |
| X301 | 547CH |
| X302 | 506CH |

Standard Lock/Key

1a. See page 10/210 for replacement keys, and up-to 15 additional uniquely keyed M - Series Lock Options available for use with the 52SC6 key-operated selector switches.

1b. To order the specific lock types shown in table h, simply append the corresponding "X" suffix to a standard part number (Ordering Example: 52SC6AEX298).

Note: Same list price applies as standard keyed locks.

2. C CAM on spring return selectors is limited to 4 contact blocks. For CAM selection see page 10/212.

3 For operator without contact blocks leave positions f and g blank.

4 Key-Operated Selector Switches with CAM types: A or C with Contact Block Codes: A0, A1, A2, A3, A4, J0, J1, J2, J3, J4, K0, K1, K2, K3 or K4 are available with Hazardous Location CL1, DIV2 Rated Contacts when Suffix "HL" is added to the part number.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Keyed Selector Switch

### Key-operated Selector Switch, Non-Illuminated[1)]

| Contact Type | Contact | Switch Position Left | Switch Position Right | Type M = Maintained S = Spring Return | Key Removal Left | Key Removal Both |
|---|---|---|---|---|---|---|
| | | | | | 2-Position Operator | |
| No Contacts | — | — | — | M M | **52SC6AF** | **52SC6AE** |
| | | | | M<---S | **52SC6AX** | — |
| 1 N.O. | A | O | X | M M | **52SC6AFK1** | **52SC6AEK1** |
| | | | | M<---S | **52SC6AXK1** | — |
| 1 N.O. | A | O | X | M M | **52SC6AFA1** | **52SC6AEA1** |
| 1 N.C. | B | X | O | M<---S | **52SC6AXA1** | — |

| Contact Type | Contact | Switch Position Left | Switch Position Center | Switch Position Right | Type M = Maintained S = Spring Return | Key Removal Left | Key Removal Right | Key Removal Center | Key Removal Left & Center | Key Removal Left & Right | Key Removal Center & Right | Key Removal All Positions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 3-Position Operator | | | | | | |
| No Contacts | — | — | — | — | M M M | 52SC6CF | 52SC6CG | 52SC6CH | 52SC6CK | 52SC6CJ | 52SC6CM | **52SC6CE** |
| | | | | | M M M | **52SC6BF** | **52SC6BG** | 52SC6BH | 52SC6BK | 52SC6BJ | 52SC6BM | **52SC6BE** |
| | | | | | S--->M M | — | 52SC6BW | 52SC6BT | — | — | 52SC6BY | — |
| | | | | | M M<----S | — | — | 52SC6BU | 52SC6BZ | — | — | — |
| | | | | | S--->M<---S | — | — | 52SC6BV | — | — | — | — |
| 1 N.O. | A | O | O | X | M M M | 52SC6CFA1 | 52SC6CGA1 | 52SC6CHA1 | 52SC6CKA1 | 52SC6CJA1 | 52SC6CMA1 | **52SC6CEA1** |
| | | | | | S--->M M | — | 52SC6CWA1 | 52SC6CTA1 | — | — | 52SC6CYA1 | — |
| 1 N.C. | B | X | O | O | M M<----S | — | — | 52SC6CUA1 | 52SC6CZA1 | — | — | — |
| | | | | | S--->M<---S | — | — | 52SC6CVA1 | — | — | — | — |
| 1 N.O. | A | O | O | X | M M M | 52SC6CFA2 | 52SC6CGA2 | 52SC6CHA2 | 52SC6CKA2 | 52SC6CJA2 | 52SC6CMA2 | **52SC6CEA2** |
| 1 N.C. | B | X | O | O | S--->M M | — | 52SC6CWA2 | 52SC6CTA2 | — | — | 52SC6CYA2 | — |
| 1 N.O. | C | O | O | X | M M<----S | — | — | 52SC6CUA2 | 52SC6CZA2 | — | — | — |
| 1 N.C. | D | X | O | O | S--->M<---S | — | — | 52SC6CVA2 | — | — | — | — |
| 1 N.O. | A | O | O | X | | | | | | | | |
| 1 N.C. | B | X | O | O | M M M | 52SC6GFJ2K1 | 52SC6GGJ2K1 | 52SC6GHJ2K1 | 52SC6GKJ2K1 | 52SC6GJJ2K1 | 52SC6GMJ2K1 | **52SC6GEJ2K1** |
| 1 N.C. | C | O | X | O | | | | | | | | |

| Contact Type | Contact | Switch Position Left | Switch Position Left Center | Switch Position Right Center | Switch Position Right | Type M = Maintained S = Spring Return | Key Removal Right | Key Removal All Positions |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 4-Position Operator | |
| No Contacts | — | — | — | — | — | M M M M | **52SC6HG** | 52SC6HE |
| 1 N.O. | A | X | O | O | O | | | |
| 1 N.C. | B | O | X | O | O | M M M M | 52SC6HGJ2K1 | 52SC6HEJ2K1 |
| 1 N.C. | C | O | O | X | O | | | |
| 1 N.O. | A | O | O | O | X | | | |
| 1 N.O. | B | X | O | O | O | | | |
| 1 N.C. | C | O | X | O | O | M M M M | 52SC6HGJ2K2 | 52SC6HEJ2K2 |
| 1 N.C. | D | O | O | X | O | | | |

Note: X = Closed / O = Open

All Operatores listed above are furnished with Lock No. 501CH

1) Readily available items are in bold.

This is a small representation of stocked items.

# Actuators and Indicators, Customized Designs

## Special locks

### Options

#### *Special locks for key-operated switches*

Siemens Key-Operated Selector Switches beginning with 51SA6 or 52SC6 can be optionally ordered with the 15 uniquely keyed M-Series Locks by appending the corresponding **"X"** suffixes from the table below to the catalog number. (Ordering Example for Lock Number M705: 52SC6CEX705).

Note: Pricing for M - Series Locks on this page are slightly higher than standard lock types.

| Suffix Code | Lock Number |
|---|---|
| X705 | **M705** |
| X709 | **M709** |
| X713 | **M713** |
| X714 | **M714** |
| X715 | **M715** |
| X723 | **M723** |
| X725 | **M725** |
| X738 | **M738** |
| X749 | **M749** |
| X750 | **M750** |
| X757 | **M757** |
| X766 | **M766** |
| X779 | **M779** |
| X782 | **M782** |
| X795 | **M795** |

#### *Spare Keys for Key-Operated Selector Switches*

| Spare Key | Part Number |
|---|---|
| 550CH (1 Key) | **52KEY-550CH** |
| 549CH (1 Key) | **52KEY-549CH** |
| 548CH (1 Key) | **52KEY-548CH** |
| 547CH (1 Key) | **52KEY-547CH** |
| 501CH (1 Key) | **52KEY-501CH** |
| 506CH (1 Key) | **52KEY-506CH** |
| M703 (1 Key) | **52KEY-M703** |
| M705 (1 Key) | **52KEY-M705** |
| M706 (1 Key) | **52KEY-M706** |
| M709 (1 Key) | **52KEY-M709** |
| M712 (1 Key) | **52KEY-M712** |
| M713 (1 Key) | **52KEY-M713** |
| M714 (1 Key) | **52KEY-M714** |
| M715 (1 Key) | **52KEY-M715** |
| M716 (1 Key) | **52KEY-M716** |
| M717 (1 Key) | **52KEY-M717** |
| M723 (1 Key) | **52KEY-M723** |
| M725 (1 Key) | **52KEY-M725** |
| M728 (1 Key) | **52KEY-M728** |
| M730 (1 Key) | **52KEY-M730** |
| M735 (1 Key) | **52KEY-M735** |
| M736 (1 Key) | **52KEY-M736** |
| M738 (1 Key) | **52KEY-M738** |
| M747 (1 Key) | **52KEY-M747** |
| M749 (1 Key) | **52KEY-M749** |
| M750 (1 Key) | **52KEY-M750** |
| M752 (1 Key) | **52KEY-M752** |
| M753 (1 Key) | **52KEY-M753** |
| M756 (1 Key) | **52KEY-M756** |
| M757 (1 Key) | **52KEY-M757** |
| M759 (1 Key) | **52KEY-M759** |
| M766 (1 Key) | **52KEY-M766** |
| M769 (1 Key) | **52KEY-M769** |
| M771 (1 Key) | **52KEY-M771** |
| M779 (1 Key) | **52KEY-M779** |
| M784 (1 Key) | **52KEY-M784** |
| M790 (1 Key) | **52KEY-M790** |
| M795 (1 Key) | **52KEY-M795** |
| M700 (1 Key) | **52KEY-M700** |
| M701 (1 Key) | **52KEY-M701** |
| M702 (1 Key) | **52KEY-M702** |
| M704 (1 Key) | **52KEY-M704** |
| M705 (1 Key) | **52KEY-M705** |
| M707 (1 Key) | **52KEY-M707** |
| M711 (1 Key) | **52KEY-M711** |
| M713 (1 Key) | **52KEY-M713** |
| M715 (1 Key) | **52KEY-M715** |
| M782 (1 Key) | **52KEY-M782** |
| M795 (1 Key) | **52KEY-M795** |

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Special devices

### Selection and ordering data

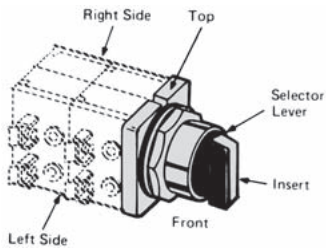
| | Version | Ohms / color | Order no. | Pack |
|---|---|---|---|---|
| | | | | Unit |
| | 2 Button maintained operator | black (flush) / red (flush) | **52MP2A1A2** | 1 |
| | | black (flush) / red (extended) | **52MP2A1B2** | |
| | | black (flush) / yellow (mushroom) | **52MP2A1W4** | |
| | | green (flush) / red (flush) | **52MP2A3A2** | |
| | | green (flush) / red (extended) | **52MP2A3B2** | |
| | | green (flush) / red (mushroom) | **52MP2A3W2** | |
| | | green (flush) / green (mushroom) | **52MP2A3W3** | |
| | Button remains depressed when pushed | less caps | **52MP2** | |

① For use with 52BAJ (NC) contact block

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Cam selection

### Selection and ordering data




Ordering Information

- Contact blocks are ordered separately, see page 10/212
- Determine which table to use based upon the type of selector (non-illum selector switch-top, illum selector switch-middle, and selector pushbutton-bottom).
- Find the correct number of selector positions (2, 3 or 4 positions).
- Select the contact operation required for each selector position. X indicates the contacts are closed, while O indicates the contacts are open. (For the selector pushbutton, N=normal and D=depressed). Contact block must be assembled in position shown for each circuit application.
- Identify the CAM letter required for the chosen contact operation (only 1 CAM can be used per selector switch or selector pushbutton).
- Contact blocks must be assembled in the position shown for each circuit application. The mounting position is viewed from the front of the device.

**Ordering CAMs D, E or G**

- CAM D, E or G may be ordered at the same price by changing the 6th character of the selector catalog number. Example: Selector with D cam **52SX2**D**AB.**

**Size Requirements**

- C CAM on spring return selectors is limited to 4 contact blocks.
- Selector operators in enclosures are limited to depth of 1 contact block. (2 blocks wide).

### Non-illuminated and keyed selector switches (viewed from front)

| 2 Selector Positions | | Contact Blocks | CAM | Mounting | | |
|---|---|---|---|---|---|---|
| Left | Right | | | Left | | Right |
| X | O | NC (52BAJ) | A | L | or | R |
| O | X | NO (52BAK) | A | L | or | R |

| 3 Selector Positions | | | Contact Blocks | CAM | Mounting | | |
|---|---|---|---|---|---|---|---|
| Left | Center | Right | | | Left | | Right |
| X | O | O | NO (52BAK) | B | | | R |
| O | O | X | NO (52BAK) | B | L | | |
| X | X | O | NC (52BAJ) | B | L | | |
| O | X | X | NC (52BAJ) | B | | | R |
| X | O | X | 2NO (2-52BAK) | B | L | and | R |
| X | O | O | NC (52BAJ) | C | L | or | R |
| O | O | X | NO (52BAK) | C | L | or | R |
| O | X | O | NC (52BAJ) | D | L | or | R |
| O | O | X | NO (52BAK) | D | L | or | R |
| X | O | O | NO (52BAK) | E | L | or | R |
| O | X | O | NC (52BAJ) | E | L | or | R |
| X | O | O | NC (52BAJ) | G | L | | |
| O | X | O | NC (52BAJ) | G | | | R |
| O | O | X | NO (52BAK) | G | L | or | R |

| 4 Selector Positions | | | | Contact Blocks | CAM | Mounting | |
|---|---|---|---|---|---|---|---|
| Left | Left Center | Right Center | Right | | | Left | Right |
| X | O | O | O | NO (52BAK) | H | | R |
| O | X | O | O | NC (52BAJ) | H | L | |
| O | O | X | O | NC (52BAJ) | H | | R |
| O | O | O | X | NO (52BAK) | H | L | |

### Illuminated selector switches (viewed from front)

| 2 Selector Positions | | Contact Blocks | CAM | Mounting | |
|---|---|---|---|---|---|
| Left | Right | | | Left | Right |
| X | O | NC (52BAJ) | A | L | |
| O | X | NO (52BAK) | A | L | |

| 3 Selector Positions | | | Contact Blocks | CAM | Mounting | |
|---|---|---|---|---|---|---|
| Left | Center | Right | | | Left | Right |
| O | O | X | NC (52BAJ) | B | | R |
| O | X | O | NO (52BAK) | B | | R |
| X | O | O | NC (52BAJ) | C | L | |
| O | O | X | NO (52BAK) | C | L | |

### Selector Pushbuttons (viewed from front)

| 2 Selector Positions | | | | Contact Blocks | CAM | Mounting | | |
|---|---|---|---|---|---|---|---|---|
| Left | | Right | | | | Left | | Right |
| N | D | N | D | | | | | |
| X | O | O | O | NC (52BAJ) | Q | | | R |
| X | X | O | O | NC (52BAJ) | Q | L | | |
| O | X | O | X | NO (52BAK) | Q | | | R |
| O | O | O | X | NO (52BAK) | Q | L | | |
| X | O | O | O | NC (52BAJ) | P | L | or | R |
| O | X | X | X | NO (52BAK) | P | L | or | R |
| X | X | X | O | NC (52BAJ) | R | L | | |
| X | O | X | X | NC (52BAJ) | R | | | R |
| O | X | O | O | NO (52BAK) | R | | | R |
| O | O | O | X | NO (52BAK) | R | L | | |

| 3 Selector Positions | | | | | | Contact Blocks | CAM | Mounting | |
|---|---|---|---|---|---|---|---|---|---|
| Left | | Center | | Right | | | | Left | Right |
| N | D | N | D | N | D | | | | |
| X | O | O | O | O | O | NC (52BAJ) | S | L | |
| X | O | X | X | O | O | NC (52BAJ) | S | | R |
| O | X | O | O | O | X | NO (52BAK) | S | | R |
| O | O | O | X | O | X | NO (52BAK) | S | L | |

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Custom selector switch designs

### Selection and ordering data

#### Assembled Non-illuminated Selector Switches

- Determine contact block and location from above.
- Select block suffix. Ex: **J** = **52BAJ**.
- Now select position suffix.
- **1-52BAJ** block mounted on right side, suffix will be **J 1**.
- Additional suffixes allow for multiple quantities and locations.
- Repeat process for next block if required.
- Add list price of blocks to operator list price.
- Consult factory for delivery.

**Example 1:** X O O
O O X
HAND-OFF-AUTO Maintained Switch
Catalog No **52SA2CAB A 1 = 52A2CABA1**
(**52BJK** block mounted on right side)

**Example 2:** X O O **52BAJ** (L)
O X O **52BAJ** (R)
O O X **52BAK** (L or R) **}K1**
G Cam required
Catalog No **52SA2GAB J2 K1 = 52SA2GABJ2K1**

| **Block Suffix** |
|---|
| A = 1 NO - 1 NC, **52BJK** |
| E = NC Late Break, **52BAE** |
| H = NO Early Make, **52BAH** |
| J = NC, **52BAJ** |
| K = NO, **52BAK** |

| **Position Suffix** | | |
|---|---|---|
| | Quantity and Location | |
| Suffix | Left | Right |
| 0 | 1 | — |
| 1 | — | 1 |
| 2 | 1 | 1 |
| 3 | 2 | — |
| 4 | — | 2 |
| 5 | 2 | 1 |
| 6 | 1 | 2 |
| 7 | 2 | 2 |
| 8 | 3 | — |
| 9 | — | 3 |

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Accessories and spare parts

### Selection and ordering data

| | Version | Suitable for | Color | Order no. |
|---|---|---|---|---|
| | **Flush actuator lens cap**<br>The 52RC1 Screw-on style caps shown are used on the new 52BM8 & 52PM8 Pushbutton Operators. | For flush type, non-illuminated pushbuttons bag of 5 caps | black<br>red<br>green<br>yellow<br>blue<br>gray<br>orange<br>kit- all colors | **52RC1A1**<br>**52RC1A2**<br>**52RC1A3**<br>**52RC1A4**<br>**52RC1A5**<br>**52RC1A6**<br>**52RC1A8**<br>**52RC1AN** |
| | **Extended actuator lens cap**<br>The 52RC1 Screw-on style caps shown are used on the new 52BM8 & 52PM8 Pushbutton Operators. | For extended type, non-illuminated pushbuttons bag of 5 caps | black<br>red<br>green<br>yellow<br>blue<br>gray<br>orange<br>1 of each color cap | **52RC1B1**<br>**52RC1B2**<br>**52RC1B3**<br>**52RC1B4**<br>**52RC1B5**<br>**52RC1B6**<br>**52RC1B8**<br>**52RC1BN** |
| | **Replacement Lens for Indicator Lights** | For catalog numbers starting with 52PL or 52BL[1]<br>Plastic | red<br>green<br>blue<br>amber<br>clear<br>white<br>1 of each color | **52RA4S2**<br>**52RA4S3**<br>**52RA4S5**<br>**52RA4S9**<br>**52RA4SA**<br>**52RA4SB**<br>**52RA4SN** |
| | | Glass | red<br>green<br>blue<br>amber<br>clear<br>white<br>1 of each color | **52RA4T2**<br>**52RA4T3**<br>**52RA4T5**<br>**52RA4T9**<br>**52RA4TA**<br>**52RA4TB**<br>**52RA4TN** |
| | **Replacement Lens forPush to Test/ Illuminated Pushbuttons**<br>The 52RA5S Raised lens caps shown are used on the 52BT6 & 52PT6 PTT/Illuminated Pushbutton Operators. To order Flush lens caps for the new style 52BT8 & 52PT8 PTT/Illuminated Pushbutton Operators change the 52RA5S prefix to 52RC5P (i.e. 52RC5P2). | For catalog numbers starting with 52PT or 52BT[1]<br>Plastic | red<br>green<br>blue<br>amber<br>clear<br>white | **52RA5S2**<br>**52RA5S3**<br>**52RA5S5**<br>**52RA5S9**<br>**52RA5SA**<br>**52RA5SB** |

[1] It is possible to retrofit catalog numbers starting with 52PA, 52PE and 52PX with the replacement lens. The new lens have concentric ribs for improved light distribution.

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Accessories and spare parts

### Selection and ordering data

| | Version | Suitable for | Color | Order no. |
|---|---|---|---|---|
| | **Mushroom head push pull illuminated plastic screw-on type** | For small 1 3/4" type, push-pull units | red | **52RC3JR** |
| | | | green | **52RC3JS** |
| | | | amber | **52RC3JT** |
| | | For large 2 1/2" type, push-pull units | red | **52RC3KR** |
| | | | green | **52RC3KS** |
| | | | amber | **52RC3KT** |
| | **Mushroom head push pull illuminated metal screw-on type** | Chrome, for small 1 3/4" type, push-pull units | red | **52RB3H2** |
| | | | green | **52RB3H3** |
| | | | amber | **52RB3H9** |
| | | | white | **52RB3HB** |
| | | BlackMax, for small 1 3/4" type, push-pull units | red | **52RX3H2** |
| | | | green | **52RX3H3** |
| | | | amber | **52RX3H9** |
| | | | white | **52RX3HB** |
| | **Mushroom head push pull non-illuminated plastic screw-on type** | For small 1 3/4" type, push-pull units (catalog numbers starting with 52PP, 52BP, 52PM9 or 52BM9) | black | **52RC3D1** |
| | | | red | **52RC3D2** |
| | | | green | **52RC3D3** |
| | | | yellow | **52RC3D4** |
| | | | blue | **52RC3D5** |
| | | | gray | **52RC3D6** |
| | | | orange | **52RC3D8** |
| | | | 1 of each color | **52RC3DN** |
| | | For large 2 1/2" type, push-pull units (catalog numbers starting with 52PP, 52BP, 52PM9 or 52BM9) | black | **52RC3E1** |
| | | | red | **52RC3E2** |
| | | | green | **52RC3E3** |
| | | | yellow | **52RC3E4** |
| | | | blue | **52RC3E5** |
| | | | gray | **52RC3E6** |
| | | | orange | **52RC3E8** |
| | | | 1 of each color | **52RC3EN** |
| | **Mushroom head push pull non-illuminated metal screw-on type** | For small 1 3/4" type, push-pull units (catalog numbers starting with 52PP or 52BP) | red | **52RC3F2** |
| | | | green | **52RC3F3** |
| | | | chrome | **52RC3FC** |
| | **Twist to release head illuminated plastic screw-on type** | For small twist to release units | red | **52RC3RR** |
| | | | green | **52RC3RS** |
| | | | amber | **52RC3RT** |
| | **Twist to release head non-illuminated plastic screw-on type** | For small twist to release units | red | **52RC3R2** |
| | | | green | **52RC3R3** |
| | | | yellow | **52RC3R4** |
| | **Replacement lens kit for Illuminated selector switches (Knob with Insert)** | | red | **52RA6P2** |
| | | | green | **52RA6P3** |
| | | | blue | **52RA6P5** |
| | | | amber | **52RA6P9** |
| | | | clear | **52RA6PA** |
| | | | white | **52RA6PB** |
| | **Lever inserts** | | | |
| | **Short lever** | | red | **52RA2A2** |
| | | | green | **52RA2A3** |
| | | | yellow | **52RA2A4** |
| | | | blue | **52RA2A5** |
| | | | gray | **52RA2A6** |
| | | | orange | **52RA2A8** |
| | | | white | **52RA2AB** |
| | **Long lever** | | red | **52RA2B2** |
| | | | green | **52RA2B3** |
| | | | yellow | **52RA2B4** |
| | | | blue | **52RA2B5** |
| | | | gray | **52RA2B6** |
| | | | orange | **52RA2B8** |
| | | | white | **52RA2BB** |

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Accessories and spare parts

### Selection and ordering data

| | Version | Suitable for | Color | Order no. |
|---|---|---|---|---|
| | **Protective boot**<br>Offers protection from ice and foreign substances from interfering with button operation | Flush pushbutton operations | clear<br>black | **52AABA**<br>**52AAB1** |
| | **Guards**<br>Prevents accidental operation | Non-illuminated basic pushbuttons | chrome<br>blackmax | **52AAGP**<br>**52AXGP** |
| | | 1 5/8" mushroom pushbuttons, 1 3/4" push-pull units①, and twist to release units | chrome<br>blackmax | **52AAGM**<br>**52AXGM** |
| | | Push to test/illuminated pushbutton and indicator lights | chrome<br>blackmax | **52AAGL**<br>**52AXGL** |
| | **EMERGENCY-STOP Backing Ring** | Yellow 90mm E-STOP Backing Ring | | **52AAR** |
| | **Locknuts**<br>Replacement front ring | Non-illuminated basic pushbuttons | chrome<br>blackmax | **52AANP**<br>**52AXNP** |
| | | Non-illuminated mushroom pushbuttons | chrome<br>blackmax | **52AANL**<br>**52AXNL** |
| | | Push-pull and twist-to-release units (only for push-pull units starting with 52PP or 52BP)② | chrome<br>blackmax | **52CANP**<br>**52CXNP** |
| | | Indicator Lights | blue<br>amber | **52AANL**<br>**52AXNL** |
| | | Selector switches | chrome<br>blackmax | **52AANS**<br>**52AXNS** |
| | **Mounting Accessories** | Class 52 Trim Washer Kit (Set of 10 pcs)<br>Class 52 Washer Kit (Include 2-Neoprene Gaskets, 1-Trim Washer, 1-Index Locking Ring (chrome) | chrome | **52AAQ**<br>**52AAD** |
| | **Padlock attachments** | Non-illuminated basic pushbuttons | flush<br>extended | **52AALA**<br>**52AALB** |
| | **EMERGENCY-STOP Lock Out** | Class 52 Illuminated Mushroom Head Pushbuttons; 304 Stainless Steel | chrome (304 SS) | **52AALE** |
| | **Padlock cover**<br>Lock devices in off position | Pushbuttons, selector switches, and non-illuminated mushroom heads | | **52AALS** |
| | **Lock nut wrench** | All devices | | **52MAWB** |
| | **Hole plugs** | | corrosion resistant steel, grey<br>stainless steel | **52AAH6**<br>**52ABH6**<br>**52ABHS** |
| | **Spare keys**<br>(Kit includes 1 Key) | Class 52 Standard Keyed Selector Switch.<br>Keyed Selector Switch ordered with Suffix X302.<br>Keyed Selector Switch ordered with Suffix X301.<br>Keyed Selector Switch ordered with Suffix X300.<br>Keyed Selector Switch ordered with Suffix X299.<br>Keyed Selector Switch ordered with Suffix X298. | 501CH<br>506CH<br>547CH<br>548CH<br>549CH<br>550CH | **52KEY-501CH**<br>**52KEY-506CH**<br>**52KEY-547CH**<br>**52KEY-548CH**<br>**52KEY-549CH**<br>**52KEY-550CH** |
| | **Grounding kit** | All devices | | **52AL109145** |

① These can also be used with the 1 5/8" push-pull devices.
② For push-pull units starting with part numbers 52PA, 52PE or 52PX, replacement locknuts can be ordered using 52AANL (Chrome) and 52AXNL (BlackMax).

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Accessories and spare parts

### Selection and ordering data⑤

| | Contact version | Number of NO contacts | NC contacts | Version | Plunger color | SD | Article No. |
|---|---|---|---|---|---|---|---|
| **Touchsafe contact blocks for UL Ordinary Location only** | | | | | | | |
| | | | | | | | **Screw terminals** ⊕ |
| 52BAK | Silver alloy | 1 | 0 | 1 NO | White | | **52BAK** |
| | | 0 | 1 ⊖ | 1 NC | Red | | **52BAJ**② |
| | | 1 | 1 ⊖ | 1 NO - 1 NC | Black | | **52BJK**② |
| | | 1 | 0 | 1 NO early make (closes before 52BAK) | Green | | **52BAH** |
| | | 0 | 1 | 1 NC late break (opens after 52BAJ) | Yellow | | **52BAE** |
| | | 0 | 1 | 1 NC extra late break (opens after 52BAE) | Blue | | **52BAU** |
| **Touchsafe contact blocks for UL Ordinary Location & UL Hazardous Location, CL1, DIV2** ① | | | | | | | |
| 52BJKHL | Factory Sealed | 1 | 0 | 1 NO | | | **52BAKHL**③④ |
| | | 0 | 1 | 1 NC | | | **52BAJHL**③④ |
| | | 1 | 1 | 1 NO - 1 NC | | | **52BJKHL**③ |

① HL Series Contact Blocks and Reed Switch are UL listed, for Hazardous Location Class 1, Division 2 Applications.

② ⊖ Positive opening according to IEC 60947-5-1, Appendix K.

③ HL Series Contact Blocks are Rated ½ HP@120Vac / 1 HP@208/240/277Vac. See Instruction Sheet E87010-0524-T003-A3, for complete ratings.

④ HL Series Single-contact Blocks are rated 690Vac, 16A, 50-60Hz, See Instruction Sheet E87010-0524-T003-A3, for complete ratings.

⑤ See Technical Data on page 10/226

# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Accessories and spare parts

### Selection and ordering data

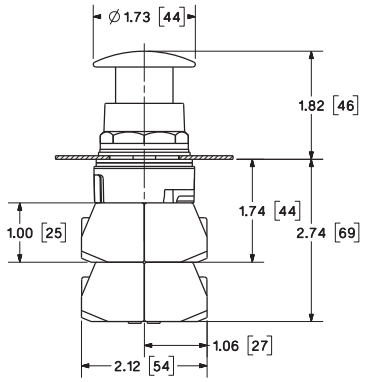
| Version | Suitable for | Lamp voltage | Color | Order no. |
|---|---|---|---|---|
| **Lamps with screw connection, miniature bayonet (BA 9s style)** | | | | |
| **Incandescent lamps,** | | | | |
| Flashing, type 267 lamp (replaces 755 lamp) | 51, 52 | 6 V | | **52AABNF** |
| 6V type 755 lamp (Rated 150 mA) | 51, 52 | 6 V | | **52AABN** |
| 12V type 756 (Rated 80 mA) | 51, 52 | 12 V | | **52AACN** |
| 24V type 757 (Rated 80 mA) | 51, 52 | 24 V | | **52AADN** |
| 48V, 2W | 52 | 48 V | | **3SB1902-1AP** |
| 60V, 2W | 52 | 60 V | | **3SR9424** |
| 120V, 2.5W, type #120MB (Rated 250 mA) | 52 | 120 V | | **52AAENC1** |
| Neon (uses resistors) type B2A (NE-51H) | 52 | 120 V | | **52AAPN** |
| **Candelabra,** 120V, 3W, Full voltage type 3S6/5 | 52 older revision styles | 120 V | | **52AAENC** |
| **LED bulbs**① | | | | |
| LED, BA9s type | Class 52 | 6 V AC/DC | | **52AEB□** |
| | | 24 V AC/DC | | **52AED□** |
| | | 120 V AC/DC | | **52AEE□** |
| Super-Bright LED | Class 52 | 6 V AC/DC | | **52AEB□7** |
| | | 24 V AC/DC | | **52AED□7** |
| **LED lighting module with integrated LED**② | | | | |
| Single LED | Class 52 | 6-24 V AC/DC | | **52AAIL□** |
| | | 24-240V AC/DC | | **52AAIU□** |
| **Full voltage lighting module accessory with BA9s type lamp**①③ | | | | |
| LED | Class 52 | 6 V AC/DC | | **52AAFB□B** |
| | | 24 V AC/DC | | **52AAFD□B** |
| | | 120 V AC/DC | | **52AAFE□B** |
| Super-Bright LED | Class 52 | 6 V AC/DC | | **52AAFB□Y** |
| | | 24 V AC/DC | | **52AAFD□Y** |
| Incandescent bulb | Class 52 | 6 V AC/DC | | **52AAFB** |
| | | 24 V AC/DC | | **52AAFD** |
| | | 120 V AC/DC | | **52AAFE** |
| **Transformer lighting module accessory with BA9s type lamp**①③ | | | | |
| LED | Class 52 | 120 V AC | | **52AATG□B** |
| | | 240 V AC | | **52AATH□B** |
| | | 277 V AC | | **52AATT□B** |
| | | 480 V AC | | **52AATJ□B** |
| | | 600 V AC | | **52AATK□B** |
| Super-Bright LED | Class 52 | 120 V AC | | **52AATG□Y** |
| | | 240 V AC | | **52AATH□Y** |
| | | 277 V AC | | **52AATT□Y** |
| | | 480 V AC | | **52AATJ□Y** |
| | | 600 V AC | | **52AATK□Y** |
| Incandescent bulb | Class 52 | 120 V AC | | **52AATGN** |
| | | 240 V AC | | **52AATHN** |
| | | 277 V AC | | **52AATTN** |
| | | 480 V AC | | **52AATJN** |
| | | 600 V AC | | **52AATKN** |
| | | Color options: | red | **2** |
| | | | green | **3** |
| | | | yellow/amber | **4** |
| | | | blue | **5** |
| | | | white/clear | **B** |

① Standard LED lamps are recommended for indoor applications, Super-Bright LED Lamps are recommended for outdoor applications.
② Integrated LED Light Modules are rated, for UL Ordinary Location, UL Hazardous Location Class 1, Division 2 Applications.
③ Light Modules with BA9s Lamp Sockets are rated, for both UL Ordinary Location and UL Hazardous Location Class 1, Division 2 Applications.

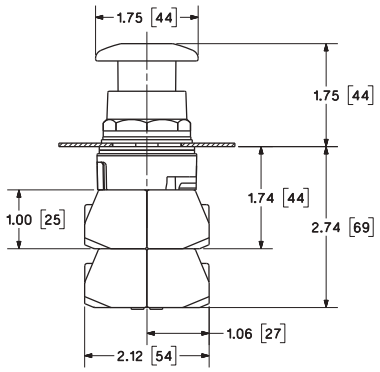
# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Dimensional drawings

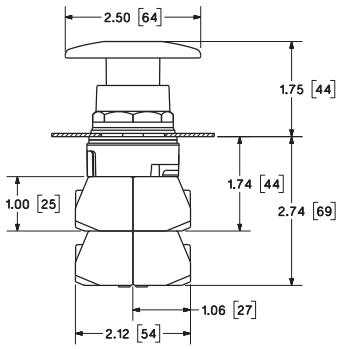
### Non-Illuminated Push-Pull Metal Mushroom Head



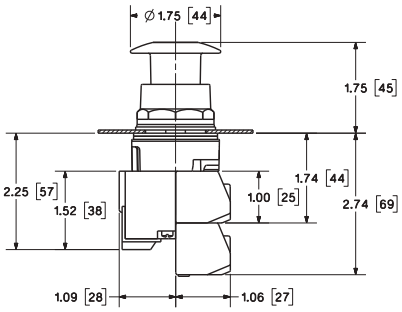

### Non-Illuminated Push-Pull Small Plastic Mushroom Head



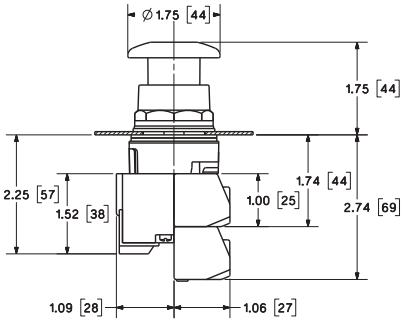

### Non-Illuminated Push-Pull Large Plastic Mushroom Head



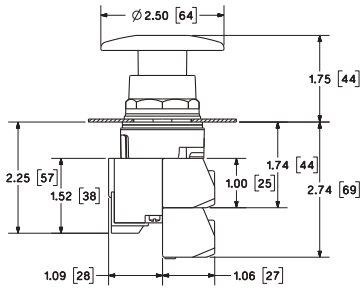

### Illuminated Push-Pull Metal Mushroom Head



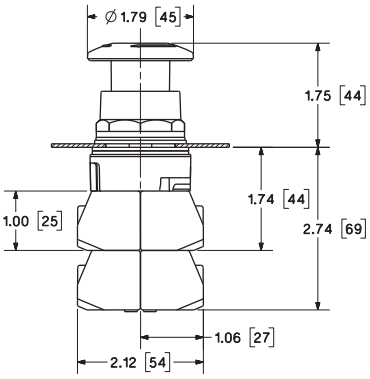

### Fully Illuminated Push-Pull Small Plastic Mushroom Head



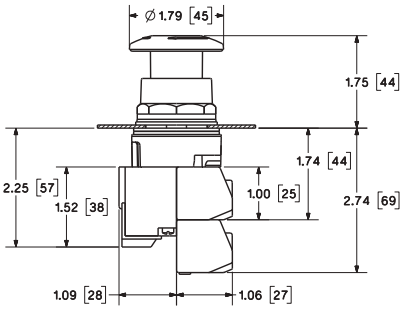

### Illuminated Push-Pull Large Plastic Mushroom Head



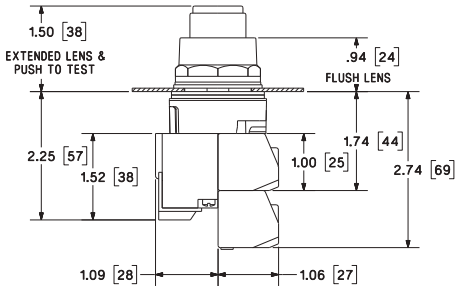

### Non-Illuminated Twist Release Plastic Mushroom Head




### Illuminated Twist Release Plastic Mushroom Head



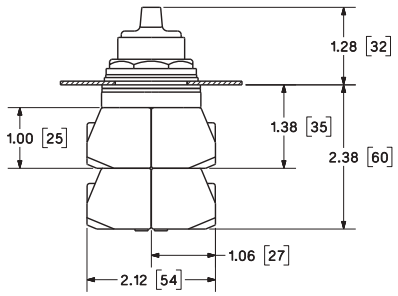

### Illuminated Pushbutton Flush Lens
### Illuminated Pushbutton Extended Lens
### Illuminated Push to Test



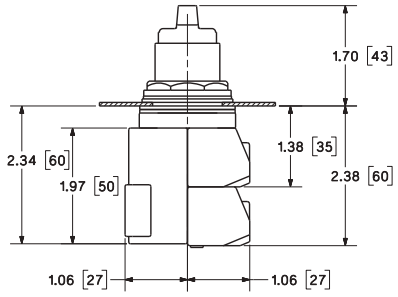
# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Dimensional drawings

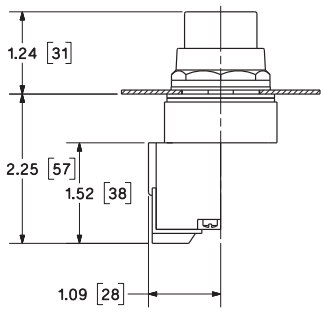
### Selector Switch Non-Illuminated



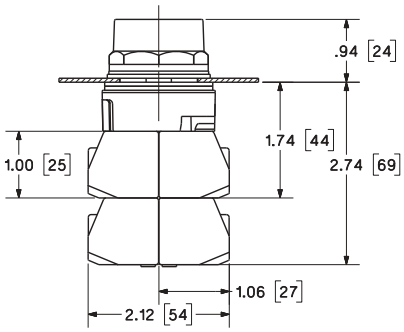

### Selector Switch Illuminated



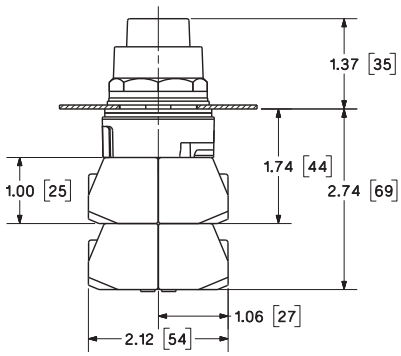

### Indicator Light Plastic Lens



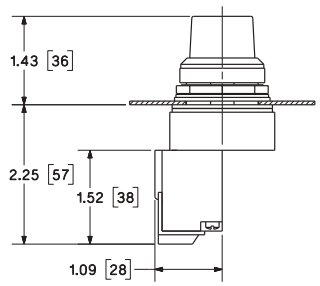

### Momentary Pushbutton Non-Illuminated Flush Cap



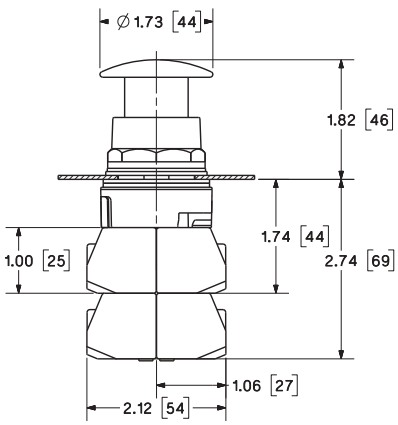

### Momentary Pushbutton Non-Illuminated Raised Cap



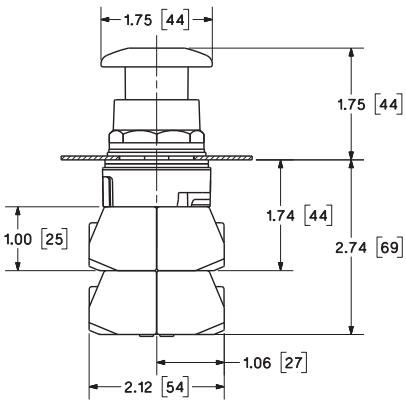

### Indicator Light Glass Lens



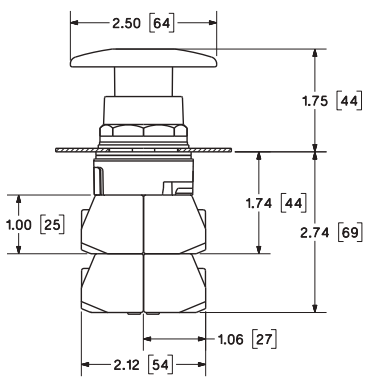

### Momentary Pushbutton Metal Mushroom Head




### Momentary Pushbutton Small Plastic Mushroom Head



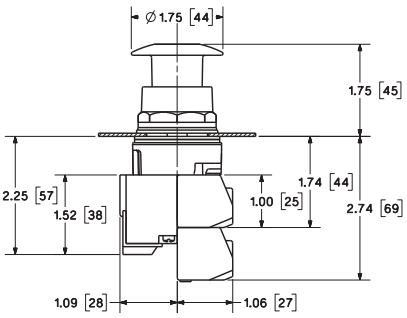

### Momentary Pushbutton Large Plastic Mushroom Head



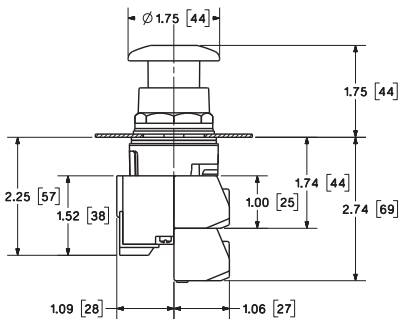
# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Dimensional drawings

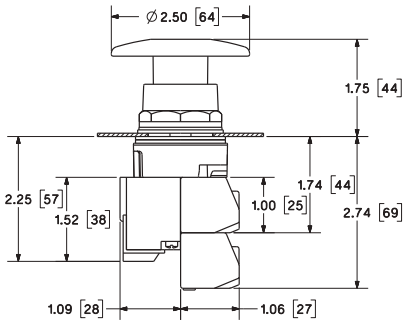
### Illuminated Momentary Pushbutton Metal Mushroom Head



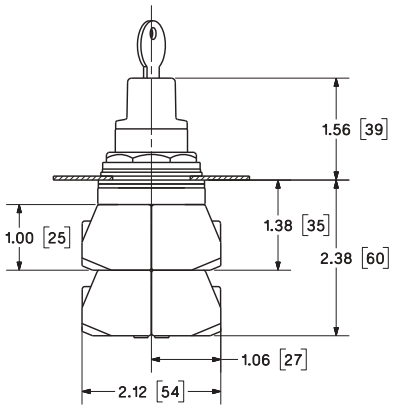

### Illuminated Momentary Pushbutton Small Plastic Mushroom Head



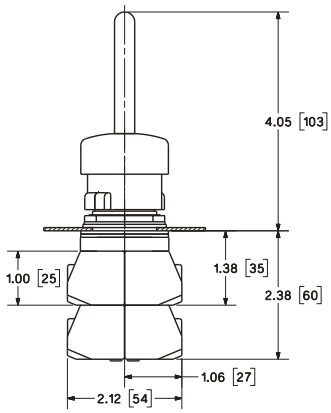

### Illuminated Momentary Pushbutton Large Plastic Mushroom Head



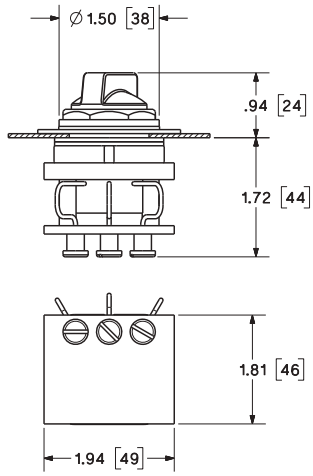

### Selector Switch Keyed



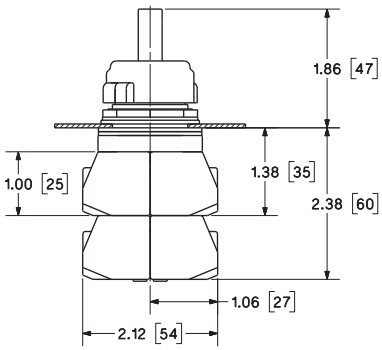

### Wobble Switch



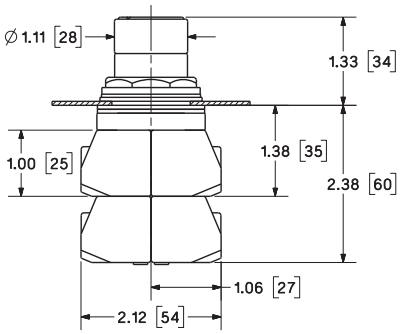

### Potentiometer Switch



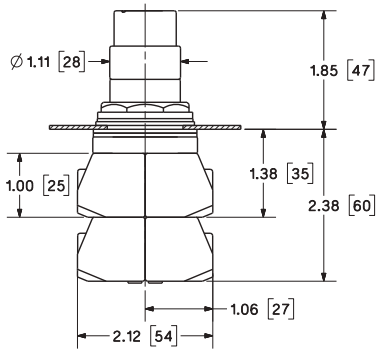

### Toggle Switch




### Selector Pushbutton Switch Flush Cap



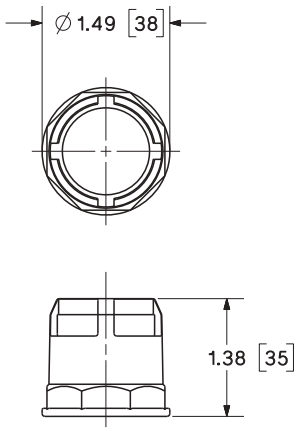

### Selector Pushbutton Switch Raised Cap



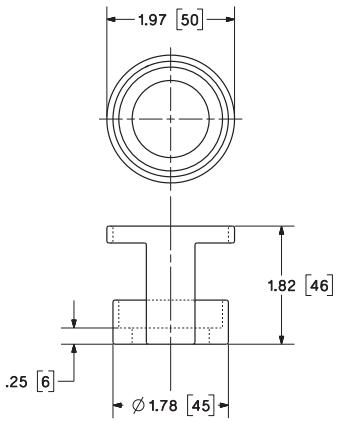
# 30mm Water, Oil Tight & Corrosion Resistant – Class 52

## Dimensional drawings

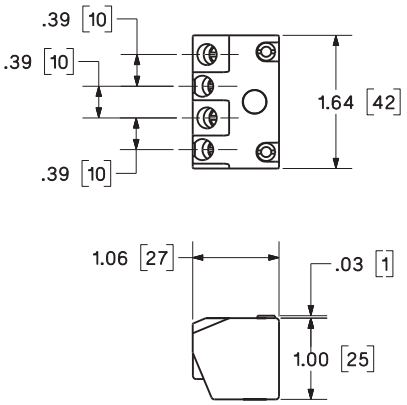
### Momentary Pushbutton Guard
### Illuminated Push to Test Guard



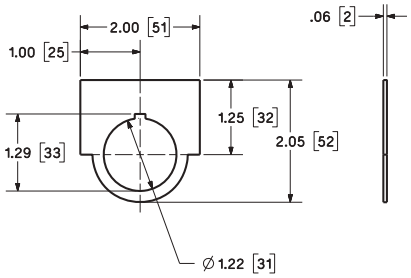

### Mushroom Head Guard



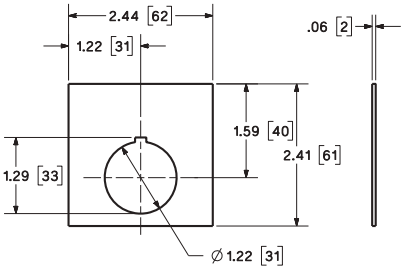

### Contact Block



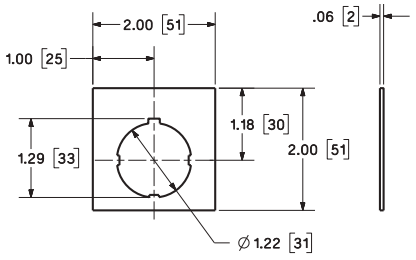

### Large Metal Legend Plate




### Automotive Metal Legend Plate




### Large Plastic Legend Plate



# Break Glass and Emergency Power Off Pushbutton (EPO) Stations

## Selection and ordering data

| Description | Degree of protection | Conduit Entry 3/4" NPT | No. of command points | Contact① | Legend Plate | Order no. |
|---|---|---|---|---|---|---|
| **Class 52 Oiltight Pushbutton Stations③** | | | | | | |
| Break Glass Pushbutton Station | NEMA 4X | Side | 1 | 1NO-1NC | "EMERGENCY SHUT-OFF" | **52G112FB** |
| | | | | | "EMERGENCY OFF" | **52G113FB** |
| | | | | | "EMERGENCY POWER OFF" | **52G114FB** |
| | | | | | "EMERGENCY GENERATOR STOP" | **52G115FB** |
| | | Rear② | | | "EMERGENCY SHUT-OFF" | **52G112FR** |
| | | | | | "EMERGENCY OFF" | **52G113FR** |
| | | | | | "EMERGENCY POWER OFF" | **52G114FR** |
| | | | | | "EMERGENCY GENERATOR STOP" | **52G115FR** |
| | | Side and Rear② | | | "EMERGENCY SHUT-OFF" | **52G112FD** |
| | | | | | "EMERGENCY OFF" | **52G113FD** |
| | | | | | "EMERGENCY POWER OFF" | **52G114FD** |
| | | | | | "EMERGENCY GENERATOR STOP" | **52G115FD** |
| Emergency Power Off EPO Pushbutton Station | NEMA 4X | Side | 1 | 1NO-1NC | "EMERGENCY POWER OFF" | **52C114EB** |
| | NEMA 12/13 | N/A | 1 | 1NO-1NC | "EMERGENCY POWER OFF" | **52C114A** |

## Accessories

| | | |
|---|---|---|
| Break Glass Pushbutton with 1NO-1NC, 4 Extra Glass Lens Inserts | | **52PM8AGA** |
| Break Glass Pushbutton with 1NO-1NC, 4 Extra Glass Lens Inserts, Mallet, Chain, Clip, Mounting Screw④ | | **52PM8AGAH** |
| Replacement Glass Lens Insert Kit (5 piece pack) | | **52RC1AG** |
| Break Glass Legend Plates⑤ | "EMERGENCY SHUT-OFF" | **52NL112R** |
| | "EMERGENCY OFF" | **52NL113R** |
| | "EMERGENCY POWER OFF" | **52NL114R** |
| | "EMERGENCY GENERATOR STOP" | **52NL115R** |
| EPO Legend Plate⑤ | "EMERGENCY POWER OFF" | **52NF214R** |
| Enclosure, NEMA 4X Aluminum with ANSI 61 Gray finish comes with one 3/4" - 14 NPT conduit entry in side of enclosure, and one Empty Command Point for fitting 30mm Round Devices. | | **P30EMS01EB** |

① Pushbutton Station comes with 1) 52BJK, 1NO-1NC contact rated NEMA A600/P600. One additional Class 52 contact block may be field installed if required.
② Versions with Conduit Entry from the Rear available February 2020.
③ All Glass Break Pushbutton Stations come with 4 Extra Glass Lens Inserts.
④ Sealant is not supplied with 52PM8AGAH kits. Note: Teflon Tape or Pipe Dope is required on the Mallet Mounting Clip Screw when field installed in a NEMA 4X Enclosure.
⑤ For a more comprehensive list of our most common legend plates, see page 10/227.

# 30mm Water, Oil Tight & Corrosion Resistant - Class 52

## Class 52 oiltight pushbutton stations

### Selection and ordering data

| | Actuator identification<br>C = top device in station<br>B = middle device in station<br>A = bottom device in station | Degree of protection① | Contact / voltage | No. of command points | Order no. | Pack Unit |
|---|---|---|---|---|---|---|
| 1 unit control station | A = Momentary flush pushbutton black, label "START" | NEMA 12 | 1NO - 1NC | 1 | **52C101A** | |
| | A = Momentary raised pushbutton red, label "STOP" | NEMA 12 | 1NO - 1NC | 1 | **52C103A** | |
| | A = Momentary mushroom head red, label "STOP" | NEMA 12 | 1NO - 1NC | 1 | **52C104A** | |
| | A = Maintained metal mushroom head red, label "EMERGENCY STOP" | NEMA 12 | 1NO - 1NC | 1 | **52C117A** | |
| | A = 2 position selector switch "OFF-ON" | NEMA 12 | 1NO - 1NC | 1 | **52C159A** | |
| | A = 3 position selector switch "HAND-OFF-AUTO" | NEMA 12 | 1NO - 1NC | 1 | **52C156A** | |
| | A = Indicator light, red | NEMA 12 | 120V Transformer type | 1 | **52C131A** | |
| | A = Indicator light, green | NEMA 12 | 120V Transformer type | 1 | **52C135A** | |
| | A = Momentary flush pushbutton black, label "START" | NEMA 4X Stainless Steel | 1NO - 1NC | 1 | **52C101S** | |
| | A = Momentary raised pushbutton red, label "STOP" | NEMA 4X Stainless Steel | 1NO - 1NC | 1 | **52C103S** | |
| | A = Momentary mushroom head red, label "STOP" | NEMA 4X Stainless Steel | 1NO - 1NC | 1 | **52C104S** | |
| | A = Maintained plastic mushroom head red, label "EMERGENCY STOP" | NEMA 4X Stainless Steel | 1NO - 1NC | 1 | **52C116S** | |
| | A = 2 position selector switch "OFF-ON" | NEMA 4X Stainless Steel | 1NO - 1NC | 1 | **52C159S** | |
| | A = 3 position selector switch "HAND-OFF-AUTO" | NEMA 4X Stainless Steel | 1NO - 1NC | 1 | **52C156S** | |
| | A = Momentary flush pushbutton black, label "START" | NEMA 4X Fiberglass | 1NO - 1NC | 1 | **52C101X** | |
| | A = Momentary raised pushbutton red, label "STOP" | NEMA 4X Fiberglass | 1NO - 1NC | 1 | **52C103X** | |
| | A = Momentary mushroom head red, label "STOP" | NEMA 4X Fiberglass | 1NO - 1NC | 1 | **52C104X** | |
| | A = Maintained plastic mushroom head red, label "EMERGENCY STOP" | NEMA 4X Fiberglass | 1NO - 1NC | 1 | **52C116X** | |
| | A = 2 position selector switch "OFF-ON" | NEMA 4X Fiberglass | 1NO - 1NC | 1 | **52C159X** | |
| | A = 3 position selector switch "HAND-OFF-AUTO" | NEMA 4X Fiberglass | 1NO - 1NC | 1 | **52C156X** | |
| 2 unit control station | B = Momentary flush pushbutton black, label "START"<br>A = Momentary raised pushbutton red, label "STOP" | NEMA 12 | 1NO, 1NC<br>1NO, 1NC | 2 | **52C201A** | |
| | B = Momentary flush pushbutton black, label "START"<br>A = Momentary Mushroom head pushbutton red, label "STOP" | NEMA 12 | 1NO, 1NC<br>1NO, 1NC | 2 | **52C202A** | |
| | B = Momentary flush pushbutton, label "FORWARD"<br>A = Momentary flush pushbutton, label "REVERSE" | NEMA 12 | 1NO, 1NC<br>1NO, 1NC | 2 | **52C204A** | |
| | B = Momentary flush pushbutton, label "UP"<br>A = Momentary flush pushbutton, label "DOWN" | NEMA 12 | 1NO, 1NC<br>1NO, 1NC | 2 | **52C223A** | |
| | B = Indicator light, red, label "RUN"<br>A = Maintained selector switch, label "HAND-OFF-AUTO" | NEMA 12 | 120V Transformer type | 2 | **52C224A** | |
| | B = Indicator light, red<br>A = Indicator light, green | NEMA 12 | 120V Transformer type | 2 | **52C230A** | |
| | B = Momentary flush pushbutton black, label "START"<br>A = Momentary raised pushbutton red, label "STOP" | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC | 2 | **52C201S** | |
| | B = Momentary flush pushbutton black, label "START"<br>A = Momentary Mushroom head pushbutton red, label "STOP" | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC | 2 | **52C202S** | |
| | B = Momentary flush pushbutton, label "UP"<br>A = Momentary flush pushbutton, label "DOWN" | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC | 2 | **52C223S** | |
| | B = Indicator light, red, label "RUN"<br>A = Maintained selector switch, label "HAND-OFF-AUTO" | NEMA 4X Stainless Steel | 120V Transformer type<br>1NO, 1NC | 2 | **52C224S** | |
| | B = Momentary flush pushbutton black, label "START"<br>A = Momentary raised pushbutton red, label "STOP" | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC | 2 | **52C201X** | |
| | B = Momentary flush pushbutton black, label "START"<br>A = Momentary Mushroom head pushbutton red, label "STOP" | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC | 2 | **52C202X** | |
| | B = Momentary flush pushbutton, label "UP"<br>A = Momentary flush pushbutton, label "DOWN" | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC | 2 | **52C223X** | |
| | B = Indicator light, red, label "RUN"<br>A = Maintained selector switch, label "HAND-OFF-AUTO" | NEMA 4X Fiberglass | 120V Transformer type<br>1NO, 1NC | 2 | **52C224X** | |

① NEMA 4X Stainless Steel Enclosure is 304 SS.

# 30mm Water, Oil Tight & Corrosion Resistant - Class 52

## Class 52 oiltight pushbutton stations

### Selection and ordering data

| | Actuator identification | Degree of protection① | Contact / voltage | No. of command points | Order no. | Pack Unit |
|---|---|---|---|---|---|---|
| 3 unit control station | C = Indicator light, red<br>B = Momentary flush pushbutton black, label “START”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 12 | 120V<br>1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C307A** | |
| | C = Momentary flush pushbutton black, label “FORWARD”<br>B = Momentary flush pushbutton black, label “REVERSE”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 12 | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C301A** | |
| | C = Momentary flush pushbutton black, label “UP”<br>B = Momentary flush pushbutton black, label “DOWN”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 12 | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C332A** | |
| | C = Momentary flush pushbutton black, label “OPEN”<br>B = Momentary flush pushbutton black, label “CLOSE”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 12 | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C333A** | |
| | C = Momentary flush pushbutton black, label “HI”<br>B = Momentary flush pushbutton, black label “LOW”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 12 | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C334A** | |
| | C = Indicator light, red<br>B = Momentary flush pushbutton black, label “START”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Stainless Steel | 120V<br>1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C307S** | |
| | C = Momentary flush pushbutton black, label “FORWARD”<br>B = Momentary flush pushbutton black, label “REVERSE”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C301S** | |
| | C = Momentary flush pushbutton black, label “UP”<br>B = Momentary flush pushbutton black, label “DOWN”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C332S** | |
| | C = Momentary flush pushbutton black, label “OPEN”<br>B = Momentary flush pushbutton black, label “CLOSE”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C333S** | |
| | C = Momentary flush pushbutton black, label “HI”<br>B = Momentary flush pushbutton, black label “LOW”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Stainless Steel | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C334S** | |
| | C = Indicator light, red<br>B = Momentary flush pushbutton black, label “START”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Fiberglass | 120V<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C307X** | |
| | C = Momentary flush pushbutton black, label “FORWARD”<br>B = Momentary flush pushbutton black, label “REVERSE”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C301X** | |
| | C = Momentary flush pushbutton black, label “UP”<br>B = Momentary flush pushbutton black, label “DOWN”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C332X** | |
| | C = Momentary flush pushbutton black, label “OPEN”<br>B = Momentary flush pushbutton black, label “CLOSE”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C333X** | |
| | C = Momentary flush pushbutton black, label “HI”<br>B = Momentary flush pushbutton, black label “LOW”<br>A = Momentary raised pushbutton red, label “STOP” | NEMA 4X Fiberglass | 1NO, 1NC<br>1NO, 1NC<br>1NO, 1NC | 3 | **52C334X** | |

① NEMA 4X Stainless Steel Enclosure is 304 SS.

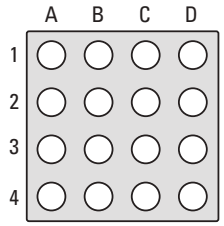
# 30mm Water, Oil Tight & Corrosion Resistant - Class 52

## Empty enclosures

### Selection and ordering data

| Version | Number of command points | Degree of protection | Order No.① | Pack Unit |
|---|---|---|---|---|
| Standard enclosures come with 2 1/4" leg center for legend spacing. Automotive end plates require 2 1/2 " spacing. For more than 2 contact blocks on the right or left, use extra deep enclosure.<br><br>Mounting hole arrangement<br><br>1 thu 4 are in one row<br>6 holes are 3 down and 2 across<br>9 holes are 3 down and 3 across<br>12 holes are 4 down and 3 across<br>16 holes are 4 down and 4 across | 1 | NEMA Type 12/13 | **P30EMS01** | |
| | 1 | NEMA Type 12/13 extra deep | **P30EMS01D** | |
| | 1 | NEMA Type 4/4X stainless steel | **P30EMS014** | |
| | 1 | NEMA Type 4/4X Fiberglass | **P30EMS01X** | |
| | 2 | NEMA Type 12/13 | **P30EMS02** | |
| | 2 | NEMA Type 12/13 extra deep | **P30EMS02D** | |
| | 2 | NEMA Type 4/4X stainless steel | **P30EMS024** | |
| | 2 | NEMA Type 4/4X Fiberglass | **P30EMS02X** | |
| | 3 | NEMA Type 12/13 | **P30EMS03** | |
| | 3 | NEMA Type 12/13 extra deep | **P30EMS03D** | |
| | 3 | NEMA Type 4/4X stainless steel | **P30EMS034** | |
| | 3 | NEMA Type 4/4X Fiberglass | **P30EMS03X** | |
| | 4 | NEMA Type 12/13 | **P30EMS04** | |
| | 4 | NEMA Type 12/13 extra deep | **P30EMS04D** | |
| | 4 | NEMA Type 4/4X stainless steel | **P30EMS044** | |
| | 4 | NEMA Type 4/4X Fiberglass | **P30EMS04X** | |
| | 6 | NEMA Type 12/13 | **P30EMS06** | |
| | 6 | NEMA Type 12/13 extra deep | **P30EMS06D** | |
| | 6 | NEMA Type 4/4X stainless steel | **P30EMS064** | |
| | 9 | NEMA Type 12/13 | **P30EMS09** | |
| | 9 | NEMA Type 12/13 extra deep | **P30EMS09D** | |
| | 9 | NEMA Type 4/4X stainless steel | **P30EMS094** | |
| | 12 | NEMA Type 12/13 | **P30EMS12** | |
| | 12 | NEMA Type 12/13 extra deep | **P30EMS12D** | |
| | 12 | NEMA Type 4/4X stainless steel | **P30EMS124** | |
| | 16 | NEMA Type 12/13 | **P30EMS16** | |
| | 16 | NEMA Type 12/13 extra deep | **P30EMS16D** | |
| | 16 | NEMA Type 4/4X stainless steel | **P30EMS164** | |

### Order Form



Enclosure Hole Arrangement

**Ordering Information**

To order non-standard control stations select catalog numbers from the previous pages, determine the required position in the enclosure and fill in the table below. If a special legend plate is required, specify description in the table. The combined list prices of the components is the list price of the station.

- Select enclosure
- Vertical or Horizontal. Outline Diagram at left starting at the top left-hand corner. Example: 3 unit vertical outline location No. 1A, 2A and 3A. 3 unit horizontal outline location No. 1A, 1B, and 1C
- List location No. and applicable catalog numbers in the table below. Use complete catalog numbers where possible

Order No./Item No.

Customer

Enclosure Catalog No.

| Location | Operator PB-SEL.-PL | Accessories Key Lock, Boot, Etc, | Legend Plate Legend or Blank | Special Marking |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

① NEMA 4X Stainless Steel Enclosure is 304 SS.

# 30 mm Heavy Duty, Watertight/Oiltight, Class 52

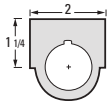
## Legend plates for Class 51 and 52

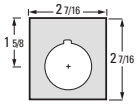
### Design

The 30 mm legend plates are approved for the use with both Class 51 and Class 52 devices.
Automotive legend plates require 2 1/2" mounting centers. Plastic legend plates will have white letters ingraved.

When ordering custom engraved legend plates, specify the required inscription text.

### Selection and ordering data




| Inscription | Large (1 1/4" x 2") Order No. | Automotive① (2 7/16" x 2 7/16") Order No. | Large Plastic② (2 1/16" x 2") Order No. | Automotive Plastic①② (2 7/16" x 2 7/16") Order No. |
|---|---|---|---|---|
| "Blank (brushed aluminum)" | **52NL02** | **52NA02** | — | — |
| "Blank (red)" | **52NL02R** | **52NA02R** | **52ND02R** | **52NE02R** |
| "Blank (Black)" | **52NL02B** | **52NA02B** | **52ND02B** | **52NE02B** |
| **Inscribed legend plates with large brushed aluminum background** | | | | |
| Close | **52NL18** | **52NA18** | — | — |
| Down | **52NL10** | **52NA10** | — | — |
| Emerg Stop | **52NL16** | **52NA16** | — | — |
| Emerg Stop (red) | **52NL16R** | **52NA16R** | — | — |
| Fast-Slow | **52NL33** | **52NA33** | — | — |
| Forward | **52NL05** | **52NA05** | — | — |
| For-Off-Rev | **52NL38** | **52NA38** | — | — |
| For-Rev | **52NL31** | **52NA31** | — | — |
| Hand-Off-Auto | **52NL37** | **52NA37** | — | — |
| High | **52NL07** | **52NA07** | — | — |
| High-Low | **52NL30** | **52NA30** | — | — |
| High-Off-Low | **52NL44** | **52NA44** | — | — |
| In | **52NL21** | **52NA21** | — | — |
| Jog | **52NL13** | **52NA13** | — | — |
| Jog-Forward | **52NL24** | **52NA24** | — | — |
| Jog-Reverse | **52NL25** | **52NA25** | — | — |
| Low | **52NL08** | **52NA08** | — | — |
| Lower | **52NL20** | **52NA20** | — | — |
| Man-Auto | **52NL35** | **52NA35** | — | — |
| Off | **52NL12** | **52NA12** | — | — |
| Off-On | **52NL26** | **52NA26** | — | — |
| On | **52NL11** | **52NA11** | — | — |
| On-Off-Auto | **52NL40** | **52NA40** | — | — |
| Open | **52NL17** | **52NA17** | — | — |
| Open-Close | **52NL34** | **52NA34** | — | — |
| Open-Off-Close | **52NL41** | **52NA41** | — | — |
| Out | **52NL22** | **52NA22** | — | — |
| Pull to Start Push to Stop | **52NL47** | **52NA47** | — | — |
| Raise | **52NL19** | **52NA19** | — | — |
| Raise-Lower | **52NL36** | **52NA36** | — | — |
| Reset | **52NL14** | **52NA14** | — | — |
| Reverse | **52NL06** | **52NA06** | — | — |
| Run | **52NL23** | **52NA23** | — | — |
| Run-Jog | **52NL29** | **52NA29** | — | — |
| Safe-Run | **52NL27** | **52NA27** | — | — |
| Slow-Off-Fast | **52NL39** | **52NA39** | — | — |
| Start | **52NL03** | **52NA03** | — | — |
| Start-Jog | **52NL28** | **52NA28** | — | — |
| Start-Stop | **52NL32** | **52NA32** | — | — |
| Stop | **52NL04** | **52NA04** | — | — |
| Stop (red) | **52NL04R** | **52NA04R** | — | — |
| Up | **52NL09** | **52NA09** | — | — |
| Up-Down | **52NL49** | **52NA49** | — | — |
| Up-Off-Down | **52NL42** | **52NA42** | — | — |
| Inscription plates with custom engraving | | | | |
| "Custom engraved (brushed aluminum)" | **52NL02E** | **52NA02E** | — | — |
| "Custom engraved (red)" | **52NL02RE** | **52NA02RE** | **52ND02RE** | **52NE02RE** |
| "Custom engraved (Black)" | **52NL02BE** | **52NA02BE** | **52ND02BE** | **52NE02BE** |
| Max. number of rows | 2 | 2 | 2 | 2 |
| Letter height | 5/32" | 1/4" | 5/32" | 1/4" |
| Characters per row | 14 | 16 | 14 | 16 |

① Automotive requires 2 1/2" mounting centers
② White letters on plastic nameplate.

# 30 mm Pilot Devices

## Technical Specifications

| | | |
|---|---|---|
| **Standards** | UL Listed File # E22655 | CSA Certified File # LR6535 |
| **Utilization** | Category NEMA | A600/P600 |
| **Degree of Protection** | 52B, 52P-, 52S-, 52M- Operators | NEMA: 1, 3, 3R, 4, 4X, 12 and 13<br>IEC 529; IP10, IP11, IP14, IP52, IP54, IP56 and IP66 |

## Rated Operational Current

**NEMA A600 – 10 Continuous Amps**

| Voltage AC | Make Amps | Break Amps |
|---|---|---|
| 120V | **60** | **6** |
| 240V | **30** | **3** |
| 480V | **15** | **1.5** |
| 600V | **12** | **1.2** |
| Total VA | **7200** | **720** |

**NEMA P600 – Rating Codes for DC Control Circuit Application**

| | |
|---|---|
| **Thermal Continuous Test Current Amps** | 5.0 |
| **Maximum Make or Break; Current / Amps** | |
| 125V | 1.10 |
| 250V | 0.55 |
| 301-600V | 0.20 |
| **Maximum Make or Break Volt amperes at 300V or Less** | 138 |

| | | |
|---|---|---|
| **Contact Blocks** | 52BAK, -BAJ①, -BAH, -BAU, -BJK①<br>52BAR | 600VAC Maximum, Heavy Duty<br>200VAC .25 Amp, 10 Watt Maximum<br>200VDC .50 Amp, 10 Watt Maximum |

① Ⓟ Positively driven contacts.

Contact blocks are suitable for applications down to 5V/1MA low voltage applications as found in PLCs. *52BAR are Class 1; Division 2 Compliant*

| | | | | |
|---|---|---|---|---|
| **Pilot Light** | Full Voltage<br>LED Module<br>Transformer Type | 52PL4/52PL5<br>or<br>52BL4/52BL5 | -B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)<br>-L (24V), -M (120V) -N (240V)<br>-G (120V), -H (240V), -J (480V), -K (600V) | 240V AC/DC Max.<br>240V AC Max.<br>600V AC Max., 50/60 Hz |
| **Push-to-Test** | Full Voltage<br>LED Module<br>Transformer Type | 52PT6<br>or<br>52BT6 | -B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)<br>-L (24V), -M (120V), -N (240V)<br>-G (120V), -H (240V), -J (480V), -K (600V) | 240V AC/DC Max.<br>240V AC Max.<br>600VAC Max., 50/60 Hz |
| **Illuminated Push-Pull** | Full Voltage<br>LED Module<br>Transformer | 52PP2(3,7)<br>or<br>52BP2(3,7) | -B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)<br>-L (24V), -M (120V), - N (240V)<br>-G (120V), -H (240V), -J (480V), -K (600V) | 240V AC/DC Max.<br>240V AC Max.<br>600VAC Max., 50/60 Hz |
| **Twist-to-Release** | Full Voltage<br>LED Module<br>Transformer | 52BR8<br>or<br>52PR8 | -B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)<br>-L (24V), -M (120V), - N (240V)<br>-G (120V), -H (240V), -J (480V), -K (600V) | 240V AC/DC Max.<br>240V AC Max.<br>600VAC Max., 50/60 Hz |
| **Illuminated Selector Switch** | Full Voltage<br>Transformer | 52SA7(A,B,C)<br>or<br>52SX7(A,B,C) | -B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)<br>-G (120V), -H (240V), -J (480V), -K (600V) | 240V AC/DC Max.<br>600V AC Max., 50/60 Hz |
| **Dielectric Strength** | | | 2200V for one minute | |

## Mechanical Design Life Cycles

| | | |
|---|---|---|
| **Vibration** | Frequency 5 - 60Hz.; Disp. .030 inches, sweep 5 minutes for a duration of 30 minutes on each axis. Not to exceed 5.5 G's for maximum of 1 minute. | |
| **Pushbuttons** | Momentary, Non-illuminated<br>Momentary, Illuminated | 5,000,000 Operating Cycles<br>300,000 Operating Cycles |
| **Push-Pull** | Maintained<br>Momentary | 300,000 Operating Cycles<br>2,000,000 Operating Cycles |
| **Twist-to-Release** | | 300,000 Operating Cycles |
| **Selector Switches** | Non-illuminated<br>Illuminated, Key-operated | 2,000,000 Operating Cycles<br>2,000,000 Operating Cycles |
| **Contact Operation** | Standard Contact Black<br>Logic Reed | |
| **Wire Gauge** | #18-12 AWG | |
| **Terminal Screw Torque** | 2-10 lb-in / 20 lb-in max; 8 lb-in recommended | |
| **Locknut Torque** | 15 ft. lbs. max | |
| **Temperature Range** | Operating<br>Storage | 31F to +158F (-35C to +70C)<br>40F to +185F (-40C to +85C) |

All parts are designed and manufactured of corrosion resistant material or are plated or painted as corrosion protection. All contact block contacts are gold flashed as a standard offering. Internal return spring mechanisms of operators and contact blocks of stainless steel. RoHS Compliant.

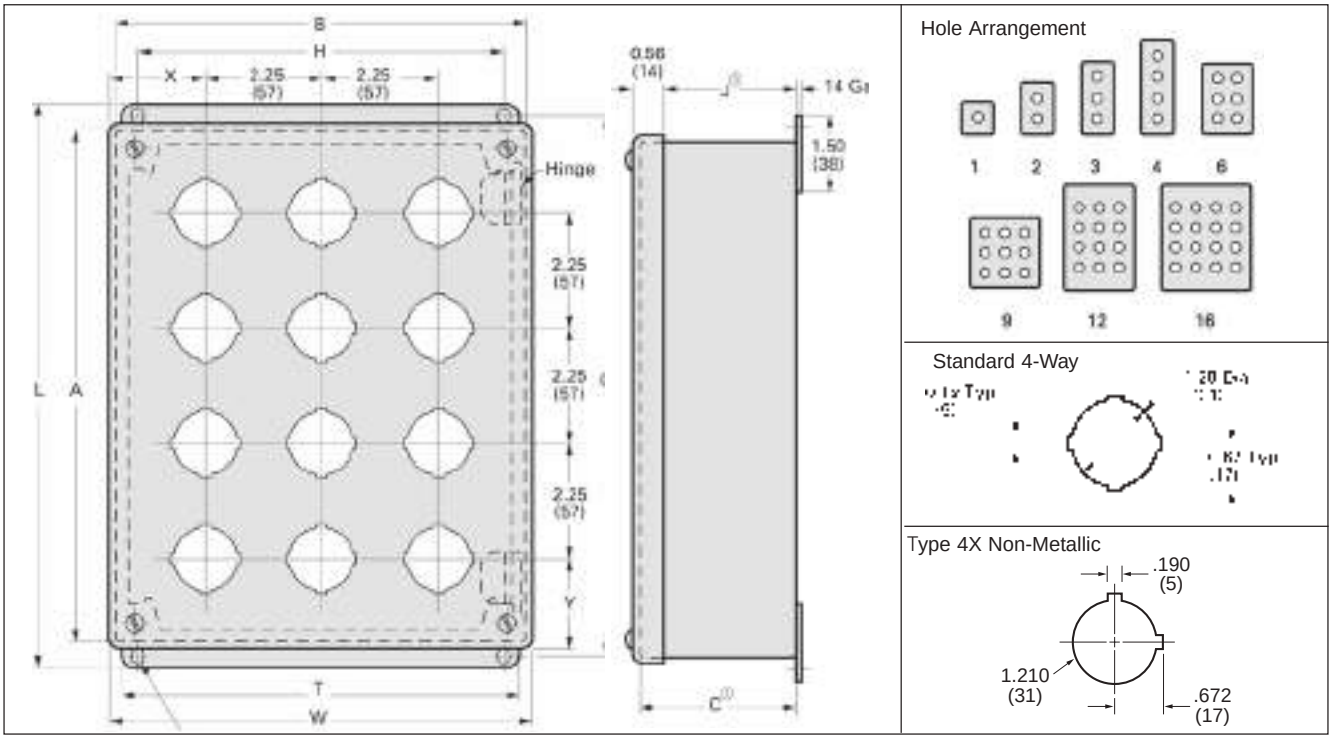
**Declaration of Conformity** — The products listed below, to which this declaration relates, are in conformity with the following standards, following the provisions of the Low Voltage Directive (LVD) (73/23/EEC), and the Electromagnetic Compatibility Directive (89/336/EEC.)

**Products:** Contact Blocks: Cat Nos. 52BAE, 52BAH, 52BAJ, 52BAK, 52BAR, 52BAU and 52BJK, with suffixes. Pilot Lights: Cat Nos 52P, with suffixes. Operators: Cat Nos 52S or 52P, with suffixes.

**Applicable Standards:** EN 60947-5-1 Low-Voltage Switchgear and controlgear. Enclosed devices meet the requirements of environmental ratings of IP10, IP11, IP14, IP52, IP54, and IP56. Open devices, when mounted as instructed, in environmental type IP10, IP11, IP14, IP52, IP54 or IP56 enclosures, maintain the environmental requirements for those enclosure types. Cat. No. 52BP, 52BR, 52PP, and 52PR, 2 Position, Twist-To-Release and 2 Position, Push Pull Maintained operators provided with red operating heads and 52BJK contact blocks meet the requirements of EN 60947-5-5 for Electrical Emergency Stop Device With Mechanical Latching Function (e-stop).

# 30mm Heavy Duty, Watertight/Oiltight, Class 52

## Dimensional drawings




### Type 12/13 and 4X Stainless Steel

| | Enclosure Size | | | Mounting | | Overall | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Units | A | B | C | G | H | L | W | J | T | X | Y |
| 1 | 3.50 (89) | 3.25 (83) | 2.75 (70) | 4.00 (102) | 2.38 (60) | 4.50 (114) | 3.47 (88) | 2.31 (59) | 3.00 (76) | 1.73 (44) | 1.86 (47) |
| 2 | 5.75 (146) | 3.25 (83) | 2.75 (70) | 6.25 (159) | 2.38 (60) | 6.75 (171) | 3.47 (88) | 2.31 (59) | 3.00 (76) | 1.73 (44) | 1.86 (47) |
| 3 | 8.00 (203) | 3.25 (83) | 2.75 (70) | 8.50 (216) | 2.38 (60) | 9.00 (229) | 3.47 (88) | 2.31 (59) | 3.00 (76) | 1.73 (44) | 1.86 (47) |
| 4 | 10.25 (260) | 3.25 (83) | 2.75 (70) | 10.75 (273) | 2.38 (60) | 11.25 (286) | 3.47 (88) | 2.31 (59) | 3.00 (76) | 1.73 (44) | 1.86 (47) |
| 6 | 9.50 (241) | 6.25 (159) | 3.00 (76) | 10.00 (254) | 5.38 (137) | 10.50 (267) | 6.47 (164) | 2.56 (65) | 6.00 (152) | 2.11 (54) | 2.61 (66) |
| 9 | 9.50 (241) | 8.50 (216) | 3.00 (76) | 10.00 (254) | 7.62 (194) | 10.50 (267) | 8.72 (221) | 2.56 (65) | 8.25 (210) | 2.11 (54) | 2.61 (66) |
| 12 | 11.75 (298) | 8.50 (216) | 3.00 (76) | 12.25 (311) | 7.62 (194) | 12.75 (324) | 8.72 (221) | 2.56 (65) | 8.25 (210) | 2.11 (54) | 2.61 (66) |
| 16[2]) | 11.75 (298) | 10.75 (273) | 3.00 (76) | 12.25 (311) | 9.88 (251) | 12.75 (324) | 10.97 (279) | 2.56 (65)[2]) | 10.50 (267) | 2.11 (54) | 2.61 (66) |

### Type 12/13 Extra Deep Enclosures

| | Enclosure Size | | | Mounting | | Overall | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Units | A | B | C | G | H | L | W | J | T | X | Y |
| 1 | 4.00 | 4.00 | 4.75 | 4.50 | 3.12 | 5.00 | 4.22 | 4.31 | 3.75 | 2.11 | 2.11 |
| 2 | 6.00 | 4.00 | 4.75 | 6.50 | 3.12 | 7.00 | 4.22 | 4.31 | 3.75 | 2.11 | 1.98 |
| 3 | 8.00 | 4.00 | 4.75 | 8.50 | 3.12 | 9.00 | 4.22 | 4.31 | 3.75 | 2.11 | 1.86 |
| 4 | 10.00 | 4.00 | 4.75 | 10.50 | 3.12 | 11.00 | 4.22 | 4.31 | 3.75 | 2.11 | 1.73 |
| 6 | 9.50 | 6.25 | 4.75 | 10.00 | 5.38 | 10.50 | 6.47 | 4.31 | 6.00 | 2.11 | 2.61 |
| 9 | 9.50 | 8.50 | 4.75 | 10.00 | 7.62 | 10.50 | 8.72 | 4.31 | 8.25 | 2.11 | 2.61 |
| 12 | 11.75 | 8.50 | 4.75 | 12.25 | 7.62 | 12.75 | 8.72 | 4.31 | 8.25 | 2.11 | 2.61 |
| 16[2]) | 11.75 | 10.75 | 4.75 | 12.25 | 9.88 | 12.75 | 10.97 | 4.31 | 10.50 | 2.11 | 2.61 |

### Type 4X Non-Metallic

| | Enclosure Size | | | Mounting | | Overall | |
|---|---|---|---|---|---|---|---|
| Units | A | B | C | G | H | L | W |
| 1 | 6.00 | 3.19 | 3.63 | 4.88 | 2.94 | 6.63 | 3.81 |
| 2 | 6.00 | 3.19 | 3.63 | 4.88 | 2.94 | 6.63 | 3.81 |
| 3 | 8.26 | 3.19 | 3.63 | 7.13 | 2.94 | 8.88 | 3.81 |
| 4 | 10.51 | 3.19 | 3.63 | 9.37 | 2.94 | 11.13 | 3.81 |

All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

1) Grounding stud in body of enclosure.
2) For stainless steel add 1.75 (45) to depth.

## Notes

## contents

Section Overview 11/2–11/3

**Temperature Monitoring Relays**
3RS2 NEW
- Overview 11/4 – 11/5
- Catalog number builder 11/6
- Technical specifications 11/7 – 11/11
- Selection and ordering data 11/12
- Accessories 11/13

**Thermistor Motor Protection**
- Overview 11/15
- Benefits and Application 11/16
- Technical specifications 11/17–11/18
- Function Diagrams 11/19
- Technical Data 11/20–11/21
- 3RN2 Selection and ordering data 11/22
- Accessories 11/23

**Timing Relays**
- General Data 11/24

3RP25 Timing Relays, 17.5 mm and 22.5 mm
- Overview 11/25–11/26
- Technical specifications 11/28
- Circuit diagrams 11/29–11/33
- Functions 11/34–11/39
- Selection and ordering data 11/40
- Accessories 11/41

3RP20 Timing Relays, 45mm
- Overview 11/42
- Technical specifications 11/43
- Functions 11/44 11/45
- Selection and ordering data 11/46
- Accessories 11/47

7PV15 Timing Relays, 17.5mm
- Overview 11/48
- Technical specifications 11/49
- Circuit diagrams 11/49–11/50
- Functions 11/51–11/52
- Selection and ordering data 11/53

**Monitoring Relays for Stand-alone Installation**
3UG45, 3UG46 General data 11/54–11/55
- Line monitoring 11/56–11/60
- Voltage monitoring 11/61–11/63
- Current monitoring 11/64–11/65
- Power factor and active current monitoring 11/66–11/68
- Residual-current monitoring relays 11/69–11/70
- 3UL23 residual-current transformers 11/71

Insulation monitoring
- General data 11/72–11/73
- For ungrounded AC networks 11/74–11/75
- For ungrounded DC and AC networks 11/76–11/80
- Level monitoring sensors 11/81
- Speed monitoring 11/82–11/84
- Accessories 11/85

**Monitoring Relays For Stand-alone Installation for IO-Link**
3UG48 General data 11/86–11/88
- Line monitoring 11/89–11/91
- Voltage monitoring 11/92–11/94
- Current monitoring 11/95–11/97
- Power factor and active current monitoring 11/98–11/101
- Residual-current monitoring relays 11/102–11/104
- Speed monitoring 11/105–11/107
- Accessories 11/108

**DC Load Monitoring Relays**
3UG546 NEW
- Overview 11/109
- Technical data 11/110 – 11/112
- Selection and ordering data 11/113
- Accessories 11/113

**Coupling Relays – Narrow Design**
3RQ3 Overview 11/114
- Benefits 11/115
- Technical specifications 11/116–11/117
- Circuit diagrams 11/118
- Selection and ordering data 11/119–11/121
- Accessories

**Coupling Relays with Industrial Enclosure**
3RQ2 Overview 11/122
- Technical specifications 11/123
- Selection and ordering data 11/124
- Accessories 11/124

**Signal Converters/Interface Converters**
3RS70 Overview 11/126
- Technical specifications 11/127–11/129
- Circuit diagrams 11/130
- Selection and Ordering 11/131
- Accessories 11/132

**Power Relays**
3TG10
- Overview 11/133
- Selection and ordering data 11/133
- Technical specifications 11/134–11/135
- Accessories, Circuit Diagrams, Dimensions 11/136

**Plug-in Relays**
3TX71
- Selection and ordering data 11/137–11/140
- Technical specifications 11/141–11/142
- Circuit diagrams 11/143–11/145
- Dimensions 11/146–11/152

LZS
- Selection and ordering data 11/153–11/157
- Technical specifications 11/158–11/160

# contents

## 3RS2 temperature monitoring relays

**3RS10/3RS20 temperature monitoring relay for RTD or Thermocouple** Page

**Selection and ordering data**

- Overview 11/4 – 11/5
- Selection and Ordering 11/12
- Accessories 11/13

Catalog number builder 11/6
Technical specifications 11/7 – 11/11


## 3RN2 thermistor motor protection

**3RN20 thermistor motor protection for PTC temperature detectors** Page

**Selection and ordering data**

- Overview 11/15
- Screw and Spring-type connection 11/16
- Accessories 11/17

Technical data 11/17
Function diagrams 11/18
Functions 11/19
Circuit diagrams 11/20
Dimension drawings 11/22


## 3RP20 timing

**3RP20 timing relays** Page

**Selection and ordering data**

- Overview 11/42
- Screw and Spring-type connection 11/46

Technical data 11/43
Function diagrams 11/44


## Timing Relays

**3RP25 timing relays** Page

**Selection and ordering data**

- Overview 11/25
- Screw and Spring-type connection 11/40

Technical data 11/28
Circuit diagrams 11/29
Function diagrams 11/34

**7PV solid-state relay** Page

**Selection and ordering data**

- Screw connection 11/29
- Accessories 11/29

Technical data 11/29
Dimension drawings 11/29

**3RA28 and 3RT19 time delay blocks for mounting on 3RT contactors**

**Selection and ordering data**

- See Section 2, page 2/70

# contents

## 3UG monitoring relays

**For electrical and mechanical quantities, including connection to IO-Link**


Page

**Catalog Numbering system**

- 3UG45, 3UG46 11/54
- 3UG48 11/87

3UG45, 3UG46 11/54 – 11/85
3UG48 11/86 – 11/108

**DC Load Monitor with Profinet**


Page

**Selection and ordering data**

- 3UG546 Selection Data 11/113

Overview 11/109
Technical data 11/110 – 11/112


## Coupling relays and interfaces

**3RQ3 slim design 3RQ2 standard width**


Page

**Selection and ordering data**

- 3RQ3 Selection Data 11/119
- 3RQ2 Selection Data 11/124

Overview 11/114
Technical data 11/116
Accessories 11/122


## Coupling relays and interfaces

**3RS70 signal converter**


Page

**Selection and ordering data**

- Screw and Spring-type connection 11/131

Overview 11/126
Technical data 11/127
Circuit diagrams 11/130

**3TG10 power relay, 20A max. resistance load pole**


Page

**Selection and ordering data**

- AC and DC operation, hum-free With screw connection or tab connector 11/133
- Accessories 11/136

Application 11/133
Technical data 11/134
Circuit diagrams 11/136
Position of terminals 11/136
Dimension drawings 11/136

**3TX71 and LZ series**


Page

**Selection and ordering data**

- AC and DC operation 11/137

Technical data 11/141
Circuit diagrams 11/143
Dimension drawings 11/146

## SIRIUS 3RS2 temperature monitoring relays NEW



### Overview

1 Diagnostics LEDs
2 Setting of the limit temperature
3 Selection of the temperature range and the sensor type
4 DIP switch for parameterization
5 Display
6 Keypad for parameterization

SIRIUS 3RS2 temperature monitoring relays

**More information**

Homepage, see www.usa.siemens.com/relays
Industry Mall, see www.siemens.com/product?3RS2
Conversion tool for article numbers, see www.siemens.com/sirius/conversion-tool

The 3RS2 temperature monitoring relays can be used to measure temperatures in solid, liquid and gas media. The temperature is acquired by means of sensors in the medium, evaluated by the device and monitored for overshoot, undershoot or location within a specified range (window function).

The family comprises an analog multi-function device which can be set using DIP switches and potentiometers, and digital devices which can be parameterized via an intuitive LCD display. The digital device is also available as a version with IO-Link.

All 3RS26 digital devices, including the 3RS28 versions with IO-Link, have safety certification according to IEC 61508/62061 or ISO 13849 up to SIL 1/PL c as well as EN 14597 for heat generating systems and EN 50156 for burners.

Furthermore, the functionality of the 3RS26/3RS28 digital devices can be expanded using a 3RS29 sensor expansion module with two additional resistance sensors, e.g. for monitoring three-phase motors or transformers.

The 3RS29 sensor expansion module also features an additional relay for outputting the sensor status, and an additional analog input 4 to 20 mA. This analog input allows ATEX applications to be implemented when using an intrinsically safe temperature sensor or other appropriate type of protection. The 3RS29 is connected wirelessly via a SIL 1-certified infrared communication interface.

Notes:

The SIRIUS 3RS2 temperature monitoring relays fully replace the 3RS1 predecessor. The large number of 3RS1 analog devices can simply be replaced with the new 3RS25 analog multi-function device. The reduced variety of order numbers means the successors can be selected quickly and easily.

The 3RS2 digital devices fully supersede the functionality of the 3RS1 predecessor in a single device type that is now able to use resistance sensors and thermocouples – all at half the width of 22.5 mm instead of 45 mm.

#### *Analog multi-function devices*

SIRIUS 3RS25 analog multi-function device

The analog multi-function device is parameterized using DIP switches and potentiometers. The device can be used to monitor a sensor with a limit value for overshoot or undershoot. The most common temperature ranges with Pt100 resistance sensors or type J or K thermocouples can be used for this purpose. This device can therefore also be used as a compact, easy-to-adjust two-point controller. The relay CO contact output enables loads to be switched directly. The NC contact can optionally be used as a signaling contact.

#### *Digital devices (1 sensor)*

SIRIUS 3RS26 digital device (1 sensor) with 3RS29 sensor expansion module

The SIRIUS 3RS26 digital device with display enables sensors with two limit values to be monitored using all common resistance sensors and thermocouples.

The additional limit value means that, in addition to overshoot and undershoot, an additional warning value can be output to the relay outputs. Alternatively, the second monitoring value can also be used to implement range monitoring. The digital devices can thus also be used as compact two or three-point controllers, with Manual or Remote RESET.

Thanks to safety certification, this device can be used in a wide range of applications.

The functionality of the SIRUS 3RS26 and 3RS28 digital devices can be expanded wirelessly with the sensor expansion module via a SIL 1-certified infrared communication interface. This combination then features three sensors and is designed for monitoring large three-phase motors and transformers. It goes without saying that the additional sensors can also be used for other applications.

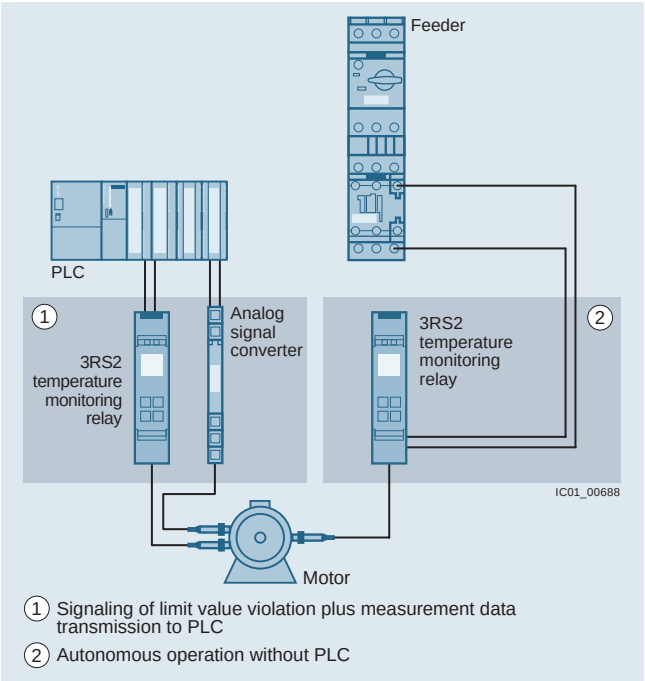
***Digital devices (1 sensor) for IO-Link***

SIRIUS 3RS28 digital device (1 sensor) for IO-Link with 3RS29 sensor expansion module

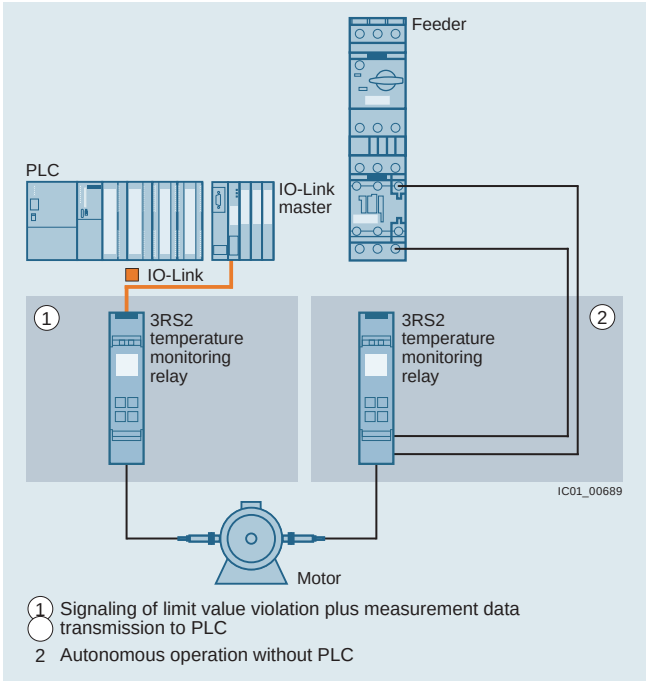
The 3RS28 digital temperature monitoring relays for IO-Link feature an IO-Link communication interface in addition to a display. They include all functions of the 3RS26 digital device and can also be operated on L+/L- as a stand-alone installation with 24 V DC.

Note:

The IO-Link devices can be reset on the display or via IO-Link.




Conventional temperature monitoring relays




Temperature monitoring relays for IO-Link

Notes:

Devices required for communication via IO-Link:

- Any controller that supports IO-Link (e.g. ET 200SP with CPU or S7-1200).
- IO-Link master (e.g. CM 4xIO-Link for SIMATIC ET 200SP.

Each monitoring relay requires an IO-Link channel.

Notes on security

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.usa.siemens.com/industrialsecurity

### *Article No. scheme*

| Product versions | | Article number |
|---|---|---|
| **Temperature monitoring relays** | | **3RS2** □ **0 0 –** □ □ □ □ **0** |
| Device type | e.g. 5 = analogically adjustable | □ |
| Connection type | Screw terminals | **1** |
| | Spring-loaded terminals (push-in) | **2** |
| Number of CO contacts | e.g. A = 1 CO contact, B = 2 CO contacts | □ |
| Rated control supply voltage | A = 24 V AC/DC, W = 24 ... 240 V AC/DC | □ |
| Type of rated control supply voltage | 3 = AC/DC, 4 = DC | □ |
| Example | | **3RS2 5 0 0 – 1 A A 3 0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers. For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

- Customary screw and spring-loaded terminals for quick and reliable wiring
- Reduced space requirement in the control cabinet thanks to a consistent width of 22.5 mm
- Easy parameterization thanks to new display and intuitive operating concept
- Reduced stock keeping and logistics thanks to heavily reduced device variance
- Cost savings thanks to additional scalable functionality with integrated infrared interface
- Communication via IO-Link for 3RS28
- Global applicability and exportability thanks to compliance with international standards and certifications
- Problem-free use in a wide range of applications thanks to Safety bundle with certification according to SIL 1/PL c, ATEX, EN 14597 for heat generating systems and EN 50156 for burners
- All versions with removable terminals
- All versions with screw or spring-loaded terminals with push-in functionality

## Application

The SIRIUS 3RS2 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Simple and compact two-point control
- Motor and system protection
- Control cabinet temperature monitoring
- Freeze monitoring
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Additionally for digital devices

- Simple and compact two or three-point control
- Burner acc. to EN 50156
- Temperature monitors or temperature limiters[1)] according to EN 14597
- ATEX explosion protection according to EN 50495

[1)] A 3RS29 sensor expansion module with an additional sensor is required for the function as a temperature limiter.

## Technical specifications

**More information**

Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25719/td

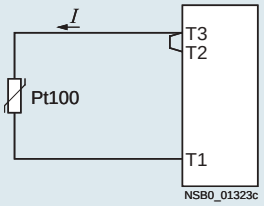
Equipment Manual and internal circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/ps/25719/man

FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25719/faq

### *Connection of resistance-type thermometers*

Two-wire measurement

When two-wire temperature sensors are used, the resistances of the sensor and wiring are added. The resulting systematic error must be taken into account when the evaluation unit is calibrated. A jumper must be clamped between terminals T2 and T3 for this purpose.




Wiring errors

The errors that are generated by the wiring comprise approximately 2.5 K/Ω. If the resistance of the cable is not known and cannot be measured, the wiring errors can also be estimated using the following table.

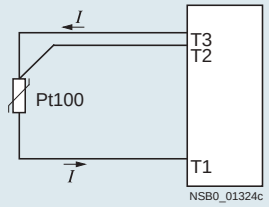
Temperature drift dependent on the length and cross-section of the cable with Pt100 sensors and an ambient temperature of 20 °C, in K:

| Cable length in m | Cross-section mm² | | | |
|---|---|---|---|---|
| | 0.5 | 0.75 | 1 | 1.5 |
| | Temperature drift in K: | | | |
| 0 | 0 | 0 | 0 | 0 |
| 10 | 1.8 | 1.2 | 0.9 | 0.6 |
| 25 | 4.5 | 3.0 | 2.3 | 1.5 |
| 50 | 9.0 | 6.0 | 4.5 | 3.0 |
| 75 | 13.6 | 9.0 | 6.8 | 4.5 |
| 100 | 18.1 | 12.1 | 9.0 | 6.0 |
| 200 | 36.3 | 24.2 | 18.1 | 12.1 |
| 500 | 91.6 | 60.8 | 45.5 | 30.2 |

Example: On a Pt100 sensor with a cable length of 10 m and a conductor cross-section of 1 mm$^2$ the temperature drift equals 0.9 K.

Three-wire measurement

To minimize the effects of the line resistances, a three-wire circuit is often used. Using the additional cable, two measuring circuits can be formed of which one is used as a reference. The evaluation unit can then automatically calculate the line resistance and take it into account.




### *Connection of thermocouples*

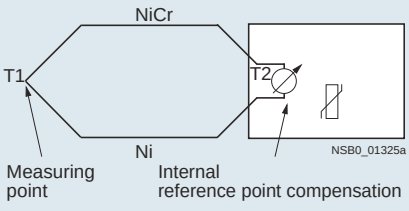
Based on the thermo-electrical effect, a differential temperature measurement will be performed between the measuring point and the evaluation unit.

This principle assumes that the evaluation unit knows the temperature at the clamping point (T2). For this reason, the 3RS2 temperature monitoring relays have an integral compensator that determines this comparison temperature and builds it into the result of the measurement. The thermal sensors and cables must therefore be insulated.

The absolute temperature is therefore calculated from the ambient temperature of the evaluation unit and the temperature difference measured by the thermocouple.

Temperature detection is therefore possible (T1) without needing to know the precise ambient temperature of the clamping point at the evaluation unit (T2).

The connecting cable is only permitted to be extended using connecting leads that are made from the same material as the thermocouple. If a different type of conductor is used, an error will result in the measurement.



***Principle of operation***

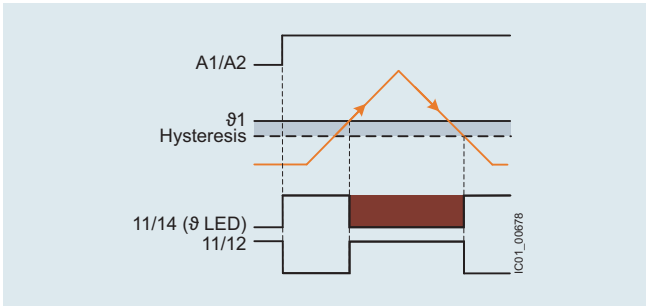
Once the temperature has reached the set threshold value ϑ1, the K1 output relay changes its switching state as soon as the set time *t* has elapsed (K2 responds in the same manner to ϑ2). The delay time can only be adjusted with digital units (on analog units *t* = 0).

When Auto RESET (AUTO RST) is set, the relays return to their original state as soon as the temperature reaches the set hysteresis value.

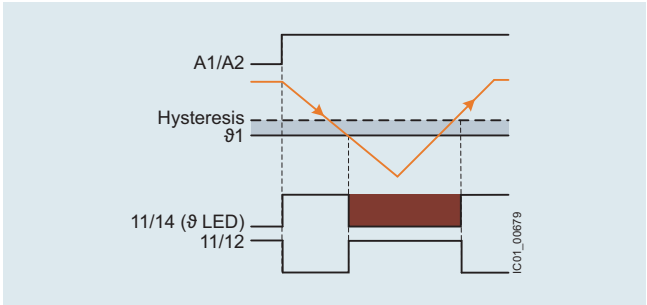
The memory function (MEMORY) allows the status to be saved even in the event of a power failure.

***3RS25 analog multi-function devices***

Temperature overshoot



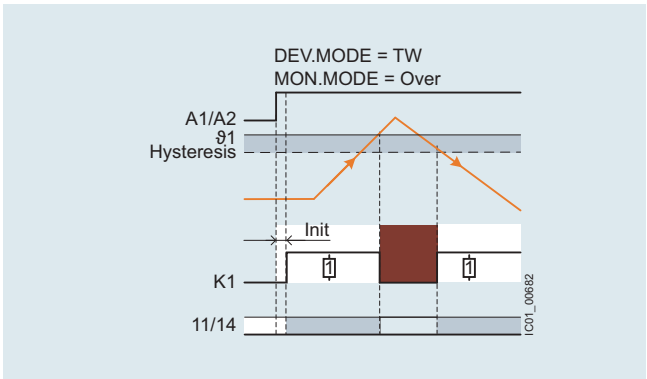

Temperature undershoot



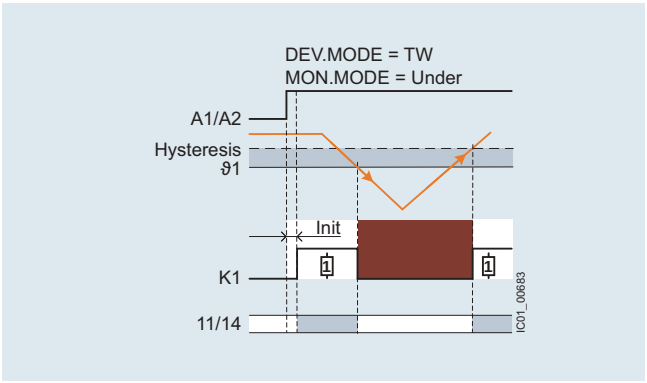

***3RS26, 3RS28 digital devices (1 sensor) with Safety function***

Temperature monitor according to EN 14597

Temperature overshoot

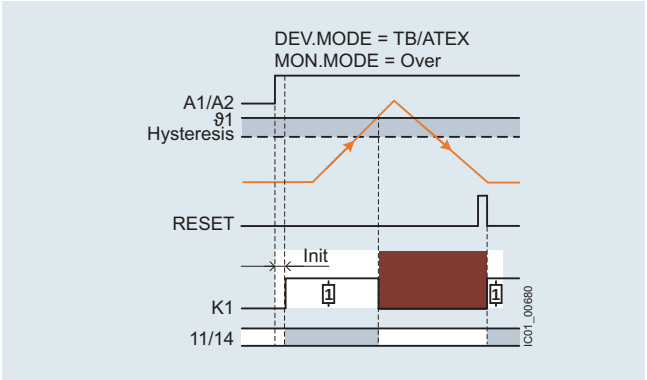



Temperature undershoot

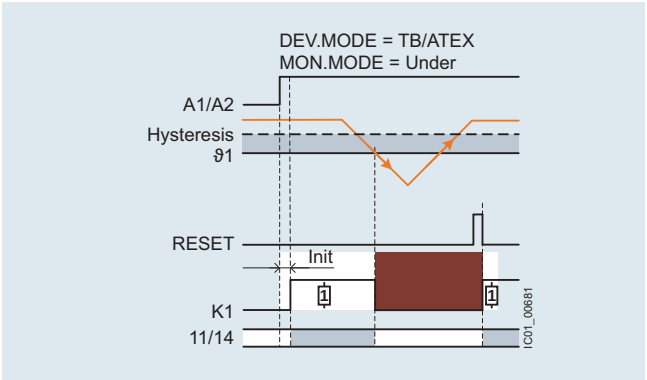



Temperature limiter according to EN 14597/ATEX

Temperature overshoot

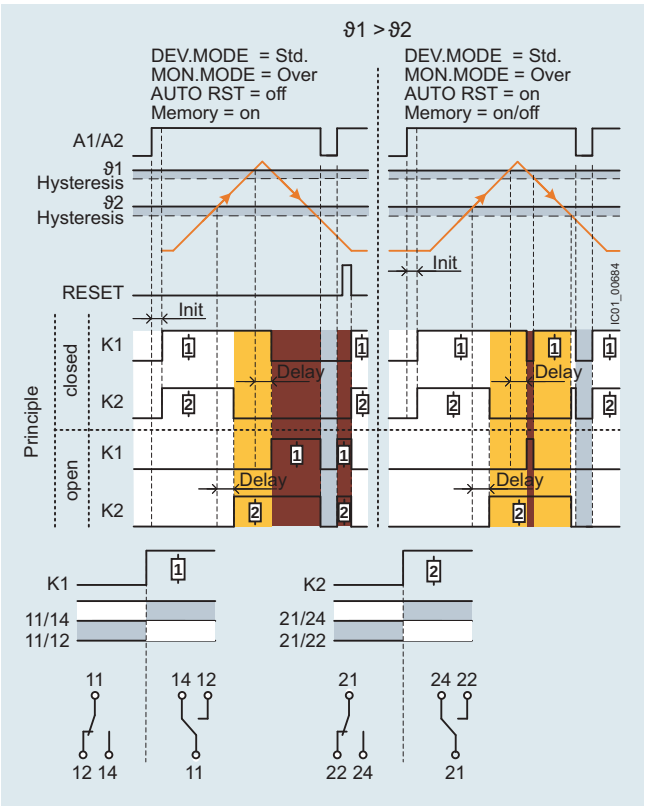



Temperature undershoot

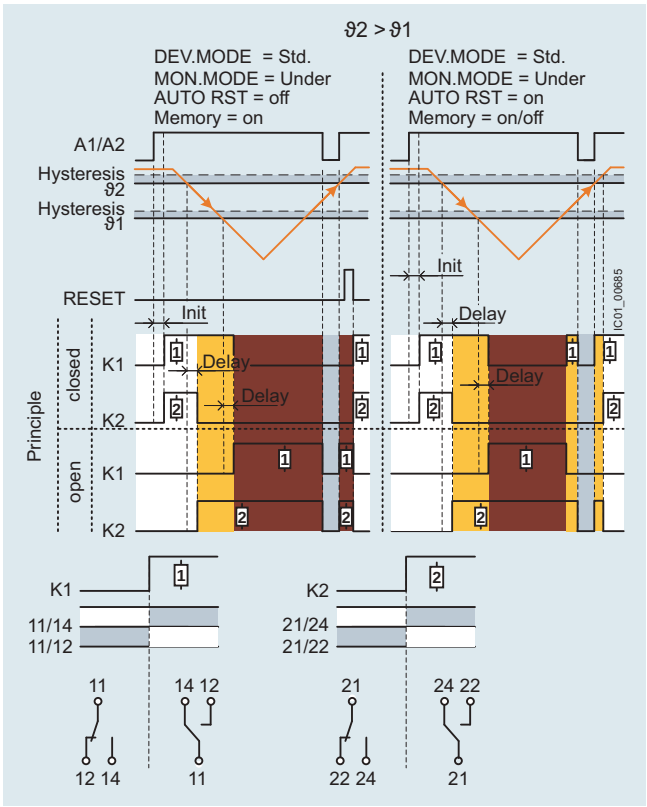


***3RS26, 3RS28 digital devices (1 sensor)***

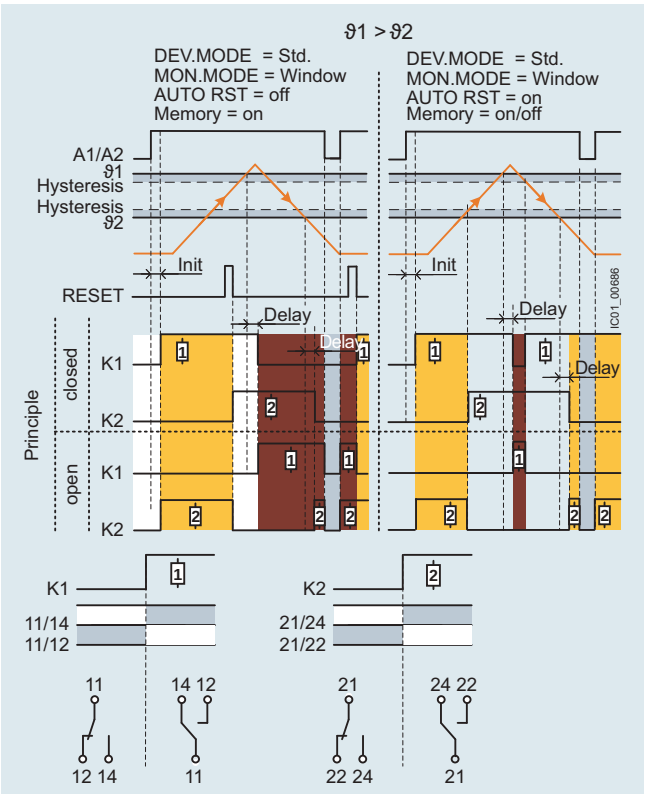
Temperature overshoot



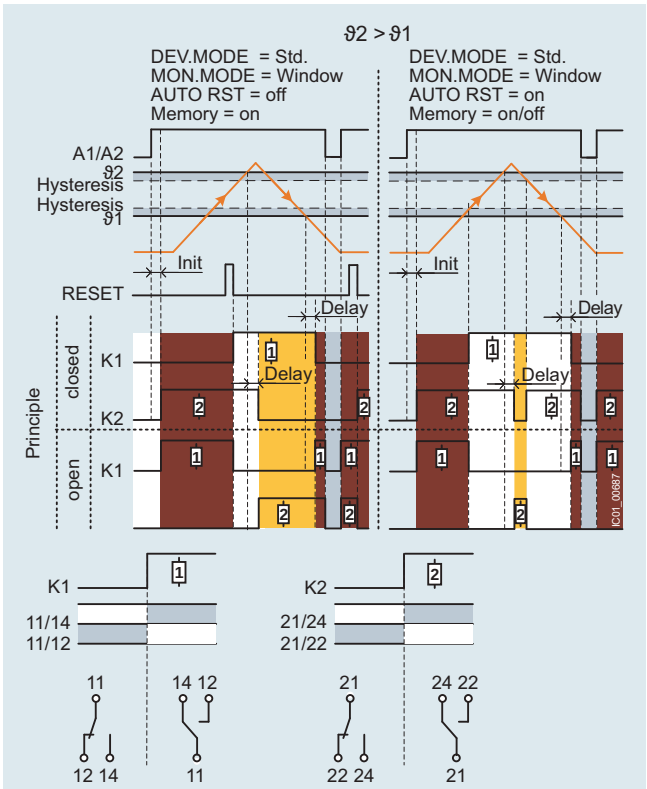

Temperature undershoot




Range monitoring

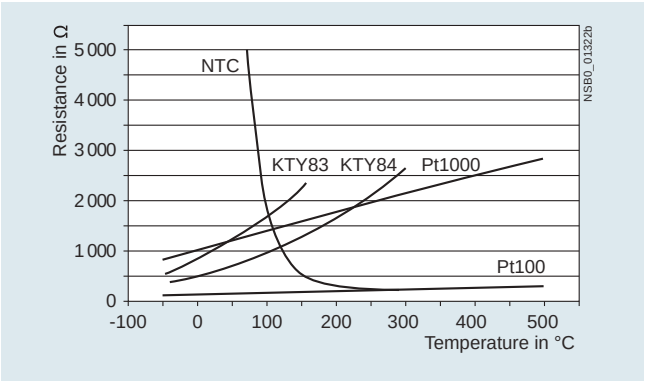



Range monitoring



### *Characteristic curves*

For resistance sensors




Characteristic curves for resistance sensors

The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

Measuring ranges and switch position for analog devices in °C for Pt100 resistance sensor

| Measuring range in °C | Switch position in °C | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | min. | | | | | 1/2 | | | | | max. |
| 0 ... +100 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| 0 ... +200 | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 |
| -50 ... +50 | -50 | -40 | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 |

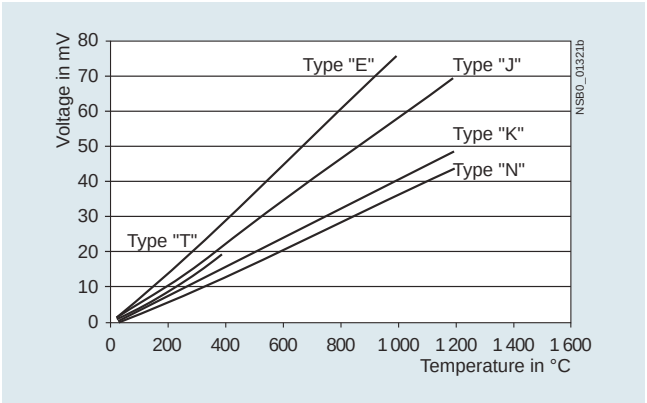
Measuring ranges for digital devices in °C for resistance sensor

| Sensor type | Short circuit | Open circuit | 3RS26, 3RS28 Measuring range in °C | 3RS26, 3RS28 Measuring range in °F |
|---|---|---|---|---|
| Pt100 | ✓ | ✓ | -50 ... +750 | -58 ... +1 382 |
| Pt1000 | ✓ | ✓ | -50 ... +500 | -58 ... +932 |
| KTY83-110 | ✓ | ✓ | -50 ... +175 | -58 ... +347 |
| KTY84 | ✓ | ✓ | -40 ... +300 | -40 ... +572 |
| NTC[1)] | ✓ | -- | +80 ... +160 | +176 ... +320 |

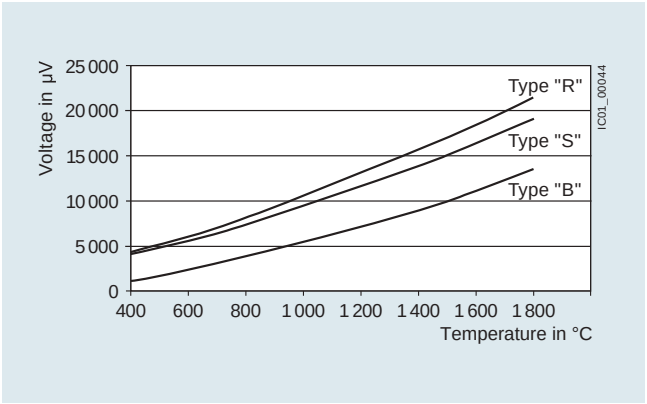
✓ Detection possible
-- Detection not possible

[1)] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For thermocouples




Characteristic curves for thermocouples J, K, T, E, N




Characteristic curves for thermocouples S, R and B

Measuring ranges and switch position for analog devices in °C for thermocouple types J, K

| Measuring range in °C | Switch position in °C | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | min. | | | | | 1/2 | | | | | max. |
| 0 ... +200 | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 |
| 0 ... +600 | 0 | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 |
| +500 ... +1 000 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1 000 |

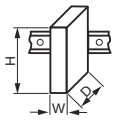
Measuring ranges for digital devices in °C/°F for thermocouples

| Sensor type | Short circuit | Open circuit | 3RS26, 3RS28 Measuring range in °C | 3RS26, 3RS28 Measuring range in °F |
|---|---|---|---|---|
| J | -- | ✓ | -99 ... +1 200 | -146.2 ... +2 192 |
| K | -- | ✓ | -99 ... +1 350 | -146.2 ... +2 462 |
| T | -- | ✓ | -99 ... +400 | -146.2 ... +752 |
| E | -- | ✓ | -99 ... +999 | -146.2 ... +1 830.2 |
| N | -- | ✓ | -99 ... +1 300 | -146.2 ... +2 372 |
| S | -- | ✓ | 0 ... +1 750 | +32 ... +3 182 |
| R | -- | ✓ | 0 ... +1 750 | +32 ... +3 182 |
| B | -- | ✓ | +400 ... +1 800 | +752 ... +3 272 |

✓ Detection possible
-- Detection not possible

## SIRIUS 3RS2 temperature monitoring relays NEW



| Type | | | 3RS25 | 3RS26<br>3RS28 | 3RS29 |
|---|---|---|---|---|---|
| **General technical specifications** | | | | | |
| Dimensions (W x H x D)  | | mm | 22.5 x 100 x 90 | | |
| **Permissible ambient temperature** | | | | | |
| • During operation | | °C | -25 ... +60 | | |
| • During transport | | °C | -40 ... +85 | | |
| • During storage | | °C | -40 ... +85 | | |
| **Degree of protection** | | | 20 | | |
| **Mounting position** | | | Any | | |
| **Type of mounting** | | | Screw fixing and snap-on mounting onto 35 mm standard mounting rail | | |
| **Connection type** | | | **Screw terminals** | | |
| • Tightening torque | | Nm | 0.6 ... 0.8 | | |
| • Solid | | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | | |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | | |
| • AWG cables, solid | | AWG | 1 x (20 ... 12), 2 x (20 ... 14) | | |
| **Connection type** | | | **Spring-loaded terminals (push-in)** | | |
| • Solid | | $mm^2$ | 1 x (0.5 ... 4) | | |
| • Finely stranded without end sleeve | | $mm^2$ | 1 x (0.5 ... 4) | | |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.5 ... 2.5) | | |
| • AWG cables, solid or stranded | | AWG | 1 x (20 ... 12) | | |
| **Auxiliary circuit** | | | | | |
| **Type of voltage** | | | AC/DC | | |
| **Operating range factor of the control supply voltage, rated value** | | | | | |
| • At AC at 50 Hz | | | 0.85 ... 1.1 | | |
| • At AC at 60 Hz | | | 0.85 ... 1.1 | | |
| • At DC | | | 0.85 ... 1.1 | | |
| **Operating frequency, rated value** | | Hz | 50 ... 60 | | |
| **Number of measuring circuits** | | | 1 | | 3 |
| **Number of CO contacts for auxiliary contacts** | | | 1 | 2 | 0 |
| **Product function** | | | | | |
| • Removable terminal for auxiliary and control circuit | | | Yes | | |
| • Auto RESET | | | Yes | | -- |
| • Error memory | | | -- | Yes | |
| • External RESET | | | -- | Yes | |
| **ATEX** | | | | | |
| **Certificate of suitability** | | | | | |
| • Relative to ATEX | | | -- | Yes, with 3RS29 sensor expansion module | Yes, with 3RS26/3RS28 digital device |
| **Safety integrity level (SIL) according to IEC 61508** | | | -- | 1 | |
| **Performance level (PL) according to EN ISO 13849-1** | | | -- | c | |

## Selection and ordering data

| | Type of sensor/ connectable | Rated control supply voltage $U_s$ 50/60 Hz AC | Suitability for use | SD | Screw terminals | | SD | Spring-loaded terminals (push-in) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Article No. | Price per PU | | Article No. | Price per PU |
| | | V | | d | | | d | | |
| **Temperature monitoring relays** | | | | | | | | | |
| | ***Analog multi-function device, 1 sensor, 1 threshold value*** | | | | | | | | |
| 3RS2500-1AA30 | Resistance sensors: Pt100<br>Thermocouples: Type J, K | 24 AC/DC | -- | 10 | **3RS2500-1AA30** | | 10 | **3RS2500-2AA30** | |
| | | 24 ... 240 AC/DC | -- | 10 | **3RS2500-1AW30** | | 10 | **3RS2500-2AW30** | |
| | ***Digital device, 1 sensor, 2 threshold values*** | | | | | | | | |
| 3RS2600-1BA30 | Resistance sensors: Pt100, Pt1000, KTY83-110, KTY84, NTC<br>Thermocouples: Type J, K, T, E, N, S, R, B | 24 AC/DC | -- | 10 | **3RS2600-1BA30** | | 10 | **3RS2600-2BA30** | |
| | | 24 ... 240 AC/DC | -- | 10 | **3RS2600-1BW30** | | 10 | **3RS2600-2BW30** | |
| | ***Digital device for IO-Link, 1 sensor, 2 threshold values*** | | | | | | | | |
| 3RS2800-1BA40 | Resistance sensors: Pt100, Pt1000, KTY83-110, KTY84, NTC<br>Thermocouples: Type J, K, T, E, N, S, R, B | 24 DC | -- | 10 | **3RS2800-1BA40** | | 10 | **3RS2800-2BA40** | |
| **Sensor expansion modules** | | | | | | | | | |
| 3RS2900-1AA30 | ***2 additional resistance sensors, analog input 4 ... 20 mA, ATEX via analog input, status relay*** | | | | | | | | |
| | Resistance sensors: Pt100, Pt1000, KTY83-110, KTY84, NTC | 24 AC/DC | For 3RS26/ 3RS28 digital devices | 10 | **3RS2900-1AA30** | | 10 | **3RS2900-2AA30** | |
| | | 24 ... 240 AC/DC | | 10 | **3RS2900-1AW30** | | 10 | **3RS2900-2AW30** | |

For accessories, see page 11/13.

## Accessories

| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Terminals for SIRIUS devices in the industrial standard mounting rail enclosure** | | | | | | |
| 3ZY1122-1BA00 | **Removable terminals** | | **Screw terminals** | | | |
| | • 2-pole, up to 1 x 4 mm² or 2 x 2.5 mm² | 2 | **3ZY1122-1BA00** | | 1 | 6 units |
| | | | **Spring-loaded terminals (push-in)** | | | |
| | • 2-pole, up to 1 x 4 mm² or 2 x 1.5 mm² | 2 | **3ZY1122-2BA00** | | 1 | 6 units |
| **Accessories for enclosures** | | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs**<br>For wall mounting | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| 3ZY1440-1AA00 | **Coding pins**<br>For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals | 2 | **3ZY1440-1AA00** | | 1 | 12 units |
| 3ZY1450-1AB00 | **Hinged cover**<br>Replacement cover, without terminal labeling, titanium gray | | | | | |
| | • 22.5 mm wide | 2 | **3ZY1450-1AB00** | | 1 | 5 units |
| **Tools for opening spring-loaded terminals** | | | | | | |
| 3RA2908-1A | **Screwdrivers**<br>For all SIRIUS devices with spring-loaded terminals | | **Spring-loaded terminals (push-in)** | | | |
| | Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

# SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

## General data



### Overview

SIRIUS 3RS14, 3RS15 temperature monitoring relay

**More information**

Homepage, see www.siemens.com/relays
Industry Mall, see www.siemens.com/product?3RS14

The temperature monitoring relays for IO-Link are used to measure temperatures in solid, liquid and gas media.

The temperatures are acquired by means of sensors in the medium, evaluated by the device and monitored up to two limit values for overshooting or undershooting a working range (window function).

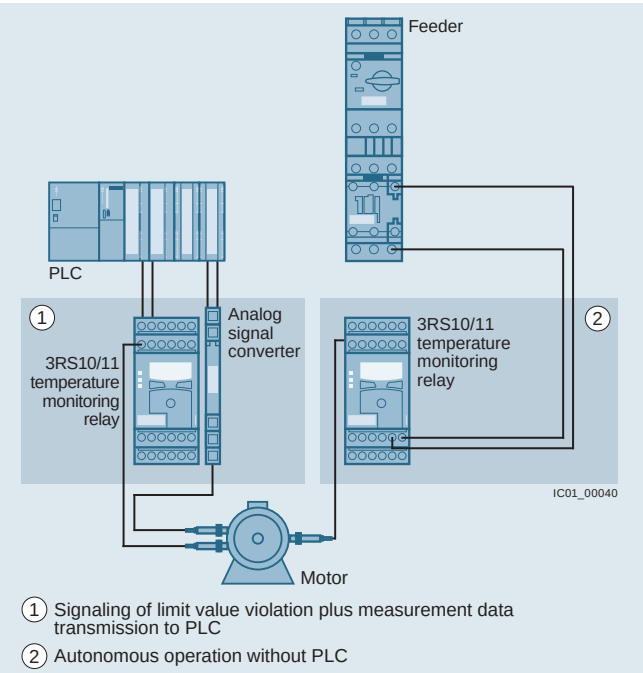
In addition to warnings and disconnection in case of temperature deviations, the devices can also be used as a temperature controller (one-point, two-point or three-point control).

The devices differ from one another in terms of the type and number of connectable temperature sensors.

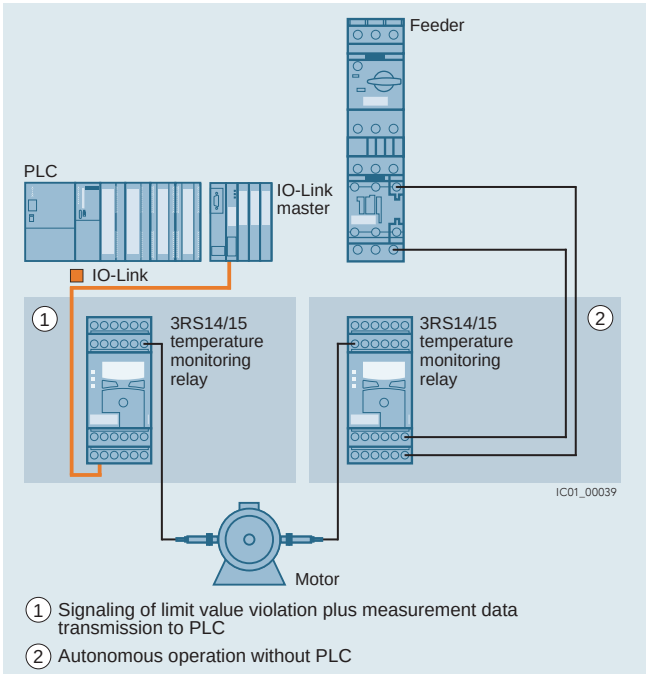
- 3RS14: Connection for resistance sensor
- 3RS15: Connection for thermocouples

| Function | Temperature monitoring relays | | |
|---|---|---|---|
| | 3RS1440 | 3RS1441 | 3RS1540 |
| **Connectable sensor type** | | | |
| Number of sensors monitored | 1 | 3 | 1 |
| Resistance sensor | ✓ | ✓ | -- |
| Thermocouples | -- | -- | ✓ |
| **Temperature monitoring** | | | |
| Temperature monitoring – overshoot | ✓ | ✓ | ✓ |
| Temperature monitoring – undershoot | ✓ | ✓ | ✓ |
| Number of adjustable limit values | 2 | 2 | 2 |

✓ Function supported
-- Function not supported




Conventional temperature monitoring relays




Temperature monitoring relays for IO-Link

Notes:

Devices required for the communication via IO-Link:

- Any controller that supports IO-Link (e.g. ET 200SP with CPU or S7-1200), see Catalog ST 70.

Each monitoring relay requires an IO-Link channel.

Notes on security

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information on Industrial Security, see www.usa.siemens.com/industrialsecurity.

## Overview

SIRIUS 3RN2 thermistor motor protection

**More information**

Homepage, see www.usa.siemens.com/relays
Industry Mall, see www.siemens.com/product?3RN2
For the conversion tool, e.g. from 3RN1 to 3RN2, see www.siemens.com/sirius/conversion-tool

Thermistor motor protection devices are used for direct monitoring of the motor winding temperature. For this purpose, the motors are equipped with temperature-dependent resistors (PTC) that are directly installed in the motor winding and abruptly change their resistance at their temperature limit.

### *Versions*

SIRIUS 3RN2 thermistor motor protection relays are available in the following versions:

- 3RN2000 compact evaluation unit
- 3RN2010 compact/standard evaluation unit
- 3RN2012-.BW31 bistable evaluation unit
- 3RN2011, 3RN2012-...30, 3RN2013 standard evaluation unit with ATEX approval
- 3RN2023 evaluation unit with ATEX approval and 2 sensor circuits for warning and disconnection

They comply with

- IEC 60947-8. Low-voltage switchgear and controlgear – Part 8: "Control units for built-in thermal protection (PTC) for rotating electrical machines"
- IEC 61000-6-2, IEC 61000-6-4. "Electromagnetic compatibility for industrial-process measurement and control equipment"

The 3RN2 thermistor motor protection relays with ATEX approval fulfill SIL1 in compliance with EN 50495.

The terminals of the auxiliary contacts are designated in accordance with EN 60947-1.

3RN2 evaluation units are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing using an adapter (accessory).

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Thermistor motor protection relay with PTC sensor, type A** | | **3RN20** | □ | □ | – | □ | □ | □ | □ | □ | | |
| Number and version of the sensor circuits | 1 sensor circuit, supply voltage = root voltage | | **0** | | | | | | | | | |
| | 1 sensor circuit | | **1** | | | | | | | | | |
| | 2 sensor circuits for warning and disconnection | | **2** | | | | | | | | | |
| RESET | Auto RESET | | | **0** | | | | | | | | |
| | Manual RESET, with open-circuit and short-circuit detection | | | **1** | | | | | | | | |
| | Manual/Auto/Remote RESET, non-volatile, with open-circuit and short-circuit detection | | | **2** | | | | | | | | |
| | Manual/Auto/Remote RESET, non-volatile, with open-circuit and short-circuit detection, with protective separation | | | **3** | | | | | | | | |
| Connection method | Screw terminals | | | | | **1** | | | | | | |
| | Spring-type terminals (push-in) | | | | | **2** | | | | | | |
| Auxiliary switches | 1 CO | | | | | | **A** | | | | | |
| | 2 CO | | | | | | **B** | | | | | |
| | 1 NO + 1 NC | | | | | | **C** | | | | | |
| | 1 NO + 1 CO | | | | | | **D** | | | | | |
| | 2 CO, hard gold-plated | | | | | | **G** | | | | | |
| Rated control supply voltage | 24 V AC/DC | | | | | | | **A** | **3** | | | |
| | 24 ... 240 V AC/DC | | | | | | | **W** | **3** | | | |
| Response to failure | Monostable | | | | | | | | | **0** | | |
| | Bistable | | | | | | | | | **1** | | |
| Example | | **3RN20** | **0** | **0** | **–** | **1** | **A** | **A** | **3** | **0** | | |

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

# Thermistor Motor Protection

## 3RN2



### Benefits

- Thanks to direct motor protection, overdimensioning of the motors is not necessary
- No settings on the device are necessary
- Semiconductor compatible output thanks to versions with hard gold-plated contacts
- Rapid error diagnosis thanks to versions that indicate open and short circuits in the sensor circuit
- All versions with removable terminals
- All versions with screw or spring-type terminals with push-in functionality

### Application

Direct motor protection through temperature monitoring of the motor winding offers 100% motor protection even under the most difficult ambient conditions, without the need to make adjustments on the device. Versions with hard gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control.

Direct motor protection

- At increased ambient temperatures
- When switching frequency is too high
- When start up and braking procedures are too long

***ATEX approval for operation in areas subject to explosion hazard***

The SIRIUS 3RN2011, 3RN2012-...30, 3RN2013 and 3RN2023 thermistor motor protection relays for PTC sensors are certified according to ATEX Ex II (2) G and D for environments with explosive gas or dust loads.

***Motor protection using current- and temperature-dependent protective devices***

IEC 60204 stipulates that motors must be protected from overheating at a rating of 0.5 kW and higher. The protection can take the form of overload protection, overtemperature protection or current limiting.

For motors with frequent starting and braking and in environments where cooling may be impaired (e.g. by dust), it is recommended to use the overtemperature protection option in the form of a protective device coordinated with this mode of operation. A good choice in this case is the use of 3RN2 thermistor motor protection devices.

On rotor-critical motors, overtemperature detection in the stator windings can lead to delayed and hence inadequate protection. In this case the standards stipulate additional protection, e.g. by means of an overload relay.

This combination of thermistor motor protection and an overload relay is recommended for full motor protection in case of frequent starting and braking of motors, irregular intermittent duty or excessive switching frequency. To prevent premature tripping of the overload relay in such operating conditions, a higher setting than that normally required for the operational current is chosen. The overload relay then performs stall protection, and the 3RN2 thermistor motor protection relay monitors the temperature of the motor windings.

| Application | Motor protection | | |
|---|---|---|---|
| | Only current-dependent, e.g. with overload relay | Temperature-dependent only, e.g. with thermistor motor protection relay | Current- and temperature-dependent |
| Motor protection in case of | | | |
| Overloading in uninterrupted duty | ✓ | ✓ | ✓ |
| Long start up and braking operations | ❍ | ✓ | ✓ |
| Irregular intermittent duty | ❍ | ✓ | ✓ |
| Excessively high switching frequency | ❍ | ✓ | ✓ |
| Single-phase operation and current unbalance | ✓ | ✓ | ✓ |
| Voltage and frequency fluctuations | ✓ | ✓ | ✓ |
| Stalling of the rotor | ✓ | ✓ | ✓ |
| Switching on a stalled rotor of a stator-critical motor | ✓ | ✓ | ✓ |
| Switching on a stalled rotor of a rotor-critical motor | ✓ | ❍ | ✓ |
| Elevated ambient temperature | -- | ✓ | ✓ |
| Impeded cooling | -- | ✓ | ✓ |

✓ Full protection
❍ Conditional protection
-- No protection

## Technical specifications

**More information**

Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/24302/td

Operating instructions and internal circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/ps/24302/man

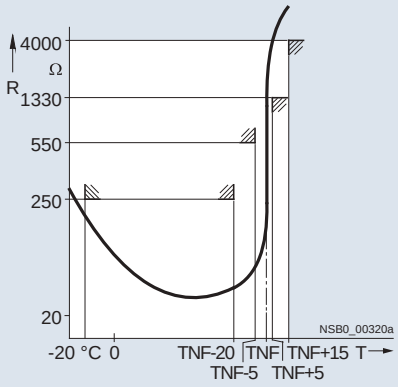
FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/24302/faq

For more information on explosion protection (ATEX), see www.siemens.com/sirius/atex

### *Type A PTC temperature sensor*

If a Type A temperature sensor is connected to a Type A evaluation unit, compliance with the operating temperatures is assured (on pick-up and reset) according to IEC 60947-8.

The characteristic curves of the Type A temperature sensors are described in IEC 60947-8, EN 44081 and EN 44082 standards.




Characteristic curve of the 3RN2 evaluation unit

### *Bimetallic switch*

In some applications, bimetallic switches (e.g. Klixon, Thermoclick) are used as sensors instead of PTC temperature sensors. Bimetallic switches are temperature- and current-dependent NC contacts and are available for different temperature ranges. Because bimetallic switches have practically no resistance below their opening temperature, short-circuit detection is not possible when using bimetallic switches. A bimetallic switch can be used for versions 3RN2000 and 3RN2010 on the SIRIUS thermistor motor protection relay.

Note:

Never use bimetallic switches in applications subject to an explosion hazard! Because of their non-standardized tripping characteristic, bimetallic switches must not be used in applications where there is an explosion hazard. Use Type A PTC sensors instead!

### *Use in hazardous areas*

Increased danger in hazardous areas means it is necessary to observe the following notes and standards carefully:

- EN 60079-14/VDE 0165-1 for electrical apparatus for explosive gas atmospheres
- EN 60079-17 Explosive atmospheres – Electrical installations inspection and maintenance
- EN 50495 Safety devices required for the safe functioning of equipment with respect to explosion risks

The following SIRIUS 3RN2 thermistor motor protection relays with short-circuit detection are approved for Equipment Group II, Category (2) in Area "G" (areas in which potentially explosive gas, vapor, mist, or air mixtures are present) and are additionally approved for Area "D" (areas containing combustible dust):

- 3RN2011
- 3RN2012-…30
- 3RN2013
- 3RN2023

PTB 15 ATEX 3011 ex II (2) G (Ex E) (EX d) (Ex px)
PTB 15 ATEX 3011 ex II (2) D (Ex T) (Ex p)

For 3RN2 thermistor motor protection relays, the EC type examination certificate is available for Group II, Category (2) G [Ex e] [Ex d] [Ex px] and D [Ex t] [Ex p]. The number is PTB 15 ATEX 3011.

SIRIUS 3RN2 thermistor motor protection relays are not intended for installation in hazardous areas. If they are installed in a potentially explosive atmosphere, the SIRIUS 3RN2 thermistor motor protection relays must be adapted to the applicable type of protection.

The machine or plant must shut down immediately if the SIRIUS 3RN2 thermistor motor protection relay is tripped, even if connected through a frequency converter. This must be implemented with circuitry.

SIRIUS 3RN2 thermistor motor protection relays with functional safety in accordance with EN 50495 are suitable for protecting explosion-proof motors/machines.

On evaluation units with a supply voltage of 24 V AC/DC, you must ensure electrical separation with a battery network or a power supply unit with electrical separation (e.g. isolating transformer) (does not apply to 3RN2013-.BA30).

A SIRIUS 3RN2 thermistor motor protection relay set to "automatic RESET" mode will be reset automatically after the recovery time has elapsed, without the RESET button being pressed. An additional ON button has to be used to ensure that the motor does not start up automatically following tripping. "Automatic RESET" mode must not be used in applications where there is a risk of personal injury or damage to property if the motor restarts unexpectedly.

**⚠ NOTICE!**

When used in a hazardous area, the thermistor motor protection relay must not be operated with automatic RESET (terminal Y1 and Y2 permanently jumpered).

A risk analysis must be performed for the complete plant or machine. If this analysis yields a lower hazard potential (category 1), all SIRIUS 3RN2 thermistor motor protection relays can be used, provided the safety regulations are observed.

**⚠ WARNING!**

All work involved in connecting, commissioning and maintenance must be carried out by qualified, responsible personnel. Improper handling may result in serious personal injury and considerable damage to property.

### *Cable routing*

The measuring circuit leads must be routed as separate control cables. It is not permitted to use cores from the supply line of the motor or any other main supply cables. If extreme inductive or capacitive interference is expected as a result of power lines routed in parallel, shielded control cables must be used.

Maximum length of sensor circuit cables for evaluation units without short-circuit detection in the sensor circuit:

| Cable cross-section | 3RN2000, 3RN2010 |
|---|---|
| 2.5 mm² | 2 x 2800 m |
| 1.5 mm² | 2 x 1500 m |
| 0.5 mm² | 2 x 500 m |

Maximum length of sensor circuit cables for evaluation units with short-circuit detection[1)]

| Cable cross-section | 3RN2011, 3RN2012, 3RN2013, 3RN2023 |
|---|---|
| 2.5 mm² | 2 x 250 m |
| 1.5 mm² | 2 x 150 m |
| 0.5 mm² | 2 x 50 m |

1) A short circuit in the sensor circuit will be detected up to this maximum cable length.

### *Principle of operation*

SIRIUS 3RN2 thermistor motor protection relays are thermal protection devices that are suitable, in combination with type A PTC thermistors, for monitoring temperatures of electrical drives, transformer windings, oils, bearings, air, etc.

The most frequent application is monitoring of three-phase motors in which the motor manufacturer has fitted a PTC sensor into every winding overhang and in which these PTC sensors are connected in series.

The SIRIUS 3RN2 thermistor motor protection relays operate in accordance with the closed-circuit principle and therefore monitor themselves for loss of supply voltage. The exceptions are the warning output on 3RN2023, which always works on the open-circuit principle and the bistable relays of the 3RN2012-.BW31, which always retain the last switching state.

A micro-interruption in the power supply of less than 30 ms does not change the status of the output relays.

For devices with the "Manual RESET" function, the test function can be activated and a trip simulated by pressing the blue Test/RESET button for > 2 seconds.

The 3RN2011, 3RN2012, 3RN2013 and 3RN2023 devices are additionally equipped with open-circuit and short-circuit detection in the sensor circuit. The unit will trip in the event of a short-circuit (resistance in sensor circuit < 10 Ω) or open circuit in the sensor circuit (dynamic open-circuit detection). Tripping as the result of a short-circuit in the sensor circuit is indicated by a flickering red LED (TRIPPED). In the event of a short-circuit in the sensor circuit for warning on the 3RN2023, the yellow warning LED (WARNING) flickers. The devices with dynamic open-circuit detection evaluate the rise time of the sensor circuit resistance. If the sensor circuit resistance rises from 3 300 Ω to 12 kΩ within 200 ms, the unit will not only trip, but also indicate the open circuit via a flashing red LED (TRIPPED). In the event of an open circuit in a sensor circuit, the yellow warning LED (WARNING) flashes for the 3RN2023.

All evaluation units (except for the 3RN2000 compact evaluation unit) feature electrical separation between the control circuit and the sensor circuit. The relay outputs are also electrically separated from all other circuits. The 3RN2013 and 3RN2023 evaluation units incorporate protective electrical separation between all circuits up to $U_i$ = 300 V.

3RN2000 compact evaluation unit

The compact unit, which is only 17.5 mm wide, is equipped with a red LED (TRIPPED) for the tripped indicator and a changeover contact. After the unit has tripped, it is automatically reset once the thermistors have cooled down. The root of the changeover contact is connected to the control voltage (terminal 11 is connected to terminal A1). This unit is particularly suitable in circuits in which the control circuit and signaling circuit have the same potential, e.g. in local control boxes.

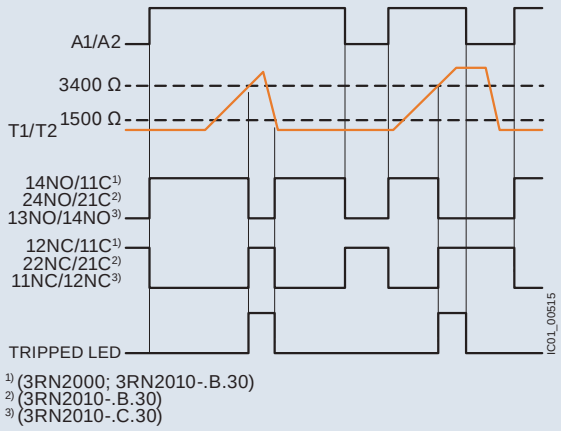
3RN2010, 3RN2011, 3RN2012 and 3RN2013 compact/standard evaluation units

The units are equipped with two LEDs (READY and TRIPPED) for an operating and tripped display and are available with either 1 NO + 1 NC contacts (3RN2010, overall width 17.5 mm) or with 2 CO contacts. Depending on the version, they are available with Auto RESET (3RN2010), Manual/Remote RESET (3RN2011) or Manual/Auto and Remote RESET (3RN2012 and 3RN2013). Remote RESET can be achieved by connecting an external pushbutton with a normally-open function to terminals Y1 and Y2. If terminals Y1 and Y2 are jumpered, the unit is automatically reset once the thermistors have cooled down (Auto RESET). 3RN2012 and 3RN2013 are non-volatile. This means a previous trip remains stored in the event of a control supply voltage failure – the thermistor motor protection relay remains in the safe state with an opened output relay until it is intentionally reset by pressing the TEST/RESET button of the unit or an external pushbutton.

3RN2023 "warning and disconnection" evaluation units

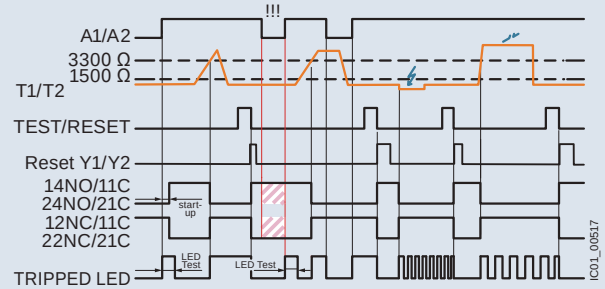
Two sensor circuits can be connected to one 3RN2023 evaluation unit that act on two separate output relays with 1 NO contact for warning and 1 CO contact for disconnection. Thermistors with different rated response temperatures TNF are used to implement the "Warning" and "Disconnection" functions. When sensor circuit 2 for "Warning" responds, a yellow LED is lit and when the "Disconnection" circuit responds, a red LED is lit. The sensor circuits have a different reset response and operating behavior: The "Warning" thermistor sensor circuit 2 (terminals 2T1, T2) works only with Auto RESET and according to the open-circuit principle (output relay K2, NO contact). The "Disconnection" thermistor sensor circuit 1, (terminals 1T1, T2) can be changed from Manual RESET to Auto RESET by jumpering terminals Y1 and Y2. Remote RESET is implemented by connecting an external pushbutton with a normally-open function to these terminals.

***Function diagrams***

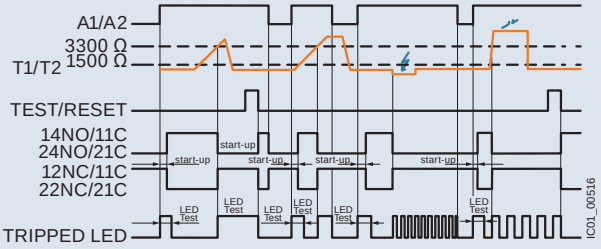



1) (3RN2000; 3RN2010-.B.30)
2) (3RN2010-.B.30)
3) (3RN2010-.C.30)

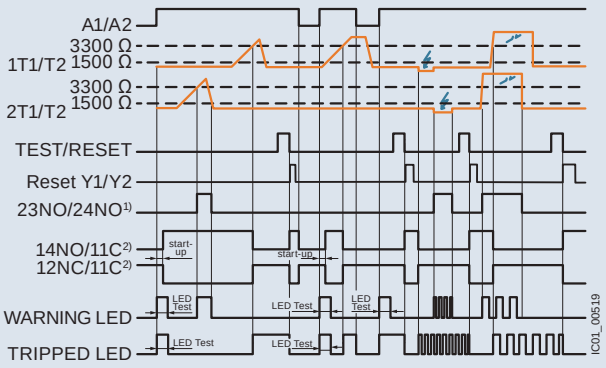
3RN2000, 3RN2010




3RN2012-.BW31: resetting via the TEST/RESET button or external push-button



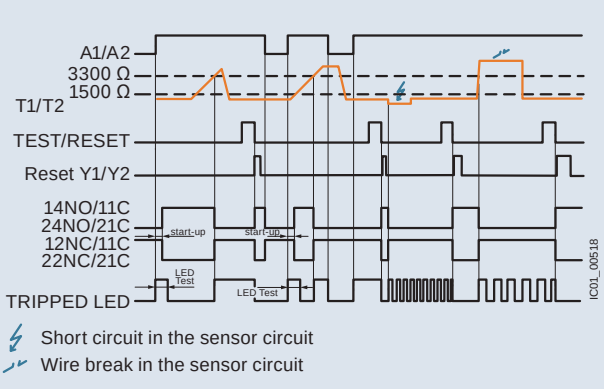

3RN2011: resetting via external pushbutton or interruption of the supply voltage



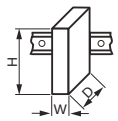

1) Relay for sensor circuit (warning)
2) Relay for sensor circuit (trip)

Short circuit in the sensor circuit
Wire break in the sensor circuit

3RN2023: resetting via the TEST/RESET button or external pushbutton




3RN2012-.B.30, 3RN2013: resetting via the TEST/RESET button or external pushbutton

| Article number | | 3RN2000-.A, 3RN2010-.C | 3RN201.-.B, 3RN2013-.G, 3RN2023-.D |
|---|---|---|---|
| **Width x height x depth**  | mm | 100 × 17.5 × 90 | 100 × 22.5 × 90 |

| Article number | | 3RN2000-.AA30 | 3RN2000-.AW30, 3RN2010-.BW30, 3RN2010-.CW30 | 3RN2010-.BA30, 3RN2010-.CA30 | 3RN2011-.BA30, 3RN2012-.BA30 | 3RN2011-.BW30, 3RN2012-.BW30 | 3RN2012-.BW31 | 3RN2013-.BA30 | 3RN2013-.BW30, 3RN2013-.GW30 | 3RN2023-.DW30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **General technical specifications** | | | | | | | | | | |
| **Type of electrical isolation** | | None | Isolated | | | | | Protective separation | | |
| **Electrical endurance (operating cycles) for AC-15 at 230 V** | | 100 000 | | | | | | | | |
| **Mechanical endurance (operating cycles)** | | 10 000 000 | | | | | | | | |
| **Insulation voltage for overvoltage category III according to IEC 60664 for pollution degree 3 / rated value** | V | 300 | | | | | | | | |
| **Impulse withstand voltage, rated value** | kV | 4 | | | | | | 6 | | |
| **Minimum mains failure buffering time** | ms | 40 | | | | | | | | 30 |
| **Pollution degree** | | 3 | | | | | | | | |
| **Degree of protection** | | IP20 | | | | | | | | |
| **Vibration resistance acc. to IEC 60068-2-27** | | 11*g*/15 ms | | | | | | | | |
| **Vibration resistance acc. to IEC 60068-2-6** | | 10 ... 55 Hz: 0.35 mm | | | | | | | | |
| **Type of mounting**<br>• Mounting position<br>• Installation altitude at height above sea level, maximum | <br><br>m | For screw-fixing and snap-on mounting to 35 mm standard mounting rail<br>Any<br>2 000 | | | | | | | | |
| **Ambient temperature during operation** | °C | -25 ... +60 | | | | | | | | |
| **Relative humidity during operation, maximum** | % | 70 | | | | | | | | |
| **ATEX** | | | | | | | | | | |
| **Ex device group and Ex category according to ATEX product directive 2014/34/EU** | | -- | | | II 2G, II 2D | -- | | II 2G, II 2D | | |
| **Safety device type according to IEC 61508-2** | | -- | | | Type B | -- | | Type B | | |
| **Safety integrity level (SIL) according to IEC 61508** | | -- | | | SIL1 | -- | | SIL1 | | |
| **Performance level (PL) according to EN ISO 13849-1** | | -- | | | c | -- | | c | | |
| **T1 value for proof test interval or service duration according to IEC 61508** | y | -- | | | 3 | -- | | 3 | | |
| **Measuring circuit** | | | | | | | | | | |
| **Number of measuring circuits** | | 1 | | | | | | | | 2 |
| **Relative measuring accuracy** | % | 9 | | | 2 | | | | | |
| **Maximum number of sensors in series** | | 6 | | | | | | | | |
| **Cable length of sensor, maximum** | m | 2 800 | | | 250 | | | | | |
| **Thermistor resistance response value** | Ω | 1 500 ... 1 650 | | | 1 500 ... 1 550 | | | | | |
| **Thermistor resistance return value** | Ω | 3 400 ... 3 600 | | | 3 300 ... 3 350 | | | | | |

| Article number | | 3RN2000-.AA30 | 3RN2000-.AW30, 3RN2010-.BW30, 3RN2010-.CW30 | 3RN2010-.BA30, 3RN2010-.CA30 | 3RN2011-.BA30, 3RN2012-.BA30 | 3RN2011-.BW30, 3RN2012-.BW30 | 3RN2012-.BW31 | 3RN2013-.BA30 | 3RN2013-.BW30, 3RN2013-.GW30 | 3RN2023-.DW30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Control circuit** | | | | | | | | | | |
| **Current carrying capacity of the output relay** | | | | | | | | | | |
| • At AC-15 at 250 V at 50/60 Hz | A | 3 | | | | | | | | |
| • At DC-13 at 24 V | A | 1 | | | | | | | | |
| • At DC-13 at 125 V | A | 0.2 | | | | | | | | |
| • At DC-13 at 250 V | A | 0.1 | | | | | | | | |
| **Thermal current of the non-solid-state contact blocks, maximum** | A | 5 | | | | | | | | |
| **Continuous current of the output relay's DIAZED fuse link** | A | 6 | | | | | | | | |
| **Supply voltage** | | | | | | | | | | |
| **Control supply voltage** | | | | | | | | | | |
| • At AC | | | | | | | | | | |
| - At 50 Hz rated value | V | 24 ... 24 | 24 ... 240 | 24 ... 24 | | 24 ... 240 | | 24 ... 24 | 24 ... 240 | |
| - At 60 Hz rated value | V | 24 ... 24 | 24 ... 240 | 24 ... 24 | | 24 ... 240 | | 24 ... 24 | 24 ... 240 | |
| • At DC, rated value | V | 24 ... 24 | 24 ... 240 | 24 ... 24 | | 24 ... 240 | | 24 ... 24 | 24 ... 240 | |
| **Operating range factor of the control supply voltage, rated value** | | | | | | | | | | |
| • At AC at 50 Hz | | 0.85 ... 1.1 | | | | | | | | |
| • At AC at 60 Hz | | 0.85 ... 1.1 | | | | | | | | |
| • At DC | | 0.85 ... 1.1 | | | | | | | | |

| Article number | | 3RN20..-1 | 3RN20..-2 |
|---|---|---|---|
| **Type of electrical connection** | | **Screw terminals** | **Spring-type terminals (push-in)** |
| **Tightening torque** | Nm | 0.6 ... 0.8 | -- |
| **Type of connectable conductor cross-sections** | | | |
| • Solid | $mm^2$ | 1x (0.5 ... 4.0 $mm^2$), 2x (0.5 ... 2.5 $mm^2$) | 1x (0.5 ... 4 $mm^2$) |
| • Finely stranded with end sleeve | $mm^2$ | 1x (0.5 ... 4 $mm^2$), 2x (0.5 ... 1.5 $mm^2$) | 1x (0.5 ... 2.5 $mm^2$) |
| • For AWG cables | | | |
| - Solid | AWG | 1x (20 ... 12), 2x (20 ... 14) | 1x (20 ... 12) |
| - Stranded | AWG | -- | 1x (20 ... 12) |

## Selection and ordering data

3RN2000-1AA30

3RN2010-1BA30

3RN2011-1BA30

3RN2012-1BW30

3RN2023-1DW30

| Product function | Number of CO contacts for auxiliary contacts | Number of NO contacts for auxiliary contacts | Number of NC contacts for auxiliary contacts | Material of switching contacts | Control supply voltage For AC at 50 Hz rated value V | Control supply voltage For DC, rated value V | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Compact evaluation unit, suitable for bimetallic switch** | | | | | | | | | | |
| **Terminal A1 jumpered with root of changeover contact** | | | | | | | | | | |
| Auto RESET | 1 | 0 | 0 | AgSnO2 | 24 ... 24 | 24 ... 24 | 2 | **3RN2000-☐AA30** | 1 | 1 unit |
| | | | | | 24 ... 240 | 24 ... 240 | 2 | **3RN2000-☐AW30** | 1 | 1 unit |
| | 0 | 1 | 1 | AgSnO2 | 24 ... 24 | 24 ... 24 | 2 | **3RN2010-☐CA30** | 1 | 1 unit |
| | | | | | 24 ... 240 | 24 ... 240 | 2 | **3RN2010-☐CW30** | 1 | 1 unit |
| **Standard evaluation unit, suitable for bimetallic switch** | | | | | | | | | | |
| Auto RESET | 2 | 0 | 0 | AgSnO2 | 24 ... 24 | 24 ... 24 | 2 | **3RN2010-☐BA30** | 1 | 1 unit |
| | | | | | 24 ... 240 | 24 ... 240 | 2 | **3RN2010-☐BW30** | 1 | 1 unit |
| **Bistable evaluation unit, open-circuit and short-circuit detection in the sensor circuit** | | | | | | | | | | |
| **Does not trigger in the event of control supply voltage failure** | | | | | | | | | | |
| Auto RESET<br>Manual RESET<br>External RESET<br>Error memory | 2 | 0 | 0 | AgSnO2 | 24 ... 240 | 24 ... 240 | 2 | **3RN2012-☐BW31** | 1 | 1 unit |
| **Standard evaluation unit with ATEX approval, open-circuit and short-circuit detection in the sensor circuit[1)]** | | | | | | | | | | |
| Manual RESET<br>External RESET | 2 | 0 | 0 | AgSnO2 | 24 ... 24 | 24 ... 24 | 2 | **3RN2011-☐BA30** | 1 | 1 unit |
| | | | | | 24 ... 240 | 24 ... 240 | 2 | **3RN2011-☐BW30** | 1 | 1 unit |
| **Non-volatile[3)]** | | | | | | | | | | |
| Auto RESET<br>Manual RESET<br>External RESET<br>Error memory | 2 | 0 | 0 | AgSnO2 | 24 ... 24 | 24 ... 24 | 2 | **3RN2012-☐BA30** | 1 | 1 unit |
| | | | | | 24 ... 240 | 24 ... 240 | 2 | **3RN2012-☐BW30** | 1 | 1 unit |
| **Protective separation, non-volatile [2)3)]** | | | | | | | | | | |
| Auto RESET<br>Manual RESET<br>External RESET<br>Error memory | 2 | 0 | 0 | AgSnO2 | 24 ... 24 | 24 ... 24 | 2 | **3RN2013-☐BA30** | 1 | 1 unit |
| | | | | | 24 ... 240 | 24 ... 240 | 2 | **3RN2013-☐BW30** | 1 | 1 unit |
| | | | | AgSnO2 Hard gold-plated | 24 ... 240 | 24 ... 240 | 2 | **3RN2013-☐GW30** | 1 | 1 unit |
| **Evaluation unit with ATEX approval and 2 sensor circuits for warning and disconnection, open-circuit and short-circuit detection in both sensor circuits** | | | | | | | | | | |
| **Protective separation, non-volatile [2)3)]** | | | | | | | | | | |
| Auto RESET<br>Manual RESET<br>External RESET<br>Error memory | 1 | 1 | 0 | AgSnO2 | 24 ... 240 | 24 ... 240 | 2 | **3RN2023-☐DW30** | 1 | 1 unit |
| **Type of electrical connection** | | | | | | | | | | |
| • Screw terminals | | | | | | | | **1** | | |
| • Spring-type terminals (push-in) | | | | | | | | **2** | | |

1) For 3RN2011: The unit can be reset with the RESET button or by disconnecting the control supply voltage.

2) Protective separation up to 300 V acc. to DIN/VDE 0160, IEC 60947-1.

3) Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.

## Accessories

| | Version | SD<br>d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Terminals for SIRIUS devices in the industrial standard mounting rail enclosure** | | | | | |
| 3ZY1122-1BA00 | **Removable terminals** | | **Screw terminals** | | |
| | • 2-pole, up to 2 x 2.5 mm² or 1 x 4 mm² | 2 | **3ZY1122-1BA00** | 1 | 6 units |
| | | | **Spring-type terminals (push-in)** | | |
| | • 2-pole, up to 1 x 4 mm² or 2 x 1.5 mm² | 2 | **3ZY1122-2BA00** | 1 | 6 units |
| **Accessories for enclosures** | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs**<br>For wall mounting | 2 | **3ZY1311-0AA00** | 1 | 10 units |
| 3ZY1440-1AA00 | **Coding pins**<br>For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure. They enable the mechanical coding of terminals,<br>see Manual "SIRIUS 3RN2 thermistor motor protection", https://support.industry.siemens.com/cs/ww/en/ps/24302/man | 2 | **3ZY1440-1AA00** | 1 | 12 units |
| **Tools for opening spring-type terminals** | | | | | |
| 3RA2908-1A | **Screwdrivers**<br>For all SIRIUS devices with spring-type terminals | | **Spring-type terminals (push-in)** | | |
| | 3.0 mm x 0.5 mm,<br>length approx. 200 mm,<br>titanium gray/black,<br>partially insulated | 2 | **3RA2908-1A** | 1 | 1 unit |

# Timing Relays

## 3RP25 / 3RP20 / 7PV15



### Overview

7PV15, SIRIUS 3RP25 and SIRIUS 3RP20 timing relays

Electronic timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. Their fully developed concept and space-saving, compact design make the SIRIUS 3RP timing relays ideal modules for control cabinet, switchgear and control manufacturers in the industry.

With their narrow design, the 7PV15 timing relays are ideal in particular for use in heating, ventilation and air-conditioning systems and in compressors. All 7PV15 timing relays in this enclosure version are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60175. The enclosure complies with DIN 43880.

### Benefits

- Clear-cut basic range with five basic units in the case of the 7PV15 timing relays, and seven basic units in the case of the 3RP timing relays
- Logistic advantages provided by versions with wide voltage range and wire setting range
- No tools required for assembly or disassembly on standard mounting rails
- Cadmium-free relay contacts
- Recyclable, halogen-free enclosure
- Optimum price/performance ratio
- Versions with logical separation
- Low variance: One design for distribution boards and for control cabinets
- Compliance with EMC requirements for buildings
- Environmentally friendly laser inscription instead of printing containing solvents
- Timing relays suitable for the 3RT miniature contactors allow smaller tier spacing
- Versions with screw terminals or alternatively with spring-type terminals

### Application

***Timing relays with ON-delay***

- Interference pulse suppression (gating of interference pulses)
- Gradual startup of motors so as not to overload the power supply

***Timing relays with OFF-delay***

- Generation of overtravel functions following removal of voltage
- Gradual, delayed shutdown, e.g. of motors or fans, to allow a plant to be shut down selectively

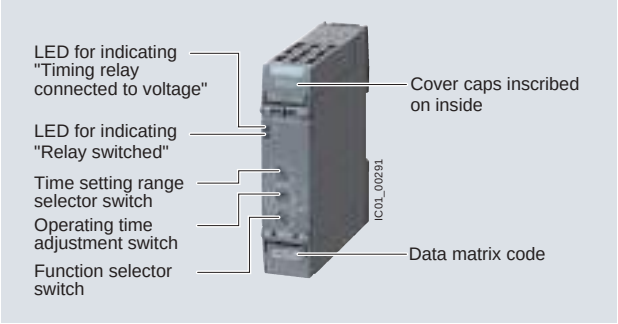
***Wye-delta timing relay***

- Switchover of motors from wye to delta with a dead interval of 50 ms to prevent phase-to-phase short circuits

***Multifunctional timing relays***

- Maximum flexibility, with a device for every application
- Available with relay and semiconductor output

## Overview




SIRIUS 3RP25 timing relays

Electronic timing relays for general use in control systems and mechanical engineering with:

- 1 or 2 CO, 1 NO (semiconductor) or 3 NO
- Monofunction or multifunction
- Combination voltage
- Wide voltage range
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

### *Standards*

The timing relays comply with:

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1/DIN VDE 0435 Part 2021 "Specified time relays for industrial use"
- IEC 61000-6-2, IEC 61000-6-3 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"

### *3RP2505 multifunctional timing relays*

The functions of the 3RP2505 multifunctional timing relays can be set by means of the function selector switch. Whether both CO contacts are switched in parallel or one CO contact with a delay and one instantaneously and the choice of time setting range are set by means of the time setting range selector switch. The exact operating time can be adjusted with the operating time switch.

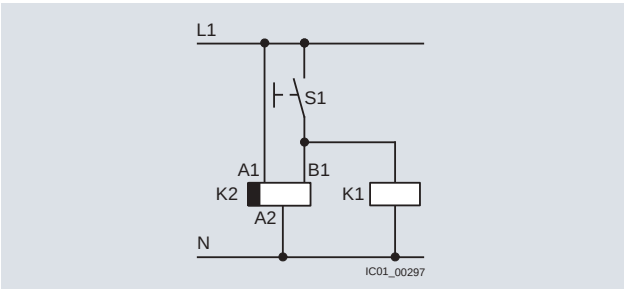
With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay.

The same potential must be applied to terminals A. and B.

Functions, see the overview of functions on page 11/26.

Note:

The activation of loads parallel to the start input is permissible when using AC/DC control voltage (see diagram).




Diagram

### *Accessories*

Push-in lugs for wall mounting

Sealable cover 17.5 mm

Sealable cover 22.5 mm

**Two setting options for implementing the multifunctions (A-M):**

(1) Determination of 13 functions by the setting A to M, with 1 CO, 1 NO, 2 CO that switch in parallel.

(2) Extended function variance by selecting the time range and determining, whether 2 CO switch in parallel or whether 1 CO switches with delay + 1 CO switches immediately (1 CO + 1 CO)

Setting the functions on the device

***Overview of functions of the 3RP2505 multifunctional timing relay***

| Identification letter | **13 functions**<br>1 CO, 1 NO (semiconductor) or 2 CO switched in parallel | **27 functions**<br>13 functions (A - M) 2 CO switched in parallel + 13 functions (A - M) 1 CO delayed + 1 CO instantaneous (1 CO + 1 CO) and wye-delta function |
|---|---|---|
| **A** | ON-delay | ON-delay and instantaneous contact |
| **B** | OFF-delay with control signal | OFF-delay with control signal and instantaneous contact |
| **C** | ON-delay/OFF-delay with control signal | ON-delay/OFF-delay with control signal and instantaneous contact |
| **D** | Flashing, symmetrical, starting with interval | Flashing, symmetrical, starting with interval and instantaneous contact |
| **E** | Passing make contact, interval relay | Passing make contact, interval relay and instantaneous contact |
| **F** | Retriggerable interval relay with deactivated control signal (passing break contact with control signal) | Retriggerable interval relay with deactivated control signal (passing break contact with control signal) and instantaneous contact |
| **G** | Passing make contact, with control signal, not retriggerable (pulse-forming with control signal) | Passing make contact, with control signal, not retriggerable (pulse-forming with control signal) and instantaneous contact |
| **H** | Additive ON-delay, instantaneous OFF with control signal | Additive ON-delay, instantaneous OFF with control signal and instantaneous contact |
| **I** | Additive ON-delay with control signal | Additive ON-delay with control signal and instantaneous contact |
| **J** | Flashing, symmetrical, starting with pulse | Flashing, symmetrical, starting with pulse and instantaneous contact |
| **K** | Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay) | Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact |
| **L** | Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay) | Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact |
| **M** | Retriggerable interval relay with activated control signal (watchdog) | Retriggerable interval relay with activated control signal and instantaneous contact (watchdog) |
| -- | -- | Wye-delta function |

Note:

Conversion tool e.g. from 3RP15 to 3RP25, see www.siemens.com/sirius/conversion-tool.

### *Article No. scheme*

| Digit of the Article No. | 1st - 5th | 6th | 7th | | 8th | 9th | 10th | 11th | 12th |
|---|---|---|---|---|---|---|---|---|---|
| | □□□□□ | □ | □ | – | □ | □ | □ | □ | 0 |
| Timing relays in industrial enclosure 17.5 mm and 22.5 mm | 3 R P 25 | | | | | | | | |
| Functions/time setting ranges | | □ | □ | | | | | | |
| Connection type | | | | | □ | | | | |
| Contacts | | | | | | □ | | | |
| Rated control supply voltage | | | | | | | □ | □ | |
| **Example** | **3 R P 25** | **0** | **5** | **–** | **1** | **A** | **W** | **3** | **0** |

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

## Benefits

- Easy stock keeping and logistics thanks to low variance of devices
- Reduced space requirement in the control cabinet thanks to variants in width 17.5 mm and 22 mm
- Consistent for all functions thanks to wide voltage range from 12 to 240 V AC/DC
- Up to 27 functions according to IEC 61812 in the multifunctional timing relay with wide voltage range
- Multifunctional timing relay with semiconductor output for high switching frequencies, bounce-free and wear-free switching

## Application

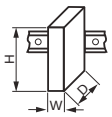
Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

### *Enclosure version*

All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing.

## Technical specifications

| Type | | 3RP2505-.A, 3RP2505-.C, 3RP251., 3RP2525-.A, 3RP2527, 3RP253., 3RP255. | 3RP2505-.B, 3RP2505-.R, 3RP2525-.B, 3RP254., 3RP256., 3RP257. |
|---|---|---|---|
| Width | mm | 17.5 | 22.5 |
| Height | mm | 100 | 100 |
| Depth | mm | 90 | 90 |

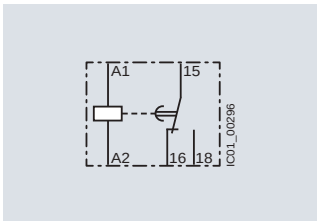



| Type | | 3RP25..-.AB30, 3RP25..-.AW30, 3RP25..-.BB30, 3RP25..-.BW30, 3RP25..-.NW30, 3RP25..-.SW30 | 3RP25..-.BT20, 3RP25..-.NM20 | 3RP25..-.CW30 | 3RP25..-.EW30 | 3RP25..-.RW30 |
|---|---|---|---|---|---|---|
| **Insulation voltage** For overvoltage category III According to IEC 60664 For pollution degree 3, rated value | V AC | 300 | 500 | 300 | -- | 300 |
| **Ambient temperature** | | | | | | |
| • During operation | °C | -25 ... +60 | | | | -40 ... +70 |
| • During storage | °C | -40 ... +85 | | | | |
| **Operating range factor** Of the control supply voltage, rated value | | | | | | |
| • At AC | | | | | | |
| - At 50 Hz | | 0.85 ... 1.1 | | | | 0.7 ... 1.1 |
| - At 60 Hz | | 0.85 ... 1.1 | | | | 0.7 ... 1.1 |
| • At DC | | 0.85 ... 1.1 | -- | 0.85 ... 1.1 | 0.85 ... 1.1 | 0.7 ... 1.1 |
| **Switching capacity current** With inductive load | A | 0.01 ... 3 | 0.01 ... 3 | 0.01 ... 1 | 0.01 ... 6 | 0.01 ... 3 |
| **Operational current of the auxiliary contacts** | | | | | | |
| • At AC-15 | | | | | | |
| - At 24 V | A | 3 | 3 | 1 | -- | 3 |
| - At 250 V | A | 3 | 3 | 1 | -- | 3 |
| - At 400 V | A | -- | 3 | -- | -- | -- |
| • At DC-12 | | | | | | |
| - At 24 V | A | -- | -- | 1 | -- | -- |
| - At 125 V | A | -- | -- | 1 | -- | -- |
| - At 250 V | A | -- | -- | 1 | -- | -- |
| • At DC-13 | | | | | | |
| - At 24 V | A | 1 | 1 | -- | -- | 1 |
| - At 125 V | A | 0.2 | 0.2 | -- | -- | 0.2 |
| - At 250 V | A | 0.1 | 0.1 | -- | -- | 0.1 |
| **Uninterrupted thermal current $I_{th}$** | A | 5 | 5 | 1 | 0.6 | 5 |
| **Mechanical endurance** | (Operating cycles) Typical | $10 \times 10^6$ | | | | |
| **Electrical endurance** For AC-15 at 230 V, typical | (Operating cycles) | $1 \times 10^5$ | | | | |

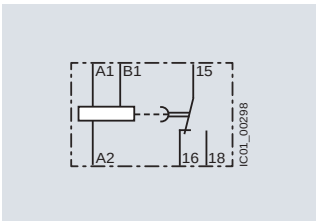
| Type | | 3RP25 |
|---|---|---|
| **Connection type** | | **Screw terminals** |
| • Design of thread of connection screw | | M3 |
| • Solid | $mm^2$ | 1 x (0.5 ... 4.0)/2 x (0.5 ... 2.5) |
| • Finely stranded with end sleeve | $mm^2$ | 1 x (0.5 ... 4)/2 x (0.5 ... 1.5) |
| • Solid for AWG cables | AWG | 1 x (20 ... 12), 2 x (20 ... 14) |
| • Stranded for AWG cables | AWG | 1 x (20 ... 12), 2 x (20 ... 14) |
| • Tightening torque | Nm | 0.6 … 0.8 |
| **Connection type** | | **Spring-type terminals** |
| • Solid | $mm^2$ | 1 x (0.5 ... 4) |
| • Finely stranded with end sleeve | $mm^2$ | 1 x (0.5 ... 2.5) |
| • AWG cables, solid | AWG | 1 x (20 ... 12) |

### *Internal circuit diagrams 3RP25*

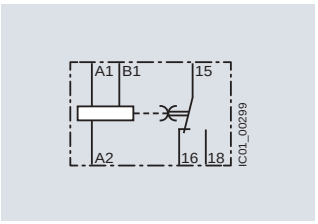
Multifunction 3RP2505-.A, 13 functions, 1 CO



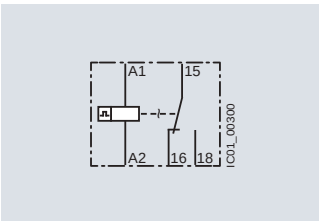

3RP2505-.A (A)
ON-delay



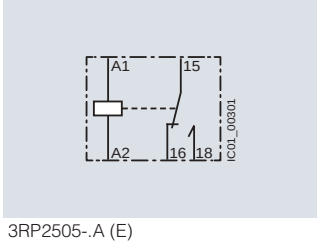

3RP2505-.A (B)
OFF-delay with control signal



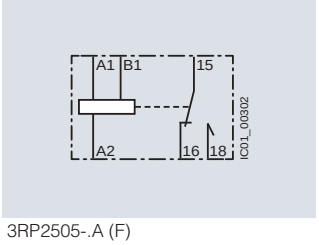

3RP2505-.A (C)
ON-delay/OFF-delay with control signal



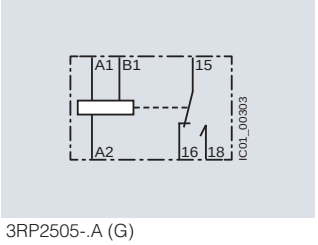

3RP2505-.A (D)
Flashing, symmetrical, starting with interval



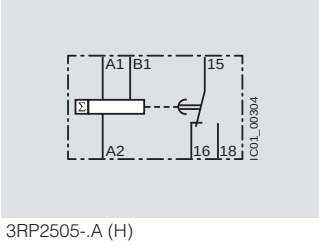

3RP2505-.A (E)
Passing make contact, interval relay



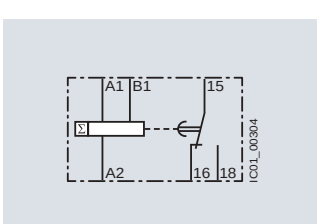

3RP2505-.A (F)
Retriggerable interval relay with deactivated control signal (passing break contact with control signal)



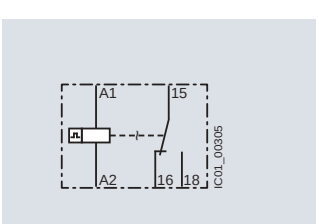

3RP2505-.A (G)
Passing make contact with control signal, not retriggerable (pulse-forming with control signal)



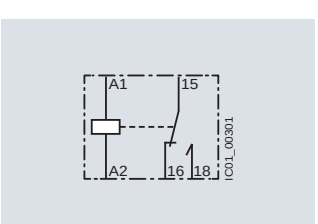

3RP2505-.A (H)
Additive ON-delay, instantaneous OFF with control signal



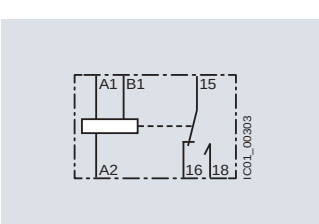

3RP2505-.A (I)
Additive ON-delay with control signal



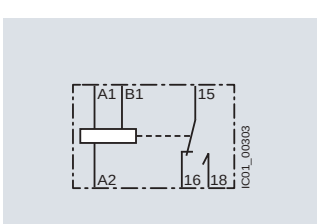

3RP2505-.A (J)
Flashing, symmetrical, starting with pulse




3RP2505-.A (K)
Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)

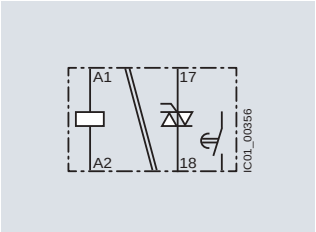



3RP2505-.A (L)
Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)

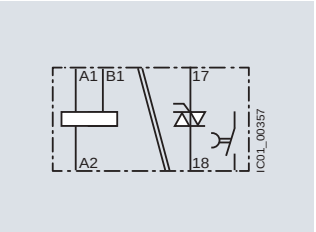



3RP2505-.A (M)
Retriggerable interval relay with activated control signal (watchdog)

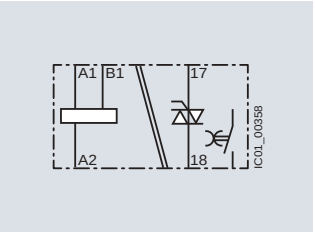
Multifunction 3RP2505-.C, 13 functions, 1 NO (semiconductor)



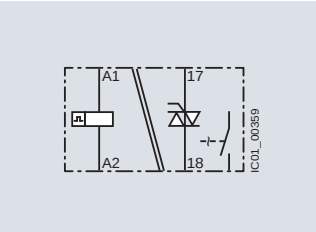

3RP2505-.C (A)
ON-delay



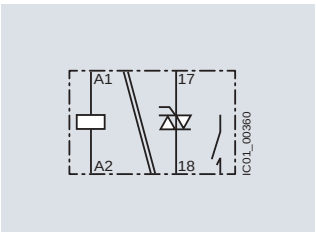

3RP2505-.C (B)
OFF-delay with control signal



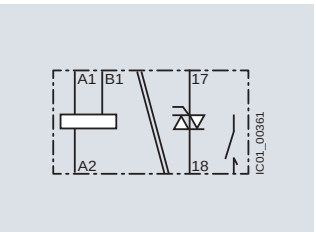

3RP2505-.C (C)
ON-delay/OFF-delay with control signal



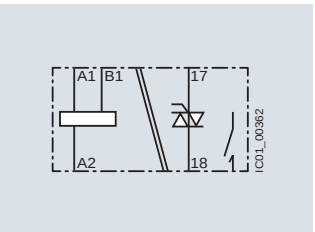

3RP2505-.C (D)
Flashing, symmetrical, starting with interval



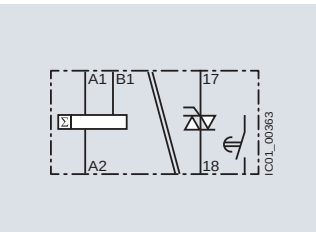

3RP2505-.C (E)
Passing make contact, interval relay



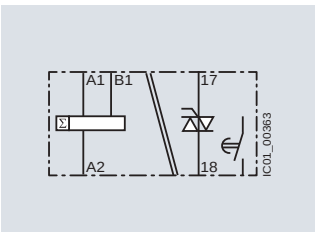

3RP2505-.C (F)
Retriggerable interval relay with deactivated control signal (passing break contact with control signal)



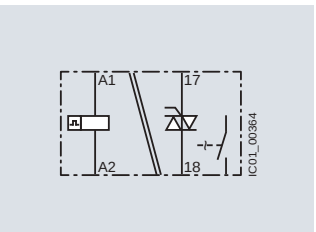

3RP2505-.C (G)
Passing make contact with control signal, not retriggerable (pulse-forming with control signal)



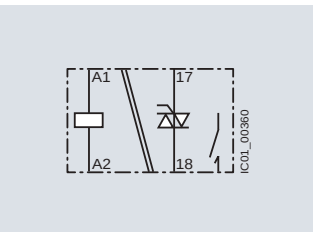

3RP2505-.C (H)
Additive ON-delay, instantaneous OFF with control signal



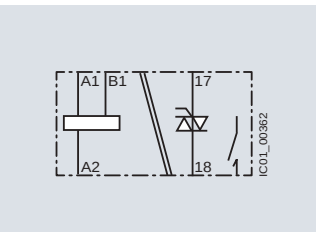

3RP2505-.C (I)
Additive ON-delay with control signal



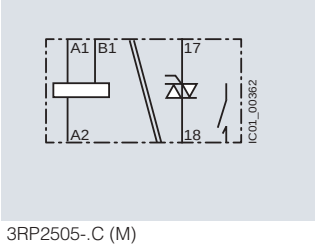

3RP2505-.C (J)
Flashing, symmetrical, starting with pulse




3RP2505-.C (K)
Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)

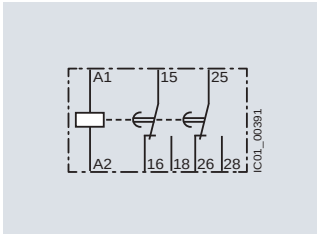



3RP2505-.C (L)
Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)

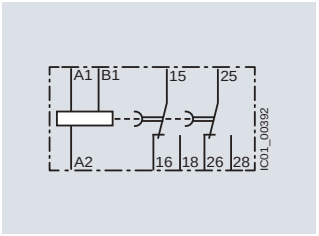



3RP2505-.C (M)
Retriggerable interval relay with activated control signal (watchdog)

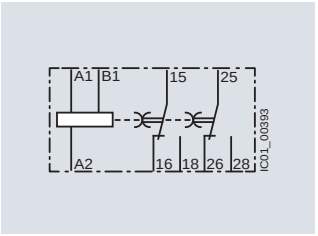
Multifunction 3RP2505-.B, 27 functions, 2 CO switched in parallel with delay/
multifunction 3RP2505-.R, 13 functions, 2 CO positively driven, and switched in parallel with delay (see also note below)



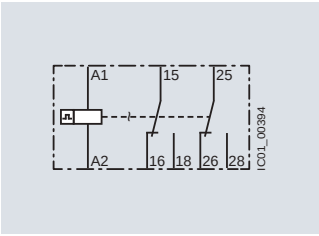

3RP2505-.B (A)
ON-delay



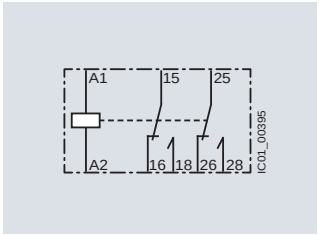

3RP2505-.B (B)
OFF-delay with control signal



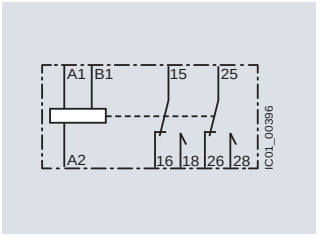

3RP2505-.B (C)
ON-delay/OFF-delay
with control signal



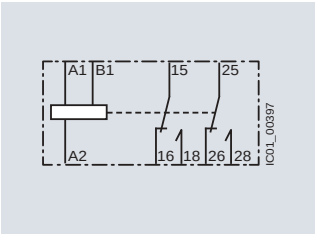

3RP2505-.B (D)
Flashing, symmetrical,
starting with interval



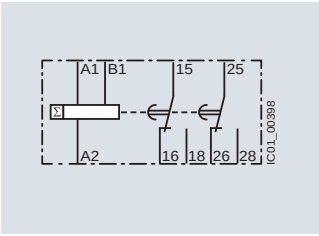

3RP2505-.B (E)
Passing make contact, interval relay



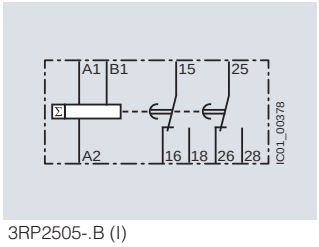

3RP2505-.B (F)
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



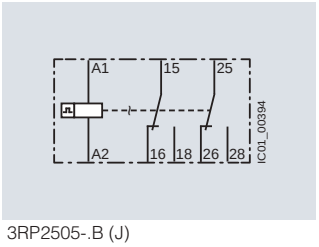

3RP2505-.B (G)
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



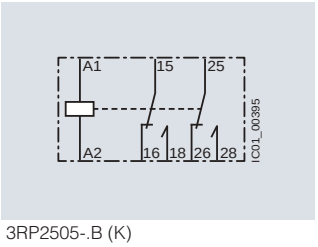

3RP2505-.B (H)
Additive ON-delay, instantaneous OFF
with control signal



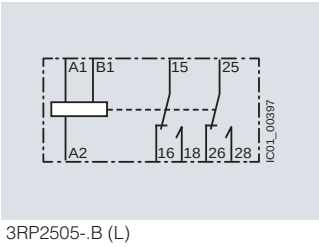

3RP2505-.B (I)
Additive ON-delay with control signal



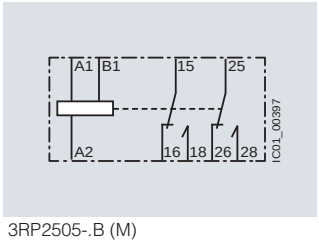

3RP2505-.B (J)
Flashing, symmetrical,
starting with pulse




3RP2505-.B (K)
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay)



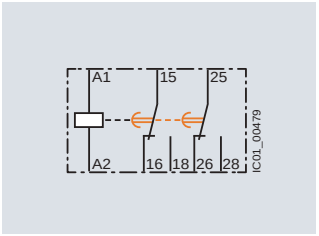

3RP2505-.B (L)
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)




3RP2505-.B (M)
Retriggerable interval relay with
activated control signal (watchdog)

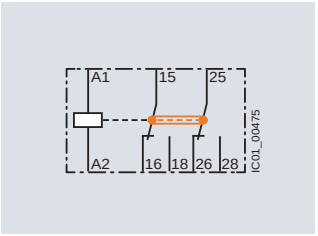
Note:

3RP2505-.RW30 has 13 functions (A to M) like 3RP2505-.B switched in parallel with delay, but with positively driven contacts. The circuit diagrams are identical except for the representation of the symbols for these contacts, see also the example on the right for 3RP2505-.RW30 of the function (A) with ON-delay.



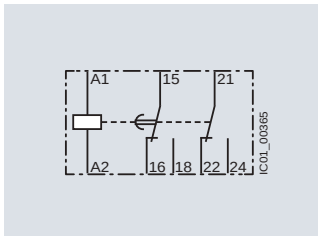

3RP2505-.B (A)

ON-delay

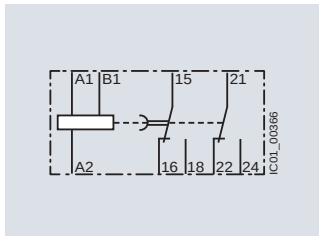



3RP2505-.R (A)
with positively driven contacts
ON-delay

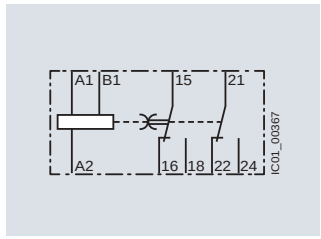
Multifunction 3RP2505-.B, 27 functions, 1 CO delayed + 1 CO instantaneous (continued)



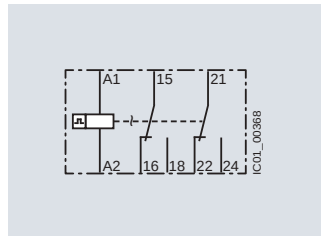

3RP2505-.B (A)
ON-delay and instantaneous contact



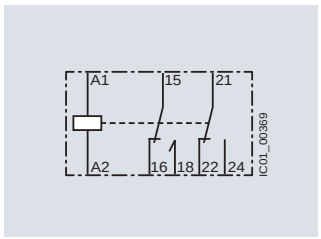

3RP2505-.B (B)
OFF-delay with control signal and instantaneous contact



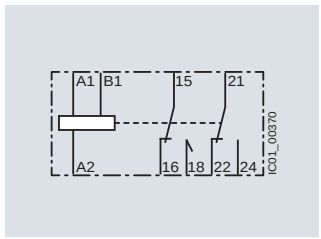

3RP2505-.B (C)
ON-delay/OFF-delay with control signal and instantaneous contact



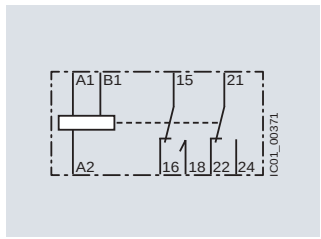

3RP2505-.B (D)
Flashing, symmetrical, starting with interval and instantaneous contact



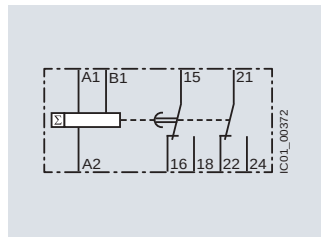

3RP2505-.B (E)
Passing make contact, interval relay and instantaneous contact



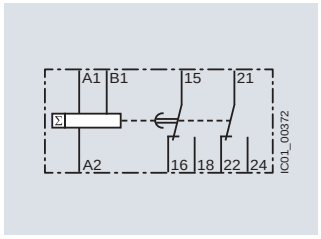

3RP2505-.B (F)
Retriggerable interval relay with deactivated control signal (passing break contact with control signal) and instantaneous contact



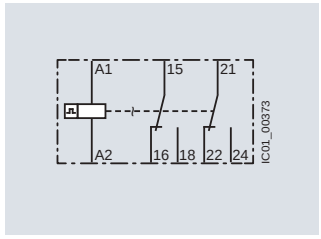

3RP2505-.B (G)
Passing make contact with control signal, not retriggerable (pulse-forming with control signal) and instantaneous contact



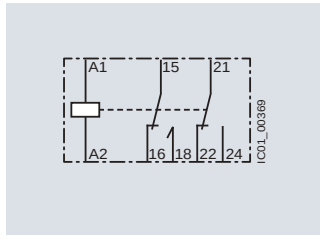

3RP2505-.B (H)
Additive ON-delay, instantaneous OFF with control signal and instantaneous contact



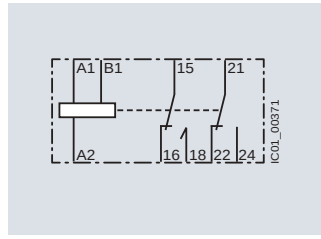

3RP2505-.B (I)
Additive ON-delay with control signal and instantaneous contact



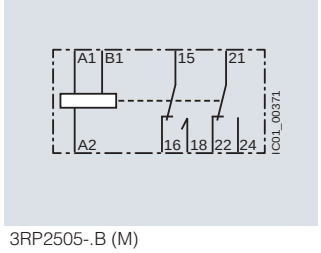

3RP2505-.B (J)
Flashing, symmetrical, starting with pulse and instantaneous contact



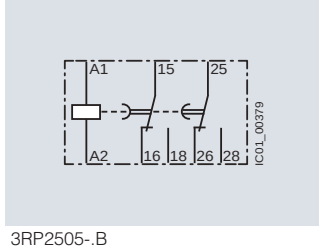

3RP2505-.B (K)
Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact




3RP2505-.B (L)
Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact

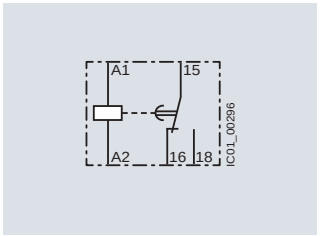



3RP2505-.B (M)
Retriggerable interval relay with activated control signal and instantaneous contact (watchdog)

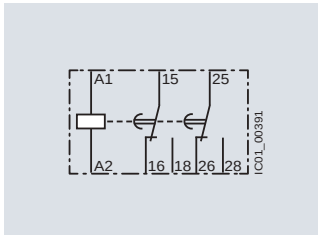



3RP2505-.B
Wye-delta function

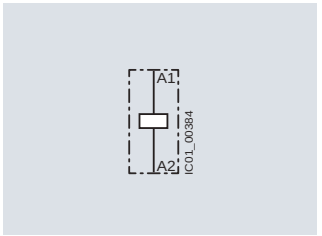
Monofunctions 3RP251. up to 3RP257.[1)]



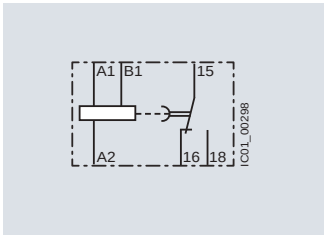

3RP251., 3RP2525-.A
ON-delay



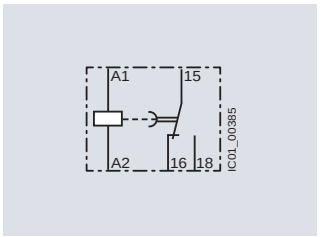

3RP2525-.B
ON-delay



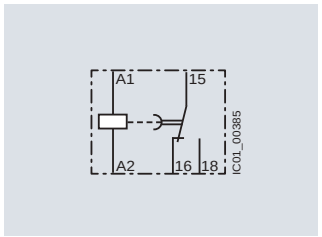

3RP2527
ON-delay, two-wire design



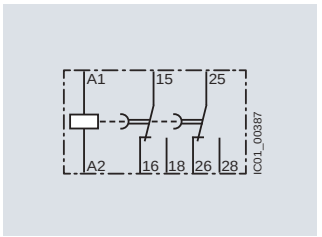

3RP2535
OFF-delay with control signal



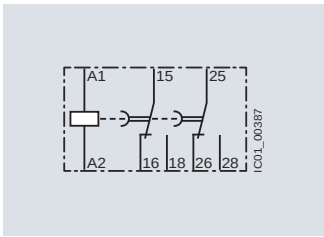

3RP2540-.A (N)[1)]
OFF-delay



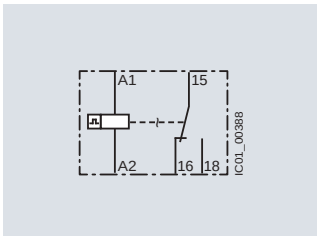

3RP2540-.A (O)[1)]
Positive passing make contact



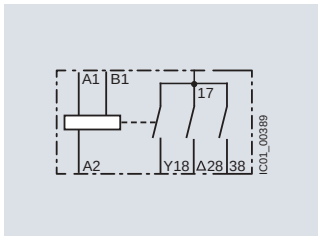

3RP2540-.B (N)[1)]
OFF-delay



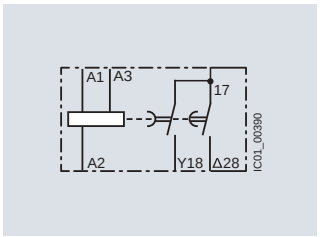

3RP2540-.B (O)[1)]
Positive passing make contact




3RP2555
Flashing, asymmetrical, starting with interval (clock-pulse relay)




3RP2560
Wye-delta function with overtravel function (idling)

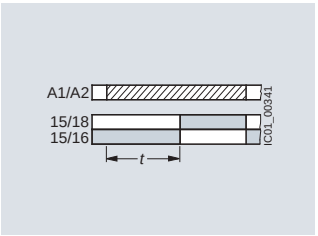



3RP257.
Wye-delta function

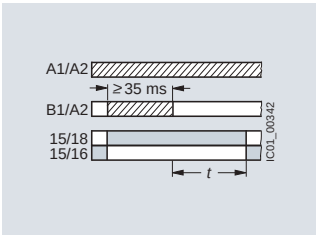
[1)] 3RP2540 has a double function:
Function N = OFF-delay
Function O = Positive passing make contact.

### *3RP25 function diagrams*

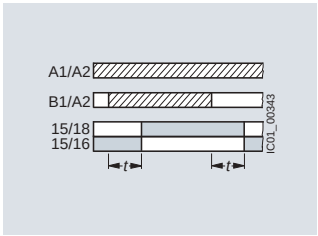
Multifunction 3RP2505-.A, 1 CO, 13 functions and 3RP2505-.C, 1 NO (semiconductor), 13 functions



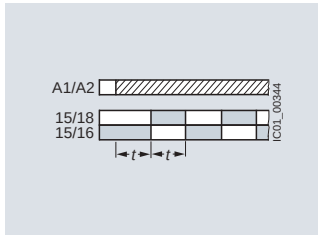

**A**
ON-delay



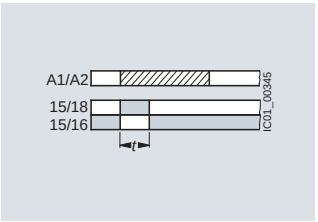

**B**
OFF-delay with control signal



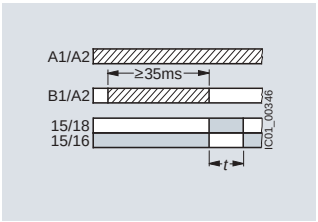

**C**
ON-delay/OFF-delay
with control signal



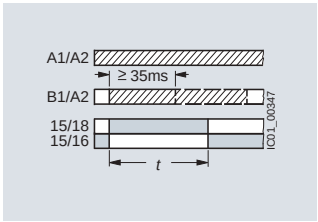

**D**
Flashing, symmetrical,
starting with interval



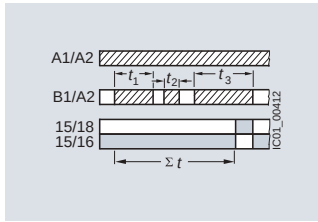

**E**
Passing make contact, interval relay



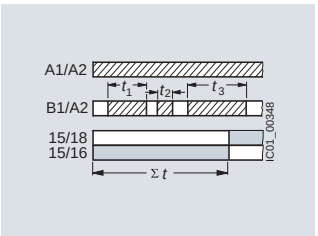

**F**
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



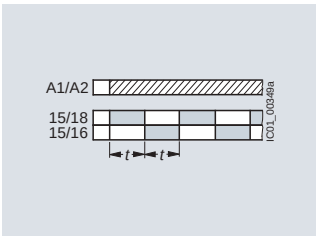

**G**
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



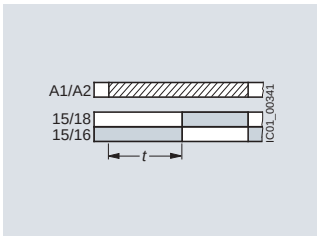

**H**
Additive ON-delay, instantaneous OFF
with control signal



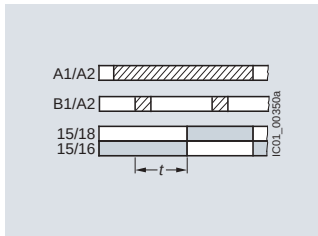

**I**
Additive ON-delay,with control signal



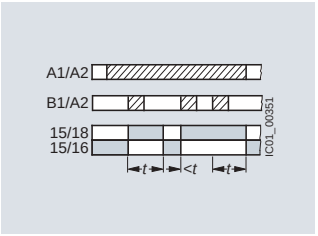

**J**
Flashing, symmetrical,
starting with pulse




**K**
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay)




**L**
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)

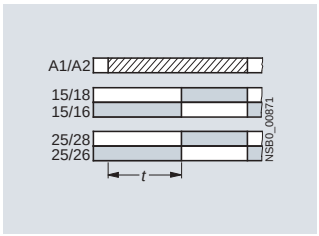



**M**
Retriggerable interval relay with
activated control signal (watchdog)

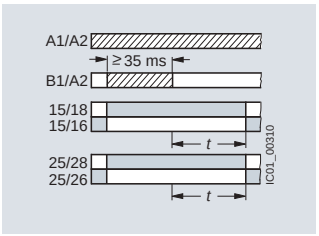
Legend

**A ... M** Identification letters
Timing relay energized
Contact closed
Contact open

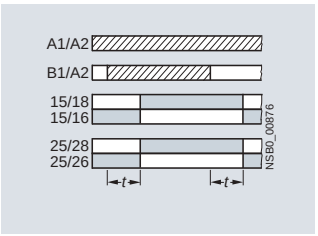
Multifunction 3RP2505-.B, 13 functions, 2 CO positively driven and switched in parallel with delay



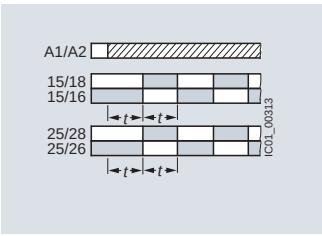

**A**
ON-delay



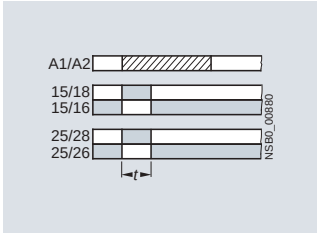

**B**
OFF-delay with control signal



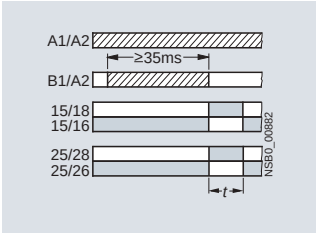

**C**
ON-delay/OFF-delay with control signal



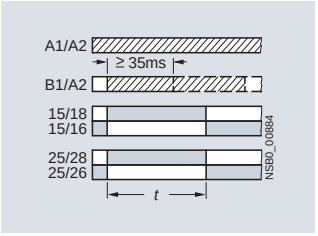

**D**
Flashing, symmetrical, starting with interval



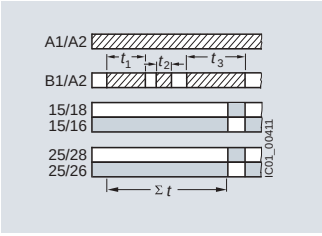

**E**
Passing make contact, interval relay



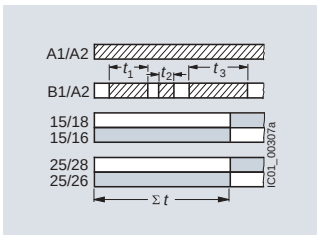

**F**
Retriggerable interval relay with deactivated control signal (passing break contact with control signal)



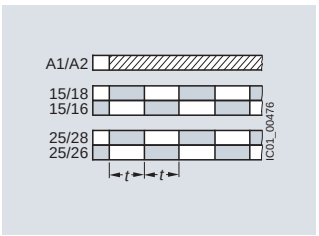

**G**
Passing make contact with control signal, not retriggerable (pulse-forming with control signal)



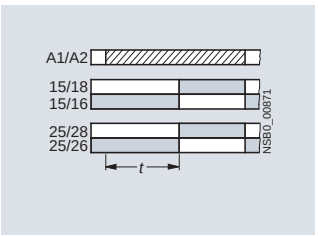

**H**
Additive ON-delay, instantaneous OFF with control signal



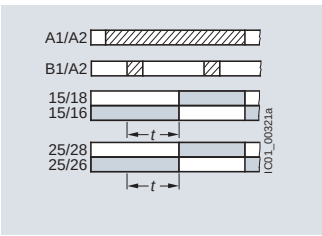

**I**
Additive ON-delay with control signal



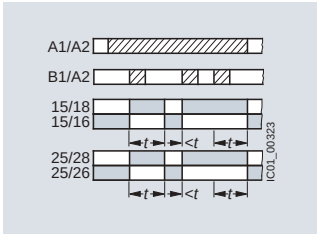

**J**
Flashing, symmetrical, starting with pulse




**K**
Pulse-delayed (fixed pulse at 1 s and settable pulse delay)




**L**
Pulse-delayed with control signal (fixed pulse at 1 s and settable pulse delay)




**M**
Retriggerable interval relay with activated control signal (watchdog)

Legend

**A ... M** Identification letters

Timing relay energized

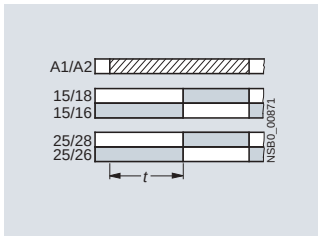
Contact closed

Contact open

## Multifunction 3RP2505-.B, 27 functions, 2 CO

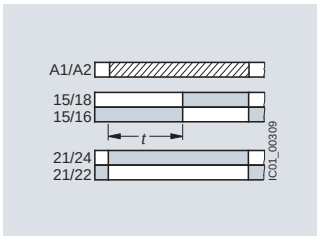
**A**

2 CO switched in parallel




ON-delay

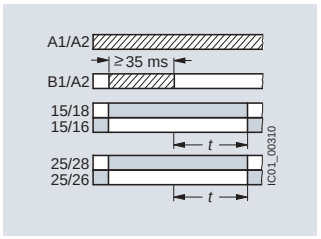
1 CO delayed + 1 CO instantaneous




ON-delay and instantaneous contact

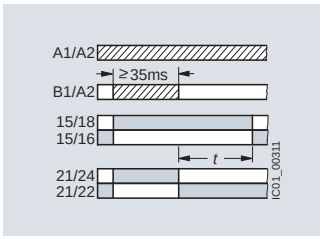
**B**

2 CO switched in parallel




OFF-delay with control signal

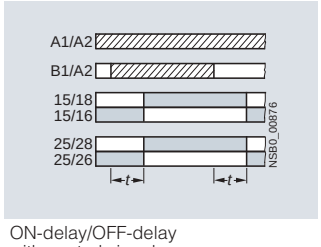
1 CO delayed + 1 CO instantaneous




OFF-delay with control signal and instantaneous contact

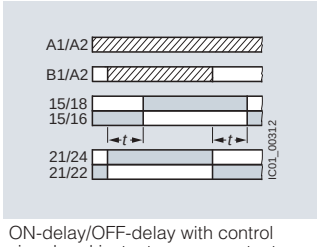
**C**

2 CO switched in parallel




ON-delay/OFF-delay with control signal

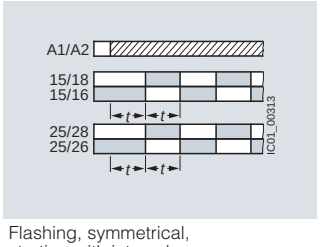
1 CO delayed + 1 CO instantaneous




ON-delay/OFF-delay with control signal and instantaneous contact

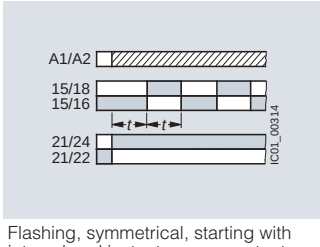
**D**

2 CO switched in parallel




Flashing, symmetrical, starting with interval

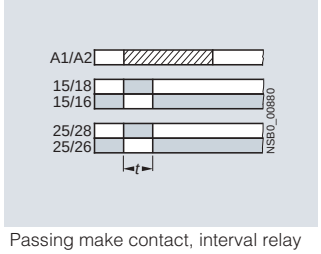
1 CO delayed + 1 CO instantaneous




Flashing, symmetrical, starting with interval and instantaneous contact

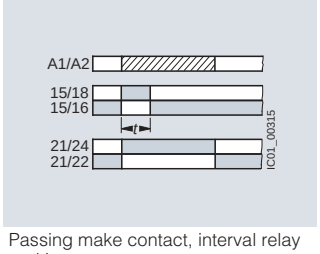
**E**

2 CO switched in parallel




Passing make contact, interval relay

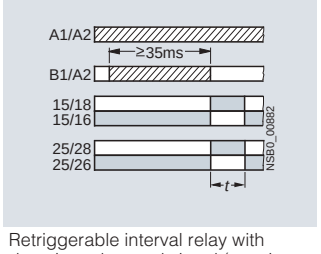
1 CO delayed + 1 CO instantaneous




Passing make contact, interval relay and instantaneous contact

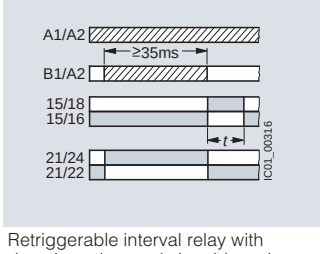
**F**

2 CO switched in parallel




Retriggerable interval relay with deactivated control signal (passing break contact with control signal)

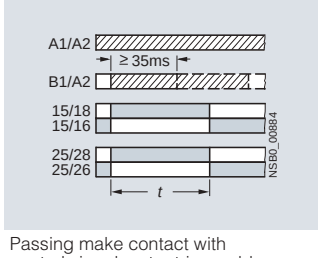
1 CO delayed + 1 CO instantaneous




Retriggerable interval relay with deactivated control signal (passing break contact with control signal) and instantaneous contact

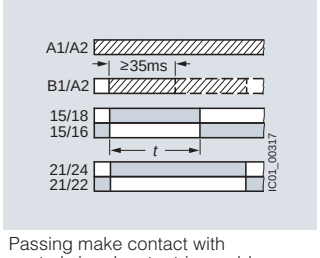
**G**

2 CO switched in parallel




Passing make contact with control signal, not retriggerable (pulse-forming with control signal)

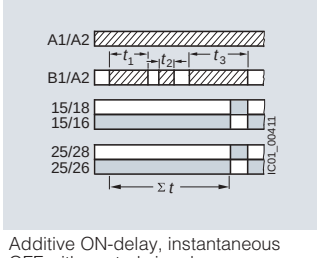
1 CO delayed + 1 CO instantaneous




Passing make contact with control signal, not retriggerable (pulse-forming with control signal) and instantaneous contact

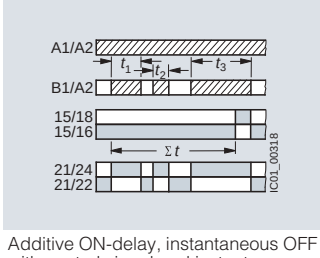
**H**

2 CO switched in parallel




Additive ON-delay, instantaneous OFF with control signal

1 CO delayed + 1 CO instantaneous




Additive ON-delay, instantaneous OFF with control signal and instantaneous contact

Legend

**A ... M** Identification letters

Timing relay energized

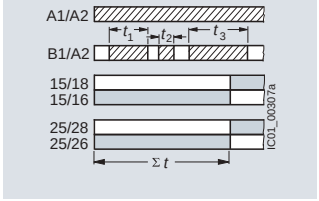
Contact closed

Contact open

Multifunction 3RP2505-.B, 27 functions, 2 CO (continued)

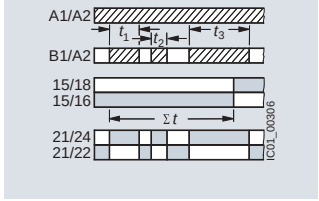
**I**

2 CO switched in parallel




Additive ON-delay with control signal

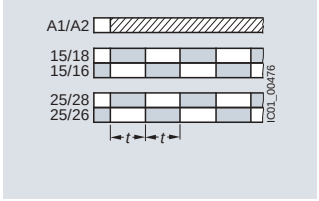
1 CO delayed +
1 CO instantaneous




Additive ON-delay with control signal and instantaneous contact

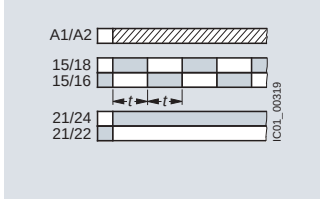
**J**

2 CO switched in parallel




Flashing, symmetrical, starting with pulse

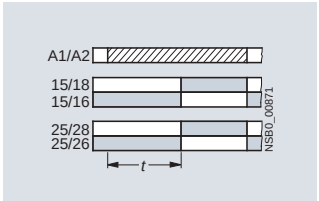
1 CO delayed +
1 CO instantaneous




Flashing, symmetrical, starting with pulse and instantaneous contact

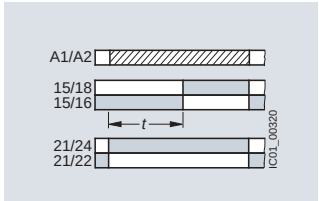
**K**

2 CO switched in parallel




Pulse-delayed (fixed pulse at 1 s and settable pulse delay)

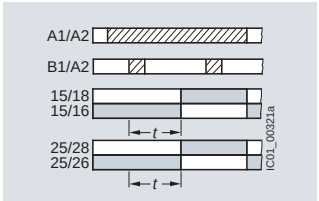
1 CO delayed +
1 CO instantaneous




Pulse-delayed (fixed pulse at 1 s and settable pulse delay) and instantaneous contact

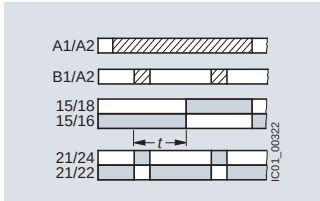
**L**

2 CO switched in parallel




Pulse-delayed with control signal (fixed pulse at 1 s and settable pulse delay)

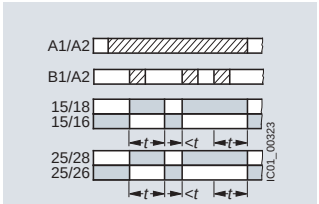
1 CO delayed +
1 CO instantaneous




Pulse-delayed with control signal (fixed pulse at 1 s and settable pulse delay) and instantaneous contact

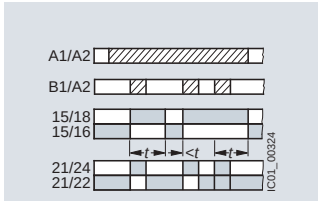
**M**

2 CO switched in parallel




Retriggerable interval relay with activated control signal (watchdog)

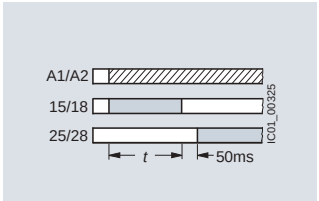
1 CO delayed +
1 CO instantaneous




Retriggerable interval relay with activated control signal and instantaneous contact (watchdog)

**Y**Δ

2 CO switched in parallel or 1 CO delayed +
1 CO instantaneous




Wye-delta function

Legend

**A ... M** Identification letters

Timing relay energized

Contact closed

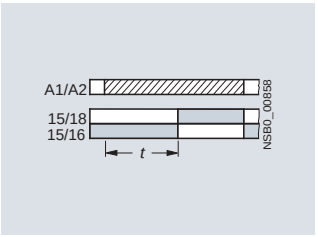
Contact open

# Timing Relays

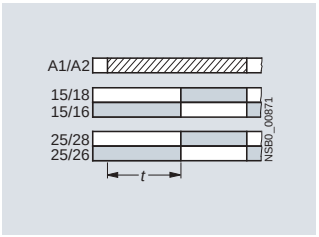
## 3RP25 timing relays, 17.5 mm and 22.5 mm



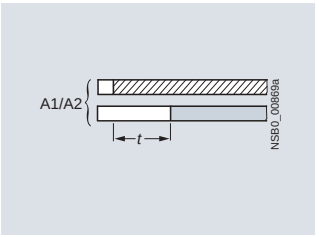
Monofunctions 3RP251. up to 3RP257.[1)]



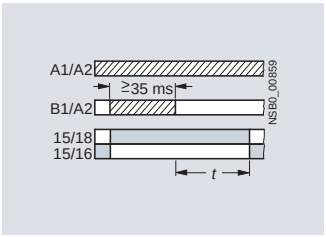

3RP251.-.AW30, 1 CO, ON-delay



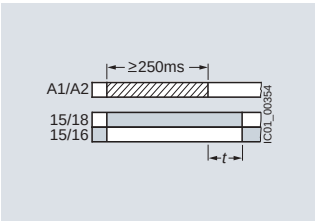

3RP2525-..W30, 2 CO, ON-delay



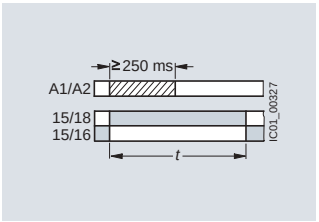

3RP2527-.EW30, 1 NO (semiconductor), ON-delay



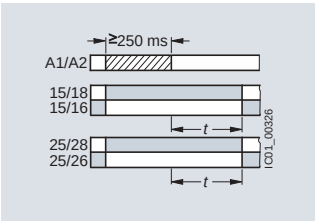

3RP2535-.AW30, 1 CO, OFF-delay with control signal



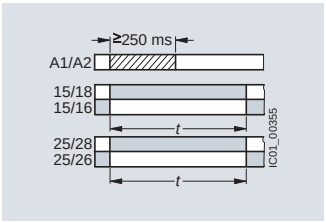

3RP2540-.A.30, 1 CO, OFF-delay (N)[1)]



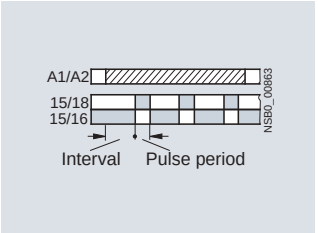

3RP2540-.A.30, 1 CO, positive passing make contact (O)[1)]



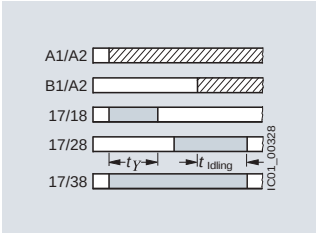

3RP2540-.B.30, 2 CO, OFF-delay (N)[1)]



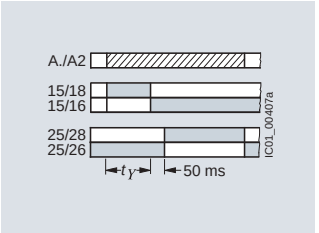

3RP2540-.B.30, 2 CO, positive passing make contact (O)[1)]



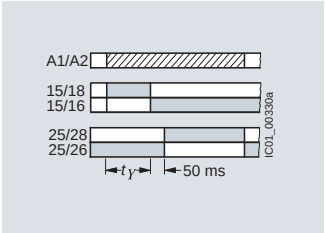

3RP2555-.AW30, 1 CO, flashing, asymmetrical, starting with interval (clock-pulse relay)




3RP2560-.SW30, 3 NO, wye-delta function with overtravel function (idling)




3RP257.-.NM20, 2 NO, wye-delta function




3RP257.-.NM30, 2 NO, wye-delta function

Legend

- Timing relay energized
- Contact closed
- Contact open

[1)] 3RP2540 has a double function:
Function N = OFF-delay
Function O = positive passing make contact.

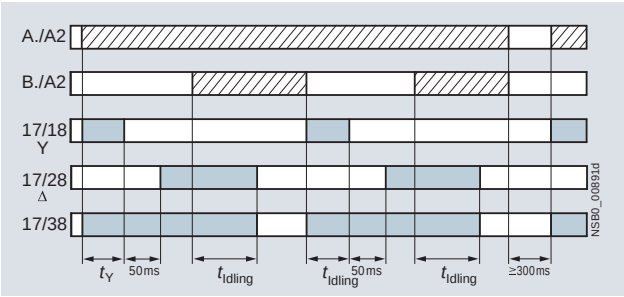
***Possibilities of operation of the 3RP2560-.SW30 timing relay***

Operation 1: Start contact B./A2 is open when control supply voltage A./A2 is applied

The control supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the Y/Δ timing. The idling time (coasting time) is started by applying a control signal to B./A2. When the set time $t_{Idling}$ (30 ... 600 s) has elapsed, the output relays (17/38 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Note:

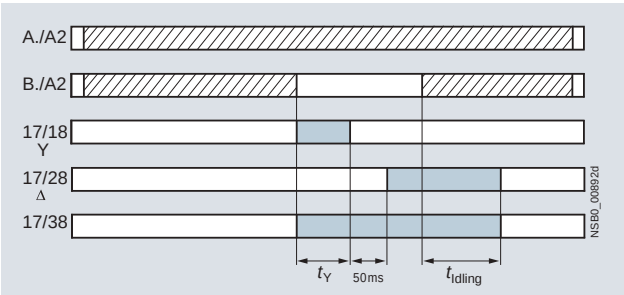
Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/16 close.




Operation 1

Operation 2: Start contact B./A2 is closed when control supply voltage A./A2 is applied

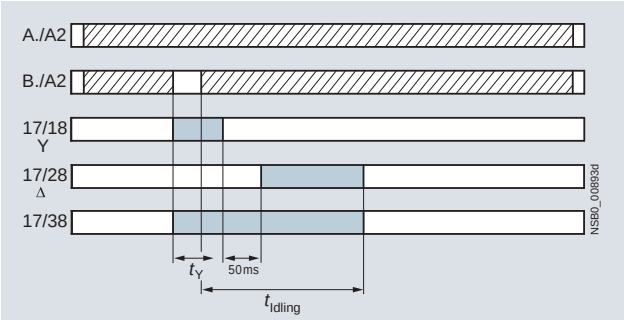
If the control signal B./A2 is already present when the control supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.




Operation 2

Operation 3: Start contact B./A2 closes while star time is running

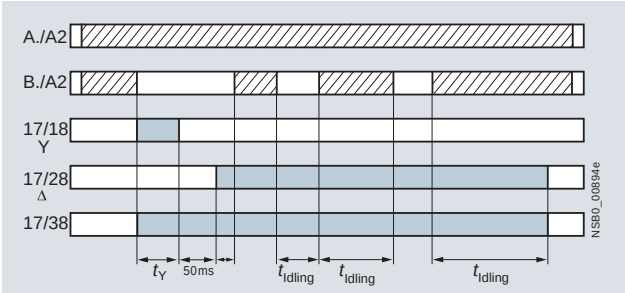
If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.




Operation 3

Operation 4: Start contact B./A2 opens while delta time is running and is applied again

If the control signal on B./A2 is applied and switched off again during the delta time, although the idling time has not yet elapsed, the idling time (coasting time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.




Operation 4

Legend

- Timing relay energized
- Contact closed
- Contact open

$t_Y$ = Star time 1 ... 20 s

$t_{Idling}$ = Idling time (coasting time) 30 ... 600 s

Note:

The following applies to all operations: The pressure switch controls the timing via B./A2.

Application example based on standard operation (operation 1): For example, use of 3RP2560 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new timing relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in "Idling" mode, i.e. in no-load operation for a specific time which can be set from 30 ... 600 s.

If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation.

If the pressure does not fall within this idling time, the motor is switched off.

The pressure switch controls the timing via B./A2.

The control supply voltage is applied to A./A2 and the start contact B./A2 is open, i.e. there is no control signal on B./A2 when the control supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing by way of terminal B./A2. The compressor is started, enters Y/Δ operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (coasting time) is started, and the compressor enters no-load operation for the set period of time from 30 ... 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).

## Selection and ordering data

3RP2505-2AB30

3RP2505-2BB30

3RP2525-2AW30

3RP2540-2AW30

3RP2555-2AW30

3RP2576-2NW30

PU (UNIT, SET, M)= 1
PS* = 1 unit

| Number of NO contacts: Instantaneous switching | Number of NO contacts: Delayed switching | Number of CO contacts: Instantaneous switching | Number of CO contacts: Delayed switching | Semiconductor output | Adjustable time | Control supply voltage: At AC 50/60 Hz | Control supply voltage: At DC | DT | Screw terminals: Article No. | Screw terminals: Price per PU | DT | Spring-type terminals (push-in): Article No. | Spring-type terminals (push-in): Price per PU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | V | V | | | | | | |
| **3RP2505-.A and 3RP2505-.C timing relays, 13 functions** | | | | | | | | | | | | | |
| The functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay. The same potential must be applied to terminals A. and B. Functions, see the overview functions on page 11/26. | | | | | | | | | | | | | |
| 0 | 0 | 0 | 1 | -- | 0.05 s ... 100 h | 24 | 24 | A | **3RP2505-1AB30** | | A | **3RP2505-2AB30** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2505-1AW30** | | A | **3RP2505-2AW30** | |
| 0 | 1 | 0 | 0 | ✓ | 0.05 s ... 100 h | 12 ... 240 | 12 ... 240 | A | **3RP2505-1CW30** | | A | **3RP2505-2CW30** | |
| **3RP2505-.R timing relays suitable for railway applications, 13 functions** NEW<br>Start of delivery planned for 11/2015 | | | | | | | | | | | | | |
| The functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay. The same potential must be applied to terminals A. and B. Functions, see the overview functions on page 11/26. | | | | | | | | | | | | | |
| 0 | 0 | -- | 2[1] | -- | 0.05 s ... 100 h | 24 ... 240 | 24 ... 240 | A | **3RP2505-1RW30** | | A | **3RP2505-2RW30** | |
| **3RP2505-.B timing relay, 27 functions** | | | | | | | | | | | | | |
| The functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay. The same potential must be applied to terminals A. and B. Functions, see the overview functions on page 11/26. | | | | | | | | | | | | | |
| 0 | 0 | -- | 2[2] | -- | 0.05 s ... 100 h | 24 | 24 | A | **3RP2505-1BB30** | | A | **3RP2505-2BB30** | |
| | | | | | | 400 ... 440 | -- | A | **3RP2505-1BT20** | | A | **3RP2505-2BT20** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2505-1BW30** | | A | **3RP2505-2BW30** | |
| **3RP251. and 3RP252. timing relays, ON-delay** | | | | | | | | | | | | | |
| 0 | 0 | 0 | 1 | -- | 0.5 ... 10 s | 12 ... 240 | 12 ... 240 | A | **3RP2511-1AW30** | | A | **3RP2511-2AW30** | |
| | | | | | 1 ... 30 s | 12 ... 240 | 12 ... 240 | A | **3RP2512-1AW30** | | A | **3RP2512-2AW30** | |
| | | | | | 5 ... 100 s | 12 ... 240 | 12 ... 240 | A | **3RP2513-1AW30** | | A | **3RP2513-2AW30** | |
| | | | | | 0.05 s ... 100 h | 12 ... 240 | 12 ... 240 | A | **3RP2525-1AW30** | | A | **3RP2525-2AW30** | |
| 0 | 0 | 0 | 2 | -- | 0.05 s ... 100 h | 24 | 24 | A | **3RP2525-1BB30** | | A | **3RP2525-2BB30** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2525-1BW30** | | A | **3RP2525-2BW30** | |
| 0 | 1 | 0 | 0 | ✓ | 0.05 s... 240 s | 12 ... 240 | 12 ... 240 | A | **3RP2527-1EW30** | | A | **3RP2527-2EW30** | |
| **3RP2535 timing relays, OFF-delay with control signal** | | | | | | | | | | | | | |
| 0 | 0 | 0 | 1 | -- | 0.05 s ... 100 h | 12 ... 240 | 12 ... 240 | A | **3RP2535-1AW30** | | A | **3RP2535-2AW30** | |
| **3RP2540 timing relays, OFF-delay, without control signal, non-volatile, passing make contact** | | | | | | | | | | | | | |
| 0 | 0 | 0 | 1 | -- | 0.05 s ... 600 s | 24 | 24 | A | **3RP2540-1AB30** | | A | **3RP2540-2AB30** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2540-1AW30** | | A | **3RP2540-2AW30** | |
| 0 | 0 | 0 | 2 | -- | 0.05 s ... 600 s | 24 | 24 | A | **3RP2540-1BB30** | | A | **3RP2540-2BB30** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2540-1BW30** | | A | **3RP2540-2BW30** | |
| **3RP2555 timing relays, clock-pulse relay, flashing, asymmetrical** | | | | | | | | | | | | | |
| 0 | 0 | 0 | 1 | -- | 0.05 s ... 100 h | 12 ... 240 | 12 ... 240 | A | **3RP2555-1AW30** | | A | **3RP2555-2AW30** | |
| **3RP2560 timing relays, wye-delta function with overtravel function (idling)** | | | | | | | | | | | | | |
| 1 | 2 | 0 | 0 | -- | 1 ... 20 s | 12 ... 240 | 12 ... 240 | A | **3RP2560-1SW30** | | A | **3RP2560-2SW30** | |
| **3RP257. timing relays, wye-delta function** | | | | | | | | | | | | | |
| 1 | 1 | 0 | 0 | -- | 1 ... 20 s | 380 ... 440[3] | -- | A | **3RP2574-1NM20** | | A | **3RP2574-2NM20** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2574-1NW30** | | A | **3RP2574-2NW30** | |
| 1 | 1 | 0 | 0 | -- | 3 ... 60 s | 380 ... 440[3] | -- | A | **3RP2576-1NM20** | | A | **3RP2576-2NM20** | |
| | | | | | | 12 ... 240 | 12 ... 240 | A | **3RP2576-1NW30** | | A | **3RP2576-2NW30** | |

✓ Available
-- Not available

[1] Positively-driven contacts.

[2] Optionally 1 CO delayed + 1 CO instantaneous.

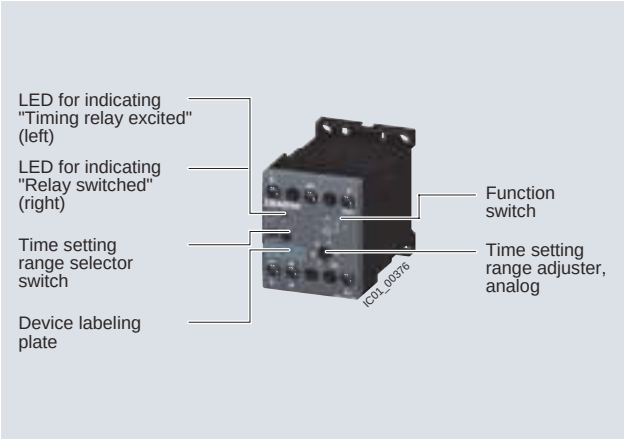
[3] With 3RP2574-.NM20 and 3RP2576-.NM20 , connection of 200 ... 240 V AC, 50/60 Hz control voltage is also possible.

For accessories, see page 11/41.

## Accessories

| | Version | DT | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Accessories for enclosures** | | | | | | |
|  3ZY1321-1AA00 | **Sealing covers**<br>• 17.5 mm | A | **3ZY1321-1AA00** | | 1 | 5 units |
|  3ZY1321-2AA00 | • 22.5 mm | A | **3ZY1321-2AA00** | | 1 | 5 units |
| 3ZY1311-0AA00 | **Push-in lugs**<br>For wall mounting | A | **3ZY1311-0AA00** | | 1 | 10 units |
| 3ZY1440-0AA00 | **Coding pins**<br>For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals | A | **3ZY1440-1AA00** | | 1 | 12 units |
| **Terminals for SIRIUS devices in the industrial standard mounting rail enclosure** | | | | | | |
| 3ZY1122-1BA00 | **Removable terminals** | | **Screw terminals** | | | |
| | • 2-pole, screw terminals 1 x 4 mm² | A | **3ZY1122-1BA00** | | 1 | 6 units |
| 3ZY1122-2BA00 | | | **Spring-type terminals (push-in)** | | | |
| | • 2-pole, push-in terminals 1 x 4 mm² | A | **3ZY1122-2BA00** | | 1 | 6 units |
| **Tools for opening spring-type terminals** | | | | | | |
| 3RA2908-1A | **Screwdrivers**<br>For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated | A | **Spring-type terminals**<br>**3RA2908-1A** | | 1 | 1 unit |

## Overview




SIRIUS 3RP20 timing relays

SIRIUS 3RP20 electronic timing relays for use in control systems and mechanical engineering with:

- 1 or 2 CO contacts
- Multifunction or monofunction
- Wide voltage range or combination voltage
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

### *Standards*

The timing relays comply with:

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1 "Time relays for industrial and residential use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- IEC 60947-1, Appendix N "Protective separation"

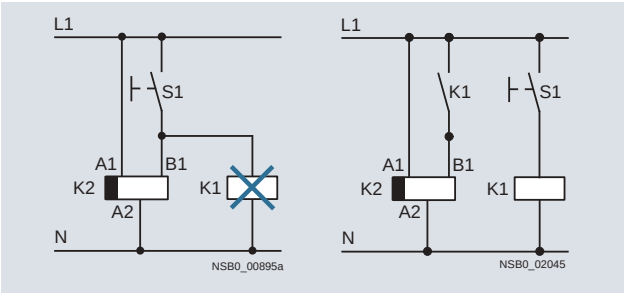
### *Multifunction*

The functions of the 3RP2005 multifunctional timing relays can be set by means of the function selector switch. Insert labels can be used to adjust different functions of the timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

For functions, see 3RP2901 label set, page 11/47.

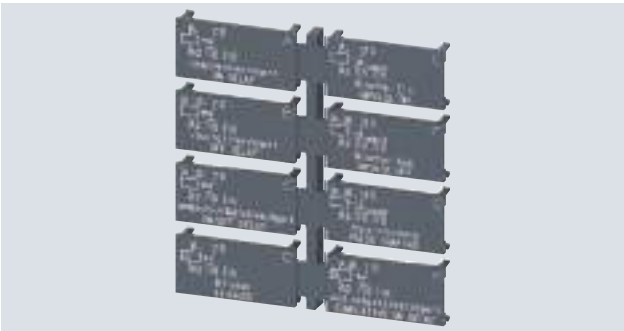
Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).




Diagrams

### *Accessories*



Label set for marking the multifunctional relay

### *Article No. scheme*

| Digit of the Article No. | 1st - 5th | 6th | 7th | | 8th | 9th | 10th | 11th | 12th |
|---|---|---|---|---|---|---|---|---|---|
| | □□□□□ | □ | □ | – | □ | □ | □ | □ | 0 |
| **SIRIUS timing relays, enclosure 45 mm** | **3 R P 2 0** | | | | | | | | |
| **Functions/time setting ranges** | | □ | □ | | | | | | |
| **Connection type** | | | | | □ | | | | |
| **Contacts** | | | | | | □ | | | |
| **Rated control supply voltage** | | | | | | | □ | □ | |
| **Example** | **3 R P 2 0** | **0** | **5** | **–** | **1** | **A** | **P** | **3** | **0** |

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

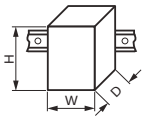
## Benefits

- Suitable for 3RT miniature contactors
- Uniform design
- Ideal for small distance between standard mounting rails and/or for low mounting depth, e.g. in control boxes
- Labels are used on the multifunctional time relay to document the function that has been set

## Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

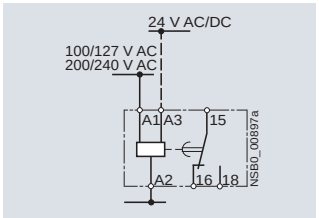
## Technical specifications

| Type | | | 3RP2005, 3RP2025 |
|---|---|---|---|
| Dimensions (W x H x D) |  | mm | 45 x 57 x 73 |
| **Rated insulation voltage**<br>Pollution degree 3<br>Overvoltage category III | | V AC | 300 |
| **Permissible ambient temperature** | | | |
| • During operation | | °C | -25 ... +60 |
| • During storage | | °C | -40 ... +85 |
| **Operating range at excitation**[1] | | | 0.85 ... 1.1 x $U_s$ at AC; 0.8 ... 1.25 x $U_s$ at DC;<br>0.95 ... 1.05 times the rated frequency |
| **Mechanical endurance** | | Operating cycles | 10 x $10^6$ |
| **Electrical endurance at $I_e$** | | Operating cycles | 1 x $10^5$ |
| **Connection type** | | | **Screw terminals** |
| • Terminal screw | | | M3 (for standard screwdriver, size 2 and Pozidriv 2) |
| • Solid | | $mm^2$ | 2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2] |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2] |
| • Stranded | | AWG | 2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2] |
| • AWG cables | | AWG | 2 x (18 ... 14) |
| • Tightening torque | | Nm | 0.8 ... 1.2 |
| **Connection type** | | | **Spring-type terminals** |
| • Solid | | $mm^2$ | 2 x (0.25 ... 2.5) |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • Finely stranded without end sleeve | | $mm^2$ | 2 x (0.25 ... 2.5) |
| • AWG cables, solid or stranded | | AWG | 2 x (24 ... 14) |
| • Max. external diameter of the conductor insulation | | mm | 3.6 |

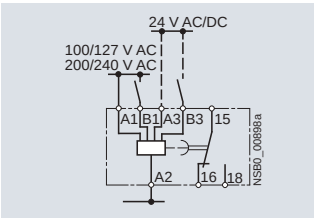
1) If nothing else is stated.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

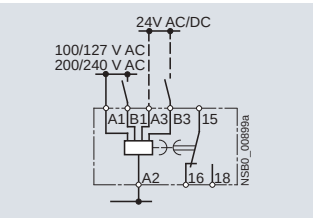
### *3RP20 internal circuit diagrams*



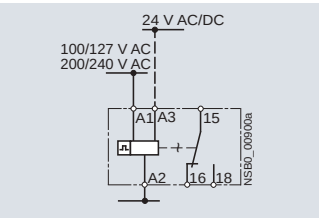

3RP2005, 3RP2025
ON-delay



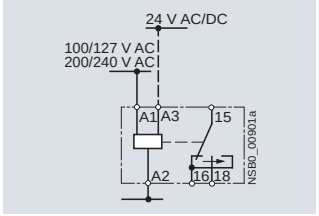

3RP2005
OFF-delay
with control signal



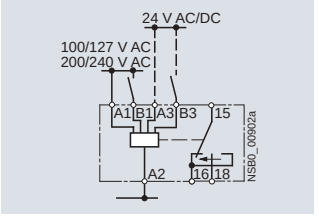

3RP2005
ON-delay and OFF-delay
with control signal



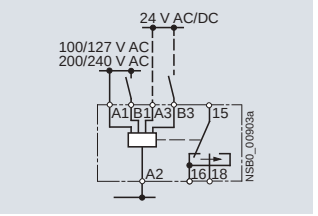

3RP2005
Flashing, starting with interval



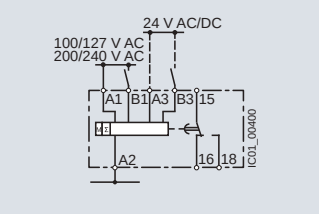

3RP2005
Passing make contact




3RP2005
Passing break contact
with control signal



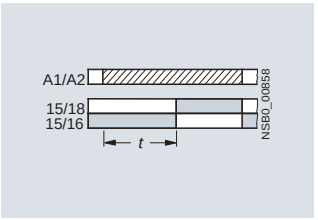

3RP2005
Pulse-forming
with control signal




3RP2005
Additive ON-delay
with control signal

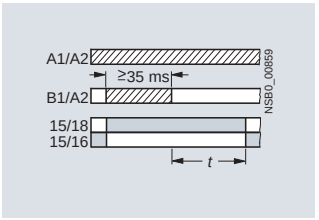
### *3RP20 function diagrams and 3RP2901 label set*

1 CO contact



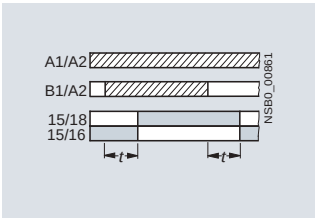

**A**

3RP2005-.A, 3RP2025
ON-delay



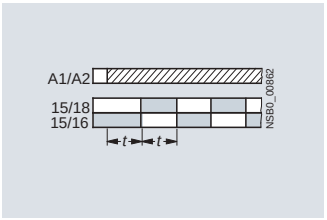

**B**[1)]

3RP2005-.A
OFF-delay with control signal



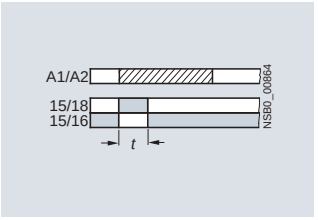

**C**[1)]

3RP2005-.A
ON-delay and OFF-delay
with control signal ($t = t_{on} = t_{off}$)



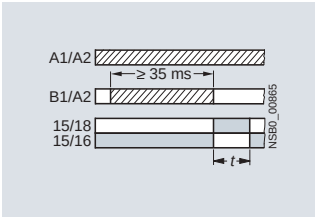

**D**

3RP2005-.A
Flashing, starting with interval
(pulse/interval 1:1)



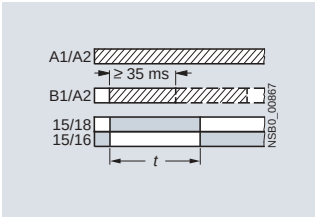

**E**

3RP2005-.A
Passing make contact



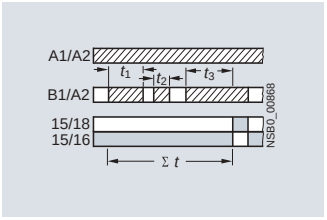

**F**[1)]

3RP2005-.A
Passing break contact
with control signal




**G**[1)]

3RP2005-.A
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)




**H**[1)]

3RP2005-.A
Additive ON-delay with control signal

Legend

**A ... H** Identification letters for 3RP2005

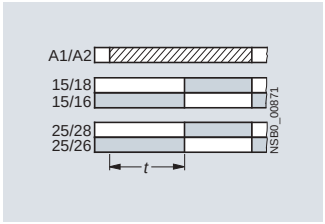
Timing relay energized

Contact closed

Contact open

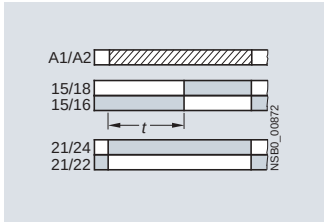
[1)] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H●, which are not retriggerable.

2 CO contacts



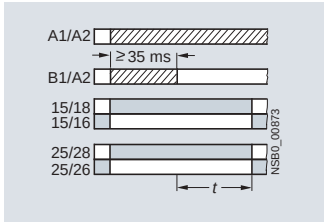

**A**

3RP2005-.B
ON-delay



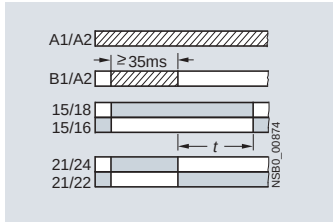

**A●**

3RP2005-.B
ON-delay and instantaneous contact



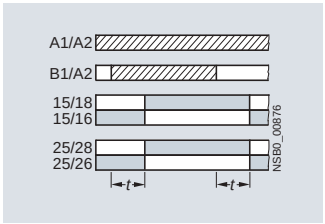

**B**[1)]

3RP2005-.B
OFF-delay with control signal



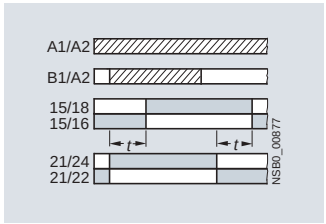

**B●**[1)]

3RP2005-.B
OFF-delay with control signal
and instantaneous contact



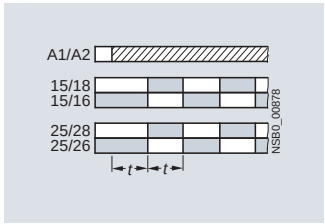

**C**[1)]

3RP2005-.B
ON-delay and OFF-delay
with control signal ($t = t_{on} = t_{off}$)



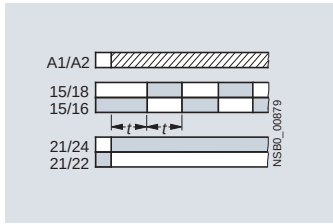

**C●**[1)]

3RP2005-.B
ON-delay and OFF-delay
with control signal and instantaneous contact
($t = t_{on} = t_{off}$)



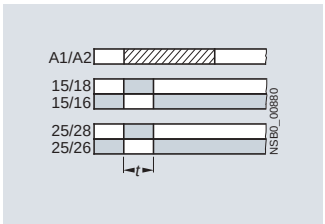

**D**

3RP2005-.B
Flashing, starting with interval
(pulse/interval 1:1)



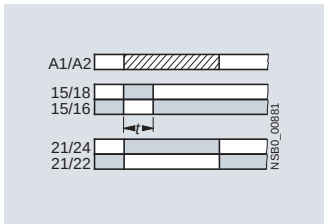

**D●**

3RP2005-.B
Flashing, starting with interval
(pulse/interval 1:1) and instantaneous contact



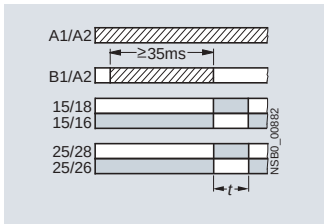

**E**

3RP2005-.B
Passing make contact



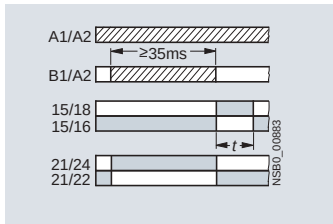

**E●**

3RP2005-.B
Passing make contact and
instantaneous contact



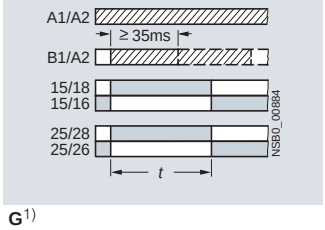

**F**[1)]

3RP2005-.B
Passing break contact
with control signal



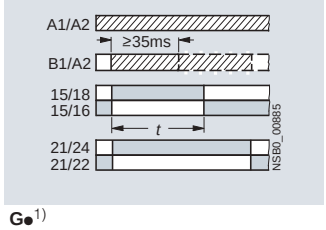

**F●**[1)]

3RP2005-.B
Passing break contact
with control signal
and instantaneous contact



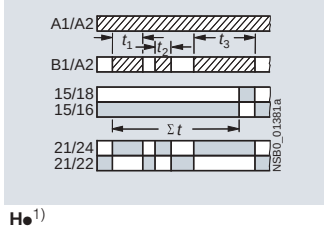

**G**[1)]

3RP2005-.B
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)



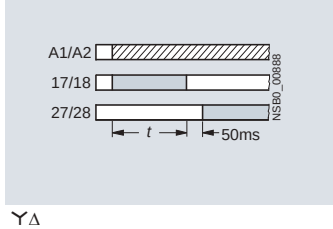

**G●**[1)]

3RP2005-.B
Pulse-forming with control signal
and instantaneous contact (pulse
generation at the output does not
depend on duration of energizing)




**H●**[1)]

3RP2005-.B
Additive ON-delay with control signal
and instantaneous contact




**Y△**

3RP2005-.B
Wye-delta function

Legend

**A ... H** Identification letters for 3RP2005

Timing relay energized

Contact closed

Contact open

[1)] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H●, which are not retriggerable.

## Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit

3RP2005-1AP30

3RP2005-1BW30

3RP2005-2AP30

3RP2025-2BW30

| Version | Time setting range *t* | Rated control supply voltage $U_s$ 50/60 Hz AC V | Rated control supply voltage $U_s$ DC V | DT | Screw terminals Article No. | Screw terminals Price per PU | DT | Spring-type terminals Article No. | Spring-type terminals Price per PU |
|---|---|---|---|---|---|---|---|---|---|
| **3RP2005 timing relays, multifunction, 15 time setting ranges** | | | | | | | | | |
| The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP2505 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B. For functions, see 3RP2901 label set, page 11/47. | | | | | | | | | |
| With LED and 1 CO contact[1], 8 functions | 0.05 ... 1 s<br>0.15 ... 3 s<br>0.5 ... 10 s<br>1.5 ... 30 s<br>0.05 ... 1 min<br>5 ... 100 s<br>0.15 ... 3 min<br>0.5 ... 10 min<br>1.5 ... 30 min<br>0.05 ... 1 h<br>5 ... 100 min<br>0.15 ... 3 h<br>0.5 ... 10 h<br>1.5 ... 30 h<br>5 ... 100 h<br>∞ [2] | 24/100 ... 127<br>24/200 ... 240 | 24<br>24 | ►<br>► | **3RP2005-1AQ30**<br>**3RP2005-1AP30** | | A<br>► | **3RP2005-2AQ30**<br>**3RP2005-2AP30** | |
| With LED and 2 CO contacts, 16 functions | | 24 ... 240[3] | 24 ... 240[4] | ► | **3RP2005-1BW30** | | A | **3RP2005-2BW30** | |
| **3RP2025. timing relays, ON-delay, 15 time setting ranges** | | | | | | | | | |
| With LED and 1 CO contact[1] | 0.05 ... 1 s<br>0.15 ... 3 s<br>0.5 ... 10 s<br>1.5 ... 30 s<br>0.05 ... 1 min<br>5 ... 100 s<br>0.15 ... 3 min<br>0.5 ... 10 min<br>1.5 ... 30 min<br>0.05 ... 1 h<br>5 ... 100 min<br>0.15 ... 3 h<br>0.5 ... 10 h<br>1.5 ... 30 h<br>5 ... 100 h<br>∞ [2] | 24/100 ... 127<br>24/200 ... 240 | 24<br>24 | ►<br>► | **3RP2025-1AQ30**<br>**3RP2025-1AP30** | | ►<br>► | **3RP2025-2AQ30**<br>**3RP2025-2AP30** | |

For accessories, see page 11/47.

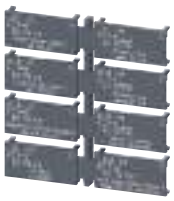
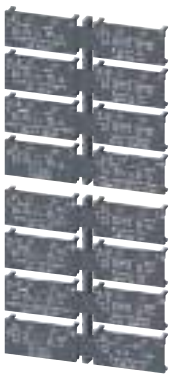
[1] Units with protective separation.

[2] With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

[3] Operating range 0.8 to 1.1 x $U_s$.

[4] Operating range 0.7 to 1.1 x $U_s$.

## Accessories

| Version | Function | Identification letter | Use | DT | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Label sets for 3RP20** | | | | | | | | |
| Accessories for 3RP20 (not included in the scope of supply). The label set offers the possibility of labeling timing relays with the set function in English and German. | | | | | | | | |
|  3RP2901-0A | | | | | | | | |
| 1 label set (1 unit) with 8 functions | ON-delay | A | For devices with 1 CO | C | **3RP2901-0A** | | 1 | 5 units |
| | OFF-delay with control signal | B | | | | | | |
| | ON-delay and OFF-delay with control signal | C | | | | | | |
| | Flashing, starting with interval | D | | | | | | |
| | Passing make contact | E | | | | | | |
| | Passing break contact with control signal | F | | | | | | |
| | Pulse-forming with control signal | G | | | | | | |
| | Additive ON-delay with control signal | H | | | | | | |
|  3RP2901-0B | | | | | | | | |
| 1 label set (1 unit) with 16 functions | ON-delay | A | For devices with 2 CO contacts | C | **3RP2901-0B** | | 1 | 5 units |
| | OFF-delay with control signal | B | | | | | | |
| | ON-delay and OFF-delay with control signal | C | | | | | | |
| | Flashing, starting with interval | D | | | | | | |
| | Passing make contact | E | | | | | | |
| | Passing break contact with control signal | F | | | | | | |
| | Pulse-forming with control signal | G | | | | | | |
| | ON-delay and instantaneous contact | A• | | | | | | |
| | OFF-delay with control signal and instantaneous contact | B• | | | | | | |
| | ON-delay and OFF-delay with control signal and instantaneous contact | C• | | | | | | |
| | Flashing, starting with interval, and instantaneous contact | D• | | | | | | |
| | Passing make contact and instantaneous contact | E• | | | | | | |
| | Passing break contact with control signal and instantaneous contact | F• | | | | | | |
| | Pulse-forming with control signal and instantaneous contact | G• | | | | | | |
| | Additive ON-delay with control signal and instantaneous contact | H• | | | | | | |
| | Wye-delta function | Y Δ | | | | | | |
| **Blank inscription labels for 3RP20** | | | | | | | | |
| Blank labels, 20 mm x 7 mm, pastel turquoise | | | For 3RP20 | D | **3RT1900-1SB20** | | 100 | 340 units |

## 7PV15 timing relays in enclosure, 17.5 mm



### Overview

7PV15 timing relay

Electronic timing relays for general use and in control systems, mechanical engineering and infrastructure with:

- 1 or 2 CO contacts
- Multifunction or monofunction
- Wide voltage range or combination voltage
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

#### *Standards*

The timing relays comply with:

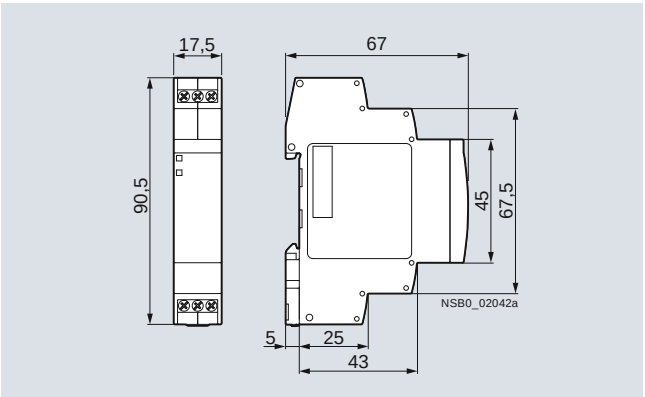
- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1 "Time relays for industrial and residential use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- DIN 43880 "Built-in equipment for electrical installations; overall dimensions and related mounting dimensions"

#### *Multifunction*

The functions of the 7PV1508-1A multifunctional timing relays can be set by means of rotary switches. The identification letters A to G are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

#### *Enclosure version*

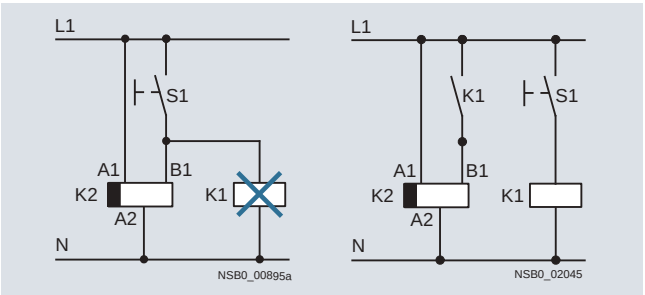
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715. The enclosure complies with DIN 43880, 1 MW.




Dimensions

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).




Diagrams

#### *Article No. scheme*

| Digit of the Article No. | 1st - 5th | 6th | 7th | | 8th | 9th | 10th | 11th | 12th |
|---|---|---|---|---|---|---|---|---|---|
| | □□□□□ | □ | □ | – | □ | □ | □ | □ | 0 |
| Timing relays in industrial enclosure, 17.5 mm | 7 P V 1 5 | | | | | | | | |
| Functions/time setting ranges | | □ | □ | | | | | | |
| Connection type | | | | | □ | | | | |
| Contacts | | | | | | □ | | | |
| Rated control supply voltage | | | | | | | □ | □ | |
| Example | 7 P V 1 5 | 0 | 8 | – | 1 | A | W | 3 | 0 |

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

## 7PV15 timing relays in enclosure, 17.5 mm



### Benefits

- Wide voltage range 12 to 240 V AC/DC
- High switching capacity, e.g. AC-15 at 230 V, 3 A
- Combination voltage, e.g. 24 V AC/DC and 200 to 240 V AC
- Changes to the time setting range during operation
- Changes to the function in the de-energized state
- High level of functionality and a high repeat accuracy of timer settings
- Integrated surge suppressor
- Function charts printed on the side of the device for reliable device adjustment

### Application

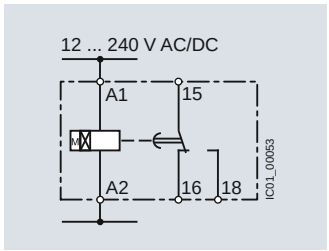
Timing relays are used in control, starting and protective circuits for all switching operations involving time delays, e.g. in non-residential buildings, airports, industrial buildings etc.

### Technical specifications

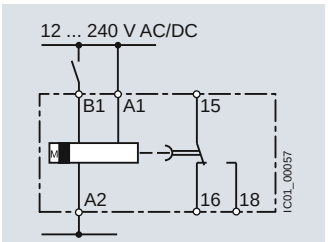
| Type | | | 7PV15 |
|---|---|---|---|
| **Rated insulation voltage**<br>Pollution degree 2, overvoltage category III | | V AC | 300 |
| **Permissible ambient temperature** | | | |
| • During operation | | °C | -25 ... +55 |
| • During storage | | °C | -40 ... +70 |
| **Operating range at excitation**[1] | | | 0.85 ... 1.1 x $U_s$ at V AC/DC, 50/60 Hz<br>0.8 ... 1.25 x $U_s$ 24 V DC<br>0.95 ... 1.05 times the rated frequency |
| **Rated operational current $I_e$** | | | |
| • AC-15 at 24 ... 240 V, 50 Hz | | A | 3 |
| • DC-13 at | | | |
| - 24 V | | A | 1 |
| - 125 V | | A | 0.2 |
| **Uninterrupted thermal current $I_{th}$** | | A | 5 |
| **Mechanical endurance** | Operating cycles | | 1 x $10^6$ |
| **Electrical endurance at $I_e$** | Operating cycles | | 1 x $10^5$ |
| **Connection type** | | | **Screw terminals** |
| • Terminal screw | | | M3 (for standard screwdriver, size 2 and Pozidriv 2) |
| • Solid | | $mm^2$ | 1 x (0.2 ... 2.5) |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.25 ... 1.5) |
| • Finely stranded without end sleeve | | $mm^2$ | 1 x (0.2 ... 1.5) |
| • AWG cables, solid or stranded | | AWG | 1 x (24 ... 14) |
| • Tightening torque | | Nm | 0.4 … 0.5 |

[1] If nothing else is stated.

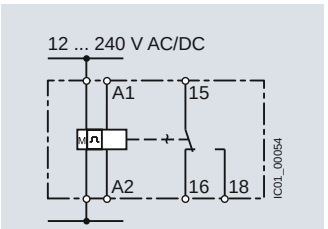
### *7PV15 internal circuit diagrams*



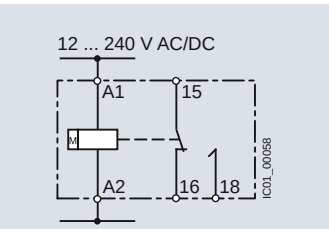

7PV1508-1AW30
ON-delay



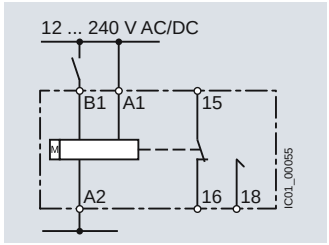

7PV1508-1AW30
OFF-delay



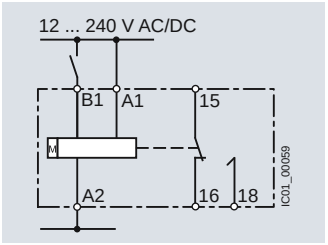

7PV1508-1AW30
Flashing, starting with interval



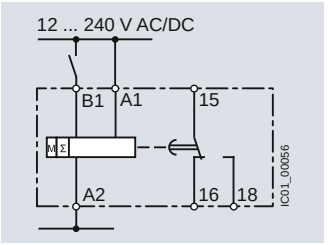

7PV1508-1AW30
Passing make contact



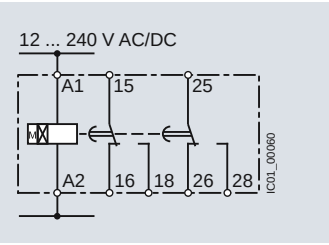

7PV1508-1AW30
Passing break contact
with control signal




7PV1508-1AW30
Pulse-forming
with control signal

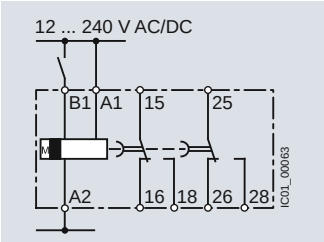



7PV1508-1AW30
Additive ON-delay,
with control signal

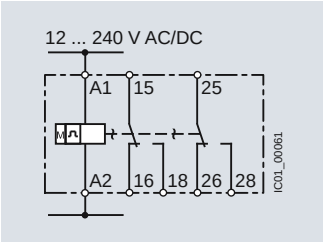



7PV1508-1BW30
ON-delay

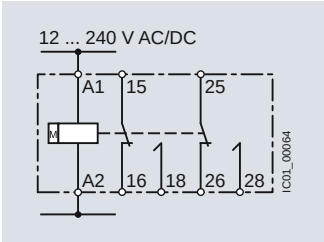
### *7PV15 internal circuit diagrams (continued)*



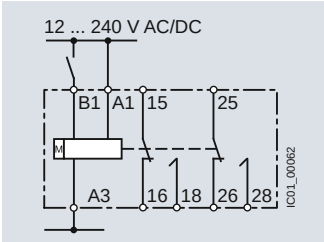

7PV1508-1BW30
OFF-delay
with control signal



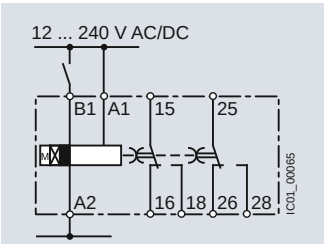

7PV1508-1BW30
Flashing,
starting with interval



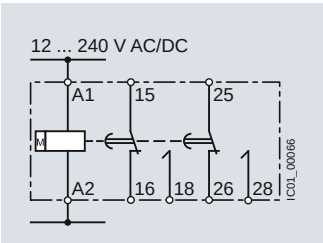

7PV1508-1BW30
Passing make contact



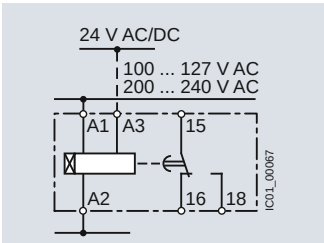

7PV1508-1BW30
Pulse-forming
with control signal



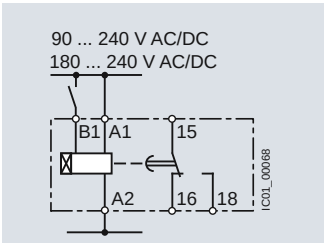

7PV1508-1BW30
ON and OFF-delay



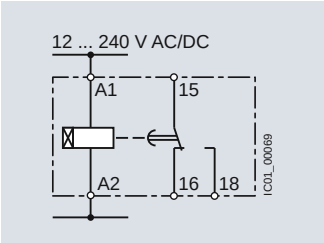

7PV1508-1BW30
Fixed pulse after ON-delay



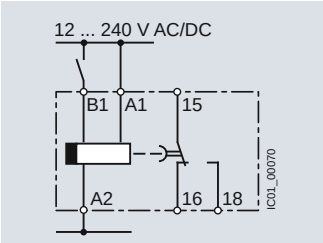

7PV151.-1AQ30, 7PV151.-1AP30
ON-delay



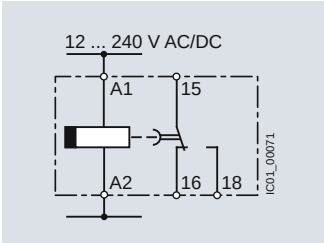

7PV1518-1AJ30, 7PV1518-1AN30
ON-delay



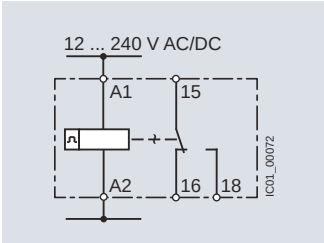

7PV1518-1AW30
ON-delay



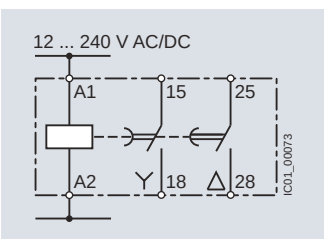

7PV1538-1AW30
OFF-delay
with control signal




7PV1540-1AW30
OFF-delay
without control signal




7PV1558-1AW30
Clock-pulse relay



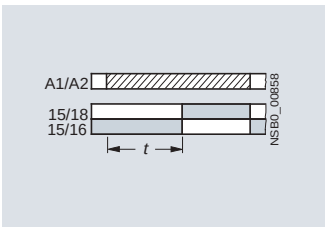

7PV1578-1BW30
Wye-delta

## 7PV15 timing relays in enclosure, 17.5 mm



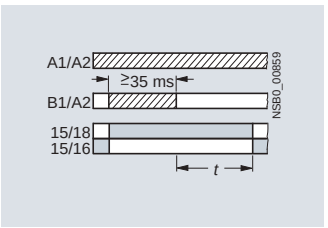
### *7PV15 function diagrams*

1 CO contact




**A**

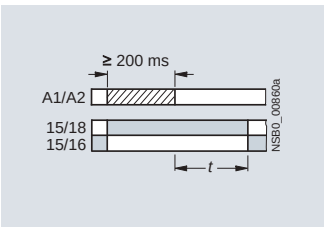
7PV1508-1A, 7PV1511, 7PV1512, 7PV1513, 7PV1518
ON-delay




**B**[1)]

7PV1508-1A, 7PV1538

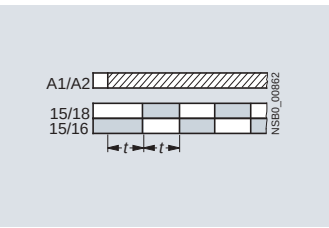
OFF-delay with control signal




**--**

7PV1540

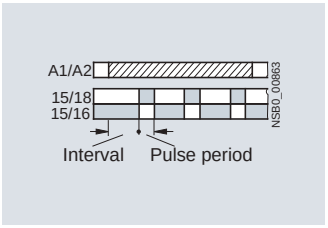
OFF-delay without control signal




**C**

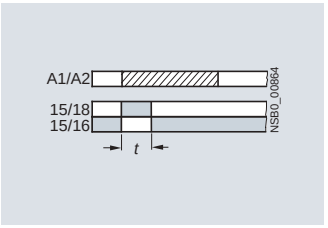
7PV1508-1A

Flashing, starting with interval (pulse/interval 1:1)



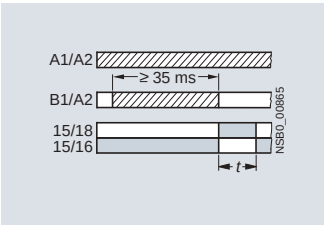

**--**

7PV1558
Clock-pulse, starting with interval (dead period, pulse time, and time setting ranges each separately adjustable)



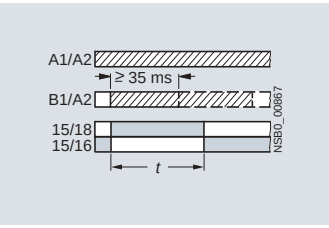

**D**

7PV1508-1A
Passing make contact



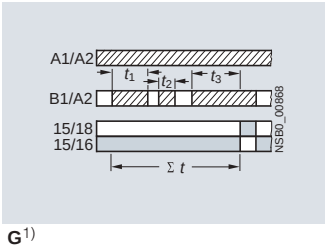

**E**[1]

7PV1508-1A
Passing break contact with control signal




**F**[1)]

7PV1508-1A
Pulse-forming with control signal (pulse generation at the output does not depend on duration of energizing)




**G**[1)]

7PV1508-1A
Additive ON-delay with control signal

Legend

**A ... G** Identification letters for 7PV1508

Timing relay energized

Contact closed

Contact open

1) Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to E, F and G, which are not retriggerable.

Note:

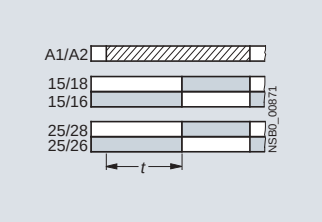
With the 7PV1508-1A multifunctional relay the identification letters A to G are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

# Timing Relays

## 7PV15 timing relays in enclosure, 17.5 mm

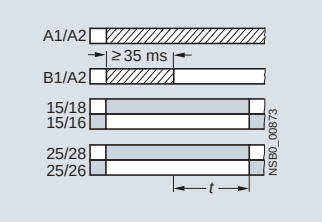


### 2 CO contacts



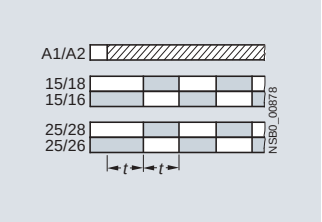

**A**

7PV1508-1B
ON-delay



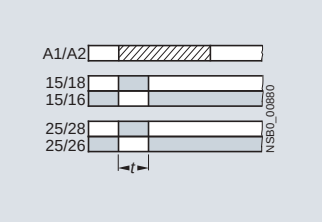

**B**[1)]

7PV1508-1B
OFF-delay with control signal



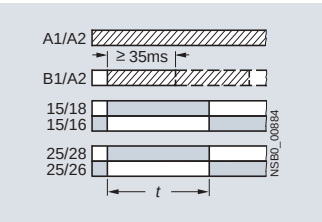

**C**

7PV1508-1B
Flashing, starting with interval (pulse/interval 1:1)



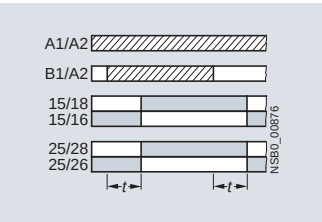

**D**

7PV1508-1B
Passing make contact



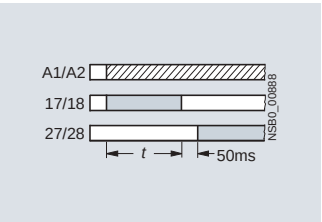

**F**[1)]

7PV1508-1B
Pulse-forming with control signal (pulse generation at the output does not depend on duration of energizing)




**H**[1)]

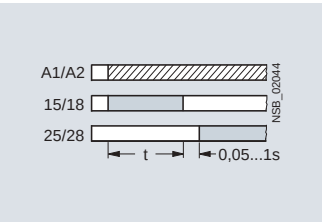
7PV1508-1B
ON-delay and OFF-delay with control signal




**I**

7PV1508-1B
Fixed pulse after ON-delay

### 2 NO contacts




**--**

7PV1578
Wye-delta function[2)]

Legend

**A ... D, F, H, I** Identification letters for 7PV1508

Timing relay energized

Contact closed

Contact open

1) Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to E, F and G, which are not retriggerable.

2) With 7PV1578 the contacts 16 and 26 are not needed for the wye-delta function.

Note:

With the 7PV1508-1B multifunctional relay the identification letters A to D, F, H, I are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

# Timing Relays

## 7PV15 timing relays in enclosure, 17.5 mm



### Selection and ordering data

7PV1508-1AW30

7PV1512-1AP30

7PV1518-1AW30

7PV1538-1AW30

7PV1540-1AW30

7PV1558-1AW30

7PV1578-1BW30

| Version | Time setting range *t* adjustable by rotary switch to | Rated control supply voltage $U_s$ 50/60 Hz AC V | Rated control supply voltage $U_s$ DC V | DT | Screw terminals Article No. | Screw terminals Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **7PV1508 timing relays, multifunction, 7 time setting ranges** | | | | | | | | |
| The functions can be adjusted by means of rotary switches. The same potential must be applied to terminals A. and B. | | | | | | | | |
| With LED and 1 CO contact, 7 functions | 0.05 ... 1 s<br>0.5 ... 10 s<br>5 ... 100 s<br>30 s ... 10 min<br>3 min ... 1 h<br>30 min ... 10 h<br>5 ... 100 h | 12 ... 240 | 12 ... 240 | ► | **7PV1508-1AW30** | | 1 | 1 unit |
| With LED and 2 CO contacts, 7 functions | | 12 ... 240 | 12 ... 240 | ► | **7PV1508-1BW30** | | 1 | 1 unit |
| **7PV151. timing relays, ON-delay, 1 time setting range** | | | | | | | | |
| With LED and 1 CO contact | 0.05 ... 1 s | 24/200 ... 240 | 24 | ► | **7PV1511-1AP30** | | 1 | 1 unit |
| | 0.5 ... 10 s | 24/100 ... 127 | 24 | ► | **7PV1512-1AQ30** | | 1 | 1 unit |
| | | 24/200 ... 240 | 24 | ► | **7PV1512-1AP30** | | 1 | 1 unit |
| | 5 ... 100 s | 24/100 ... 127 | 24 | ► | **7PV1513-1AQ30** | | 1 | 1 unit |
| | | 24/200 ... 240 | 24 | ► | **7PV1513-1AP30** | | 1 | 1 unit |
| **7PV1518 timing relays, ON-delay, 7 time setting ranges** | | | | | | | | |
| With LED and 1 CO contact | 0.05 ... 1 s<br>0.5 ... 10 s<br>5 ... 100 s<br>30 s ... 10 min<br>3 min ... 1 h<br>30 min ... 10 h<br>5 ... 100 h | 12 ... 240 | 12 ... 240 | ► | **7PV1518-1AW30** | | 1 | 1 unit |
| | | 90 ... 127 | 90 ... 127 | ► | **7PV1518-1AJ30** | | 1 | 1 unit |
| | | 180 ... 240 | 180 ... 240 | ► | **7PV1518-1AN30** | | 1 | 1 unit |
| **7PV1538 timing relays, OFF-delay, with control signal, 7 time setting range** | | | | | | | | |
| With LED and 1 CO contact | 0.05 ... 1 s<br>0.5 ... 10 s<br>5 ... 100 s<br>30 s ... 10 min<br>3 min ... 1 h<br>30 min ... 10 h<br>5 ... 100 h | 12 ... 240 | 12 ... 240 | ► | **7PV1538-1AW30** | | 1 | 1 unit |
| **7PV1540 timing relays, OFF-delay, without control signal, 7 time setting ranges** | | | | | | | | |
| With LED and 1 CO contact | 0.05 ... 1 s<br>0.15 ... 3s<br>0.3 ... 6 s<br>0.5 ... 10 s<br>1.5 ... 30 s<br>3 ... 60 s<br>5 ... 100 s | 12 ... 240 | 12 ... 240 | ► | **7PV1540-1AW30** | | 1 | 1 unit |
| **7PV1558 timing relays, clock-pulse relay, 7 time setting ranges** | | | | | | | | |
| With LED and 1 CO contact | 0.05 ... 1 s<br>0.5 ... 10 s<br>5 ... 100 s<br>30 s ... 10 min<br>3 min ... 1 h<br>30 min ... 10 h<br>5 ... 100 h | 12 ... 240 | 12 ... 240 | ► | **7PV1558-1AW30** | | 1 | 1 unit |
| **7PV1578 timing relays, wye-delta function, 7 time setting ranges** | | | | | | | | |
| With LED and 2 NO contacts, dead interval 0.05 ... 1 s adjustable | 0.05 ... 1 s<br>0.5 ... 10 s<br>5 ... 100 s<br>30 s ... 10 min<br>3 min ... 1 h<br>30 min ... 10 h<br>5 ... 100 h | 12 ... 240 | 12 ... 240 | ► | **7PV1578-1BW30** | | 1 | 1 unit |

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## General data



### Overview

SIRIUS 3UG4 monitoring relay

**More information**

Homepage, see www.usa.siemens.com/relays
Industry Mall, see www.siemens.com/product?3UG45
For the conversion tool, e.g. from 3UG3 to 3UG4, see www.siemens.com/sirius/conversion-tool

The field-proven SIRIUS monitoring relays for electrical and mechanical variables enable constant monitoring of all important characteristic quantities that provide information about the functional capability of a plant. Both sudden disturbances and gradual changes, which may indicate the need for maintenance, are detected. Thanks to their relay outputs, the monitoring relays permit direct disconnection of the affected system components as well as alerting (e.g. by switching a warning lamp).

Thanks to adjustable delay times the monitoring relays can respond very flexibly to brief faults such as voltage dips or load changes. This avoids unnecessary alarms and disconnections while enhancing plant availability.

The individual 3UG4 monitoring relays offer the following functions in various combinations:

- Undershooting and/or overshooting of liquid levels
- Phase sequence
- Phase failure, neutral conductor failure
- Phase asymmetry
- Undershooting and/or overshooting of limit values for voltage
- Undershooting and/or overshooting of limit values for current
- Undershooting and/or overshooting of limit values for power factor
- Monitoring of the active current or the apparent current
- Monitoring of the residual current
- Monitoring of the insulation resistance
- Undershooting and/or overshooting of limit values for speed

### *Article No. scheme*

| Product versions | | Article number |
|---|---|---|
| **Monitoring relays** | | **3UG4** □ □ □ – □ □ □ □ **0** |
| Type of setting | e.g. 5 = analogically adjustable | □ |
| Functions | e.g. 11 = line monitoring | □ □ |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals | **2** |
| Contacts | e.g. A = 1 CO contact | □ |
| Supply voltage | e.g. N2 = 160 ... 260 V AC | □ □ |
| Example | | **3UG4 5 1 1 – 1 A N 2 0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## General data



### Benefits

- Customary screw and spring-type terminals for quick and reliable wiring
- Fast commissioning thanks to menu-guided parameterization and actual value display for limit value determination
- Reduced space requirement in the control cabinet thanks to a consistent width of 22.5 mm
- Parameterizable monitoring functions, delay times, RESET response, etc.
- Reduced stockkeeping thanks to minimized variance and large measuring ranges
- Wide-voltage power supply units for global applicability
- Device replacement without renewed wiring thanks to removable terminals
- Reliable system diagnostics thanks to actual value display and connectable fault memory
- Rapid diagnostics thanks to unambiguous error messages on the display

### Application

The SIRIUS 3UG4 monitoring relays monitor the most diverse electrical and mechanical quantities in the feeder, and provide reliable protection against damage in the plant. For this purpose, they offer freely parameterizable limit values and diverse options for adapting to the respective task, and in the event of a fault, they provide clear diagnostics information.

The digitally adjustable products also display the current measured values direct on the device. This not only facilitates the display of valuable plant status information during operation, it also enables adjustment of the monitored limit values in accordance with the actual conditions.

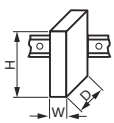
The positive result: More selective avoidance of production faults – sustained increases in availability and productivity.

The 3UG4 monitoring relays are available for the following applications:

- Line and single-phase voltage monitoring
- Single-phase current monitoring or power factor and active current monitoring
- Residual current monitoring
- Insulation monitoring
- Level monitoring
- Speed monitoring

### Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16367/td | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16367/faq |
| Manual and internal circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/view/54397927 | |

| Type | | | 3UG |
|---|---|---|---|
| **General data** | | | |
| Dimensions (W x H x D) |  | | |
| • For 2 terminal blocks | | | |
| - Screw terminals | | mm | 22.5 x 83 x 91 |
| - Spring-type terminals | | mm | 22.5 x 84 x 91 |
| • For 3 terminal blocks | | | |
| - Screw terminals | | mm | 22.5 x 92 x 91 |
| - Spring-type terminals | | mm | 22.5 x 94 x 91 |
| • For 4 terminal blocks | | | |
| - Screw terminals | | mm | 22.5 x 103 x 91 |
| - Spring-type terminals | | mm | 22.5 x 103 x 91 |
| **Permissible ambient temperature** | | | |
| • During operation | | °C | -25 ... +60 |
| **Connection type** | | | **Screw terminals** |
| • Terminal screw | | | M3 (for standard screwdriver, size 2 and Pozidriv 2) |
| • Solid | | $mm^2$ | 1 x (0.5 ... 4)/2 x (0.5 ... 2.5) |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5) |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) |
| **Connection type** | | | **Spring-type terminals** |
| • Solid | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • Finely stranded, with end sleeve acc. to DIN 46228 | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • Finely stranded | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • AWG cables, solid or stranded | | AWG | 2 x (24 ... 16) |

## Overview

SIRIUS 3UG4615 monitoring relay

Electronic line monitoring relays provide maximum protection for mobile machines and plants or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

Depending on the version, the relays monitor phase sequence, phase failure with and without N conductor monitoring, phase asymmetry, undervoltage or overvoltage.

Phase asymmetry is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exists when at least one phase voltage deviates by 20% from the set rated system voltage or the directly set limit values are overshot or undershot. The rms value of the voltage is measured.

With the 3UG4617 or 3UG4618 relay, a wrong direction of rotation can also be corrected automatically.

## Benefits

- Can be used without auxiliary voltage in any network from 160 to 630 V AC worldwide thanks to wide voltage range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Permanent display of actual value and line fault type on the digital versions
- Automatic correction of the direction of rotation by distinguishing between power system faults and wrong phase sequence
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

| Function | Application |
|---|---|
| Phase sequence | • Direction of rotation of the drive |
| Phase failure | • A fuse has tripped<br>• Failure of the control supply voltage<br>• Broken cable |
| Phase asymmetry | • Overheating of the motor due to asymmetrical voltage<br>• Detection of asymmetrically loaded networks |
| Undervoltage | • Increased current on a motor with corresponding overheating<br>• Unintentional resetting of a device<br>• Network collapse, particularly with battery power |
| Overvoltage | • Protection of a plant against destruction due to overvoltage |

## Technical specifications

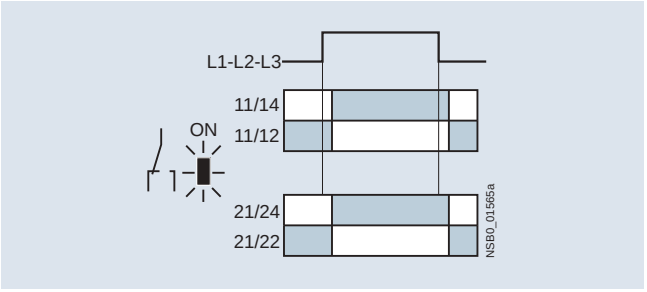
### *3UG4511 monitoring relays*

The 3UG4511 phase sequenced relay monitors the phase sequence in a three-phase network. No adjustments are required for operation. The device has an internal power supply and works using the closed-circuit principle. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up after the delay time has elapsed and the LED is lit. If the phase sequence is wrong, the output relay remains in its rest position.

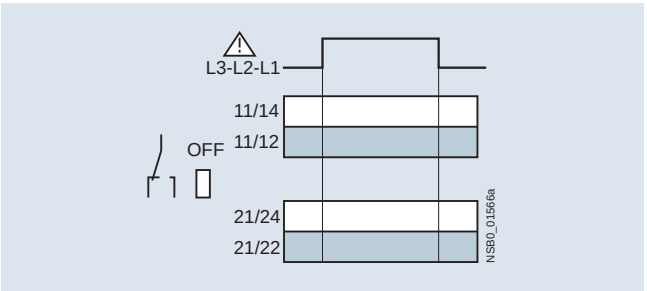
Note:

When one phase fails, connected loads (motor windings, lamps, transformers, coils, etc.) create a feedback voltage at the terminal of the failed phase due to the network coupling. Because the 3UG4511 relays are not resistant to voltage feedback, such a phase failure is not detected. Should this be required, then the 3UG4512 monitoring relay must be used.

Correct phase sequence




Wrong phase sequence



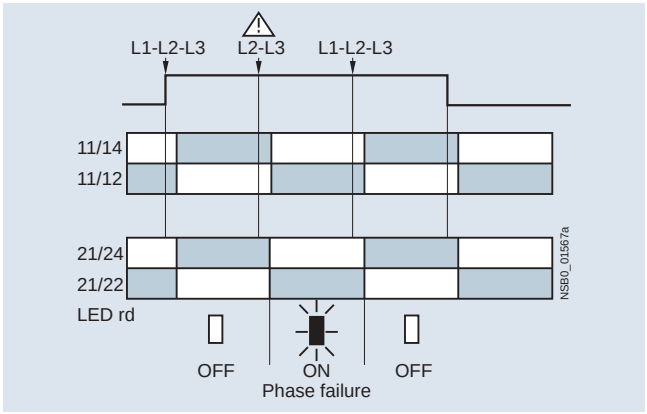
### *3UG4512 monitoring relays*

The 3UG4512 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure and phase unbalance of 10%. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V AC and feedback through the load of up to 90%. The device has an internal power supply and works using the closed-circuit principle. No adjustments are required. If the line voltage is switched on, the green LED will light up. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up. If the phase sequence is wrong, the red LED flashes and the output relay remains in its rest position. If a phase fails, the red LED is permanently lit and the output relay drops.

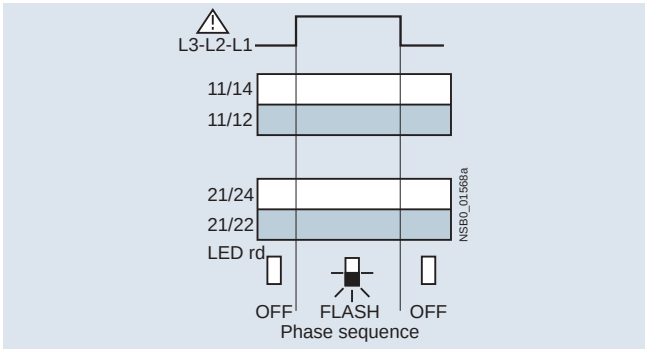
Note:

The red LED is a fault diagnostic indicator and does not show the current relay status. The 3UG4512 monitoring relay is suitable for line frequencies of 50/60 Hz.

Phase failure




Wrong phase sequence



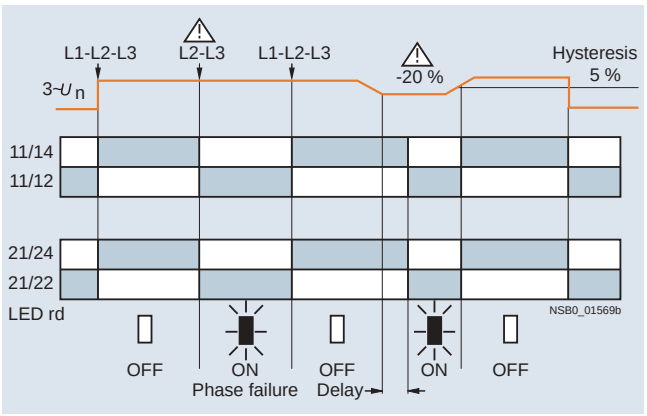

### *3UG4513 monitoring relays*

The 3UG4513 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase asymmetry and undervoltage of 20%. The device has an internal power supply and works using the closed-circuit principle. The hysteresis is 5%. The integrated response delay time T is adjustable from 0 to 20 s and responds to undervoltage. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80%. If the line voltage is switched on, the green LED will light up. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up. If the phase sequence is wrong, the red LED flashes and the output relay remains in its rest position. If a phase fails, the red LED is permanently lit and the output relay drops.

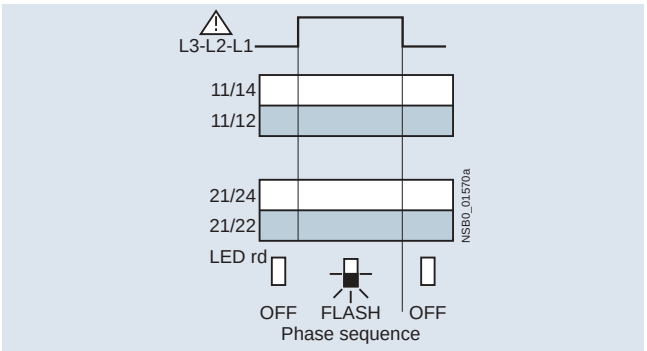
Note:

The red LED is a fault diagnostic indicator and does not show the current relay status. The 3UG4513 monitoring relay is suitable for line frequencies of 50/60 Hz.

Phase failure and undervoltage




Wrong phase sequence



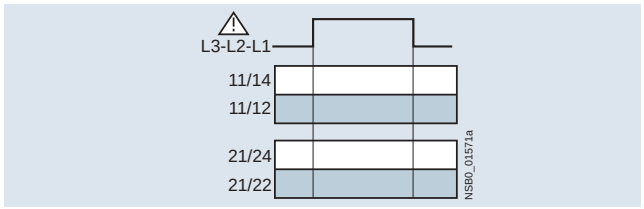
### *3UG4614 monitoring relays*

The 3UG4614 line monitoring relay has a wide voltage range input and an internal power supply. The device is equipped with a display and is parameterized using three buttons. The unit monitors three-phase networks with regard to phase asymmetry from 5 to 20%, phase failure, undervoltage and phase sequence. The hysteresis is adjustable from 1 to 20 V. In addition the device has a response delay and ON-delay from 0 to 20 s in each case. The integrated response delay time responds to phase asymmetry and undervoltage. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80%.

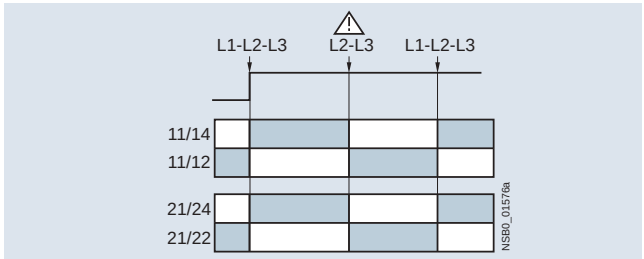
The 3UG4614 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET.

With the closed-circuit principle selected

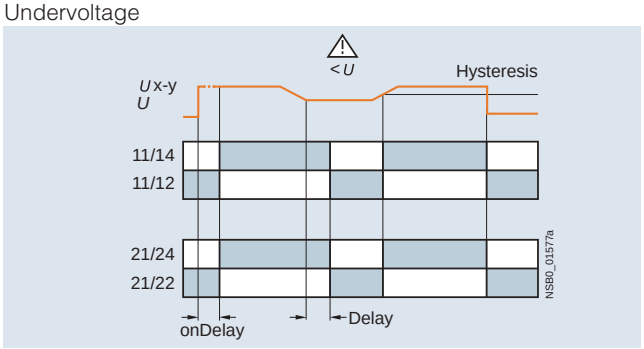
Wrong phase sequence



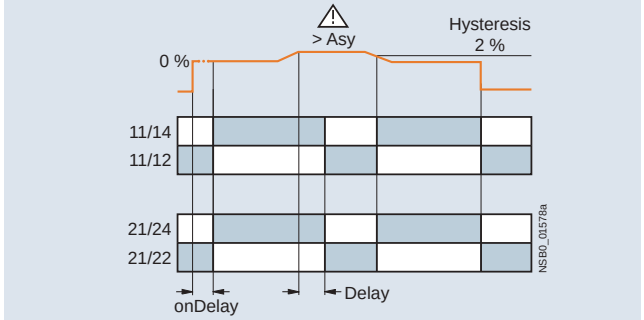

Phase failure




Undervoltage




Unbalance



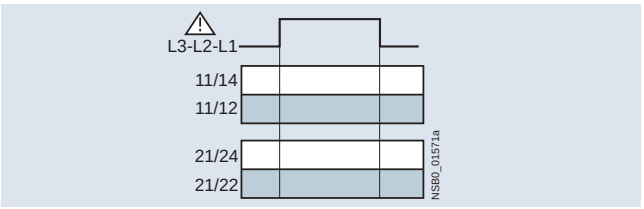

### *3UG4615/3UG4616 monitoring relays*

The 3UG4615/3UG4616 line monitoring relay has a wide voltage range input and an internal power supply. The device is equipped with a display and is parameterized using three buttons. The 3UG4615 device monitors three-phase networks with regard to phase failure, undervoltage, overvoltage and phase sequence. The 3UG4616 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V. In addition the device has two separately adjustable delay times for overvoltage and undervoltage from 0 to 20 s in each case. If the direction of rotation is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80%.

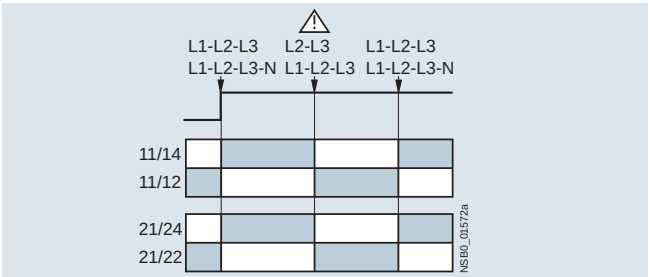
The 3UG4615/3UG4616 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET.

With the closed-circuit principle selected

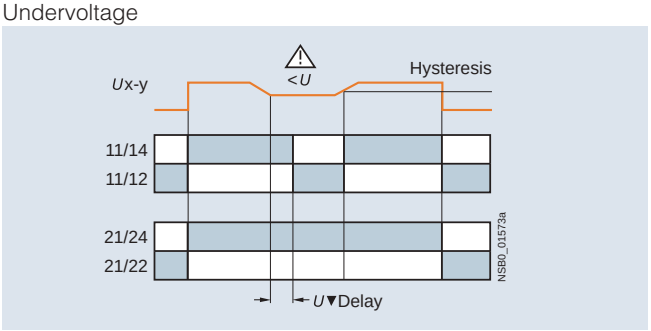
Wrong phase sequence



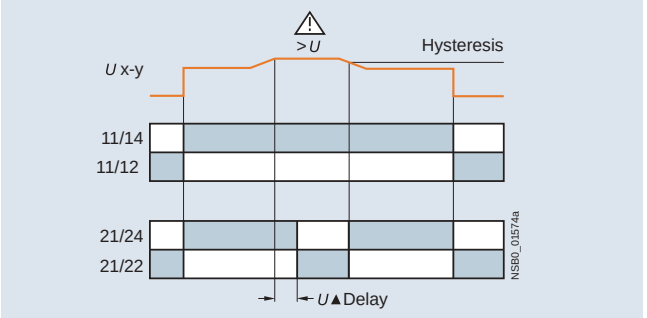

Phase failure




Undervoltage




Overvoltage

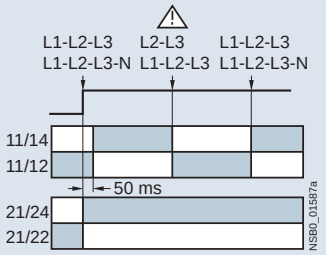


### *3UG4617/3UG4618 monitoring relays*

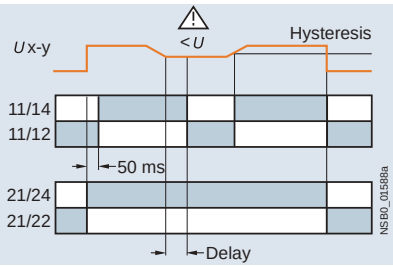
The 3UG4617/3UG4618 line monitoring relay has an internal power supply and can automatically correct a wrong direction of rotation. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V AC and feedback through the load of up to 80%. The device is equipped with a display and is parameterized using three buttons. The 3UG4617 line monitoring relay unit monitors three-phase networks with regard to phase sequence, phase failure, phase unbalance, undervoltage and overvoltage. The 3UG4618 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V. In addition the device has delay times from 0 to 20 s in each case for overvoltage, undervoltage, phase failure and phase unbalance. The 3UG4617/3UG4618 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET.
The one changeover contact is used for warning or disconnection in the event of power system faults (voltage, asymmetry), the other responds only to a wrong phase sequence. In conjunction with a contactor reversing assembly it is thus possible to change the direction automatically.

With the closed-circuit principle selected

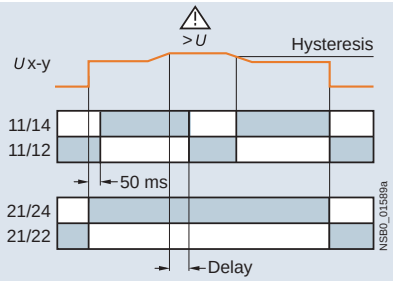
Phase failure



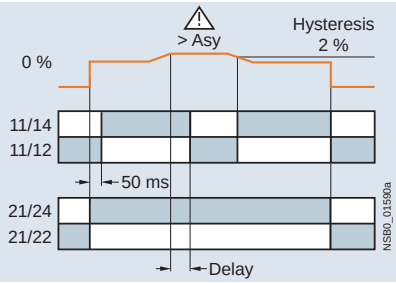

Undervoltage




Overvoltage




Unbalance




| Type | | 3UG4511 ... 3UG4513, 3UG4614 ... 3UG4618 |
|---|---|---|
| **General data** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to VDE 0110 | V | 690 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Control circuit** | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V<br>• DC-13/125 V<br>• DC-13/250 V | <br>A<br>A<br>A<br>A | <br>3<br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |
| **Electrical endurance AC-15** | Million operating cycles | 0.1 |
| **Mechanical endurance** | Million operating cycles | 10 |

## Selection and ordering data

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4511-1AP20

3UG4615-1CR20

3UG4616-1CR20

3UG4617-1CR20

3UG4618-1CR20

3UG4511-2BP20

3UG4512-2BR20

| Adjustable hysteresis | Under-voltage detec-tion | Over-voltage detec-tion | Stabiliza-tion time adjustable stDEL | Tripping delay time adjustable Del | Version of auxiliary contacts | Measurable line voltage[1] | SD | Screw terminals | SD | Spring-type terminals |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | s | s | CO contact | V | d | Article No. Price per PU | d | Article No. Price per PU |
| **Monitoring of phase sequence** | | | | | | | | | | |
| Auto RESET | | | | | | | | | | |
| -- | -- | -- | -- | -- | 1 | 160 … 260 AC | 2 | **3UG4511-1AN20** | 2 | **3UG4511-2AN20** |
| | | | | | 2 | | 2 | **3UG4511-1BN20** | 2 | **3UG4511-2BN20** |
| | | | | | 1 | 320 … 500 AC | 2 | **3UG4511-1AP20** | 2 | **3UG4511-2AP20** |
| | | | | | 2 | | 2 | **3UG4511-1BP20** | 2 | **3UG4511-2BP20** |
| | | | | | 1 | 420 … 690 AC | 2 | **3UG4511-1AQ20** | 5 | **3UG4511-2AQ20** |
| | | | | | 2 | | 2 | **3UG4511-1BQ20** | 5 | **3UG4511-2BQ20** |
| **Monitoring of phase sequence, phase failure and phase unbalance** | | | | | | | | | | |
| Auto RESET, closed-circuit principle, unbalance threshold permanently 10% | | | | | | | | | | |
| -- | -- | -- | -- | -- | 1 | 160 … 690 AC | 2 | **3UG4512-1AR20** | 2 | **3UG4512-2AR20** |
| | | | | | 2 | | 2 | **3UG4512-1BR20** | 2 | **3UG4512-2BR20** |
| **Monitoring of phase sequence, phase failure, unbalance and undervoltage** | | | | | | | | | | |
| Analogically adjustable, Auto RESET, closed-circuit principle, asymmetry and undervoltage threshold permanently 20% | | | | | | | | | | |
| 5% of set value | ✓ | -- | -- | 0.1 … 20 | 2 | 160 … 690 AC | 2 | **3UG4513-1BR20** | 2 | **3UG4513-2BR20** |
| Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle, asymmetry threshold 0 or 5 ... 20% | | | | | | | | | | |
| adjustable 1 ... 20 V | ✓ | -- | 0.1 ... 20 | 0.1 … 20 | 2 | 160 … 690 AC | 2 | **3UG4614-1BR20** | 2 | **3UG4614-2BR20** |
| **Monitoring of phase sequence, phase failure, overvoltage and undervoltage** | | | | | | | | | | |
| Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle | | | | | | | | | | |
| adjustable 1 ... 20 V | ✓ | ✓ | -- | 0.1 … 20[2] | 2[2] | 160 … 690 AC | 2 | **3UG4615-1CR20** | 2 | **3UG4615-2CR20** |
| **Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage** | | | | | | | | | | |
| Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle | | | | | | | | | | |
| adjustable 1 ... 20 V | ✓ | ✓ | -- | 0.1 … 20[2] | 2[2] | 90… 400 AC against N | 2 | **3UG4616-1CR20** | 2 | **3UG4616-2CR20** |
| **Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, unbalance, overvoltage and undervoltage** | | | | | | | | | | |
| Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle, asymmetry threshold 0 or 5 ... 20% | | | | | | | | | | |
| adjustable 1 ... 20 V | ✓ | ✓ | -- | 0.1 … 20 | 2[3] | 160 … 690 AC | 2 | **3UG4617-1CR20** | 2 | **3UG4617-2CR20** |
| **Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage** | | | | | | | | | | |
| Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle, asymmetry threshold 0 or 5 ... 20% | | | | | | | | | | |
| adjustable 1 ... 20 V | ✓ | ✓ | -- | 0.1 … 20 | 2[3] | 90 … 400 AC against N | 2 | **3UG4618-1CR20** | 2 | **3UG4618-2CR20** |

✓ Function available
-- Function not available

1) Absolute limit values.

2) 1 CO contact each and one tripping delay time each for $U_{min}$ and $U_{max}$.

3) 1 CO contact each for power system fault and phase sequence correction.

For accessories, see page 11/85

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation





## Overview

SIRIUS 3UG4631 monitoring relay

The relays monitor single-phase AC voltages (rms value) and DC voltages against the set threshold value for overshoot and undershoot. The devices differ with regard to their power supply (internal or external).

## Benefits

- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded control supply voltages, particularly with battery power
- Threshold switch for analog signals from 0.1 to 10 V

## Technical specifications

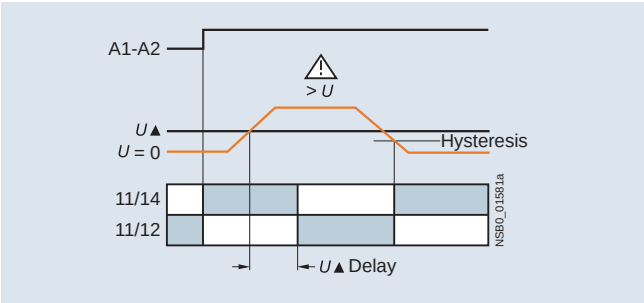
### *3UG4631/3UG4632 monitoring relays*

The 3UG4631/3UG4632 voltage monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

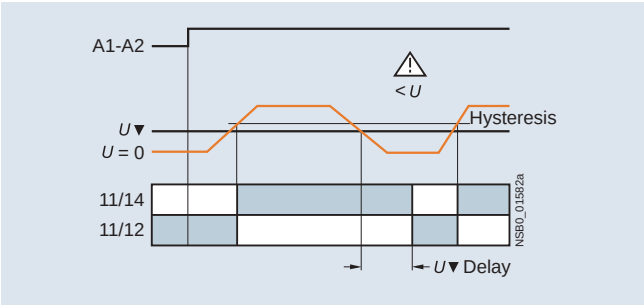
The measuring range extends from 0.1 to 60 V or 10 to 600 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the delay time has elapsed. This delay time $U_{Del}$ can be set from 0.1 to 20 s. The hysteresis can be set from 0.1 to 30 V or 0.1 to 300 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

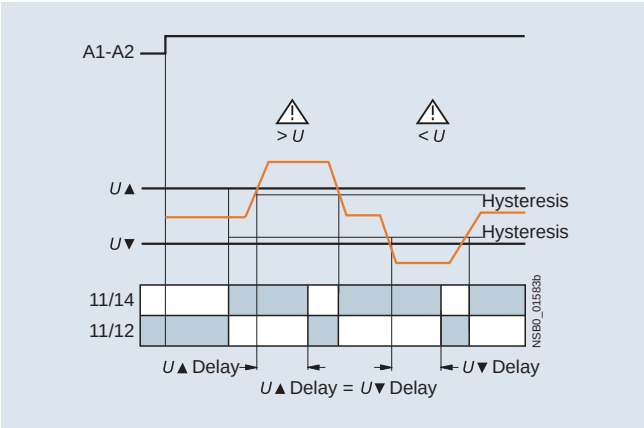
Overvoltage




Undervoltage




Range monitoring



### *3UG4633 monitoring relay*

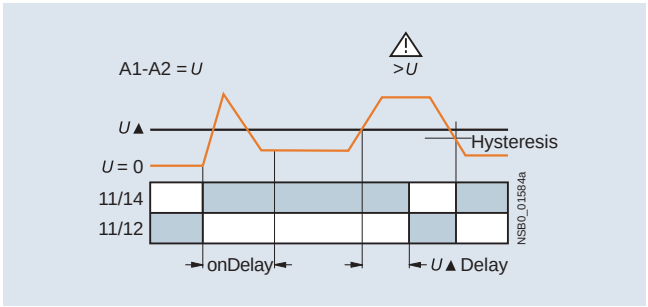
The 3UG4633 voltage monitoring relay has an internal power supply and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

The operating and measuring range extends from 17 to 275 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time has elapsed. This delay time $U_{Del}$ can also be adjusted, just like the ON-delay time $on_{Del}$, from 0.1 to 20 s.

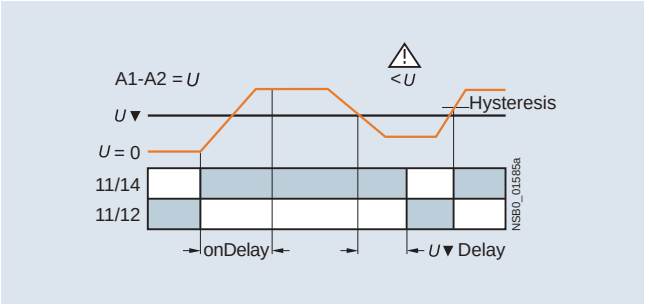
The hysteresis is adjustable from 0.1 to 150 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

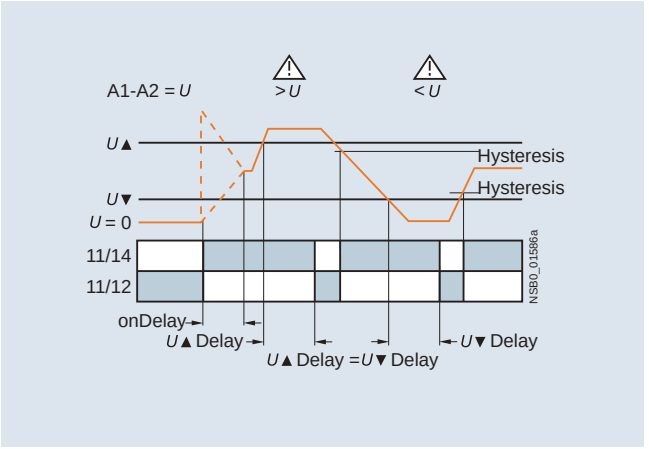
Overvoltage




Undervoltage




Range monitoring




| Type | | 3UG4631 | 3UG4632 | 3UG4633 |
|---|---|---|---|---|
| **General data** | | | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to VDE 0110 | V | 690 | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | | |
| **Measuring circuit** | | | | |
| **Permissible measuring range** single-phase AC/DC voltage | V | 0.1 … 68 | 10 … 650 | 17 … 275 |
| **Measuring frequency** | Hz | 40 ... 500 | | |
| **Setting range** single-phase voltage | V | 0.1 ... 60 | 10 ... 600 | 17 ... 275 |
| **Control circuit** | | | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 | | |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V<br>• DC-13/125 V<br>• DC-13/250 V | <br>A<br>A<br>A<br>A | <br>3<br>1<br>0.2<br>0.1 | | |
| **Minimum contact load** at 17 V DC | mA | 5 | | |

## Selection and ordering data

- Digitally adjustable, with illuminated LCD
- Auto or Manual RESET
- Open- or closed-circuit principle
- 1 CO contact

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4631-1AA30

3UG4633-2AL30

| Measuring range | Adjustable hysteresis | Rated control supply voltage $U_s$ | SD | Screw terminals | SD | Spring-type terminals |
|---|---|---|---|---|---|---|
| | | | | Article No. / Price per PU | | Article No. / Price per PU |
| V | V | V | d | | d | |
| **Internal power supply without auxiliary voltage, separately adjustable ON-delay and tripping delay 0.1 ... 20 s** | | | | | | |
| 17 ... 275 AC/DC | 0.1 ... 150 | 17 ... 275 AC/DC[1] | 2 | **3UG4633-1AL30** | 2 | **3UG4633-2AL30** |
| **Externally supplied with auxiliary voltage, tripping delay adjustable 0.1 ... 20 s** | | | | | | |
| 0.1 … 60 AC/DC | 0.1 ... 30 | 24 AC/DC | 2 | **3UG4631-1AA30** | 2 | **3UG4631-2AA30** |
| 10 ... 600 AC/DC | 0.1 ... 300 | | 2 | **3UG4632-1AA30** | 2 | **3UG4632-2AA30** |
| 0.1 … 60 AC/DC | 0.1 ... 30 | 24 ... 240 AC/DC | 2 | **3UG4631-1AW30** | 2 | **3UG4631-2AW30** |
| 10 ... 600 AC/DC | 0.1 ... 300 | | 2 | **3UG4632-1AW30** | 2 | **3UG4632-2AW30** |

[1] Absolute limit values.

For accessories, see page 11/85

## Overview

SIRIUS 3UG4622 monitoring relay

The relays monitor single-phase AC currents (rms value) and DC currents against the set threshold value for overshoot and undershoot. They differ with regard to their measuring ranges and control supply voltage types.

## Benefits

- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring
- Threshold switch for analog signals from 4 to 20 mA

## Technical specifications

### *3UG4621/3UG4622 monitoring relays*

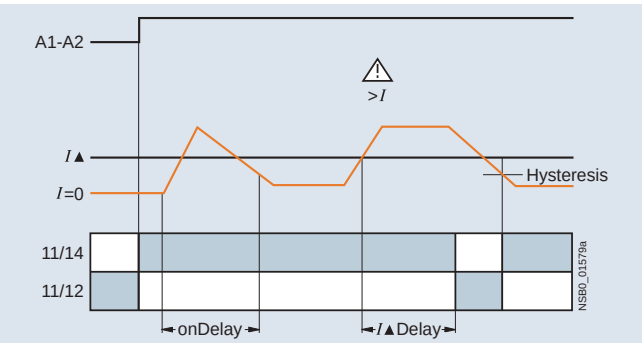
The 3UG4621 or 3UG4622 current monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the current depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

The measuring range extends from 3 to 500 mA or 0.05 to 10 A. The rms value of the current is measured. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time $I_{Del}$ has elapsed. This time and the ON-delay time $on_{Del}$ are adjustable from 0.1 to 20 s.

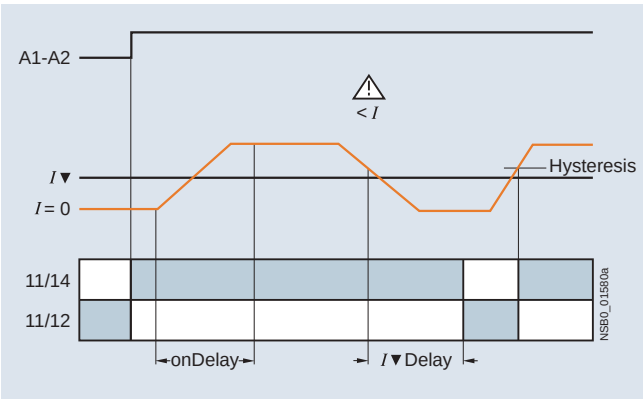
The hysteresis is adjustable from 0.1 to 250 mA or 0.01 to 5 A. The device can be operated with Manual or Auto RESET and on the basis of either the open-circuit or closed-circuit principle. You can decide here whether the output relay is to respond when the supply voltage $U_s$ = ON is applied, or not until the lower measuring range limit of the measuring current ($I$ > 3 mA/50 mA) is reached. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected upon application of the control supply voltage

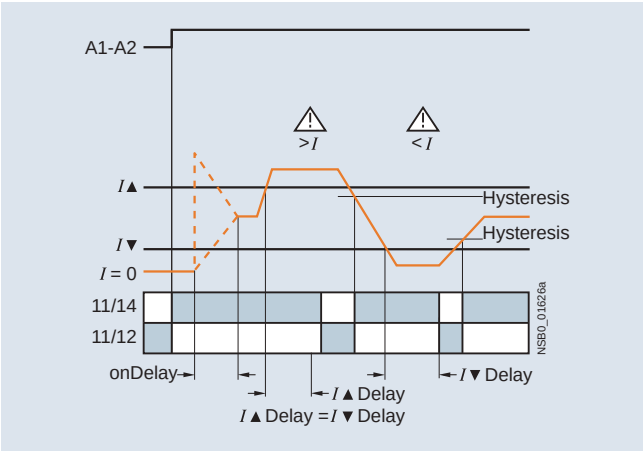
Current overshoot




Current undershoot




Range monitoring



| Type | | 3UG4621-.AA | 3UG4621-.AW | 3UG4622-.AA | 3UG4622-.AW |
|---|---|---|---|---|---|
| **General data** | | | | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3; overvoltage category III according to VDE 0110 | V | 690 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | | | |
| **Measuring circuit** | | | | | |
| **Measuring range for single-phase AC/DC current** | A | 0.003 … 0.6 | | 0.05 … 15 | |
| **Measuring frequency** | Hz | 40 ... 500 | | | |
| **Setting range for single-phase current** | A | 0.003 ... 0.5 | | 0.05 ... 10 | |
| **Load supply voltage** | V | 24 | Max. 300[1]<br>Max. 500[2] | 24 | Max. 300[1]<br>Max. 500[2] |
| **Control circuit** | | | | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 | | | |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V<br>• DC-13/125 V<br>• DC-13/250 V | <br>A<br>A<br>A<br>A | <br>3<br>1<br>0.2<br>0.1 | | | |
| **Minimum contact load** at 17 V DC | mA | 5 | | | |

1) With protective separation.

2) With simple separation.

## Selection and ordering data

- Digitally adjustable, with illuminated LCD
- Auto or Manual RESET
- Open- or closed-circuit principle
- 1 CO contact

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4621-1AA30

3UG4622-2AW30

| Measuring range | Adjustable hysteresis | Rated control supply voltage $U_s$ | SD | Screw terminals | SD | Spring-type terminals |
|---|---|---|---|---|---|---|
| | | | | Article No. / Price per PU | | Article No. / Price per PU |
| | | V | d | | d | |
| **Monitoring of undercurrent and overcurrent, start up delay and tripping delay times can be adjusted separately 0.1 ... 20 s** | | | | | | |
| 3 … 500 mA AC/DC | 0.1 ... 250 mA | 24 AC/DC [1] | 2 | **3UG4621-1AA30** | 2 | **3UG4621-2AA30** |
| 0.05 … 10 A AC/DC | 0.01 ... 5 A | | 2 | **3UG4622-1AA30** | 2 | **3UG4622-2AA30** |
| 3 … 500 mA AC/DC | 0.1 ... 250 mA | 24 ... 240 AC/DC [2] | 2 | **3UG4621-1AW30** | 2 | **3UG4621-2AW30** |
| 0.05 … 10 A AC/DC | 0.01 ... 5 A | | 2 | **3UG4622-1AW30** | 2 | **3UG4622-2AW30** |

1) No electrical separation. Load supply voltage 24 V.

2) Electrical separation between control circuit and measuring circuit. Load supply voltage for protective separation max. 300 V, for simple separation max. 500 V.

For accessories, see page 11/85

With AC currents $I$ > 10 A it is possible to use 4NC current transformers as an accessory.

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Power factor and active current monitoring



### Overview

SIRIUS 3UG4641 monitoring relay

The 3UG4641 power factor and active current monitoring device enables the load monitoring of motors.

Whereas power factor (p.f.) monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

### Benefits

- Can be used worldwide thanks to wide voltage range from 90 to 690 V (absolute limit values)
- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values by the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor (p.f.) or $I_{res}$ (active current) can be selected as the measurement principle
- Width 22.5 mm
- All versions with removable terminals

### Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low-end performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Simple power factor monitoring in power systems for control of compensation equipment
- Broken cable between control cabinet and motor

### Technical specifications

***3UG4641 monitoring relay***

The 3UG4641 monitoring relay is self-powered and serves the single-phase monitoring of the power factor or performs overshoot, undershoot or range monitoring of the active current depending on how it is parameterized. The load to be monitored is connected upstream of the IN terminal. The load current flows through the terminals IN and Ly/N. The setting range for the power factor is 0.1 to 0.99 and for the active current $I_{res}$ it is 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show $I$ < 0.2 and a symbol for overrange, underrange or range monitoring. If the motor is now switched on and the current exceeds 0.2 A, the set ON-delay time begins. During this time, if the set limit values are undershot or exceeded, this does not lead to a relay reaction of the changeover contact. If the operational flowing active current and/or the power factor value falls below or exceeds the respective set threshold value, the spike delay begins. When this time has expired, the relay changes its switch position. The relevant measured variables for overshooting and undershooting in the display flash. If monitoring for active current undershoot is switched off ($I_{res}$▼= OFF), and if the load current undershoots the lower measuring range threshold (0.2 A), the CO contacts remain unchanged. If a threshold value is set for the monitoring of active current undershooting, then undershooting of the measuring range threshold (0.2 A) will result in a response of the CO contacts.

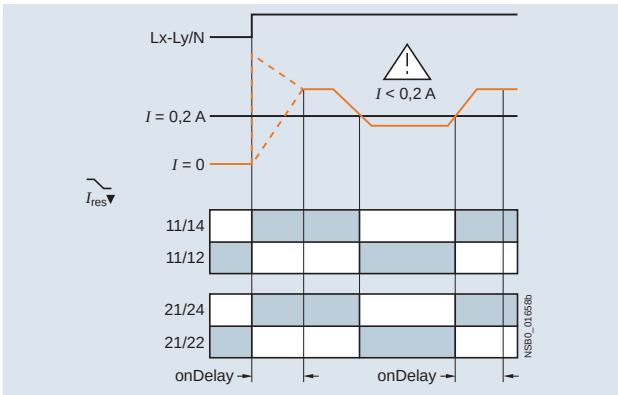
The relay operates either according to the open-circuit or closed-circuit principle. If the device is set to Auto RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for 2 seconds, or by switching the supply voltage off and back on again.

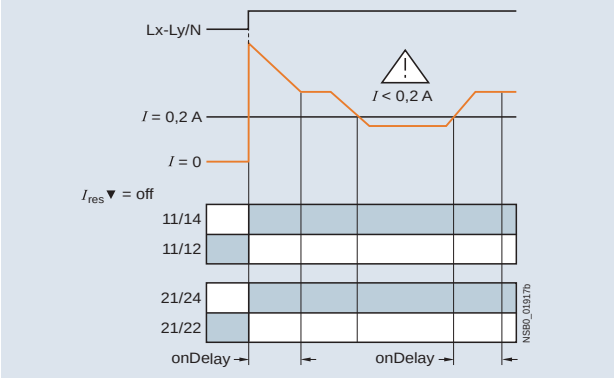
With the closed-circuit principle selected

Response in the event of undershooting the measuring range limit

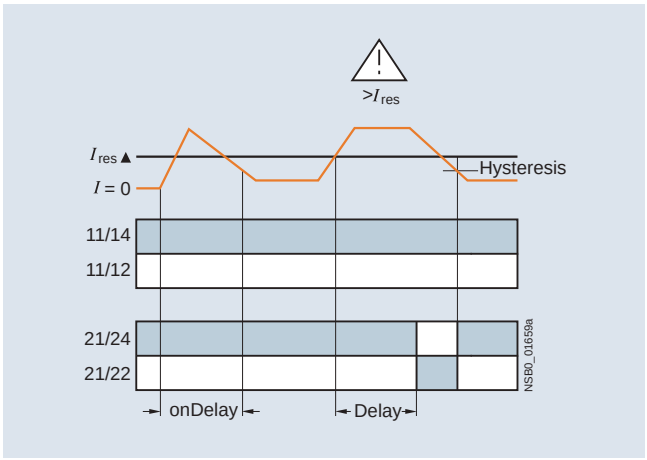
- With activated monitoring of $I_{res}$▼



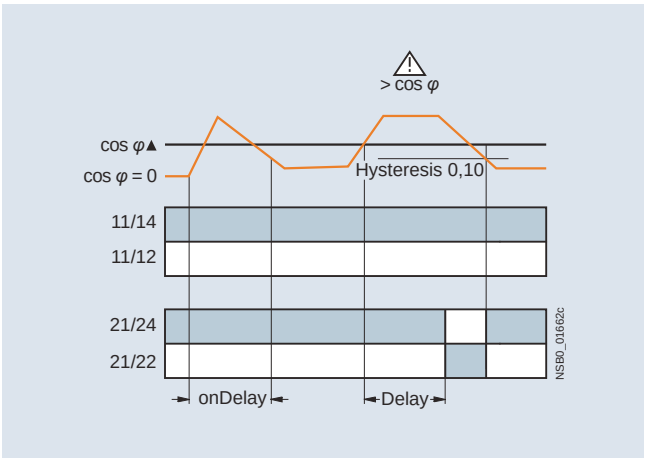

- With deactivated monitoring of active current undershooting



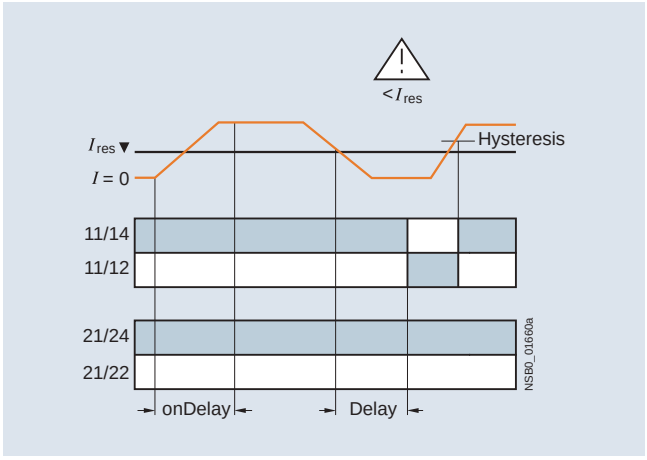
Overshooting of active current



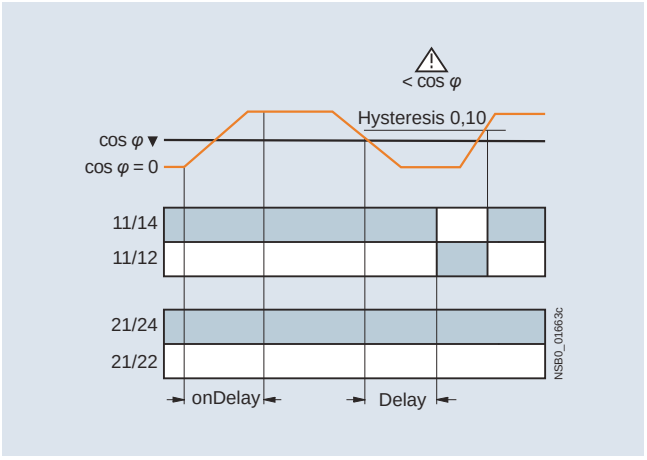

Overshooting of power factor



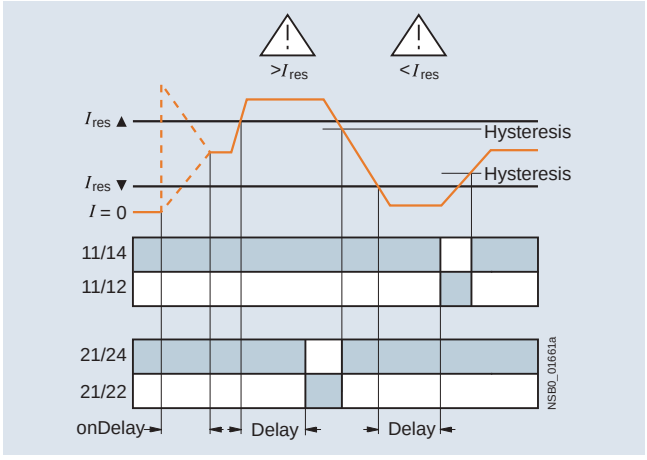

Undershooting of active current



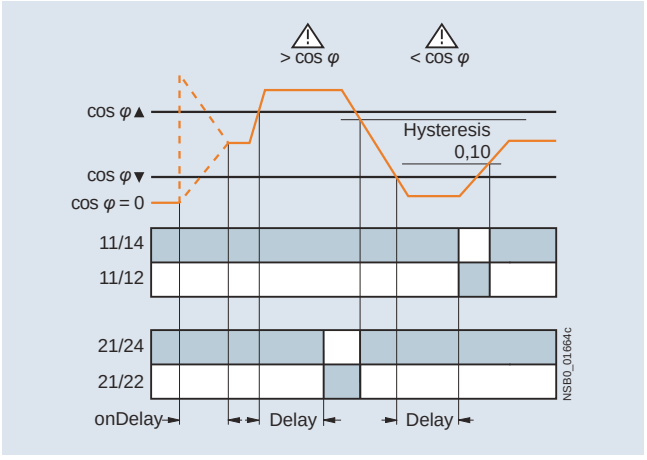

Undershooting of power factor




Range monitoring of active current




Range monitoring of power factor



| Type | | 3UG4641 |
|---|---|---|
| **General data** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to VDE 0110 | V | 690 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Control circuit** | | |
| **Number of CO contacts for auxiliary contacts** | | 2 |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V<br>• DC-13/125 V<br>• DC-13/250 V | <br>A<br>A<br>A<br>A | <br>3<br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

## Selection and ordering data

- For monitoring the power factor and the active current $I_{res}$ (p.f. x $I$)
- Suitable for single- and three-phase currents
- Digitally adjustable, with illuminated LCD
- Overshoot, undershoot or range monitoring adjustable
- Upper and lower threshold value can be adjusted separately
- Permanent display of actual value and tripping state
- 1 changeover contact each for undershoot/overshoot

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

| Measuring range | | Adjustable hysteresis | | ON-delay time adjustable onDel | Tripping delay time adjustable $I$▲Del/ $I$▼Del, $\varphi$▲Del/ $\varphi$▼Del | Rated control supply voltage $U_s$ [1] 50/60 Hz AC | SD | **Screw terminals** | | SD | **Spring-type terminals** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| For power factor | For active current $I_{res}$ | For power factor | For active current $I_{res}$ | | | | | Article No. | Price per PU | | Article No. | Price per PU |
| P.f. | A | P.f. | A | s | s | V | d | | | d | | |
| 0.10 ... 0.99 | 0.2 ... 10.0 | 0.1 | 0.1 ... 2.0 | 0 ... 99 | 0.1 ... 20.0 | 90 ... 690 | 2 | **3UG4641-1CS20** | | 2 | **3UG4641-2CS20** | |

[1] Absolute limit values.

For accessories, see page 11/85

With AC active currents $I_{res}$ > 10 A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10.

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation





## Overview

SIRIUS 3UG4625 monitoring relay

The 3UG4625 residual-current monitoring relays are used in conjunction with the 3UL23 residual-current transformers for monitoring plants in which higher residual currents are increasingly expected due to ambient conditions. Monitoring encompasses pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A in accordance with DIN VDE 0100-530/IEC TR 60755).

## Benefits

- Worldwide use thanks to wide voltage range from 24 to 240 V AC/DC
- High measuring accuracy of ± 7.5%
- Permanent self-monitoring
- Variable threshold values for warning and disconnection
- Freely configurable delay times and RESET response
- Permanent display of the actual value and fault diagnostics via the display
- High level of flexibility and space saving through installation of the transformer inside or outside the control cabinet
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

Monitoring of plants in which residual currents can occur, e.g. due to dust deposits or moisture, porous cables and leads, or capacitive residual currents.

## Technical specifications

### *3UG4625 monitoring relays*

The main conductor, and any neutral conductor to which a load is connected, are routed through the opening of the annular ring core of a residual-current transformer. A secondary winding is placed around this annular strip-wound core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. No current is then induced in the secondary winding of the residual-current transformer.

However, if an insulation fault occurs downstream of the residual current operated circuit breaker, the sum of the inflowing currents is greater than that of the outward currents. The differential current – i.e. the residual current – induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display.

If the measured residual current exceeds the set tripping value, the set delay time begins and the associated relay symbol flashes. On expiry of this time, the associated changeover contact changes the switching state.

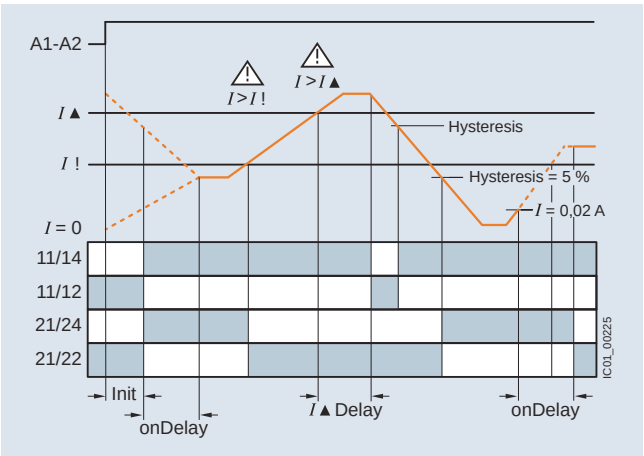
ON-delay time for motor start

To be able to start a drive when a residual current is detected, the output relays switch to the OK state for an adjustable ON-delay time depending on the selected open-circuit principle or closed-circuit principle.

The changeover contacts do not react if the set threshold values are overshot during this period.

With the closed-circuit principle selected

Residual current monitoring with Auto RESET (Memory = no)




If the device is set to Auto RESET, the relay switches back to the OK state for the tripping value once the value falls below the set hysteresis threshold and the display stops flashing.

The associated relay changes its switching state if the value falls below the fixed hysteresis value of 5% of the set warning value.

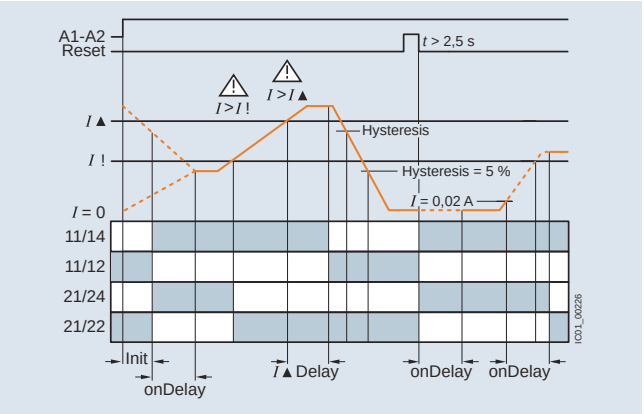
Any overshoots are therefore not stored.

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Residual-current monitoring relays



Residual current monitoring with Manual RESET (Memory = yes)




If Manual RESET is selected in the menu, the output relays remain in their current switching state and the current measured value and the symbol for overshooting continues to flash, even when the measured residual current returns to a permissible value. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for > 2 seconds, or by switching the supply voltage off and back on again.

Note:

Do not ground the neutral conductor downstream of the residual-current transformer as otherwise residual current monitoring functions can no longer be ensured.

| Type | | 3UG4625-1CW30, 3UG4625-2CW30 |
|---|---|---|
| **General data** | | |
| **Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3, rated value** | V | 300 |
| **Impulse withstand voltage, rated value $U_{imp}$** | kV | 4 |
| **Control circuit** | | |
| **Number of CO contacts for auxiliary contacts** | | 2 |
| **Thermal current of the non-solid-state contact blocks, maximum** | A | 5 |
| **Current carrying capacity of the output relay** | | |
| • At AC-15 at 250 V at 50/60 Hz | A | 3 |
| • At DC-13 | | |
| - At 24 V | A | 1 |
| - At 125 V | A | 0.2 |
| - At 250 V | A | 0.1 |
| **Operational current at 17 V, minimum** | mA | 5 |

## Selection and ordering data

- For monitoring residual currents from 0.03 to 40 A, from 16 to 400 Hz
- For 3UL23 residual-current transformers with feed-through opening from 35 to 210 mm
- Permanent self-monitoring
- Certified in accordance with IEC 60947, functionality corresponds to IEC 62020
- Digitally adjustable, with illuminated LCD
- Permanent display of actual value and tripping state
- Separately adjustable limit value and warning threshold
- 1 changeover contact each for warning threshold and tripping threshold

PU (UNIT, SET, M) = 1
PS* = 1 unit

3UG4625-1CW30

3UG4625-2CW30

| Measurable current | Adjustable response value current | Switching hysteresis | Adjustable ON-delay time | Control supply voltage | | | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | For AC at 50 Hz rated value | For AC at 60 Hz rated value | At DC rated value | | Article No. | Price per PU | | Article No. | Price per PU |
| A | A | % | s | V | V | V | d | | | d | | |
| 0.01 ... 43 | 0.03 ... 40 | 0 ... 50 | 0 ... 20 | 24 ... 240 | 24 ... 240 | 24 ... 240 | 2 | **3UG4625-1CW30** | | 2 | **3UG4625-2CW30** | |

For accessories, see page 11/85

For 3UL23 residual-current transformers, see page 11/71.

## Overview

SIRIUS 3UL23 residual-current transformer

The 3UL23 residual-current transformers detect residual currents in machines and plants. They are suitable for pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A in accordance with DIN VDE 0100-530/IEC TR 60755).

Together with the 3UG4625, 3UG4825 residual-current monitoring relays for IO-Link or the SIMOCODE 3UF motor management and control device they enable residual-current and ground-fault monitoring.

The 3UL2302-1A and 3UL2303-1A residual-current transformers with a feed-through opening from 35 to 55 mm can be mounted in conjunction with the 3UL2900 accessories on a TH 35 standard mounting rail according to IEC 60715.

## Selection and ordering data

| Diameter of the bushing opening | Connectable cross-section of the connecting terminal | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| mm | $mm^2$ | d | Article No. | Price per PU | | |
| **Residual-current transformers (essential accessories for 3UG4625, 3UG4825)** | | | | | | |
| 35 | 2.5 | 2 | **3UL2302-1A** | | 1 | 1 unit |
| 55 | 2.5 | 2 | **3UL2303-1A** | | 1 | 1 unit |
| 80 | 2.5 | 2 | **3UL2304-1A** | | 1 | 1 unit |
| 110 | 2.5 | 2 | **3UL2305-1A** | | 1 | 1 unit |
| 140 | 2.5 | 2 | **3UL2306-1A** | | 1 | 1 unit |
| 210 | 4 | 2 | **3UL2307-1A** | | 1 | 1 unit |

## Accessories

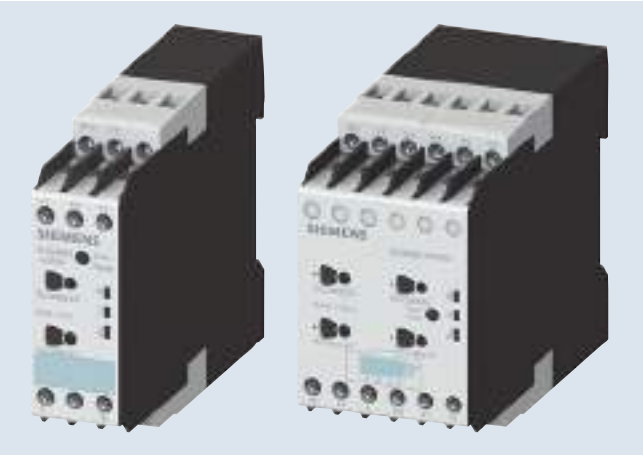
| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Adapters** | | | | | | |
| 3UL2900 | **Adapters** For mounting onto standard rail for 3UL23 to diameter 55 mm | 2 | **3UL2900** | | 1 | 2 units |

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Insulation monitoring



### Overview



SIRIUS 3UG458. insulation monitor

Insulation monitoring relays are used for monitoring the insulation resistance between ungrounded single or three-phase AC supplies and a protective conductor.

Ungrounded, i.e. isolated networks (IT networks) are always used where high demands are placed on the reliability of the power supply, e.g. emergency lighting systems. IT systems are supplied via an isolating transformer or by power supply sources such as batteries or a generator. While an initial insulation fault between a phase conductor and the ground effectively grounds the conductor, as a result no circuit has been closed, so it is possible to continue work in safety (single-fault safety). However, the fault must be rectified as quickly as possible before a second insulation fault occurs (e.g. according to DIN VDE 0100-410). For this purpose insulation monitoring relays are used, which constantly measure the resistance to ground of the phase conductor and the neutral conductor, reporting a fault immediately if insulation resistance falls below the set value so that either a controlled shutdown can be performed or the fault can be rectified without interrupting the power supply.

***Two device series***

- 3UG4581 insulation monitoring relays for ungrounded AC networks
- 3UG4582 and 3UG4583 insulation monitoring relays for ungrounded DC and AC networks

### Benefits

- Devices for AC and DC systems
- All devices have a wide control supply voltage range
- Direct connection to networks with mains voltages of up to 690 V AC and 1 000 V DC by means of a voltage reducer module
- For AC supply systems: Frequency range 15 to 400 Hz
- Monitoring of broken conductors
- Monitoring of setting errors
- Safety in use thanks to integrated system test after startup
- Option of resetting and testing (by means of button on front or using control contact)
- New predictive measurement principle allows very fast response times

### Application

IT networks are used, for example:

- In emergency power supplies
- In safety lighting systems
- In industrial production facilities with high availability requirements (chemical industry, automobile manufacturing, printing plants)
- In shipping and railways
- For mobile generators (aircraft)
- For renewable energies, such as wind energy and photovoltaic power plants
- In the mining industry

## Technical specifications

**More information**

For manuals, see
- https://support.industry.siemens.com/cs/ww/en/view/54382552
- https://support.industry.siemens.com/cs/ww/en/view/54382528

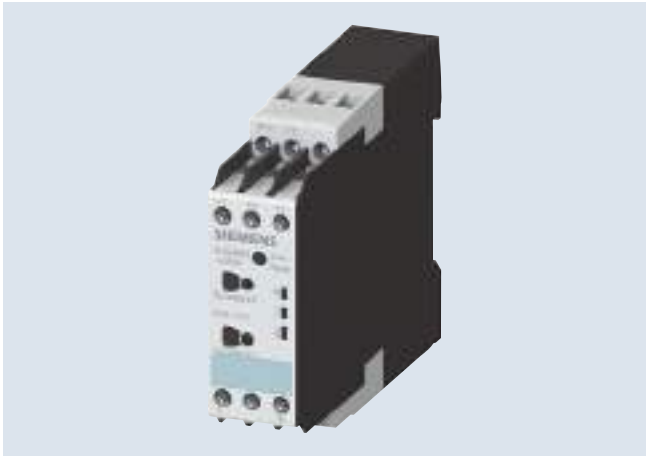
| Type | | 3UG4581-1AW30 | 3UG4582-1AW30 | 3UG4583-1CW30 |
|---|---|---|---|---|
| **General data** | | | | |
| **Setting range for the setpoint response values** | | | | |
| • 1 ... 100 kΩ | | ✓ | ✓ | ✓ |
| • 2 ... 200 kΩ | | -- | -- | ✓ |
| **Rated voltage of the network being monitored** | | | | |
| • 0 ... 250 V AC | | -- | ✓ | -- |
| • 0 ... 440 V AC | | ✓ | -- | ✓ |
| • 0 ... 690 V AC | | -- | -- | ✓ 1) |
| • 0 … 300 V DC | | -- | ✓ | -- |
| • 0 … 600 V DC | | -- | -- | ✓ |
| • 0 ... 1 000 V DC | | -- | -- | ✓ 1) |
| **Max. leakage capacitance of the system** | | | | |
| • 10 µF | | ✓ | ✓ | -- |
| • 20 µF | | -- | -- | ✓ |
| **Output contacts** | | | | |
| • 1 CO | | ✓ | ✓ | -- |
| • 2 CO or 1 CO + 1 CO, adjustable | | -- | -- | ✓ |
| **Number of limit values** | | | | |
| • 1 | | ✓ | ✓ | -- |
| • 1 or 2, adjustable | | -- | -- | ✓ |
| **Principle of operation** | | Closed-circuit principle | Closed-circuit principle | Open-circuit/closed-circuit principle, adjustable |
| **Rated control supply voltage** | | | | |
| • 24 ... 240 V AC/DC | | ✓ | ✓ | ✓ |
| **Rated frequency** | | | | |
| • 15 ... 400 Hz | | -- | ✓ | ✓ |
| • 50/60 Hz | | ✓ | -- | -- |
| **Auto or Manual RESET** | | ✓ Adjustable | ✓ Adjustable | ✓ Adjustable |
| **Remote RESET** | | ✓ Via control input | ✓ Via control input | ✓ Via control input |
| **Non-volatile error memory** | | -- | -- | ✓ Adjustable |
| **Broken wire detection** | | -- | -- | ✓ Adjustable |
| **Replacement for** | | | | |
| Rated control supply voltage $U_s$ | Voltage range of the network being monitored | | | |
| **3UG3081-1AK20** 110 ... 130/220 ... 240 V AC/DC | 3 x 230/400 V AC | ✓ | -- | -- |
| **3UG3081-1AW30** 24 ... 240 V AC/DC | 3 x 230/400 V AC | ✓ | -- | -- |
| **3UG3082-1AW30** 24 ... 240 V AC/DC | 24 ... 240 V DC | -- | ✓ | -- |

✓ Available

-- Not available

1) With voltage reducer module.

## Overview



SIRIUS 3UG4581 insulation monitor

The 3UG4581 insulation monitoring relays are used to monitor insulation resistance according to IEC 61557-8 in ungrounded AC networks with rated voltages of up to 400 V.

These devices can monitor control circuits (single-phase) and main circuits (three-phase).

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status.

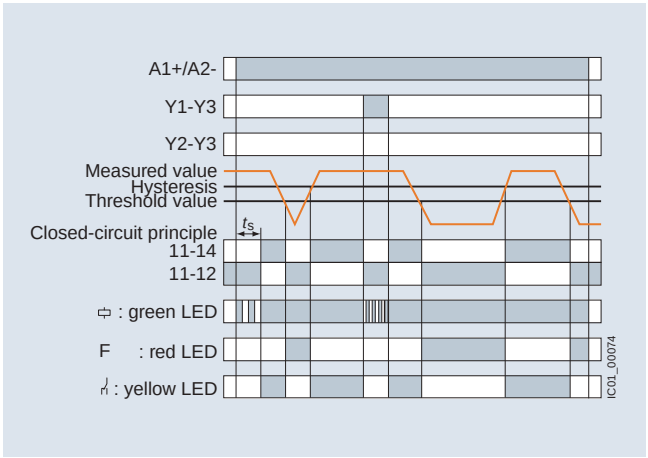
In the case of 3UG4581 a higher-level DC measuring signal is used. The higher-level DC measuring signal and the resulting current are used to determine the value of the insulation resistance of the network which is to be measured.

## Technical specifications

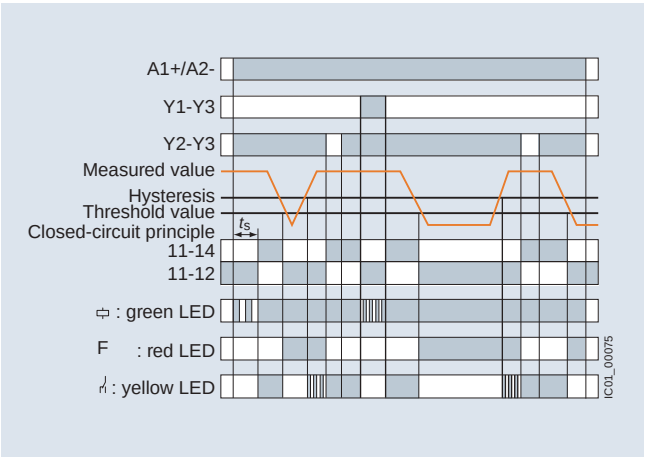
### *3UG4581 monitoring relay*

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET



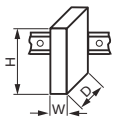

Insulation resistance monitoring with fault storage and Manual RESET



# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Insulation monitoring for ungrounded AC networks



| Type | | | 3UG4581 |
|---|---|---|---|
| Dimensions (W x H x D) |  | mm | 22.5 x 100 x 100 |
| **Connection type** | | | **Screw terminals** |
| • Solid | | $mm^2$ | 2 x (0.5 ... 4) |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.75 ... 2.5) |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) |
| **General data** | | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to IEC 60664 | | V | 400 supply circuit/measuring circuit<br>300 supply circuit/output circuit |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 |
| **Rated control supply voltage** | | V | 24 ... 240 AC/DC |
| **Rated frequency** | | Hz | 15 ... 400 |
| **Measuring circuit** | | | |
| **Rated line voltage of the network being monitored** | | V | 0 ... 400 |
| **Rated frequency of the network being monitored** | | Hz | 50 ... 60 |
| **Setting range for insulation resistance** | | kΩ | 1 ... 100 |
| **Control circuit** | | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | | A | 4 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V | | A<br>A | 3<br>2 |
| **Minimum contact load** at 24 V DC | | mA | 10 |

## Selection and ordering data

- Auto or Manual RESET
- Closed-circuit principle
- 1 CO contact
- Fault memory adjustable using control input (Y2-Y3)
- Reset by means of button on front or using control input (Y2-Y3)
- Test by means of button on front or using control input (Y1-Y3)

| | Rated line voltage $U_n$ | Measuring range $U_e$ | Rated control supply voltage $U_s$ | System leakage capacitance | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Article No. | Price per PU | | |
| | V AC | kΩ | V | µF | d | | | | |
| **Insulation monitors for ungrounded AC networks** | | | | | | | | | |
| | 0 ... 400 | 1 ... 100 | 24 ... 240 AC/DC | Max. 10 | 5 | **3UG4581-1AW30** | | 1 | 1 unit |

3UG4581-1AW30

For accessories, see page 11/85

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Insulation monitoring for ungrounded DC and AC networks



### Overview

SIRIUS 3UG4582 and 3UG4583 insulation monitors

The 3UG4582 and 3UG4583 insulation monitoring relays are used to monitor insulation resistance in ungrounded IT AC or DC networks according to IEC 61557-8.

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status. With these devices, which are suitable for both AC and DC networks, a pulsed test signal is fed into the network to be monitored and the isolation resistance is determined.

The pulsed test signal changes its form according to insulation resistance and network loss capacitance. The changed form is used to predict the changed insulation resistance.

If the predicted insulation resistance matches the insulation resistance calculated in the next measurement cycle, and is lower than the threshold value, the output relays are activated or deactivated, depending on the device configuration. This measurement principle is also suitable for identifying symmetrical insulation faults.

***3UG4983 voltage reducer module***

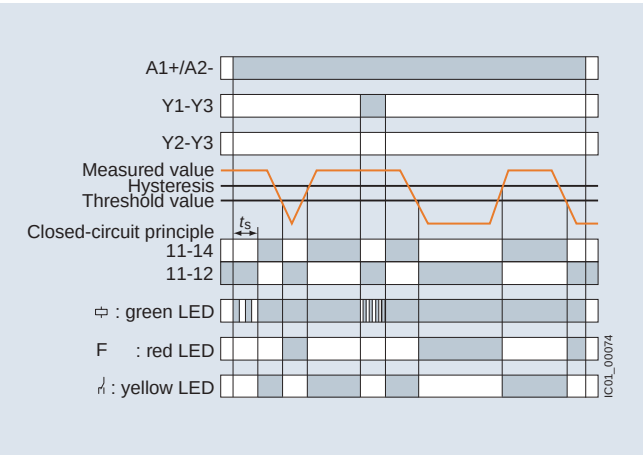
The 3UG4983 passive voltage reducer module can be used to allow the 3UG4583 insulation monitoring relay to be used for insulation monitoring of IT networks with rated voltages of up to 690 V AC and 1 000 V DC.

### Technical specifications

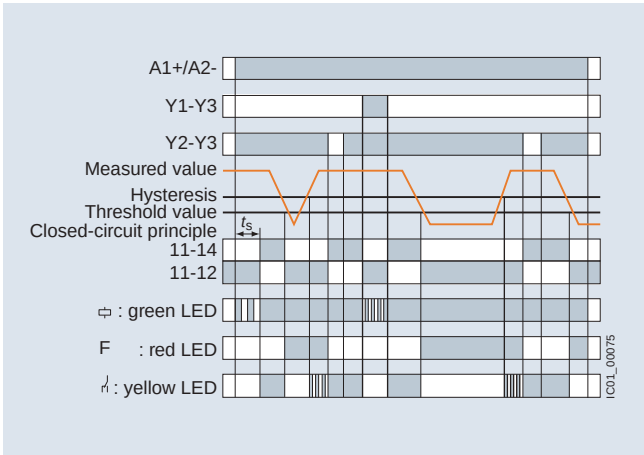
***3UG4582 monitoring relays***

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET



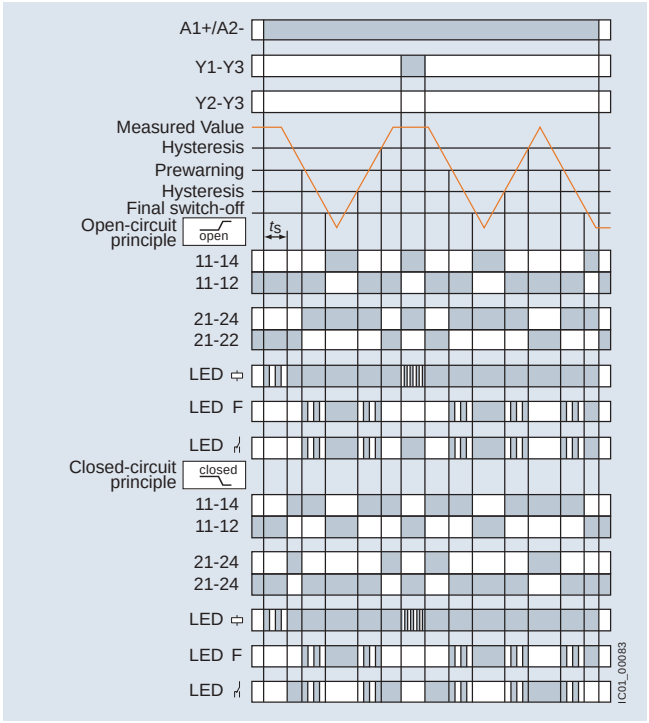

Insulation resistance monitoring with fault storage and Manual RESET



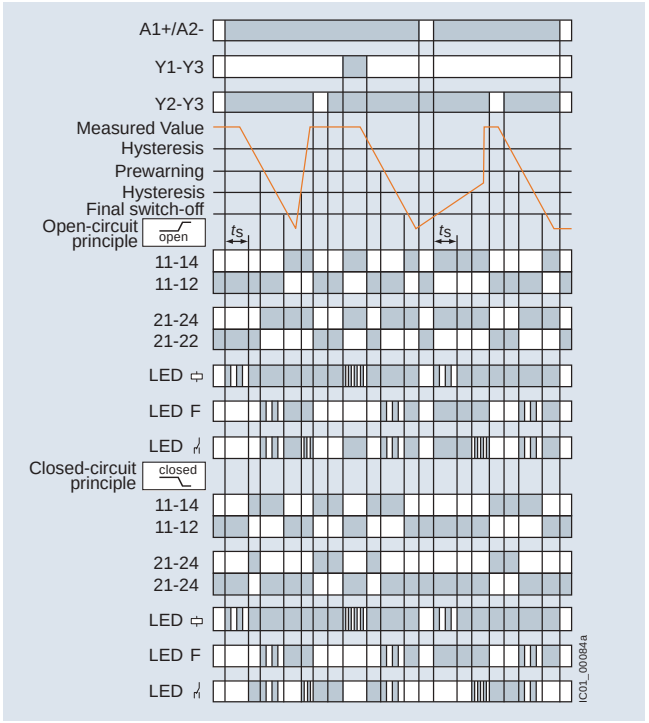
### *3UG4583 monitoring relays*

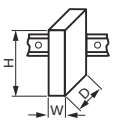
With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET




Insulation resistance monitoring with fault storage and Manual RESET




| Type | | | 3UG4582 | 3UG4583 |
|---|---|---|---|---|
| Dimensions (W x H x D) |  | mm | 22.5 x 100 x 100 | 45 x 100 x 100 |
| **Connection type** | | | **Screw terminals** | |
| • Solid | | $mm^2$ | 2 x (0.5 ... 4) | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x (0.75 ... 2.5) | |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) | |
| **General data** | | | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to IEC 60664 | | V | 400 supply circuit/measuring circuit, 300 supply circuit/output circuit | 400 supply circuit/measuring circuit<br>300 supply circuit/output circuit,<br>300 output circuit 1/output circuit 2 |
| **Rated impulse withstand voltage $U_{imp}$** | | kV | 6 | |
| **Rated control supply voltage** | | V AC/DC | 24 ... 240 | |
| **Rated frequency** | | Hz | 15 ... 400 | |
| **Measuring circuit** | | | | |
| **Rated line voltage of the network being monitored** | | V<br>V | 0 ... 250 AC,<br>0 ... 300 DC | 0 ... 300 AC, 0 ... 690 AC with 3UG49 83<br>0 ... 600 DC, 0 ... 1 000 DC with 3UG49 83 |
| **Rated frequency of the network being monitored** | | Hz | DC or 15 ... 400 | |
| **Setting range for insulation resistance** | | k | 1 ... 100 | 1 ... 100,<br>2 ... 200 for 2nd limit value (disconnectable) |
| **Control circuit** | | | | |
| **Number of CO contacts for auxiliary contacts** | | | 1 | 2 or 1 + 1, adjustable |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | | A | 4 | |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V | | A<br>A | 3<br>2 | |
| **Minimum contact load** at 24 V DC | | mA | 10 | |

## Selection and ordering data

- Auto or Manual RESET
- Rated control supply voltage $U_s$ 24 ... 240 V AC/DC
- 3UG4582: Closed-circuit principle
  3UG4583: Open-circuit or closed-circuit principle, adjustable
- 1 or 2 CO contacts
- Fault memory adjustable using control input (Y2-Y3)
- Reset by means of button on front or using control input (Y2-Y3)
- Test by means of button on front or using control input (Y1-Y3)
- 3UG4583: Non-volatile fault storage can be configured
- 3UG4583: 2 separate limit values (e.g. for warning and disconnection) or 2 CO contacts for one limit value (e.g. for a local alarm and signaling to the PLC via separate circuits) can be configured

Note:

With the 3UG4983-1A coupling unit, connection to networks with voltages of up to 690 V AC and 1 000 V DC is possible, see below.

| | Rated line voltage $U_n$ | System leakage capacitance | Output relays | Measuring range $U_e$ | Broken wire detection in the measuring range | SD | Screw terminals<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| | V | µF | | kΩ | | d | | | | |
| **3UG4582 insulation monitors** | | | | | | | | | | |
| 3UG4582-1AW30 | 0 ... 250 AC, 0 ... 300 DC | Max. 10 | 1 CO | 1 ... 100 | ✓ | 5 | **3UG4582-1AW30** | | 1 | 1 unit |
| **3UG4583 insulation monitors** | | | | | | | | | | |
| 3UG4583-1CW30 | 0 ... 400 AC, 0 ... 600 DC[1] | Max. 20 | 2 CO or 1 CO + 1 CO, adjustable | 1 ... 100, 2 ... 200 for 2nd limit value, adjustable | ✓ Adjustable | 5 | **3UG4583-1CW30** | | 1 | 1 unit |
| **Voltage reducer module for 3UG4583** | | | | | | | | | | |
| 3UG4983-1A | For extending the network voltage range to max. 690 V AC and 1 000 V DC | | | | | 5 | **3UG4983-1A** | | 1 | 1 unit |

✓ Available

[1] With 3UG4983-1A voltage reducer module suitable also for the insulation monitoring of IT networks of up to 690 V AC and 1 000 V DC.

For accessories, see page 11/85

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Insulation monitoring for ungrounded DC and AC networks



### Overview

SIRIUS 3UG4501 monitoring relay

The 3UG4501 level monitoring relay is used in combination with 2- or 3-pole sensors to monitor the levels of conductive liquids.

### Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V (absolute limit values)
- Individually shortenable 2- and 3-pole wire electrodes for easy mounting from above/below
- Bow electrodes for installation from the side, for larger filling levels and minimum space requirements
- Can be flexibly adapted to different conductive liquids through analog setting of the sensitivity from 2 to 200 kΩ
- Compensation for wave movements through tripping delay times from 0.1 to 10 s
- Upstream or downstream function selectable
- All versions with removable terminals
- All versions with screw or spring-type terminals

### Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry run protection
- Leak monitoring

### Technical specifications

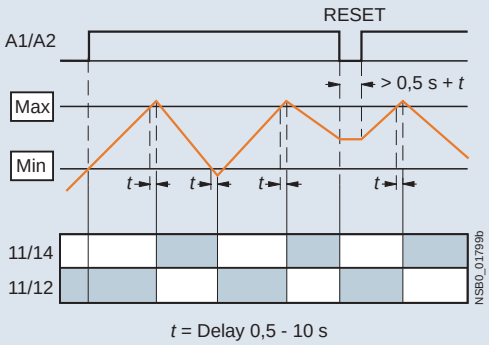
***3UG4501 monitoring relays***

The principle of operation of the 3UG4501 level monitoring relay is based on measuring the electrical resistance of the liquid between two immersion sensors and a reference terminal. If the measured value is lower than the sensitivity set at the front, the output relay changes its switching state. In order to exclude electrolytic phenomena in the liquid, the sensors are supplied with alternating current.

Two-point control

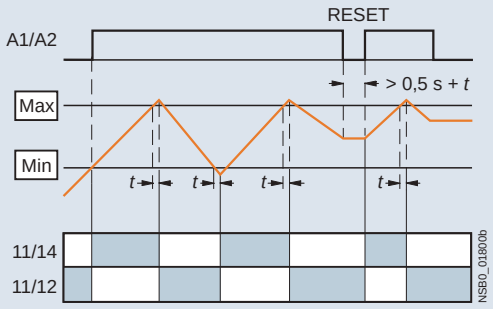
The output relay changes its switching state as soon as the liquid level reaches the maximum sensor, while the minimum sensor is submerged. The relay returns to its original switching state as soon as the minimum sensor no longer has contact with the liquid.

OVER, two-point control




*t* = Delay 0,5 - 10 s

UNDER, two-point control




*t* = Delay 0,5 - 10 s

Note:

It is also possible to connect other resistance sensors to the Min and Max terminals in the range 2 to 200 kΩ, e.g. photoresistors, temperature sensors, encoders based on resistance, etc. The monitoring relay can therefore also be used for other applications as well as for monitoring the levels of liquids.

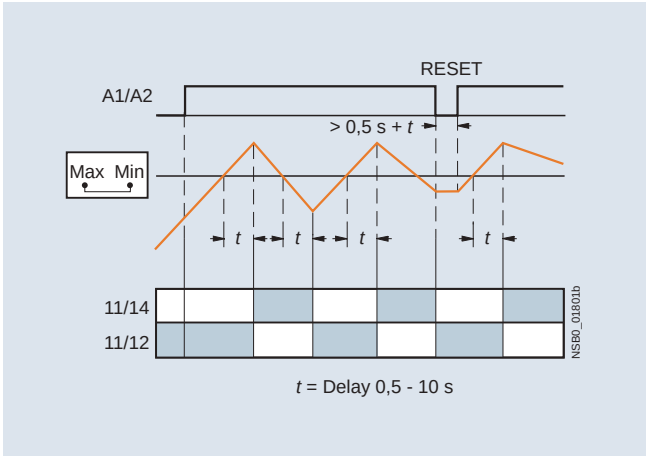
Single-point control

If only one level is being controlled, the terminals for Min and Max on the monitoring relay are bridged. The output relay changes its switching state as soon as the liquid level is reached and returns to its original switching state once the sensor no longer has contact with the liquid.

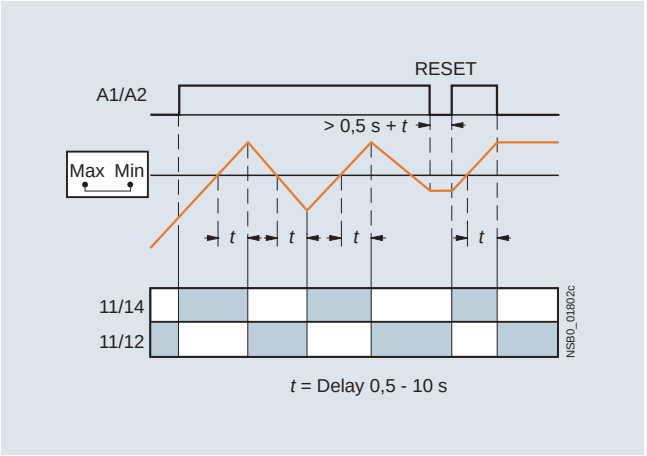
In order to prevent premature tripping of the switching function caused by wave motion or frothing, even though the set level has not been reached, it is possible to delay this function by 0.5 to 10 s.

For safe resetting, the control supply voltage must be interrupted for at least the set delay time of +0.5 s.

OVER, single-point control




UNDER, single-point control




| Type | | 3UG4501 |
|---|---|---|
| **General data** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to VDE 0110 | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Measuring circuit** | | |
| **Electrode current, max.** (typ. 70 Hz) | mA | 1 |
| **Electrode voltage, max.** (typ. 70 Hz) | V | 15 |
| **Sensor feeder cable** | m | Max. 100 |
| **Conductor capacitance of sensor cable**[1)] | nF | Max. 10 |
| **Control circuit** | | |
| **Load capacity of the output relay**<br>Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13/24 V<br>• DC-13/125 V<br>• DC-13/250 V | <br>A<br>A<br>A<br>A | <br>3<br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

1) The sensor cable does not necessarily have to be shielded, but we do not recommend installing this cable parallel to the power supply lines. It is also possible to use a shielded cable, whereby the shield has to be connected to the M terminal.

## Selection and ordering data

- For level monitoring of electrically conductive liquids
- Control principle: inlet or sequence control adjustable per rotary switch
- Single-point and two-point control possible
- Analogically adjustable sensitivity (specific resistance of the liquid)
- Analogically adjustable tripping delay time
- 1 yellow LED for displaying the relay state
- 1 green LED for displaying the applied control supply voltage
- 1 CO contact

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

| Sensitivity | Tripping delay time | Rated control supply voltage $U_s$ | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|---|
| | | | | Article No. | Price per PU | | Article No. | Price per PU |
| kΩ | s | V AC/DC | d | | | d | | |
| 2 ... 200 | 0.5 ... 10 | 24[1] | 2 | **3UG4501-1AA30** | | 2 | **3UG4501-2AA30** | |
| | | 24 ... 240 | 2 | **3UG4501-1AW30** | | 2 | **3UG4501-2AW30** | |

[1] The rated control supply voltage and the measuring circuit are not electrically separated.

For accessories, see page 11/85

# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Speed monitoring



### Overview

SIRIUS 3UG4651 monitoring relay

The 3UG4651 monitoring relay is used in combination with a sensor to monitor motor drives for overspeed and/or underspeed.

Furthermore, the monitoring relay is ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

### Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V (absolute limit values)
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Permanent display of actual value and fault type
- Use of up to 10 sensors per rotation for extremely slowly rotating motors
- 2- or 3-wire sensors and sensors with a mechanical switching output or semiconductor output can be connected
- Auxiliary voltage for sensor integrated
- All versions with removable terminals
- All versions with screw or spring-type terminals

### Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

### Technical specifications

***3UG4651 monitoring relay***

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in rpm.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with Auto RESET (Memory = no)

If the device is set to Auto RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 0.1 to 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with Manual RESET (Memory = yes)

If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continue to flash, even when the speed returns to a permissible value. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for > 2 s, by connecting the RESET device terminal to 24 V DC or by switching the control supply voltage off and back on again.

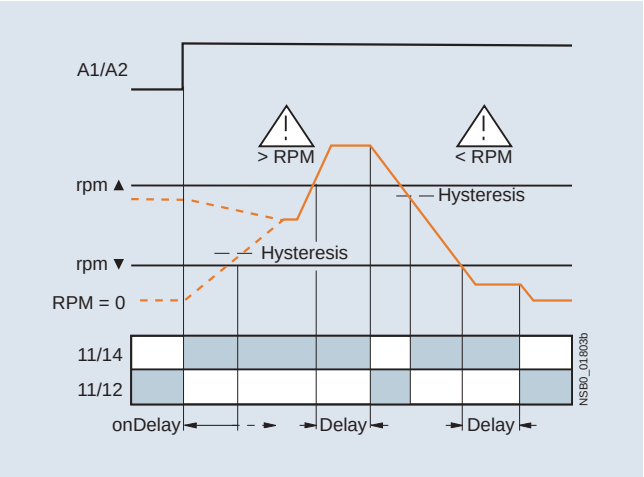
# 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

## Speed monitoring

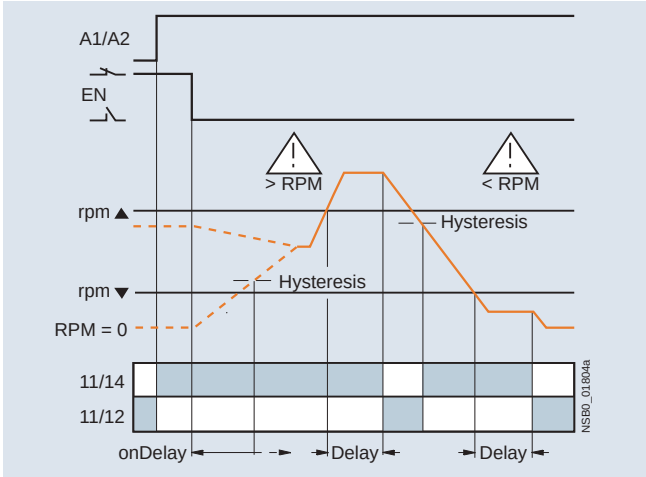


With the closed-circuit principle selected

Range monitoring without enable input




Range monitoring with enable input




| Type | | 3UG4651 |
|---|---|---|
| **General data** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 3<br>Overvoltage category III acc. to VDE 0110 | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Measuring circuit** | | |
| **Sensor supply** | | |
| • For 3-wire sensor (24 V/0 V) | mA | Max. 50 |
| • For 2-wire NAMUR sensor (8V2) | mA | Max. 8.2 |
| **Signal input** | | |
| • IN1 | kΩ | 16, 3-wire sensor, pnp operation |
| • IN2 | kΩ | 1, floating contact, 2-wire NAMUR sensor |
| **Voltage level** | | |
| • For level 1 at IN1 | V | 4.5 ... 30 |
| • For level 0 at IN1 | V | 0 ... 1 |
| **Current level** | | |
| • For level 1 at IN2 | mA | > 2.1 |
| • For level 0 at IN2 | mA | < 1.2 |
| **Minimum pulse duration of signal** | ms | 5 |
| **Minimum interval between 2 pulses** | ms | 5 |
| **Control circuit** | | |
| **Number of CO contacts for auxiliary contacts** | | 1 |
| **Load capacity of the output relay**<br>Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at** | | |
| • AC-15/24 ... 400 V | A | 3 |
| • DC-13/24 V | A | 1 |
| • DC-13/125 V | A | 0.2 |
| • DC-13/250 V | A | 0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

## Selection and ordering data

- For speed monitoring in revolutions per minute (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Sensor supply 24 V DC/50 mA integrated
- Input frequency 0.1 to 2 200 pulses rpm (0.0017 to 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Digitally adjustable, with illuminated LCD
- Overshoot, undershoot or range monitoring adjustable
- Number of pulses per revolution can be adjusted
- Upper and lower threshold value can be adjusted separately
- Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact

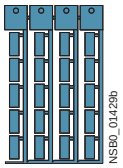
PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

| Measuring range | Hysteresis | ON-delay time | Tripping delay time | Pulses per revolution | Rated control supply voltage $U_s$ AC/DC | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Article No. | Price per PU | | Article No. | Price per PU |
| rpm | rpm | s | s | | V | d | | | d | | |
| 0.1 ... 2 200 | OFF<br>0.1 ... 99.9 | 0 ... 900 | 0.1 ... 99.9 | 1 ... 10 | 24[1] | 2 | **3UG4651-1AA30** | | 2 | **3UG4651-2AA30** | |
| | | | | | 24 ... 240 | 2 | **3UG4651-1AW30** | | 2 | **3UG4651-2AW30** | |

[1] The rated control supply voltage and the measuring circuit are not electrically separated.

For accessories, see page 11/85

## Selection and ordering data

| | Use | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Blank labels** | | | | | | | |
|  3RT1900-1SB20 | For 3UG4 | **Unit labeling plates**<br>For SIRIUS devices<br>20 mm x 7 mm, pastel turquoise | 20 | **3RT1900-1SB20** | | 100 | 340 units |
| | For 3UG4 | **Adhesive labels** for SIRIUS devices<br>• 19 mm x 6 mm, pastel turquoise | 15 | **3RT1900-1SB60** | | 100 | 3 060 units |
| | | • 19 mm x 6 mm, zinc yellow | 15 | **3RT1900-1SD60** | | 100 | 3 060 units |
| **Push-in lugs and covers** | | | | | | | |
| 3RP1903 | For 3UG4 | **Push-in lugs**<br>For screw fixing,<br>2 units are required for each device | 5 | **3RP1903** | | 1 | 10 units |
| 3RP1902 | For 3UG4 | **Sealable covers**<br>For securing against unauthorized adjustment of setting knobs | 5 | **3RP1902** | | 1 | 5 units |
| | For 3UG45 | **Sealing foil**<br>For securing against unauthorized adjustment of setting knobs | ► | **3TK2820-0AA00** | | 1 | 1 unit |
| **Covers for insulation monitoring relays** | | | | | | | |
| 3UG4981-0C | For 3UG4581 and 3UG4582 | **Sealable, transparent covers** | 5 | **3UG4981-0C** | | 1 | 1 unit |
| 3UG4983-0C | For 3UG4583 | | 5 | **3UG4983-0C** | | 1 | 1 unit |
| **Tools for opening spring-type terminals** | | | | | | | |
| 3RA2908-1A | For auxiliary circuit connections | **Screwdrivers**<br>For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated | 2 | **Spring-type terminals**<br>**3RA2908-1A** | | 1 | 1 unit |

Note:

For products for mechanical bearing monitoring, e.g. condition monitoring systems, see www.siemens.com/siplus-cms.

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link



## Overview

SIRIUS 3UG48 monitoring relays

**More information**

Homepage, see www.usa.siemens.com/relays
Industry Mall, see www.siemens.com/product?3UG48
For the conversion tool, e.g. from 3UG3 to 3UG4, see www.siemens.com/sirius/conversion-tool

The SIRIUS 3UG4 monitoring relays for electronic and mechanical variables monitor all important characteristics that allow conclusions to be drawn about the functionality of a plant. Both sudden disturbances and gradual changes, which may indicate the need for maintenance, are detected.

Thanks to their relay outputs, the monitoring relays permit direct disconnection of the affected system components and alerting, e.g. by the triggering of a warning light. Thanks to adjustable delay times the 3UG4 monitoring relays can respond very flexibly to brief faults such as voltage dips or load changes and can thus avoid unnecessary alarms and disconnections and increase system availability.

### *3UG48 monitoring relays for IO-Link*

The SIRIUS 3UG48 monitoring relays for IO-Link also offer many other options based upon the monitoring functions of the tried-and-tested SIRIUS 3UG4 monitoring relays:

- Measured value transmission to a controller, including resolution and unit, may be parameterizable as to which value is cyclically transmitted
- Transmission of alarm flags to a controller
- Full diagnosis capability by inquiry as to the cause of the fault in the diagnosis data record
- Remote parameterization is also possible, in addition to or instead of local parameterization
- Rapid parameterization of the same devices by duplication of the parameterization in the controller
- Parameter transmission through uploading to a controller by IO-Link call or by parameter server (if IO-Link master from IO-Link Specification V1.1 and higher is used)
- Consistent central data storage in the event of parameter change locally or via a controller
- Automatic reparameterizing when devices are exchanged
- Blocking of local parameterization via IO-Link possible
- Faults are saved in parameterizable and non-volatile fashion to prevent an automatic start up after voltage failure and to make sure diagnostics data is not lost
- Integration into the automation level provides the option of parameterizing the monitoring relays at any time via a display unit, or displaying the measured values in a control room or locally at the machine/control cabinet

Even without communication via IO-Link the devices continue to function fully autonomously:

- Parameterization can take place locally at the device, independently of a controller.
- In the event of failure or before the controller becomes available the monitoring relays work as long as the control supply voltage (24 V DC) is present.
- If the monitoring relays are operated without the controller, the 3UG48 monitoring relays have, thanks to the integrated SIO mode, an additional semiconductor output, which switches when the adjustable warning threshold is exceeded.

Thanks to the combination of autonomous monitoring relay function and integrated IO-Link communication, redundant sensors and/or analog signal converters – which previously took over the transmission of measured values to a controller, leading to considerable extra cost and wiring outlay – are no longer needed.

Because the output relays are still present, the monitoring relays increase the functional reliability of the system, since only the controller can fulfill the control tasks if the current measured values are available, whereas the output relays can also be used for the disconnection of the system if limit values that cannot be reached during operation are exceeded.

The individual 3UG48 monitoring relays for IO-Link offer the following functions in different combinations:

- Phase sequence
- Phase failure, neutral conductor failure
- Phase asymmetry
- Undershooting and/or overshooting of limit values for voltage
- Undershooting and/or overshooting of limit values for current
- Undershooting and/or overshooting of power factor limit values
- Monitoring of the active current or the apparent current
- Monitoring of the residual current
- Undershooting and/or overshooting of limit values for speed

Note:

For more information on the IO-Link bus system, click here.

Notes on security

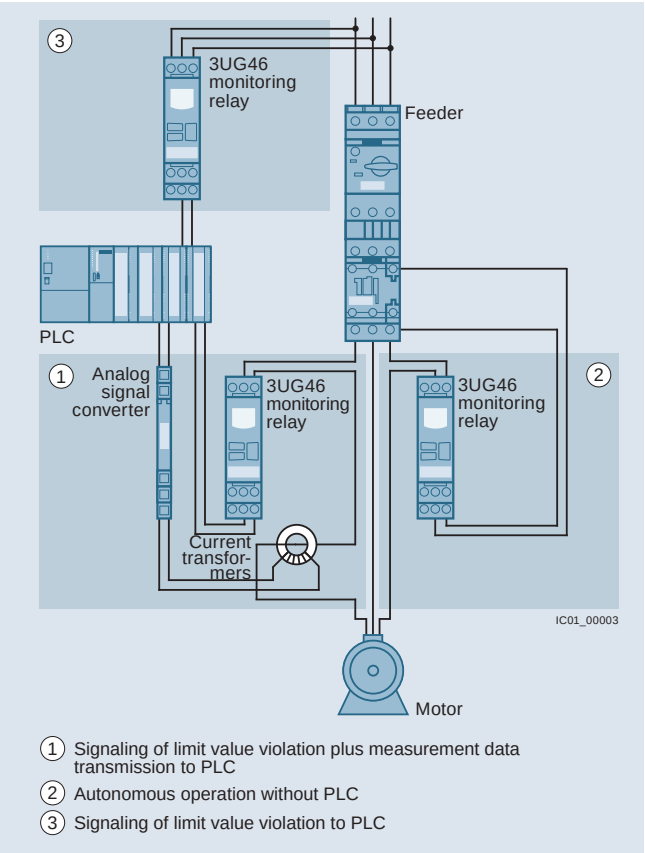
In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information on Industrial Security, see www.usa.siemens.com/industrialsecurity.

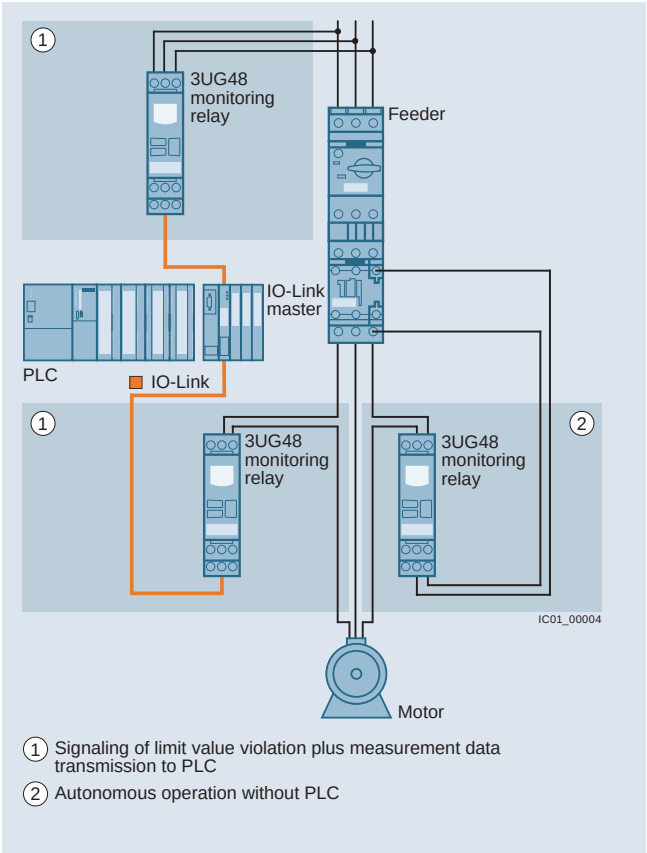
# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## General data






Use of conventional monitoring relays




Monitoring relays for IO-Link

Notes:

Devices required for the communication via IO-Link:
- Any controller that supports the IO-Link (e.g. ET 200SP with CPU or S7-1200).
- IO-Link master (e.g. CM 4xIO-Link for SIMATIC ET 200SP or SM 1278 for S7-1200).

Each monitoring relay requires an IO-Link channel.

### *Article No. scheme*

| Product versions | | Article number |
|---|---|---|
| **3UG4 monitoring relay with IO-Link** | | **3UG4** □ □ □ – □ □ □ □ **0** |
| Type of setting | e.g. 8 = analogically adjustable | □ |
| Functions | e.g. 15 = line monitoring | □ □ |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals (push-in) | **2** |
| Contacts | e.g. A = 1 CO contact | □ |
| Supply voltage | e.g. A4 = 160 ... 690 V AC | □ □ |
| Example | | **3UG4 8 1 5 – 1 A A 4 0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

- Simple cyclical transmission of the current measured values, relay switching states and events to a controller
- Remote parameterization
- Automatic reparameterizing when devices are exchanged
- Simple duplication of identical or similar parameterizations
- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Cost saving and space saving in control cabinet due to the elimination of AI and IO modules as well as analog signal converters and duplicated sensors

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## General data



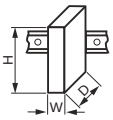
### Application

The use of SIRIUS monitoring relays for IO-Link is particularly recommended for machines and plants in which these relays, in addition to their monitoring function, are to be connected to the automation level for the rapid, simple and fault-free provision of the current measured values and/or for remote parameterization.

The monitoring relays can either relieve the controller of monitoring tasks or, as a second monitoring entity in parallel to and independent of the controller, increase the reliability in the process or in the system. In addition, the elimination of AI and IO modules allows the width of the controller to be reduced despite significantly expanded funcionality.

### Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16368/td<br>Manual and internal circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/view/54375430 | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16368/faq |

| Type | | | 3UG48 |
|---|---|---|---|
| **General technical specifications** | | | |
| Dimensions (W x H x D) |  | | |
| • For 3 terminal blocks | | | |
| - Screw terminals | | mm | 22.5 x 92 x 91 |
| - Spring-type terminals | | mm | 22.5 x 94 x 91 |
| • For 4 terminal blocks | | | |
| - Screw terminals | | mm | 22.5 x 103 x 91 |
| - Spring-type terminals | | mm | 22.5 x 103 x 91 |
| **Permissible ambient temperature** | | | |
| • During operation | | °C | -25 ... +60 |
| **Connection type** | | | **Screw terminals** |
| • Terminal screw | | | M3 (for standard screwdriver, size 2 and Pozidriv 2) |
| • Solid | | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5) |
| • AWG cables, solid or stranded | | AWG | 2 x (20 ... 14) |
| • Tightening torque | | Nm | 0.8 ... 1.2 |
| **Connection type** | | | **Spring-type terminals** |
| • Solid | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • Finely stranded, with end sleeve acc. to DIN 46228 | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • Finely stranded | | $mm^2$ | 2 x (0.25 ... 1.5) |
| • AWG cables, solid or stranded | | AWG | 2 x (24 ... 16) |

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link





## Overview

SIRIUS 3UG4815 monitoring relay

Solid-state line monitoring relays provide maximum protection for mobile machines, plants and hoisting equipment or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

The line monitoring relays with IO-Link monitor phase sequence, phase failure (with or without N conductor monitoring), phase asymmetry and undervoltage and/or overvoltage.

Phase asymmetry is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exist if the set limit values for at least one phase voltage are overshot or undershot. The rms value of the voltage is measured.

## Benefits

- Can be used in any network from 160 to 630 V AC worldwide thanks to wide voltage range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and network fault type to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

| Function | Application |
|---|---|
| Phase sequence | • Direction of rotation of the drive |
| Phase failure | • A fuse has tripped<br>• Failure of the control supply voltage<br>• Broken cable |
| Phase asymmetry | • Overheating of the motor due to asymmetrical voltage<br>• Detection of asymmetrically loaded networks |
| Undervoltage | • Increased current on a motor with corresponding overheating<br>• Unintentional resetting of a device<br>• Network collapse, particularly with battery power |
| Overvoltage | • Protection of a plant against destruction due to overvoltage |

## Technical specifications

### *3UG4815/3UG4816 monitoring relays*

The 3UG4815 and 3UG4816 line monitoring relays have a wide voltage range input and are supplied with power through IO-Link or from an external 24 V DC source.

The device is equipped with a display and is parameterized using three buttons. The 3UG4815 monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase asymmetry, undervoltage and overvoltage. The 3UG4816 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V.

The device has two separately adjustable delay times for overvoltage and undervoltage and for line stabilization. If the direction of rotation is incorrect or a phase fails, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from and potentially high feedback through the load.

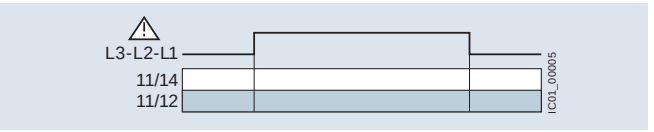
The 3UG4815 and 3UG4816 monitoring relays can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for 2.5 s.

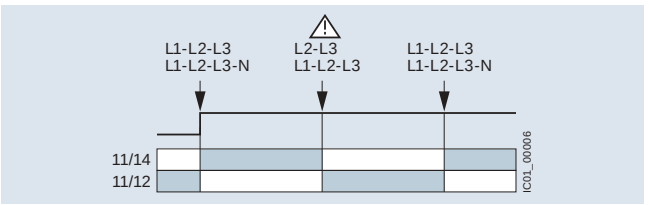
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

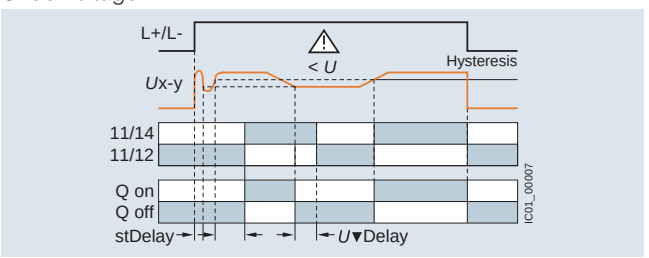
Wrong phase sequence



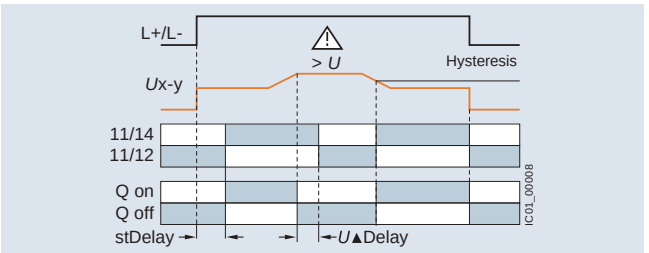

Phase failure




Undervoltage




Overvoltage




| Type | | 3UG4815, 3UG4816 |
|---|---|---|
| **General technical specifications** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 2<br>Overvoltage category III acc. to VDE 0110 | V | 690 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Control circuit** | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13 at<br>- 24 V<br>- 125 V<br>- 250 V | <br>A<br><br><br>A<br>A<br>A | <br>3<br><br><br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |
| **Electrical endurance AC-15** | Million operating cycles | 0.1 |
| **Mechanical endurance** | Million operating cycles | 10 |

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link





## Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Auto or Manual RESET
- Open- or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4815-1AA40

3UG4816-1AA40

3UG4815-2AA40

3UG4816-2AA40

| Adjustable hysteresis | Undervoltage detection | Overvoltage detection | Stabilization time adjustable stDEL | Tripping delay time adjustable Del | Version of auxiliary contacts | Measurable line voltage[1] | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Article No. | Price per PU | | Article No. | Price per PU |
| V | | | s | s | | V AC | d | | | d | | |
| **Monitoring of phase sequence, phase failure, phase asymmetry, overvoltage and undervoltage** | | | | | | | | | | | | |
| 1 ... 20 | ✓ | ✓ | 0.1 … 999.9 | 0.1 … 999.9 | 1 CO + 1 Q[2] | 160 … 690 | 2 | **3UG4815-1AA40** | | 2 | **3UG4815-2AA40** | |
| **Monitoring of phase sequence, phase and N conductor failure, phase asymmetry, overvoltage and undervoltage** | | | | | | | | | | | | |
| 1 ... 20 | ✓ | ✓ | 0.1 … 999.9 | 0.1 … 999.9 | 1 CO + 1 Q[2] | 90 … 400 to N | 2 | **3UG4816-1AA40** | | 2 | **3UG4816-2AA40** | |

✓ Function supported

[1] Absolute limit values.

[2] In SIO mode.

For accessories, see page 11/108

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Voltage monitoring



### Overview

SIRIUS 3UG4832 monitoring relays

The relays monitor single-phase AC voltages (rms value) and DC voltages against the set limit value for overshoot and undershoot.

### Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

### Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded control supply voltages, particularly with battery power

### Technical specifications

***3UG4832 monitoring relays***

The 3UG4832 voltage monitoring relays are supplied with power through IO-Link or with an external auxiliary voltage of 24 V DC and perform overshoot, undershoot or range monitoring of the voltage depending on parameterization. The devices are equipped with a display and are parameterized by means of three buttons or through IO-Link.

The measuring range extends from 10 to 600 V AC/DC. The limit values for overshoot or undershoot can be freely configured within this range. If one of these limit values is reached, the output relay responds according to the set principle of operation as soon as the delay time has elapsed. This tripping delay time *U*▲Del/*U*▼Del can be set from 0 to 999.9 s, as can the ON-delay time onDel. The hysteresis is adjustable from 0.1 to 300 V.

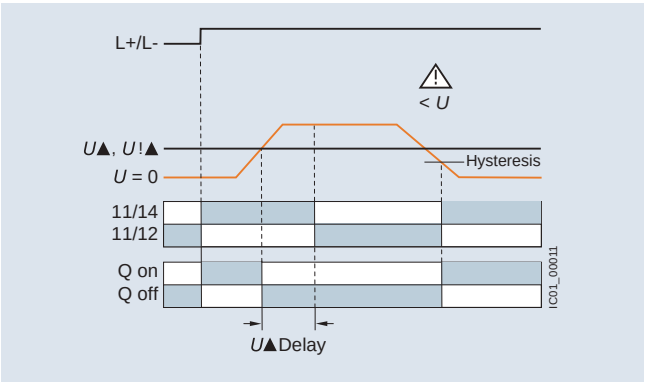
The device can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET. One output changeover contact is available as a signaling contact, and a semiconductor output is available in addition in SIO mode.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for 2.5 s.

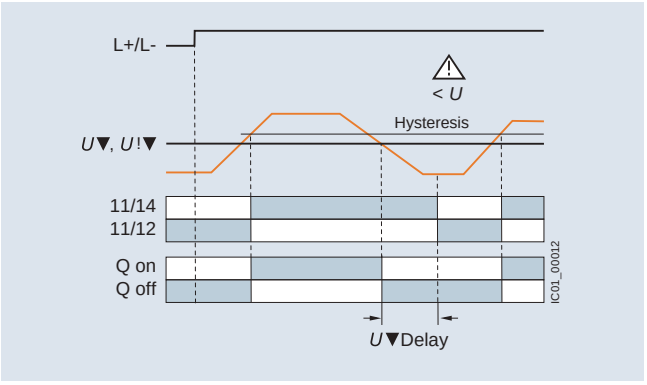
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

Overvoltage




Undervoltage



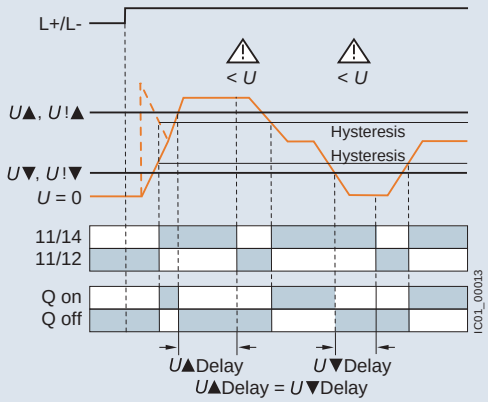
# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Voltage monitoring



With the closed-circuit principle selected

Range monitoring




| Type | | 3UG4832 |
|---|---|---|
| **General technical specifications** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 2<br>Overvoltage category III acc. to VDE 0110 | V | 690 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Measuring circuit** | | |
| **Permissible measuring range** single-phase AC/DC voltage | V | 10 … 690 |
| **Measuring frequency** | Hz | 40 ... 500 |
| **Setting range** single-phase voltage | V | 10 ... 600 |
| **Control circuit** | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13 at<br>- 24 V<br>- 125 V<br>- 250 V | A<br><br>A<br>A<br>A | 3<br><br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Voltage monitoring



### Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Auto or Manual RESET
- Open- or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4832-1AA40

3UG4832-2AA40

| Measuring range | Adjustable hysteresis | ON-delay time adjustable onDel | Tripping delay time separately adjustable *U*▲Del/*U*▼Del | SD | **Screw terminals** | SD | **Spring-type terminals** |
|---|---|---|---|---|---|---|---|
| | | | | | Article No. Price per PU | | Article No. Price per PU |
| V AC/DC | V | s | s | d | | d | |
| **Monitoring of voltage for overshoot or undershoot** | | | | | | | |
| 10 … 600 | 0.1 ... 300 | 0 … 999.9 | 0 … 999.9 | 2 | **3UG4832-1AA40** | 2 | **3UG4832-2AA40** |

For accessories, see page 11/108.

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link





## Overview

SIRIUS 3UG4822 monitoring relays

The relays monitor single-phase AC (rms value) and DC currents against the set limit value for overshoot and undershoot.

## Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Monitoring for broken conductors

## Technical specifications

### *3UG4822 monitoring relays*

The 3UG4822 current monitoring relays are supplied with power through IO-Link or with an external voltage of 24 V DC and perform overshoot, undershoot or range monitoring of the current depending on the parameterization. The devices are equipped with a display and are parameterized using three buttons.

The measuring range extends from 0.05 to 10 A. For larger AC currents the measuring range can be extended by using commercially available current transformers. Using the adjustable transformer factor, the display of the measured primary currents up to 750 A instead of the secondary currents (max. 1 A or 5 A) is possible.

The rms value of the current is measured. The limit values for overshoot or undershoot can be freely configured within this range. If one of these limit values is reached, the output relay responds according to the set principle of operation as soon as the delay time $I$▲Del/$I$▼Del has elapsed. This time and the ON-delay time onDel are adjustable from 0 to 999.9 s.

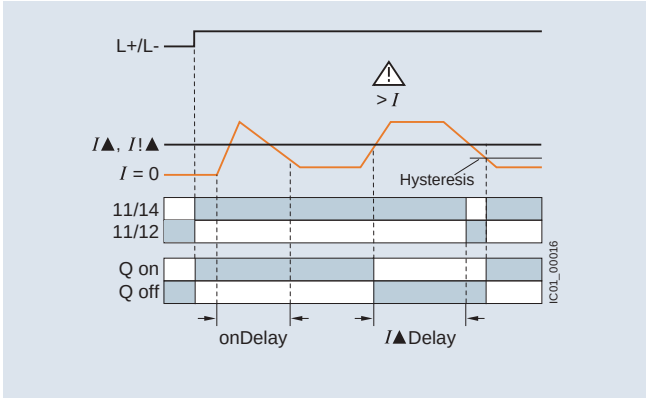
The hysteresis is adjustable from 0.01 to 5 A. The device can be operated with Manual or Auto RESET and on the basis of either the open-circuit or closed-circuit principle. You can decide here whether the output relay is to respond when the supply voltage $U_s$ = ON is applied, or not until the lower measuring range limit of the measuring current ($I$ > 50 mA) is reached. One output changeover contact is available as a signaling contact, and a semiconductor output is available in addition in SIO mode.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for 2.5 s.

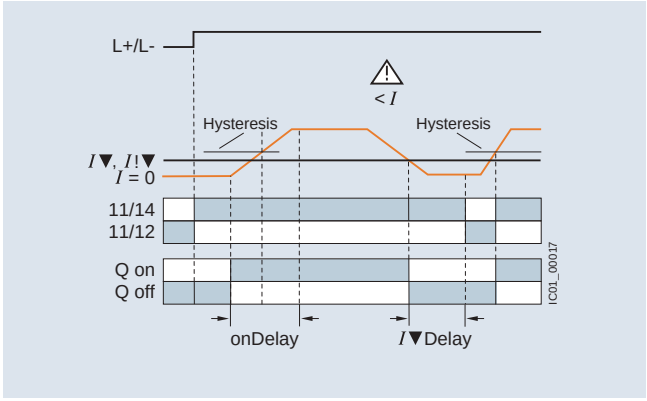
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected upon application of the control supply voltage

Current overshoot

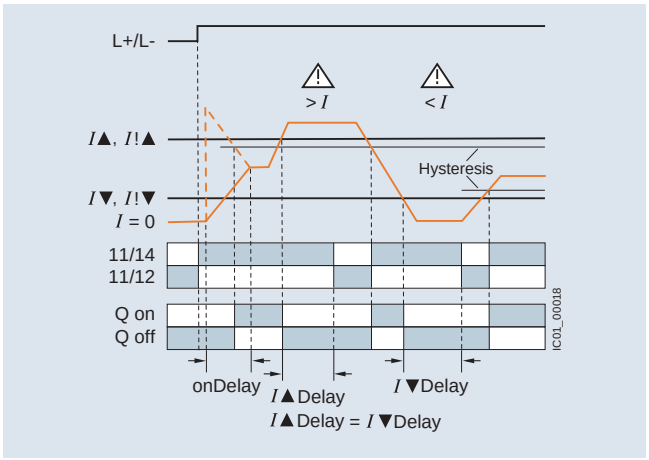



Current undershoot



With the closed-circuit principle selected
upon application of the control supply voltage

Range monitoring




| Type | | 3UG4822 |
|---|---|---|
| **General technical specifications** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 2<br>Overvoltage category III acc. to VDE 0110 | V | 690 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Measuring circuit** | | |
| **Measuring range** for single-phase AC/DC current | A | 0.05 … 15 |
| **Measuring frequency** | Hz | 40 ... 500 |
| **Setting range** for single-phase current | A | 0.05 ... 10 |
| **Load supply voltage** | V | Max. 300 (with protective separation)<br>Max. 500 (with simple separation) |
| **Control circuit** | | |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13 at<br>- 24 V<br>- 125 V<br>- 250 V | A<br><br>A<br>A<br>A | 3<br><br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

## Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Adjustable converter factor to display the measured primary current when an external current transformer is used
- Auto or Manual RESET
- Open- or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4822-1AA40

3UG4822-2AA40

| Measuring range | Adjustable hysteresis | ON-delay time adjustable onDel | Tripping delay time separately adjustable $I$▲Del/$I$▼Del | SD | Screw terminals | SD | Spring-type terminals |
|---|---|---|---|---|---|---|---|
| | | | | | Article No. / Price per PU | | Article No. / Price per PU |
| A AC/DC | A | s | s | d | | d | |
| **Monitoring of current for overshooting and undershooting** | | | | | | | |
| 0.05 … 10 | 0.01 ... 5 | 0.1 … 999.9 | 0.1 … 999.9 | 2 | **3UG4822-1AA40** | 2 | **3UG4822-2AA40** |

For accessories, see page 11/108.

For AC currents $I$ > 10 A it is possible to use commercially available current transformers, e.g. the Siemens 4NC current transformer, as accessories, see Catalog LV 10.

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Power factor and active current monitoring



### Overview

SIRIUS 3UG4841 monitoring relay

The 3UG4841 power factor and active current monitoring devices enable the load monitoring of motors.

Whereas power factor (p.f.) monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

### Benefits

- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values by the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor and/or $I_{res}$ (active current) can be selected as the measurement principle
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

### Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low-end performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

### Technical specifications

***3UG4841 monitoring relays***

The 3UG4841 monitoring relays are supplied with power through IO-Link or with an external auxiliary voltage of 24 V DC and are used for performing overshoot, undershoot or range monitoring of the power factor and/or the resulting active current, depending on parameterization. The load to be monitored is connected upstream of the IN terminal. The load current flows through the terminals IN and Ly/N. The setting range for the power factor is 0 to 0.99 and for the active current $I_{res}$ it is 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show $I$ < 0.2 and a symbol for overrange, underrange or range monitoring. If the motor is now switched on and the current exceeds 0.2 A, the set ON-delay time onDel begins. During this time, if the set limit values are undershot or exceeded, this does not lead to a relay reaction of the changeover contact. If the operational flowing active current and/or the p.f. value falls below or exceeds the respective set threshold value, the tripping delay time begins. When this time has expired, the relay changes its switch position. The relevant measured variables for overshooting and undershooting in the display flash. If monitoring for active current undershoot is switched off ($I_{res}$▼= OFF), and if the load current undershoots the lower measuring range threshold (0.2 A), the CO contacts remain unchanged. If a threshold value is set for the monitoring of active current undershooting, then undershooting of the measuring range threshold (0.2 A) will result in a response of the CO contacts.

The relay operates either according to the open-circuit or closed-circuit principle.

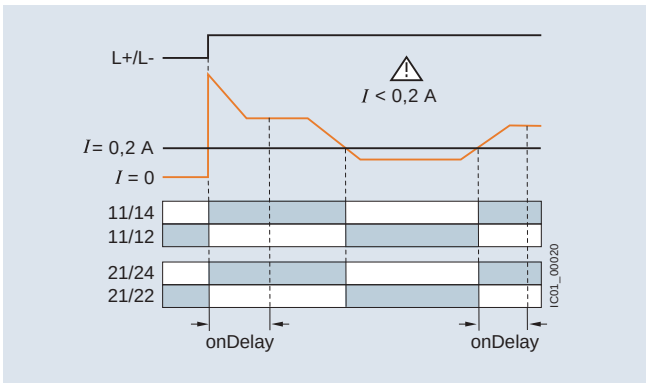
If the device is set to Auto RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for 2.5 s.

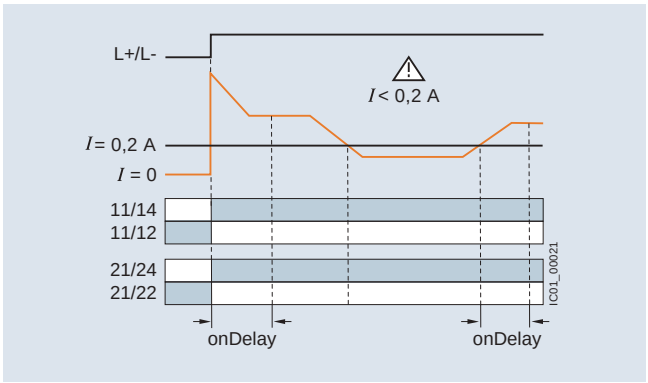
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

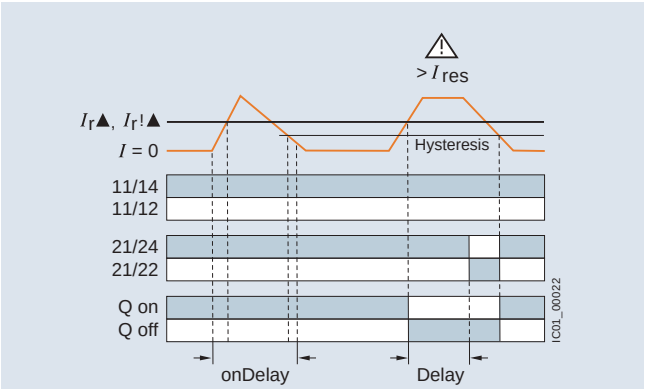
Response in the event of undershooting the measuring range limit with activated monitoring of $I_{res}$▼



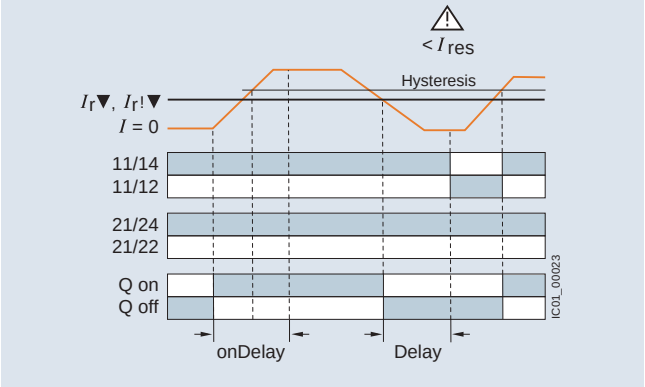

Response in the event of undershooting the measuring range limit with deactivated monitoring of active current undershooting



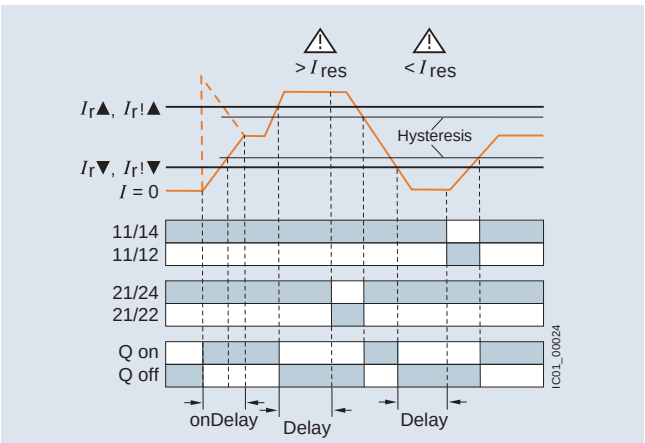

Overshooting of active current




Undershooting of active current

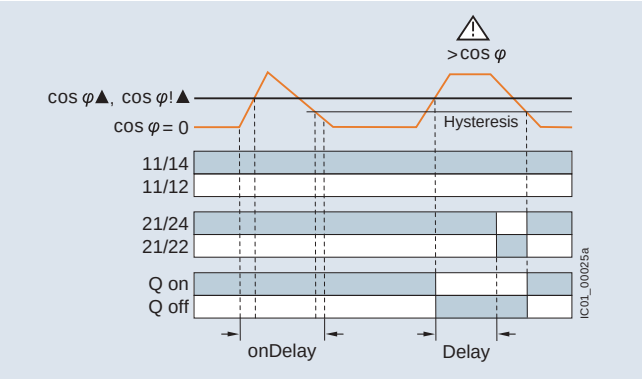



Range monitoring of active current

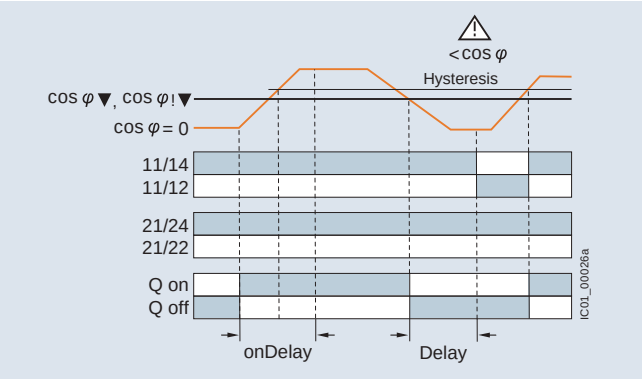


With the closed-circuit principle selected

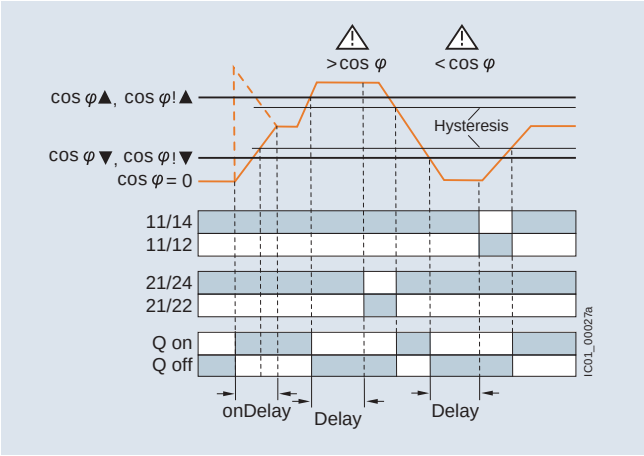
Overshooting of power factor




Undershooting of power factor




Range monitoring of power factor




| Type | | 3UG4841 |
|---|---|---|
| **General technical specifications** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 2<br>Overvoltage category III according to IEC 60664-1 | V | 690 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 |
| **Control circuit** | | |
| **Number of CO contacts for auxiliary contacts** | | 2 |
| **Load capacity of the output relay**<br>• Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at**<br>• AC-15/24 ... 400 V<br>• DC-13 at<br>- 24 V<br>- 125 V<br>- 250 V | A<br><br>A<br>A<br>A | 3<br><br>1<br>0.2<br>0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Power factor and active current monitoring



### Selection and ordering data

- For monitoring the power factor and the active current $I_{res}$ (p.f. x $I$)
- Suitable for single- and three-phase currents
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Upper and lower limit values can be adjusted separately
- Permanent display of actual value and tripping state
- 1 CO contact each for undershoot and overshoot, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

3UG4841-1CA40

3UG4841-2CA40

| Measuring range | | Voltage range of the measuring voltage[1] | Hysteresis | | ON-delay time adjustable onDel | Tripping delay time separately adjustable $U$▲Del/ $U$▼Del, $\varphi$▲Del/ $\varphi$▼Del | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| For power factor | For active current $I_{res}$ | 50/60 Hz AC | Adjustable for power factor | Adjustable for active current $I_{res}$ | | | | Article No. | Price per PU | d | Article No. | Price per PU |
| P.f. | A | V | P.f. | A | s | s | d | | | | | |
| **Monitoring of power factor and active current for overshooting or undershooting** | | | | | | | | | | | | |
| 0.1 ... 0.99 | 0.2 ... 10 | 90 ... 690 | 0.1 ... 0.2 | 0.1 ... 3 | 0 ... 999.9 | 0 ... 999.9 | 2 | **3UG4841-1CA40** | | 2 | **3UG4841-2CA40** | |

[1] Absolute limit values.

For accessories, see page 11/108.

For AC active currents $I_{res}$ > 10 A it is possible to use commercially available current transformers, e.g. Siemens 4NC current transformers, as accessories, see Catalog LV 10.

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Residual-current monitoring relays



### Overview

SIRIUS 3UG4825 monitoring relay

The 3UG4825 residual-current monitoring relays are used in conjunction with the 3UL23 residual-current transformers for monitoring plants in which higher residual currents are increasingly expected due to ambient conditions. Monitoring encompasses pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A in accordance with DIN VDE 0100-530/IEC TR 60755).

### Benefits

- High measuring accuracy of ± 7.5%
- Permanent self-monitoring
- Parameterization of the devices locally or via IO-Link possible
- Variable threshold values for warning and disconnection
- Freely configurable delay times and RESET response
- Display and transmission of actual value and status messages to controller
- High level of flexibility and space saving through installation of the transformer inside or outside the control cabinet
- Width 22.5 m
- All versions with removable terminals
- All versions with screw or spring-type terminals

### Application

Monitoring of plants in which residual currents can occur, e.g. due to dust deposits or moisture, porous cables and leads, or capacitive residual currents.

### Technical specifications

***3UG4825 monitoring relays***

The main conductor, and any neutral conductor to which a load is connected, are routed through the opening of the annular ring core of a residual-current transformer. A secondary winding is placed around this annular strip-wound core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. No current is then induced in the secondary winding of the residual-current transformer.

However, if an insulation fault occurs downstream of the residual current operated circuit breaker, the sum of the inflowing currents is greater than that of the outward currents. The differential current – the residual current – induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display.

If the measured residual current exceeds the set tripping value, the set delay time begins and the associated relay symbol flashes. On expiry of this time, the associated changeover contact changes the switching state.

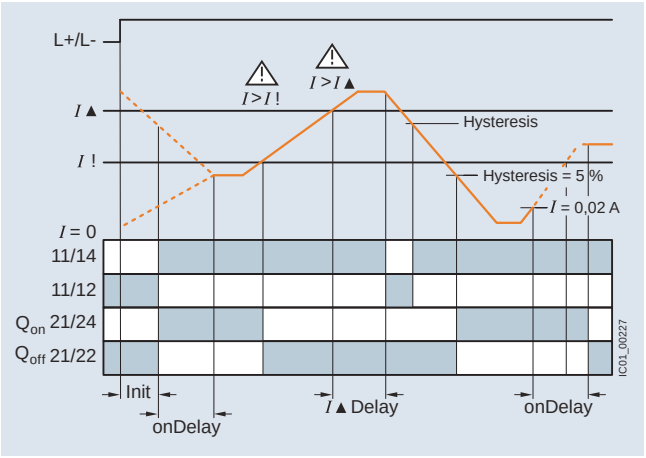
ON-delay time for motor start

To be able to start a drive when a residual current is detected, the output relays switch to the OK state for an adjustable ON-delay time depending on the selected open-circuit principle or closed-circuit principle.

The changeover contacts do not react if the set threshold values are overshot during this period.

With the closed-circuit principle selected

Residual current monitoring with Auto RESET (Memory = no)

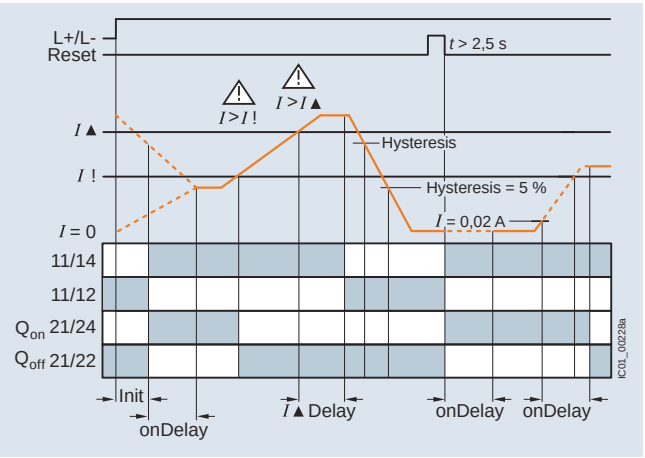



If the device is set to Auto RESET, the relay switches back to the OK state for the tripping value once the value falls below the set hysteresis threshold and the display stops flashing.

The associated relay changes its switching state if the value falls below the fixed hysteresis value of 5% of the warning value.

Any overshoots are therefore not stored.

Residual current monitoring with Manual RESET (Memory = yes)




If Manual RESET is selected in the menu, the output relays remain in their current switching state and the current measured value and the symbol for overshooting continues to flash, even when the measured residual current returns to a permissible value. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for > 2 seconds, or by switching the supply voltage off and back on again.

Note:

The neutral conductor must not be grounded downstream of the summation current transformer as this may impair the function of the residual-current monitoring device.

| Type | | 3UG4825-1CA40, 3UG4825-2CA40 |
|---|---|---|
| **General data** | | |
| **Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value** | V | 300 |
| **Impulse withstand voltage, rated value $U_{imp}$** | kV | 4 |
| **Control circuit** | | |
| **Number of CO contacts for auxiliary contacts** | | 2 |
| **Thermal current of the non-solid-state contact blocks, maximum** | A | 5 |
| **Current carrying capacity of the output relay** | | |
| • At AC-15 at 250 V at 50/60 Hz | A | 3 |
| • At DC-13 | | |
| - At 24 V | A | 1 |
| - At 125 V | A | 0.2 |
| - At 250 V | A | 0.1 |
| **Operational current at 17 V, minimum** | mA | 5 |

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

## Residual-current monitoring relays



### Selection and ordering data

- For monitoring residual currents from 0.03 to 40 A, from 16 to 400 Hz
- For 3UL23 residual-current transformers with feed-through opening from 35 to 210 mm
- Permanent self-monitoring
- Certified in accordance with IEC 60947, functionality corresponds to IEC 62020
- Digitally adjustable, with illuminated LCD
- Permanent display of actual value and tripping state
- Separately adjustable limit value and warning threshold
- 1 changeover contact each for warning threshold and tripping threshold

PU (UNIT, SET, M) = 1
PS* = 1 unit

3UG4825-1CA40

3UG4825-2CA40

| Measurable current | Adjustable response value current | Switching hysteresis | Adjustable ON-delay time | Control supply voltage At DC rated value | SD | Screw terminals Article No. | Price per PU | SD | Spring-type terminals Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|---|---|
| A | A | % | s | V | d | | | d | | |
| 0.01 ... 43 | 0.03 ... 40 | 0 ... 50 | 0 ... 999.9 | 24 | 2 | **3UG4825-1CA40** | | 2 | **3UG4825-2CA40** | |

For accessories, see page 11/108.

For 3UL23 residual-current transformers and accessories for 3UL23, see page 11/71.

## Overview

SIRIUS 3UG4851 monitoring relay

3UG4851 monitoring relays are used in combination with a sensor to monitor drives for overspeed and/or underspeed.

Furthermore, the monitoring relays are ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

## Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display and transmission of actual value and fault type to controller
- Use of up to 10 sensors per rotation for extremely slowly rotating motors
- 2- or 3-wire sensors and sensors with a mechanical switching output or semiconductor output can be connected
- Auxiliary voltage for sensor integrated
- All versions with removable terminals
- All versions with screw or spring-type terminals

## Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

## Technical specifications

***3UG4851 monitoring relays***

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in rpm.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with Auto RESET (Memory = no)

If the device is set to Auto RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 1 to 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

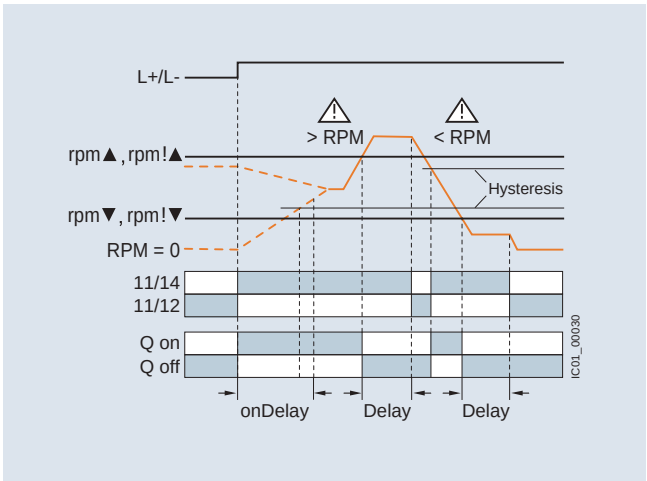
Speed monitoring with Manual RESET (Memory = yes)

If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continue to flash, even when the speed returns to a permissible value. This stored fault status can be reset by simultaneously pressing the UP▲ and DOWN▼ keys for > 2.5 s or by connecting the RESET device terminal to 24 V DC.

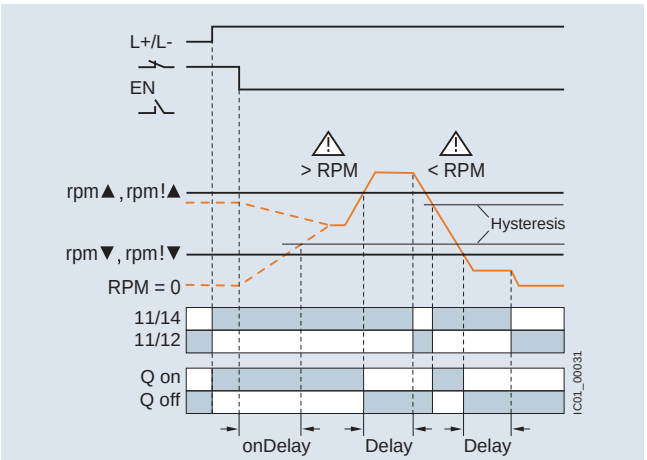
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

Range monitoring without enable input




Range monitoring with enable input




| Type | | 3UG4851 |
|---|---|---|
| **General technical specifications** | | |
| **Rated insulation voltage $U_i$**<br>Pollution degree 2<br>Overvoltage category III acc. to VDE 0110 | V | 300 |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 |
| **Measuring circuit** | | |
| **Sensor supply** | | |
| • For 3-wire sensor (24 V/0 V) | mA | Max. 50 |
| • For 2-wire NAMUR sensor (8V2) | mA | Max. 8.2 |
| **Signal input** | | |
| • IN1 | kΩ | 16, 3-wire sensor, pnp operation |
| • IN2 | kΩ | 1, floating contact, 2-wire NAMUR sensor |
| **Voltage level** | | |
| • For level 1 at IN1 | V | 4.5 ... 30 |
| • For level 0 at IN1 | V | 0 ... 1 |
| **Current level** | | |
| • For level 1 at IN2 | mA | > 2.1 |
| • For level 0 at IN2 | mA | < 1.2 |
| **Minimum pulse duration of signal** | ms | 5 |
| **Minimum interval between 2 pulses** | ms | 5 |
| **Control circuit** | | |
| **Number of CO contacts for auxiliary contacts** | | 1 |
| **Load capacity of the output relay**<br>Thermal current $I_{th}$ | A | 5 |
| **Rated operational current $I_e$ at** | | |
| • AC-15/24 ... 250 V | A | 3 |
| • DC-13 at | | |
| - 24 V | A | 1 |
| - 125 V | A | 0.2 |
| - 250 V | A | 0.1 |
| **Minimum contact load** at 17 V DC | mA | 5 |

# 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link





## Selection and ordering data

- For speed monitoring in revolutions per minute (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Sensor supply 24 V DC/50 mA integrated
- Input frequency 0.1 to 2 200 pulses per minute (0.0017 to 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Number of pulses per revolution can be adjusted
- Upper and lower limit values can be adjusted separately
- Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PKG* = 1 UNIT

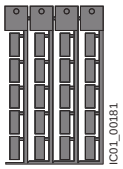
3UG4851-1AA40

3UG4851-2AA40

| Measuring range | Adjustable hysteresis | ON-delay time adjustable onDel | Tripping delay time separately adjustable rpm▲Del/ rpm▼Del | Pulses per revolution | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Article No. | Price per PU | | Article No. | Price per PU |
| rpm | rpm | s | s | | d | | | d | | |
| **Speed monitoring for overshooting and undershooting** | | | | | | | | | | |
| 0.1 ... 2 200 | OFF<br>1 ... 99.9 | 0 ... 999.9 | 0 ... 999.9 | 1 ... 10 | 2 | **3UG4851-1AA40** | | 2 | **3UG4851-2AA40** | |

For accessories, see page 11/108.

## Selection and ordering data

| | Use | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Blank labels** | | | | | | | |
|  3RT2900-1SB20 | For 3UG48 | **Unit labeling plates** For SIRIUS devices | | | | | |
| | | 20 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB20** | | 100 | 340 units |
| | For 3UG48 | **Adhesive labels** for SIRIUS devices | | | | | |
| | | • 19 mm x 6 mm, pastel turquoise | 15 | **3RT1900-1SB60** | | 100 | 3 060 units |
| | | • 19 mm x 6 mm, zinc yellow | 15 | **3RT1900-1SD60** | | 100 | 3 060 units |
| **Push-in lugs and covers** | | | | | | | |
| 3RP1903 | For 3UG48 | **Push-in lugs** For screw fixing, 2 units are required for each device | 5 | **3RP1903** | | 1 | 10 units |
| 3RP1902 | For 3UG48 | **Sealable covers** For securing against unauthorized adjustment of setting knobs | 5 | **3RP1902** | | 1 | 5 units |
| **Tools for opening spring-type terminals** | | | | | | | |
| 3RA2908-1A | For auxiliary circuit connections | **Screwdrivers** For all SIRIUS devices with spring-type terminals | | **Spring-type terminals** | | | |
| | | 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

# SIRIUS 3UG546 DC Load Monitoring Relays

## DC load monitoring NEW



### Overview

SIRIUS 3UG546 DC load monitoring relays

**More information**

Homepage, see www.usa.siemens.com/relays

Industry Mall, see https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10355238?tree=CatalogTree

The SIRIUS 3UG546 DC load monitoring relays are suitable for monitoring motors, batteries, and other DC equipment. The devices monitor the DC current, voltage, and actual power for overshooting or undershooting of set limit values in one or two channels. The relays have a CO contact output for alarms and operate on the closed-circuit principle (NC).

The devices are parameterized via PROFINET, and transfer the measured values and diagnostic messages to a controller. Besides providing detailed fault diagnostics, the integrated energy counters, operating hours counters, and operating cycle counters can also be read out and reset.

When metering energy consumption, the SIRIUS 3UG546 DC load monitoring relays distinguish the direction of current flow and can thus, for example, separately sense the quantities of energy stored in or drawn from a battery.

| Features | 3UG5461-1AA40, 3UG5462-1AA40 |
|---|---|
| **DC monitoring** | |
| Monitoring the DC current for undershoot | ✓ |
| Monitoring the DC current for overshoot | ✓ |
| Range monitoring | ✓ |
| **Voltage monitoring** | |
| Monitoring the voltage for undershoot | ✓ |
| Monitoring the voltage for overshoot | ✓ |
| Range monitoring | ✓ |
| **Power monitoring** | |
| Monitoring the power for undershoot | ✓ |
| Monitoring the power for overshoot | ✓ |
| Range monitoring | ✓ |
| **Delay times** | |
| ON-delay | ✓ |
| Tripping delay | ✓ |
| **Operating hours counter** | |
| Monitoring for overshoot | ✓ |
| **Operating cycles counter** | |
| Monitoring for overshoot | ✓ |
| **Energy recovery counter** | |
| Monitoring for overshoot | ✓ |
| **Energy consumption counter** | |
| Monitoring for overshoot | ✓ |
| **PROFINET IO functions** | |
| Ethernet services | ✓ |
| Port diagnostics | ✓ |
| Min. update time | 2 ms |
| Resetting of communication parameters to factory settings | ✓ |
| PROFINET RT (real-time communication) | ✓ |
| Firmware update via PROFINET IO | ✓ |
| I&M identification data 0 to 3 | ✓ |

✓ Available

### *Article No. scheme*

| Product versions | | Article number | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Monitoring relays** | | **3UG546** | **□** | **–** | **1** | **A** | **A** | **4** | **0** |
| Current measuring range | 2 x 8 A/1 x 16 A | | **1** | | | | | | |
| | 1 x 63 A | | **2** | | | | | | |
| Example | | **3UG546** | **1** | **–** | **1** | **A** | **A** | **4** | **0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

### Benefits

- Wide voltage measuring range of up to 800 V
- Detection and monitoring of current, voltage and power in a single device
- Detailed fault diagnostics
- Energy metering with distinction of direction of current flow
- Communication and visualization via PROFINET and thus quick and easy integration for visualizing plant energy values
- Integration in the TIA Portal
- Customary screw terminals for quick and reliable wiring
- Device replacement without renewed wiring thanks to removable terminals

# SIRIUS 3UG546 DC Load Monitoring Relays

## DC load monitoring NEW

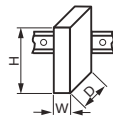


### Application

- Exhaustive discharge protection on battery-operated vehicles
- Acquisition of energy flows, incl. energy recovery, e.g. for robots
- DC line monitoring
- DC heaters
- Lighting systems
- Energy management
- Condition monitoring

### Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td | Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/ps/25412/man<br>FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq |

| Article number | | 3UG5461-1AA40 | 3UG5462-1AA40 |
|---|---|---|---|
| **General technical specifications:** | | | |
| **Width x height x depth** | mm | 22.5 × 100 × 141.6 | 45 × 100 × 141.6 |
|   | | | |
| **Type of electrical separation** | | Protective separation | |
| **Electrical endurance (operating cycles) for relay outputs, maximum** | | 100 000, 0.5 A, 125 V AC, for resistive load up to 40 °C | |
| **Mechanical endurance (operating cycles), typical** | | 10 000 000 | |
| **Power loss, maximum** | W | 3 | |
| **Adjustable response value current 1** | A | -8 ... +8 | -63 ... +63 |
| **Adjustable response value current 2** | A | -8 ... +8 | -- |
| **Adjustable ON-delay time** | | | |
| • On starting | s | 0 ... 999 | |
| • On upper or lower limit violation | s | 0 ... 999 | |
| **Adjustable voltage range** | V | 0 ... +800 | |
| **Minimum supply voltage failure buffering time** | ms | 10 | |
| **Reaction time, maximum** | ms | 100 | |
| **Degree of protection** | | IP20 | -- |
| • On front | | -- | IP20 |
| • Of the terminal | | -- | IP20 |
| **Type of mounting** | | | |
| • Mounting position | | Any | |
| **Installation altitude at height above sea level, maximum** | m | 2 000 | |
| **Ambient temperature** | | | |
| • During operation | °C | -25 ... +60 | |
| • During storage | °C | -40 ... +80 | |
| **Relative temperature-related measurement deviation** | % | 0.5 | |
| **Number of ports at the interface 1** | | 1 | |
| **Product function** | | | |
| • Operating cycles counter | | Yes | |
| • Operating hours counter | | Yes | |
| • Removable terminal for main circuit | | Yes | No |
| • Removable terminal for auxiliary and control circuit | | Yes | |
| • Auto RESET | | Yes | |
| • Manual RESET | | Yes | |
| • Overvoltage detection DC | | Yes | |
| • Overcurrent detection DC | | Yes | |
| • Undervoltage detection DC | | Yes | |
| • Undercurrent detection DC | | Yes | |

# SIRIUS 3UG546 DC Load Monitoring Relays

## DC load monitoring NEW



| Article number | | 3UG5461-1AA40 | 3UG5462-1AA40 |
|---|---|---|---|
| **Measuring circuit:** | | | |
| **Relative measuring accuracy** | | | |
| • Relative to the measured value | % | 2 | |
| • Relative to the full-scale value | % | 2 | |
| **Number of CO contacts for auxiliary contacts** | | 1 | |
| **Control circuit:** | | | |
| **Current-carrying capacity of the output relay** | | | |
| • At DC-13 at 24 V | A | 1 | |
| **Thermal current of the non-solid-state contact blocks, maximum** | A | 1 | |
| **Type of voltage for monitoring** | | DC | |
| **Type of current for monitoring** | | DC | |
| **Supply voltage type** | | DC | |
| **Supply voltage 1 at DC, rated value** | V | 24 | |
| **Supply voltage:** | | | |
| **Operating range factor of the control supply voltage, rated value** | | | |
| • At DC | | 0.85 ... 1.15 | |

| Article number | | 3UG5461-1AA40 | 3UG5462-1AA40 |
|---|---|---|---|
| **Type of electrical connection** | | **Screw terminals** | |
| **Connectable conductor cross-section for auxiliary contacts** | | | |
| • Solid | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | |
| • Finely stranded with end sleeve | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 1.5) | |
| • For AWG cables | | 1 x (20 ... 12), 2 x (20 ... 14) | |
| **Connectable conductor cross-section for main contacts** | | | |
| • Solid | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | 2 x (1 ... 16), 1 x (1 ... 16) |
| • Finely stranded with end sleeve | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | 2 x (1 ... 25), 1 x (1 ... 35) |
| • Stranded | $mm^2$ | 1 x (0.5 ... 4), 2 x (0.5 ... 2.5) | 2 x (1 ... 16), 1 x (1 ... 16) |
| • For AWG cables | | 1 x (20 ... 12), 2 x (20 ... 14) | 1 x (18 ... 1), 2 x (18 ... 2) |

The SIRIUS 3UG546 DC load monitoring relays monitor a DC load current circuit for undershooting or overshooting of set limit values in one or two channels. Current, voltage, and power can be monitored separately. When the relays measure the current, they also detect the direction of current and have separate counters for measuring energy consumption and energy recovery.

The devices count the operating cycles and the operating hours of the connected loads as well as the operating cycles of the internal relay. All counters can be monitored for settable limit values and the counter statuses can be reset (with the exception of the operating cycle counter of the internal relay).

The SIRIUS 3UG546 DC load monitoring relays are parameterized exclusively via a PROFINET interface. All measured values and counter values as well as other diagnostics data are transmitted to a controller via PROFINET. The relays can also be operated without PROFINET. If communication fails, the monitoring function continues to be reliably executed. The internal relay, which is switched as a signaling output that responds when a set limit value is undershot or overshot, responds to detected system faults.

All monitored counter values and measured values can be additionally assigned a warning limit, which generates an alarm via PROFINET when the set value is undershot or overshot. Violations of the set limit values are also signaled as an alarm via PROFINET.

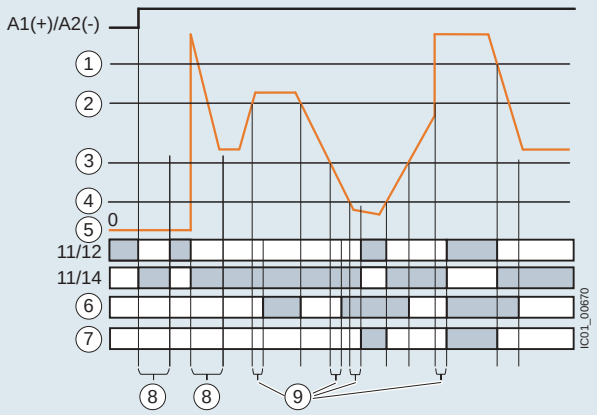
The devices are supplied via an external 24 V DC voltage source.

The integral counters for operating hours and operating cycles support operators in requirement-oriented plant maintenance. The operating hours counter outputs the time during which a measurable current flows. The properties of the insulation material of the motor windings, for example, deteriorate during operation due to the thermal load. The operating hours serve as an indicator of upcoming maintenance or replacement of machine parts and system components.

The operating cycles counter is incremented by one each time a breaking operation of the monitored load is detected (transition from current flow to no measurable current flow). The number of operating cycles serves as an indicator of upcoming maintenance or replacement of contact blocks. Arcs in breaking operations cause high loads and wear in particular in DC current circuits.

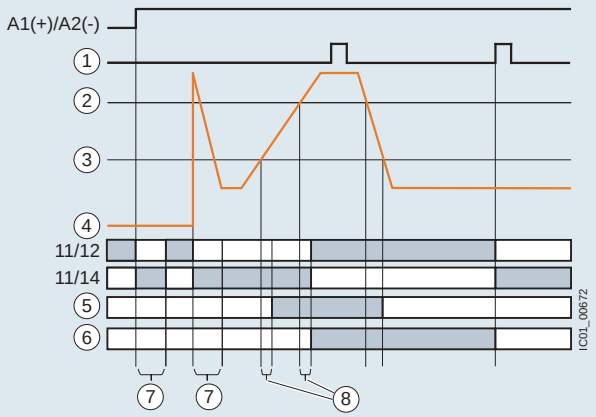
With the closed-circuit principle selected upon application of the control supply voltage

Monitoring for overshooting and undershooting of a measured value including parameterized warning limit/current flow in one direction only/Automatic RESET



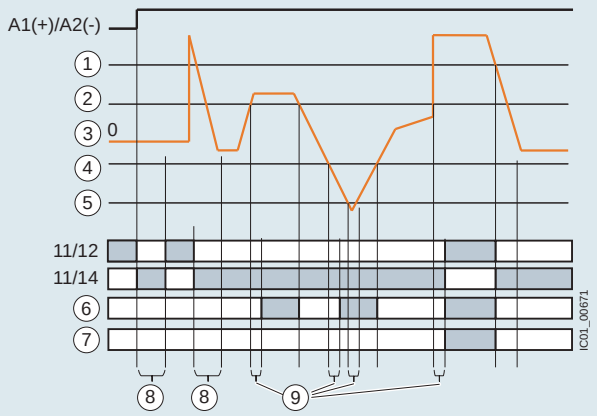

1 Threshold for overshoot
2 Warning threshold for overshoot
3 Warning threshold for undershoot
4 Threshold for undershoot
5 Measured value
6 PROFINET diagnostic interrupt (warning)
7 PROFINET diagnostic interrupt (fault)
8 ON-delay time
9 Tripping delay time

Monitoring for overshooting of a measured value including parameterized warning limit/Manual RESET




1 RESET
2 Threshold for overshoot
3 Warning threshold for overshoot
4 Measured value
5 PROFINET diagnostic interrupt (warning)
6 PROFINET diagnostic interrupt (fault)
7 ON-delay time
8 Tripping delay time

Monitoring for overshooting and undershooting of a measured value including parameterized warning limit/current flow in both directions (energy consumption and energy recovery)/ Automatic RESET




1 Threshold for overshoot
2 Warning threshold for overshoot
3 Measured value
4 Warning threshold for undershoot
5 Threshold for undershoot
6 PROFINET diagnostic interrupt (warning)
7 PROFINET diagnostic interrupt (fault)
8 ON-delay time
9 Tripping delay time

## Selection and ordering data

3UG5461-1AA40

3UG5462-1AA40

| Current measuring range | Width | SD | Screw terminals | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | Article No. | Price per PU | | |
| A | mm | d | | | | |
| **DC load monitoring** | | | | | | |
| 2 x 8/1 x 16 | 22.5 | 20 | **3UG5461-1AA40** | | 1 | 1 unit |
| 1 x 63 | 45 | 20 | **3UG5462-1AA40** | | 1 | 1 unit |

## Accessories

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Terminals for SIRIUS devices in the industrial standard mounting rail enclosure** | | | | | | |
| 3ZY1122-1BA00 | **Removable terminals**<br>• 2-pole, up to 1 x 4 mm² or 2 x 2.5 mm² | 2 | **Screw terminals**<br>**3ZY1122-1BA00** | | 1 | 6 units |
| **Accessories for enclosures** | | | | | | |
| 3ZY1311-0AA00 | **Push-in lugs**<br>For wall mounting | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| 3ZY1440-1AA00 | **Coding pins**<br>For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals | 2 | **3ZY1440-1AA00** | | 1 | 12 units |
| 3ZY1450-1AB00 | **Hinged cover**<br>Replacement cover, without terminal labeling, titanium gray<br>• 22.5 mm wide | 2 | **3ZY1450-1AB00** | | 1 | 5 units |

# Coupling Relays – Narrow Design

## SIRIUS 3RQ3



### Overview

SIRIUS 3RQ3 coupling relays

SIRIUS 3RQ3 coupling relays in narrow design are used for coupling control signals from and to a controller, and they are available in different versions:

- Coupling relays with relay output (not plug-in)
- Coupling relays with plug-in relays
- Coupling relays with semiconductor output (not plug-in)

***Coupling relays with relay output (not plug-in)***

**AC and DC operation**

IEC/EN 60947-5-1

The input and output coupling relays differ with regard to the positioning of the terminals and the LEDs.

***Coupling relays with plug-in relays***

**AC and DC operation**

IEC 60947-1

The coupling relays are plug-in, so the relay can be replaced quickly at the end of its service life without detaching the wiring.

***Coupling relays with semiconductor output (not plug-in)***

**AC and DC operation**

IEC 60947-1, EN 60664-1 and EN 50005;
coupling relays with semiconductor output: EN 60747-5;
programmable controllers: IEC 61131-2

The input and output coupling relays differ with regard to the positioning of the terminals and the LEDs.

The coupling relays with semiconductor output have extremely high contact reliability, so they are especially suitable for electronic systems.

For test purposes, versions are available with manual-0-automatic switches.

# Coupling Relays – Narrow Design

## SIRIUS 3RQ3



### *Article No. scheme*

| Product versions | | Article number |
|---|---|---|
| **Coupling relays with relay output (not plug-in)** | | **3RQ30 ☐ 8 – ☐ A ☐ 0 ☐** |
| Design and type of output | Output coupler, without manual/automatic switch | **1** |
| | Input coupler | **3** |
| Type of electrical connection | Screw terminals | **1** |
| | Spring-type terminals (push-in) | **2** |
| Control supply voltage | 24 V AC/DC | **B** |
| | 115 V AC/DC | **E** |
| | 230 V AC/DC | **F** |
| Material of switching contacts | e.g. | |
| | 0 = AgSnO2 | ☐ |
| | 1 = AgSnO2 hard gold-plated | ☐ |
| Example | | **3RQ30 1 8 – 1 A B 0 1** |

| Product versions | | Article number |
|---|---|---|
| **Coupling relays with relay output (not plug-in)** | | **3RQ30 1 8 – 2 A ☐ 0 8 – 0 A A 0** |
| Railway version with extended operating range 0.7 ... 1.2 x $U_s$ | | |
| Control supply voltage | 24 V DC | **M** |
| | 110 V DC | **N** |
| Example | | **3RQ30 1 8 – 2 A M 0 8 – 0 A A 0** |

| Product versions | | Article number |
|---|---|---|
| **Coupling relays with plug-in relays** | | **3RQ31 1 8 – ☐ A ☐ 0 ☐** |
| Type of electrical connection | Screw terminals | **1** |
| | Spring-type terminals (push-in) | **2** |
| Control supply voltage | 24 V AC/DC | **B** |
| | 115 V AC/DC | **E** |
| | 230 V AC/DC | **F** |
| | 24 V DC | **M** |
| Material of switching contacts | AgSnO2 | **0** |
| | AgSnO2 hard gold-plated | **1** |
| Example | | **3RQ31 1 8 – 1 A B 0 1** |

| Product versions | | Article number | | |
|---|---|---|---|---|
| **Coupling relays with semiconductor output (not plug-in)** | | **3RQ30 ☐ ☐ – ☐ S ☐ ☐ 0** | | |
| | Current carrying capacity of the semiconductor output | | Control supply voltage | Switching voltage of the semiconductor output |
| Output coupler | | | | |
| • Without manual/automatic switch | 1 mA ... 0.5 A | **3RQ30 5 0 – ☐ S M 5 0** | 11 ... 30 V DC | 10 ... 60 V DC |
| | 5 mA ... 2 A | **3RQ30 5 2 – ☐ S M 3 0** | 11 ... 30 V DC | 10 ... 30 V DC |
| | 1 mA ... 2 A | **3RQ30 5 2 – ☐ S M 4 0** | 11 ... 30 V DC | 10 ... 60 V DC |
| | 5 mA ... 2 A | **3RQ30 5 2 – ☐ S M 5 0** | 11 ... 30 V DC | 20 ... 264 V AC |
| | 1 mA ... 3 A | **3RQ30 5 3 – ☐ S G 3 0** | 110 ... 230 V AC/DC | 10 ... 30 V DC |
| | 5 mA ... 5 A | **3RQ30 5 5 – ☐ S M 3 0** | 11 ... 30 V DC | 10 ... 30 V DC |
| • With manual/automatic switch | 5 mA ... 5 A | **3RQ30 6 5 – ☐ S M 3 0** | 11 ... 30 V DC | 10 ... 30 V DC |
| Input coupler | 10 mA ... 0.5 A | **3RQ30 7 0 – ☐ S B 3 0** | 11 ... 30 V AC/DC | 10 ... 30 V DC |
| | | **3RQ30 7 0 – ☐ S G 3 0** | 110 ... 230 V AC/DC | 10 ... 30 V DC |
| Type of electrical connection | Screw terminals | **1** | | |
| | Spring-type terminals (push-in) | **2** | | |
| Example | | **3RQ30 7 0 – 1 S B 3 0** | | |

Note:

These Article No. schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

# Coupling Relays – Narrow Design

## SIRIUS 3RQ3



### Benefits

***General***

- All versions with screw terminals or spring-type terminals (push-in technology)
- TOP wiring with spring-type terminals (push-in) for quick and reliable wiring
- Low space requirements in the control cabinet thanks to a consistent width of 6.2 mm
- Reduced inventory due to fewer variants
- Clearly visible functional state of the coupling relay by green LED
- Integrated reverse polarity protection and EMC arc-suppression diode
- Standardized accessories across the entire 3RQ3 series
- Universal bridging option using connecting combs for all terminals
- Galvanic isolation plate for isolating different voltages for neighboring units
- Clip-on labels available as set for individual labeling

***Coupling relays with relay output (not plug-in)***

- Relays fixed in enclosure for increased contact reliability
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents

***Coupling relays with plug-in relays***

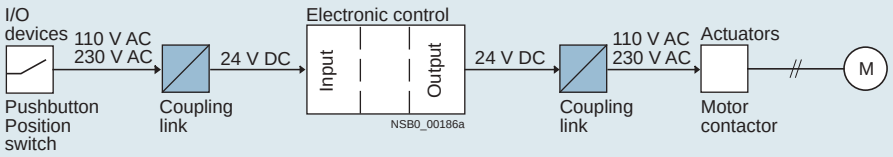
- Fast replacement of the relays with existing wiring
- Shorter installation times thanks to certified complete units
- Individual relays available as spare parts
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents

***Coupling relays with semiconductor output (not plug-in)***

- Long service life since there is no mechanical wear
- High switching frequency thanks to short make-break times
- Vibration-resistant
- No contact bounce
- Extremely high contact reliability
- Noise-free switching
- Low control power required
- Switching of DC and capacitive loads

### Application

- Electrical separation between the input and output circuit
- Adjustment of different signal levels
- Signal amplification



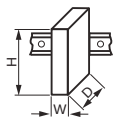

Application example motor controller

## Technical specifications

**More information**

Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16198/td
FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16198/faq
Operating instructions, see https://support.industry.siemens.com/cs/ww/en/ps/16198/man

### *Coupling relays with relay output (not plug-in)*

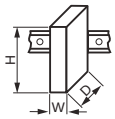
| Article number | | 3RQ30.8-.AB00 | 3RQ30.8-.AB01 | 3RQ30.8-.AE00 | 3RQ30.8-.AE01 | 3RQ30.8-.AF00 | 3RQ30.8-.AF01 | 3RQ3018-2AM08-0AA0 | 3RQ3018-2AN08-0AA0 |
|---|---|---|---|---|---|---|---|---|---|
| **General technical specifications** | | | | | | | | | |
| **Width x height x depth**   | mm | 6.2 x 93 x 72.5 | | | | | | | |
| **Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3** | V | 300 | | | | | | | |
| **Max. permissible voltage for protective separation between control circuit and auxiliary circuit** | V | 300 | | | | | | | |
| **Ambient temperature** | | | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | | | -40 ... +70 | |
| • During storage | °C | -40 ... +85 | | | | | | | |
| **Degree of protection** | | IP20 | | | | | | | |
| **Version of the fuse link required for short-circuit protection of the auxiliary switch** | | Fuse gG: 4 A | | | | | | | |
| **Operational current of the auxiliary contacts** | | | | | | | | | |
| • At AC-15 | | | | | | | | | |
| - At 24 V | A | 3 | | | | | | | |
| - At 250 V | A | 3 | | | | | | | |
| • At DC-13 | | | | | | | | | |
| - At 24 V | A | 1 | | | | | | | |
| - At 125 V | A | 0.2 | | | | | | | |
| - At 250 V | A | 0.1 | | | | | | | |
| **Contact reliability of the auxiliary contacts** (one contact failure per 100 million) | | 17 V, 5 mA | 5 V, 1 mA | 17 V, 5 mA | 5 V, 1 mA | 17 V, 5 mA | 5 V, 1 mA | 17 V, 5 mA | |
| **Mechanical endurance (operating cycles) typical** | | 10 000 000 | | | | | | | |
| **Electrical endurance (operating cycles) for AC-15 at 230 V typical** | | 100 000 | | | | | | | |
| **Operating range factor of the control supply voltage, rated value** | | | | | | | | | |
| • At AC | | | | | | | | | |
| - At 50 Hz | | 0.8 ... 1.25 | | 0.8 ... 1.1 | | | | -- | |
| - At 60 Hz | | 0.8 ... 1.25 | | 0.8 ... 1.1 | | | | -- | |
| • At DC | | 0.8 ... 1.25 | | 0.8 ... 1.1 | | | | 0.7 ... 1.25 | |
| **Active power input** | W | 0.3 | | 0.5 | | 1 | | 0.3 | 0.6 |
| **Thermal current** | A | 6 | | | | | | | |

# Coupling Relays – Narrow Design

## 3RQ3



### *Coupling relays with plug-in relay*

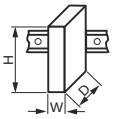
| Article number | | 3RQ3118-.AB00 | 3RQ3118-.AB01 | 3RQ3118-.AE00 | 3RQ3118-.AE01 | 3RQ3118-.AF00 | 3RQ3118-.AF01 | 3RQ3118-.AM00 | 3RQ3118-.AM01 |
|---|---|---|---|---|---|---|---|---|---|
| **General technical specifications** | | | | | | | | | |
| **Width x height x depth**   | mm | 6.2 x 93 x 76 | | | | | | | |
| **Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3** | V | 300 | | | | | | | |
| **Max. permissible voltage for protective separation between control circuit and auxiliary circuit** | V | 300 | | | | | | | |
| **Ambient temperature** | | | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | | | | |
| • During storage | °C | -40 ... +85 | | | | | | | |
| **Degree of protection** | | IP20 | | | | | | | |
| **Version of the fuse link required for short-circuit protection of the auxiliary switch** | | Fuse gG: 4 A | | | | | | | |
| **Operational current of the auxiliary contacts** | | | | | | | | | |
| • At AC-15 | | | | | | | | | |
| - At 24 V | A | 3 | | | | | | | |
| - At 250 V | A | 3 | | | | | | | |
| • At DC-13 | | | | | | | | | |
| - At 24 V | A | 1 | | | | | | | |
| - At 125 V | A | 0.2 | | | | | | | |
| - At 250 V | A | 0.1 | | | | | | | |
| **Contact reliability of the auxiliary contacts** (one contact failure per 100 million) | | 17 V, 5 mA | 5 V, 1 mA | 17 V, 5 mA | 5 V, 1 mA | 17 V, 5 mA | 5 V, 1 mA | 17 V, 5 mA | 5 V, 1 mA |
| **Mechanical endurance (operating cycles) typical** | | 10 000 000 | | | | | | | |
| **Electrical endurance (operating cycles) for AC-15 at 230 V typical** | | 100 000 | | | | | | | |
| **Operating range factor of the control supply voltage, rated value** | | | | | | | | | |
| • At AC | | | | | | | | | |
| - At 50 Hz | | 0.8 ... 1.25 | | 0.8 ... 1.1 | | | | -- | |
| - At 60 Hz | | 0.8 ... 1.25 | | 0.8 ... 1.1 | | | | -- | |
| • At DC | | 0.8 ... 1.25 | | 0.8 ... 1.1 | | | | 0.8 ... 1.25 | |
| **Active power input** | W | 0.3 | | 0.5 | | 1 | | 0.3 | |
| **Thermal current** | A | 6 | | | | | | | |

# Coupling Relays – Narrow Design

## 3RQ3 with relay output



### *Coupling relays with semiconductor output (not plug-in)*

| Article number | | 3RQ3050-.SM50 | 3RQ3052-.SM30 | 3RQ3052-.SM40 | 3RQ3052-.SM50 | 3RQ3053-.SG30 | 3RQ3055-.SM30 | 3RQ3065-.SM30 | 3RQ3070-.SB30 | 3RQ3070-.SG30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **General technical specifications** | | | | | | | | | | |
| **Width x height x depth**   | mm | 6.2 x 93 x 72.5 | | | | | | 6.2 x 93 x 75 | 6.2 x 93 x 72.5 | |
| **Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3** | V | 50 | | | 300 | | 50 | | | -- |
| **Ambient temperature** | | | | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | | | | | |
| • During storage | °C | -40 ... +85 | | | | | | | | |
| **Degree of protection** | | IP20 | | | | | | | | |
| **Switching voltage of the semiconductor output** | | | | | | | | | | |
| • At AC | V | -- | | | 20 ... 264 | -- | | | | |
| • At DC | V | 10 ... 60 | 10 ... 30 | 10 ... 60 | -- | 10 ... 30 | | | | |
| **Current carrying capacity of the semiconductor output** | | | | | | | | | | |
| • At AC | | -- | | | 5 mA ... 2 A | -- | | | | |
| • At DC | | 1 mA ... 0.5 A | 5 mA ... 2 A | 1 mA ... 2 A | -- | 1 mA ... 3 A | 5 mA ... 5 A | | 10 mA ... 0.5 A | |
| **Operating range factor of the control supply voltage, rated value** | | | | | | | | | | |
| • At AC | | | | | | | | | | |
| - At 50 Hz | | -- | | | | 1 ... 1 | -- | | 1 ... 1 | |
| - At 60 Hz | | -- | | | | 1 ... 1 | -- | | 1 ... 1 | |
| • At DC | | 1 ... 1 | | | | | | | | |
| **Active power input** | W | 0.3 | | | 0.25 | 0.3 | | | 0.5 | |
| **Thermal current** | A | 0.5 | 2 | | | 3 | 5 | | 0.5 | |

| Article number | | 3RQ3...-1.... | 3RQ3...-2.... |
|---|---|---|---|
| **Type of electrical connection for auxiliary and control circuits** | | **Screw terminals** | **Spring-type terminals (push-in)** |
| **Type of connectable conductor cross-sections** | | | |
| • Solid | | 1x (0.25 ... 2.5) mm$^2$ | |
| • Finely stranded | | | |
| - Without end sleeves | | -- | 1x (0.25 ... 2.5) mm$^2$ |
| - With end sleeves | | 1x (0.25 ... 1.5) mm$^2$ | |
| • Solid for AWG cables | | 1x (20 ... 14) | |

# Coupling Relays – Narrow Design

## SIRIUS 3RQ3



### Selection and ordering data

| Type of voltage | Control supply voltage At AC At 50 Hz V | At AC At 60 Hz V | At DC V | Number of CO contacts for auxiliary contacts | Material of switching contacts | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Coupling relays with relay output (not plug-in)** | | | | | | | | | | |
| ***Output coupling links*** | | | | | | | | | | |
| AC/DC | 24 | 24 | 24 | 1 | AgSnO2 | 2 | **3RQ3018-☐AB00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3018-☐AB01** | | 1 | 5 units |
| | 115 | 115 | 115 | 1 | AgSnO2 | 2 | **3RQ3018-☐AE00** | | 1 | 5 units |
| | 230 | 230 | 230 | 1 | AgSnO2 | 2 | **3RQ3018-☐AF00** | | 1 | 5 units |
| DC | -- | -- | 24 | 1 | AgSnO2 | 2 | **3RQ3018-2AM08-0AA0** | | 1 | 5 units |
| | | | 110 | 1 | AgSnO2 | 2 | **3RQ3018-2AN08-0AA0** | | 1 | 5 units |
| ***Input coupling links*** | | | | | | | | | | |
| AC/DC | 24 | 24 | 24 | 1 | AgSnO2 | 2 | **3RQ3038-☐AB00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3038-☐AB01** | | 1 | 5 units |
| | 115 | 115 | 115 | 1 | AgSnO2 | 2 | **3RQ3038-☐AE00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3038-☐AE01** | | 1 | 5 units |
| | 230 | 230 | 230 | 1 | AgSnO2 | 2 | **3RQ3038-☐AF00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3038-☐AF01** | | 1 | 5 units |

3RQ30.8-2....

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Coupling relays with plug-in relay** | | | | | | | | | | |
| ***Output coupling links*** | | | | | | | | | | |
| AC/DC | 24 | 24 | 24 | 1 | AgSnO2 | 2 | **3RQ3118-☐AB00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3118-☐AB01** | | 1 | 5 units |
| | 115 | 115 | 115 | 1 | AgSnO2 | 2 | **3RQ3118-☐AE00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3118-☐AE01** | | 1 | 5 units |
| | 230 | 230 | 230 | 1 | AgSnO2 | 2 | **3RQ3118-☐AF00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3118-☐AF01** | | 1 | 5 units |
| DC | -- | -- | 24 | 1 | AgSnO2 | 2 | **3RQ3118-☐AM00** | | 1 | 5 units |
| | | | | | AgSnO2 hard gold-plated | 2 | **3RQ3118-☐AM01** | | 1 | 5 units |

3RQ3118-2....

**Type of electrical connection**

- Screw terminals → **1**
- Spring-type terminals (push-in) → **2**

| Type of voltage | Control supply voltage At AC At 50 Hz | At AC At 60 Hz | At DC | Current carrying capacity of the semiconductor output At AC | At DC | Operating mode selectable via switch position | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coupling relays with semiconductor output (not plug-in)** | | | | | | | | | | | |
| ***Output coupling links*** | | | | | | | | | | | |
| DC | -- | -- | 11 ... 30 V | -- | 1 mA ... 0.5 A | -- | 2 | **3RQ3050-☐SM50** | | 1 | 5 units |
| | | | | | 5 mA ... 2 A | -- | 2 | **3RQ3052-☐SM30** | | 1 | 5 units |
| | | | | | 1 mA ... 2 A | -- | 2 | **3RQ3052-☐SM40** | | 1 | 5 units |
| | | | | 5 mA ... 2 A | -- | -- | 2 | **3RQ3052-☐SM50** | | 1 | 5 units |
| | | | | -- | 5 mA ... 5 A | -- | 2 | **3RQ3055-☐SM30** | | 1 | 5 units |
| | | | | | | Manual/ Off/ Automatic | 2 | **3RQ3065-☐SM30** | | 1 | 5 units |
| AC/DC | 110 ... 230 V | 110 ... 230 V | 110 ... 230 V | -- | 1 mA ... 3 A | -- | 2 | **3RQ3053-☐SG30** | | 1 | 5 units |
| ***Input coupling links*** | | | | | | | | | | | |
| AC/DC | 11 ... 30 V | 11 ... 30 V | 11 ... 30 V | -- | 10 mA ... 0.5 A | -- | 2 | **3RQ3070-☐SB30** | | 1 | 5 units |
| | 110 ... 230 V | 110 ... 230 V | 110 ... 230 V | -- | 10 mA ... 0.5 A | -- | 2 | **3RQ3070-☐SG30** | | 1 | 5 units |

3RQ3050-2SM50

**Type of electrical connection**

- Screw terminals → **1**
- Spring-type terminals (push-in) → **2**

# Coupling Relays – Narrow Design

## SIRIUS 3RQ3



### Accessories

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Galvanic isolation plates** | | | | | | |
| 3RQ3900-0A | For electrical separation of different potentials when devices of different types are installed side by side | 2 | **3RQ3900-0A** | | 1 | 10 units |
| **Connecting combs** | | | | | | |
| 3RQ3901-0B | For linking the same potentials, current carrying capacity for infeed max. 6 A | | | | | |
| | • 2-pole | 2 | **3RQ3901-0A** | | 1 | 10 units |
| | • 4-pole | 2 | **3RQ3901-0B** | | 1 | 10 units |
| | • 8-pole | 2 | **3RQ3901-0C** | | 1 | 10 units |
| | • 16-pole | 2 | **3RQ3901-0D** | | 1 | 10 units |
| **Clip-on labels**[1] | | | | | | |
| 3RQ3902-0A | For terminal and equipment labeling, white | | | | | |
| | • 5 x 5 mm | 2 | **3RQ3902-0A** | | 100 | 2 000 units |
| | • 6 x 12 mm | 2 | **3RQ3902-0B** | | 100 | 1 200 units |
| **Tools for opening spring-type terminals** | | | | | | |
| | | | **Spring-type terminals (push-in)** | | | |
| 3RA2908-1A | **Screwdriver** For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

[1] PC labeling system for individual inscription of unit labeling plates available from Conta-Clip Verbindungstechnik GmbH (see page 16/16).

| Coupling relays with plug-in relay | Control supply voltage | Material of switching contacts | Number of CO contacts for auxiliary contacts | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| Type | V | | | d | | | | |
| **Replacement modules for 3RQ3118 coupling relays with plug-in relay** | | | | | | | | |
| 3RQ3118-.AM00 | 24 DC | AgSnO2 | 1 | 2 | **3TX7014-7BM00** | | 1 | 15 units |
| 3RQ3118-.AM01 | | AgSnO2 hard gold-plated | | 2 | **3TX7014-7BM02** | | 1 | 15 units |
| 3RQ3118-.AB00 | 24 AC/DC | AgSnO2 | 1 | 2 | **3TX7014-7BM00** | | 1 | 15 units |
| 3RQ3118-.AB01 | | AgSnO2 hard gold-plated | | 2 | **3TX7014-7BM02** | | 1 | 15 units |
| 3RQ3118-.AE00 | 115 AC/DC | AgSnO2 | 1 | 2 | **3TX7014-7BP00** | | 1 | 15 units |
| 3RQ3118-.AF00 | 230 AC/DC | AgSnO2 | | | | | | |
| 3RQ3118-.AE01 | 115 AC/DC | AgSnO2 hard gold-plated | 1 | 2 | **3TX7014-7BP02** | | 1 | 15 units |
| 3RQ3118-.AF01 | 230 AC/DC | AgSnO2 hard gold-plated | | | | | | |

# Coupling Relays with Industrial Enclosure

## SIRIUS 3RQ2 NEW



## Overview

SIRIUS 3RQ2 coupling relays, screw terminals, 3 changeover contacts

**More information**

Homepage, see www.usa.siemens.com/relays

Industry Mall, see www.siemens.com/product?3RQ2

For the conversion tool, e.g. from 3RS18 to 3RQ2, see www.siemens.com/sirius/conversion-tool

3RQ2 coupling relays in their 22.5 mm industrial enclosure serve to couple control signals to and from a controller and replace the 3RS18 coupling relays. The 3RQ2 has an impressively high-quality industrial enclosure finished in modern titanium gray so that it fits in visually with the SIRIUS series of relays.

The series consists of devices with up to three changeover contacts with screw or spring-type terminals (push-in) and, with its wide voltage range from 24 to 240 V AC/DC, is a genuine highlight in the coupling relay market.

Thanks to terminal assignment that is identical to the previous version, existing products can easily be converted.

The reduced variety of components simplifies product selection and standardization.

Numerous accessories are available for the 3RQ2 coupling relays, for example replacement terminals, push-in lugs for wall mounting and coding pins.

### *Article No. scheme*

| Product versions | | Article number | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Coupling relays, standard** | | **3RQ2000 –** | ☐ | ☐ | ☐ | **0** | ☐ | |
| Connection methods | Screw terminals | | **1** | | | | | |
| | Spring-type terminals (push-in) | | **2** | | | | | |
| Outputs | 1 CO contact | | | **A** | | | | |
| | 2 CO contacts | | | **B** | | | | |
| | 3 CO contacts | | | **C** | | | | |
| Rated control supply voltage | 24 ... 240 V AC/DC | | | | **W** | | | |
| Material of switching contacts | 0 = AgSnO2 | | | | | | **0** | |
| | 1 = AgNi +Au | | | | | | **1** | |
| Example | | **3RQ2000 –** | **1** | **C** | **W** | **0** | **1** | |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

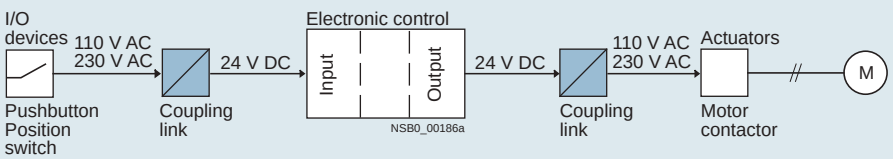
For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

- Permanent wiring thanks to removable terminals in screw or spring-type technology (push-in)
- Replacement of individual terminals minimizes wiring effort
- A product for all voltages from 24 to 240 V AC/DC
- Reduced costs thanks to fewer versions
- Especially high contact reliability even at low currents thanks to versions with hard gold-plated contacts
- International standards and certifications including CE, UL/CSA, EAC and confirmations for rail, and more

## Application

- Electrical separation between the input and output circuit
- Adjustment of different signal levels
- Signal amplification
- Contact multiplication




Application example motor controller

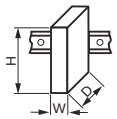
# Coupling Relays with Industrial Enclosure

## SIRIUS 3RQ2 NEW



### Technical specifications

| More information | |
|---|---|
| Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25158/td | Operating instructions, see https://support.industry.siemens.com/cs/ww/en/ps/25158/man |

| Type | | | 3RQ2000-.AW00<br>3RQ2000-.BW00<br>3RQ2000-.CW00 | 3RQ2000-.CW01 |
|---|---|---|---|---|
| **General data** | | | | |
| **Dimensions (W x H x D)**   | | mm | 22.5 x 100 x 90 | |
| **Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3** | | V | 300 | |
| **Max. permissible voltage for protective separation between control circuit and auxiliary circuit acc. to IEC 60947-1** | | V | 300 | |
| **Ambient temperature** | | | | |
| • During operation | | °C | -25 ... +60 | |
| • During storage | | °C | -40 ... +80 | |
| **Degree of protection** | | | IP20 | |
| **Control circuit** | | | | |
| **Control supply voltage** | | V | 24 ... 240 AC/DC; 50/60 Hz | |
| **Operating range factor of control supply voltage** | | | 0.7 ... 1.1 | |
| **Load circuit** | | | | |
| **Thermal current of the non-solid-state contact blocks, maximum** | | A | 5 | |
| **Current carrying capacity of the output relay** | | | | |
| • At AC-15 at 250 V | | A | 3 | |
| • At DC-13 at 24 V | | A | 1 | |
| • At DC-13 at 125 V | | A | 0.2 | |
| • At DC-13 at 250 V | | A | 0.1 | |
| **Mechanical endurance (operating cycles) typical** | | | 10 000 000 | |
| **Electrical endurance (operating cycles) for AC-15 at 230 V, typical** | | | 100 000 | |
| **Material of switching contacts** | | | AgSnO2 | AgNi + Au |

| Article number | | | 3RQ2000-1 | 3RQ2000-2 |
|---|---|---|---|---|
| **Type of electrical connection** | | | **Screw terminals** | **Spring-type terminals (push-in)** |
| **Type of connectable conductor cross-sections** | | | | |
| • Solid | | $mm^2$ | 1x (0.5 ... 4.0 $mm^2$), 2x (0.5 ... 2.5 $mm^2$) | 1x (0.5 ... 4 $mm^2$) |
| • Finely stranded with end sleeve | | $mm^2$ | 1x (0.5 ... 4 $mm^2$), 2x (0.5 ... 1.5 $mm^2$) | 1x (0.5 ... 2.5 $mm^2$) |
| • Solid for AWG cables | | AWG | 1x (20 ... 12), 2x (20 ... 14) | 1x (20 ... 12) |
| **Tightening torque** | | Nm | 0.6 ... 0.8 | -- |

# Coupling Relays with Industrial Enclosure

## SIRIUS 3RQ2 NEW



### Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 UNIT

| Control supply voltage at AC at 50 Hz | Control supply voltage At DC | Number of CO contacts for auxiliary contacts | Material of switching contacts | SD | Screw terminals Article No. | Price per PU | SD | Spring-type terminals (push-in) Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|---|
| V | V | W | | d | | | | | |
| **Coupling relays in industrial enclosure, 22.5 mm** | | | | | | | | | |
| 24 ... 240 | 24 ... 240 | 1 | AgSnO2 | 2 | **3RQ2000-1AW00** | | 2 | **3RQ2000-2AW00** | |
| | | 2 | AgSnO2 | 2 | **3RQ2000-1BW00** | | 2 | **3RQ2000-2BW00** | |
| | | 3 | AgSnO2 | 2 | **3RQ2000-1CW00** | | 2 | **3RQ2000-2CW00** | |
| | | 3 | AgNi + Au | 2 | **3RQ2000-1CW01** | | 2 | **3RQ2000-2CW01** | |

3RQ2000-1CW00

3RQ2000-2CW00

### Accessories

**More information**

Operating instructions, see https://support.industry.siemens.com/cs/ww/en/ps/25158/man

Conversion tool, e.g. from 3RS18 to 3RQ2, see www.siemens.com/sirius/conversion-tool

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Terminals for SIRIUS devices in the industrial standard mounting rail enclosure** | | | | | |
| **Removable terminals** | | **Screw terminals** | | | |
| • 2-pole, up to 1 x 4 mm² or 2 x 2.5 mm² | 2 | **3ZY1122-1BA00** | | 1 | 6 units |
| | | **Spring-type terminals (push-in)** | | | |
| • 2-pole, up to 1 x 4 mm² or 2 x 1.5 mm² | 2 | **3ZY1122-2BA00** | | 1 | 6 units |
| **Accessories for enclosures** | | | | | |
| **Hinged cover** replacement cover, without terminal labeling, titanium gray, 22.5 mm wide | 2 | **3ZY1450-1AB00** | | 1 | 5 units |
| **Push-in lugs** For wall mounting | 2 | **3ZY1311-0AA00** | | 1 | 10 units |
| **Coding pins** For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; they enable the mechanical coding of terminals | 2 | **3ZY1440-1AA00** | | 1 | 12 units |
| **Tools for opening spring-type terminals** | | | | | |
| **Screwdrivers** For all SIRIUS devices with spring-type terminals | | **Spring-type terminals (push-in)** | | | |
| 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

3ZY1122-1BA00

3ZY1450-1AB00

3ZY1311-0AA00

3ZY1440-1AA00

3RA2908-1A

# Coupling Relays with Industrial Enclosure

## SIRIUS 3RQ2 NEW



### More information

#### *Code conversion table*

| SIRIUS 3RS18 coupling relays | | | | Comparison type SIRIUS 3RQ2 coupling relays | | | |
|---|---|---|---|---|---|---|---|
| Screw terminals | Spring-type terminals | Version | Contacts | Screw terminals | Spring-type terminals (push-in) | Version | Contacts |
| 3RS1800-1AQ00 | 3RS1800-2AQ00 | 24 V AC/DC; 110 ... 120 V AC | 1 CO contact | 3RQ2000-1AW00 | 3RQ2000-2AW00 | 24 ... 240 V AC/DC | 1 CO contact |
| 3RS1800-1AP00 | 3RS1800-2AP00 | 24 V AC/DC; 220 ... 240 V AC | | | | | |
| 3RS1800-1BW00 | 3RS1800-2BW00 | 24 ... 240 V AC/DC | 2 CO contacts | 3RQ2000-1BW00 | 3RQ2000-2BW00 | 24 ... 240 V AC/DC | 2 CO contacts |
| 3RS1800-1BQ00 | 3RS1800-2BQ00 | 24 V AC/DC; 110 ... 120 V AC | | | | | |
| 3RS1800-1BP00 | 3RS1800-2BP00 | 24 V AC/DC; 220 ... 240 V AC | | | | | |
| 3RS1800-1HW00 | 3RS1800-2HW00 | 24 ... 240 V AC/DC | 3 CO contacts | 3RQ2000-1CW00 | 3RQ2000-2CW00 | 24 ... 240 V AC/DC | 3 CO contacts |
| 3RS1800-1HQ00 | 3RS1800-2HQ00 | 24 V AC/DC; 110 ... 120 V AC | | | | | |
| 3RS1800-1HP00 | 3RS1800-2HP00 | 24 V AC/DC; 220 ... 240 V AC | | | | | |
| 3RS1800-1HW01 | 3RS1800-2HW01 | 24 ... 240 V AC/DC | 3 CO contacts, hard gold-plated | 3RQ2000-1CW01 | 3RQ2000-2CW01 | 24 ... 240 V AC/DC | 3 CO contacts, hard gold-plated |
| 3RS1800-1HQ01 | 3RS1800-2HQ01 | 24 V AC/DC; 110 ... 120 V AC | | | | | |
| 3RS1800-1HP01 | 3RS1800-2HP01 | 24 V AC/DC; 220 ... 240 V AC | | | | | |

## Overview

SIRIUS 3RS70 signal converters

**More information**

Homepage, see www.usa.siemens.com/relays
Industry Mall, see www.siemens.com/product?3RS70
For the conversion tool, e.g. from 3RS17 to 3RS70, see www.siemens.com/sirius/conversion-tool

Signal converters perform the coupling function for analog signals on both the input side and the output side. They are indispensable when processing analog values with electronic controls. Under harsh industrial conditions in particular, it is often necessary to transmit analog signals over long distances. Electrical separation is then needed as a result of the different power supplies. The resistance of the wiring causes potential differences and losses which must be prevented.

Electromagnetic disturbance and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS70 signal converters are safe up to a voltage of 30 V DC and protected against switching poles. Short-circuit protection is an especially important function for the outputs.

The devices are EMC-tested according to

- IEC 61000-6-4 (generic standard for emitted interference)
- IEC 61000-6-2 (generic standard for interference immunity)

The analog signals comply with

- IEC 60381-1/2

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signal converters** | | **3RS70** | □ | □ | – | □ | □ | □ | **0** | **0** |
| Product function/type of input signal | Single-range converters, active | | **0** | **0** | | | | | | 3-way separation, input 0 ... 10 V |
| | | | **0** | **2** | | | | | | 3-way separation, input 0 ... 20 mA, |
| | | | **0** | **3** | | | | | | 3-way separation, input 4 ... 20 mA, |
| | Switchable multi-range converters, active | | **0** | **5** | | | | | | 3-way separation, 3 standard signals can be switched 0 ... 10 V, 0/4 ... 20 mA |
| | Switchable universal converters, active | | **0** | **6** | | | | | | 3-way separation, 16 signals can be switched |
| | Single-range converters, passive | | **2** | **0** | | | | | | 2-way separation, 4 ... 20 mA |
| | Switchable multi-range converters, active | | **2** | **5** | | | | | | 3-way separation, with manual/automatic switch and setting potentiometer |
| Connection type | Screw terminals | | | | | **1** | | | | |
| | Spring-type terminals (push-in) | | | | | **2** | | | | |
| Type of output signal | 0 ... 10 V | | | | | | **A** | | | |
| | 0 ... 20 mA | | | | | | **C** | | | |
| | 4 ... 20 mA | | | | | | **D** | | | |
| | Loop power isolator 4 ... 20 mA | | | | | | **E** | | | |
| | 3 standard signals can be switched | | | | | | **F** | | | |
| | 4 frequencies can be switched | | | | | | **K** | | | |
| Supply voltage | 24 V AC/DC | | | | | | | **E** | | |
| | None | | | | | | | **T** | | |
| | 24 ... 240 V AC/DC | | | | | | | **W** | | |
| Example | | **3RS70** | **0** | **0** | **–** | **1** | **A** | **E** | **0** | **0** |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

- Narrow width
- Easy-to-set universal converters
- Converters with frequency output
- All ranges are fully calibrated
- Universal family of devices – the perfect solution for every application
- Integrated manual/automatic switch with a setpoint generator
- Outputs are short-circuit-proof
- Up to 30 V – protected against damage caused by wiring errors

## Application

Signal converters are used in analog signal processing for

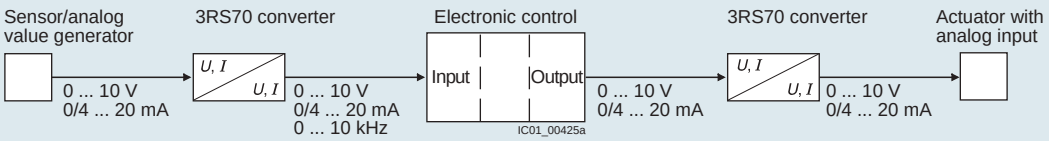
- Electrical separation
- Conversion of normalized and non-normalized signals
- Amplification and impedance adaptation
- Conversion to a frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs

***3RS7025 manual/automatic converter***

For special applications in which analog signals have to be simulated, or during plant commissioning when the actual process value is not yet available, the 3RS7025 devices feature an adjustable potentiometer for manual setpoint selection and a manual/automatic switch.

The potentiometer for the 3RS7025 devices is used to simulate analog output signals when the changeover switch is set to "Manual" and the control supply voltage is applied, without the need for an analog input signal. The scale ranges from 0 ... 100%.

Example: When it is set for an output of 4 ... 20 mA, the left stop on the potentiometer represents an output current of 4 mA and the right stop represents an output current of 20 mA. In the "Auto" switch position, the output signal follows the input signal proportionally regardless of the potentiometer setting.

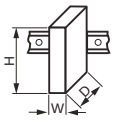


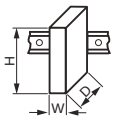

Application example of analog signal processing

## Technical specifications

**More information**

Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16691/td
Operating instructions, see https://support.industry.siemens.com/cs/ww/en/view/109475738
Circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/view/109475738

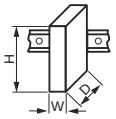
| Article number | | 3RS7000-.AE00 | 3RS7002-.AE00, 3RS7003-.AE00 | 3RS7000-.CE00, 3RS7000-.DE00 | 3RS7002-.CE00, 3RS7002-.DE00, 3RS7003-.CE00, 3RS7003-.DE00 | 3RS7020-.ET00 |
|---|---|---|---|---|---|---|
| Product designation<br>Product version | | Single-range converters, active | | | | Single-range converters, passive |
| **General data:** | | | | | | |
| **Width x height x depth**  | mm | 6.2 × 93 × 72.5 | | | | 6.2 × 93 × 71 |
| **Ambient temperature**<br>• During operation<br>• During storage | <br>°C<br>°C | <br>-25 ... +60<br>-40 ... +80 | | | | |
| **Relative humidity during operation** | % | 10 ... 95 | | | | |
| **Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value** | V | 50 | | | | |
| **Active power input** | W | 0.29 | | | | -- |
| **Degree of protection** | | IP20 | | | | |
| **Input:** | | | | | | |
| **Input voltage**<br>• Max. | <br>V | <br>30 | | | | |
| **Input impedance**<br>• Of current input, maximum<br>• Of voltage input, minimum | <br>Ω<br>kΩ | <br>--<br>330 | <br>100<br>-- | <br>--<br>330 | <br>100<br>-- | |
| **Output:** | | | | | | |
| **Load**<br>• Maximum at current output<br>• Minimum at voltage output | <br>Ω<br>kΩ | <br>--<br>2 | | <br>500<br>-- | | <br>1 000<br>-- |
| **Relative measuring accuracy** | % | 0.1 | | | | |
| **Short-circuit-proof** | | Yes | | | | No |

| Article number | | 3RS7005-.FE00 | 3RS7005-.KE00 | 3RS7005-.FW00 | 3RS7005-.KW00 | 3RS7025-.FE00 | 3RS7025-.FW00 |
|---|---|---|---|---|---|---|---|
| Product designation<br>Product version | | Switchable multi-range converters, active | | | | Switchable multi-range converters, active, with manual/automatic switch and setting potentiometer | |
| **General data:** | | | | | | | |
| **Width x height x depth**   | mm | 6.2 × 93 × 72.5 | | 17.5 × 93 × 72.5 | | 17.5 × 93 × 75 | |
| **Ambient temperature**<br>• During operation<br>• During storage | <br>°C<br>°C | <br>-25 ... +60<br>-40 ... +80 | | | | | |
| **Relative humidity during operation** | % | 10 ... 95 | | | | | |
| **Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value** | V | 50 | | 300 | | 50 | 300 |
| **Active power input** | W | 0.29 | | 0.5 | 0.34 | 0.5 | |
| **Degree of protection** | | IP20 | | | | | |
| **Input:** | | | | | | | |
| **Input voltage**<br>• Max. | <br>V | <br>30 | | | | | |
| **Input impedance**<br>• Of current input, maximum<br>• Of voltage input, minimum | <br>Ω<br>kΩ | <br>100<br>330 | | | | | |
| **Output:** | | | | | | | |
| **Load**<br>• Maximum at current output<br>• Minimum at voltage output | <br>Ω<br>kΩ | <br>500<br>2 | <br>--<br>-- | <br>500<br>2 | <br>--<br>-- | <br>500<br>2 | |
| **Relative measuring accuracy** | % | 0.1 | | | | | |
| **Short-circuit-proof** | | Yes | | | | | |

# Coupling Relays and Signal Converters/Interface Converters

## SIRIUS 3RS70 signal converters



| Article number | | 3RS7006-.FE00 | 3RS7006-.FW00 |
|---|---|---|---|
| Product designation<br>Product version | | Switchable universal converters,<br>active | |
| **General data:** | | | |
| **Width x height x depth**  | mm | 17.5 × 93 × 72.5 | |
| **Ambient temperature**<br>• During operation<br>• During storage | <br>°C<br>°C | <br>-25 ... +60<br>-40 ... +80 | |
| **Relative humidity during operation** | % | 10 ... 95 | |
| **Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value** | V | 50 | 300 |
| **Active power input** | W | 0.5 | |
| **Degree of protection** | | IP20 | |
| **Input:** | | | |
| **Input voltage**<br>• Max. | <br>V | <br>30 | |
| **Input impedance**<br>• Of current input, maximum<br>• Of voltage input, minimum | <br>Ω<br>kΩ | <br>100<br>330 | |
| **Output:** | | | |
| **Load**<br>• Maximum at current output<br>• Minimum at voltage output | <br>Ω<br>kΩ | <br>500<br>2 | |
| **Relative measuring accuracy** | % | 0.1 | |
| **Short-circuit-proof** | | Yes | |

| Article number | | 3RS70..-1.... | 3RS70..-2.... |
|---|---|---|---|
| **Type of electrical connection** | | **Screw terminals** | **Spring-type terminals (push-in)** |
| **Type of connectable conductor cross-sections**<br>• Solid<br>• Finely stranded | <br><br> | <br>1x (0.25 ... 2.5 mm²) | <br>1x (0.25 ... 2.5 mm²) |
| - Without end sleeves<br>- With end sleeves | <br> | --<br>1x (0.25 ... 1.5 mm²) | 1x (0.25 ... 2.5 mm²)<br>1x (0.25 ... 1.5 mm²) |
| • Solid for AWG cables | | 1x (20 ... 14) | 1x (20 ... 14) |

## Selection and ordering data

| Signal type At the input | At the output | Supply voltage | Width mm | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Single-range converters** | | | | | | | | |
| ***Passive*** | | | | | | | | |
| **Type of electrical isolation, 2-way** | | | | | | | | |
| 4 ... 20 mA | 4 ... 20 mA | -- | 6.2 | 2 | **3RS7020-☐ET00** | | 1 | 1 unit |
| **Single-range converters** | | | | | | | | |
| ***Active*** | | | | | | | | |
| **Type of electrical isolation, 3-way** | | | | | | | | |
| 0 ... 10 V | 0 ... 10 V | 24 V AC/DC | 6.2 | 2 | **3RS7000-☐AE00** | | 1 | 1 unit |
| 0 ... 20 mA | 0 ... 10 V | 24 V AC/DC | 6.2 | 2 | **3RS7002-☐AE00** | | 1 | 1 unit |
| 4 ... 20 mA | 0 ... 10 V | 24 V AC/DC | 6.2 | 2 | **3RS7003-☐AE00** | | 1 | 1 unit |
| 0 ... 10 V | 0 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7000-☐CE00** | | 1 | 1 unit |
| 0 ... 20 mA | 0 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7002-☐CE00** | | 1 | 1 unit |
| 4 ... 20 mA | 0 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7003-☐CE00** | | 1 | 1 unit |
| 0 ... 10 V | 4 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7000-☐DE00** | | 1 | 1 unit |
| 0 ... 20 mA | 4 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7002-☐DE00** | | 1 | 1 unit |
| 4 ... 20 mA | 4 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7003-☐DE00** | | 1 | 1 unit |
| **Multi-range converters** | | | | | | | | |
| ***Active, switchable*** | | | | | | | | |
| **Type of electrical isolation, 3-way** | | | | | | | | |
| 0 ... 10 V,<br>0 ... 20 mA,<br>4 ... 20 mA | 0 ... 10 V,<br>0 ... 20 mA,<br>4 ... 20 mA | 24 V AC/DC | 6.2 | 2 | **3RS7005-☐FE00** | | 1 | 1 unit |
| | | 24 ... 240 V AC/DC | 17.5 | 2 | **3RS7005-☐FW00** | | 1 | 1 unit |
| | 0 ... 50 Hz<br>0 ... 100 Hz<br>0 ... 1 kHz<br>0 ... 10 kHz | 24 V AC/DC | 6.2 | 2 | **3RS7005-☐KE00** | | 1 | 1 unit |
| | | 24 ... 240 V AC/DC | 17.5 | 2 | **3RS7005-☐KW00** | | 1 | 1 unit |
| **Multi-range converters** | | | | | | | | |
| ***Active, with manual/automatic switch and setting potentiometer*** | | | | | | | | |
| **Type of electrical isolation, 3-way** | | | | | | | | |
| 0 ... 10 V,<br>0 ... 20 mA,<br>4 ... 20 mA | 0 ... 10 V,<br>0 ... 20 mA,<br>4 ... 20 mA | 24 V AC/DC | 17.5 | 2 | **3RS7025-☐FE00** | | 1 | 1 unit |
| | | 24 ... 240 V AC/DC | 17.5 | 2 | **3RS7025-☐FW00** | | 1 | 1 unit |
| **Universal converters** | | | | | | | | |
| ***Active, switchable*** | | | | | | | | |
| **Type of electrical isolation, 3-way** | | | | | | | | |
| 0 ... 60 mV,<br>0 ... 100 mV,<br>0 ... 300 mV,<br>0 ... 500 mV,<br>0 ... 1 V,<br>0 ... 2 V,<br>0 ... 5 V,<br>0 ... 10 V,<br>0 ... 20 V,<br>2 ... 10 V,<br>0 ... 5 mA,<br>0 ... 10 mA,<br>0 ... 20 mA,<br>4 ... 20 mA,<br>-5 ... +5 mA,<br>-20 ... +20 mA | 0 ... 10 V,<br>0 ... 20 mA,<br>4 ... 20 mA | 24 V AC/DC | 17.5 | 2 | **3RS7006-☐FE00** | | 1 | 1 unit |
| | | 24 ... 240 V AC/DC | 17.5 | 2 | **3RS7006-☐FW00** | | 1 | 1 unit |

3RS7000-1AE00

3RS7000-2AE00

3RS7005-1FW00

3RS7006-1FE00

**Type of electrical connection**

- Screw terminals
- Spring-type terminals (push-in)

1
2

## Accessories

| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Galvanic isolation plates** | | | | | | |
| 3RQ3900-0A | **Galvanic isolation plates**<br>For electrical separation of different potentials when devices of different types are installed side by side | 2 | **3RQ3900-0A** | | 1 | 10 units |
| **Connecting combs** | | | | | | |
| 3RQ3901-0B | **Connecting combs**<br>For linking the same potentials, current carrying capacity for infeed max. 6 A | | | | | |
| | • 2-pole | 2 | **3RQ3901-0A** | | 1 | 10 units |
| | • 4-pole | 2 | **3RQ3901-0B** | | 1 | 10 units |
| | • 8-pole | 2 | **3RQ3901-0C** | | 1 | 10 units |
| | • 16-pole | 2 | **3RQ3901-0D** | | 1 | 10 units |
| **Clip-on labels** | | | | | | |
| | **Clip-on labels**<br>For terminal marking and equipment labeling, white | | | | | |
| | • 5 x 5 mm | 2 | **3RQ3902-0A** | | 100 | 2 000 units |
| **Tools for opening spring-type terminals** | | | | | | |
| | | | **Spring-type terminals (push-in)** | | | |
| 3RA2908-1A | **Screwdrivers**<br>For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

## Overview

### *Version*

The 3TG10 contactors with 4 main contacts are available with screw-type terminals or with 6.3 mm to 0.8 mm tab connectors. The designs with screw-type terminals are suitable for use in any climate and safe from touch to DIN VDE 0106 Part 100.

The 3TG10 contactors have a compact design. Their overall width is 36 mm.

## Application

They are suitable for use in household appliances as well as for distribution boards in offices and residential buildings, owing to their hum-free construction. They can further be used in all areas where there is only a limited amount of space available, e.g. in air conditioners, heating systems, pumps and fans - basically in all simple electrical controls.

### *AC and DC operation*

EN 60 947-4-1
(VDE 0660 Part 102).

### *Surge suppression*

The 3TG10 contactors are fitted with an integrated protective circuit for damping opening surges.

### *Overload and short-circuit protection*

The 3UA7 overload relay can be used for overload protection (see NS E catalogue, available in German). This applies both for contactor mounting and for mounting as a single unit.

The data for short-circuit protection of the contactors without using an overload relay are provided in the technical data.

## Selection and ordering data

| | Ratings Utilization category | | | Main contacts | | Rated control supply voltage $U_s$ | Order No. | List Price $ | Weight approx. | Pack |
|---|---|---|---|---|---|---|---|---|---|---|
| | AC-1 maximum resistive load | Horsepower ratings of three-phase loads at 50 Hz 400 V | AC-3 maximum inductive current | Design | | | | | | |
| | A | kW | A | NO | NC | | | | kg | Units |
| **With screw connections, 4-pin for screwing and snapping onto 35 mm standard mounting rail · hum-free** | | | | | | | | | | |
| | • **AC operation** | | | | | | | | | |
| 3TG10 ..-0 | 20 | 5 | 8.4 | 4 | – | 230 V, 45–450 Hz<br>110 V, 45–450 Hz<br>24 V, 45–450 Hz | **3TG10 10-0AL2**<br>**3TG10 10-0AG2**<br>**3TG10 10-0AC2** | | 0.15 | 10 |
| | | | | 3 | 1 | 230 V, 45–450 Hz<br>110 V, 45–450 Hz<br>24 V, 45–450 Hz | **3TG10 01-0AL2**<br>**3TG10 01-0AG2**<br>**3TG10 01-0AC2** | | 0.15 | 10 |
| | • **DC operation** | | | | | | | | | |
| | 20 | 5 | 8.4 | 4<br>3 | –<br>1 | DC 24 V<br>DC 24 V | **3TG10 10-0BB4**<br>**3TG10 01-0BB4** | | 0.15 | 10 |
| **With tab connectors 6.3 x 0.8 mm, 4-pin for screwing and snapping onto 35 mm standard mounting rail · hum-free** | | | | | | | | | | |
| | • **AC operation** | | | | | | | | | |
| 3TG10 ..-1 | 16 | 5 | 8.4 | 4 | – | 230 V, 45–450 Hz<br>110 V, 45–450 Hz<br>24 V, 45–450 Hz | **3TG10 10-1AL2**<br>**3TG10 10-1AG2**<br>**3TG10 10-1AC2** | | 0.14 | 10 |
| | | | | 3 | 1 | 230 V, 45–450 Hz<br>110 V, 45–450 Hz<br>24 V, 45–450 Hz | **3TG10 01-1AL2**<br>**3TG10 01-1AG2**<br>**3TG10 01-1AC2** | | 0.14 | 10 |
| | • **DC operation** | | | | | | | | | |
| | 16 | 5 | 8.4 | 4<br>3 | –<br>1 | DC 24 V<br>DC 24 V | **3TG10 10-1BB4**<br>**3TG10 01-1BB4** | | 0.14 | 10 |

1) The links for paralleling can be reduced by one pole. The rated operational currents are valid for each pole. The links for paralleling are insulated.

## Technical data

### General data

| | | | | | |
|---|---|---|---|---|---|
| **Mechanical endurance** | operating cycles | | | 3 mill. | |
| **Electrical endurance** at $I_e$ | operating cycles | AC-1<br>AC-3 | | 0.1 million<br>0.4 million | |
| **Rated insulation voltage $U_i$** (pollution degree 3) | | | V | 400 | |
| **Rated impulse withstand voltage $U_{imp}$** | | | kV | 4 | |
| **Safe isolation** acc. to DIN VDE 0106 Part 101 and A1 (draft 2/89) between coil and contacts | | | V | up to 300 | |
| **Permissible ambient temperature** | in operation[1])<br>when stored | | °C<br>°C | –25 ... +55<br>–50 ... +80 | |
| **Degree of protection** acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1) | | | | IP 00, coil system IP 20 | |
| **Power consumption of the coils** (with coil in cold state and 1.0 x $U_s$) | | | | | |
| | AC operation 45 – 450 Hz<br>p.f.<br>DC operation | | VA<br><br>W | 4.4<br>0.9 (hum-free)<br>4 | |
| **Coil voltage tolerance** | | | | 0.85 to 1.1 x $U_s$ | |
| **Operating times** (break-time = opening time + arcing time) | | | | AC operation | DC operation |
| | Closing | closing time<br>opening time | NO<br>NC | ms<br>ms | 10 ... 50<br>5 ... 45 | 11 ... 50<br>5 ... 45 |
| | Opening | opening time<br>closing time | NO<br>NC | ms<br>ms | 20 ... 30<br>20 ... 30 | 19 ... 35<br>21 ... 39 |
| | Arcing time | | | ms | 10 to 15 | |
| **Shock resistance** | | | | | | |
| rectangular pulse | | AC and DC operation | | *g*/ms | 5.1/5 and 3.5/10 | |
| sine pulse | | AC and DC operation | | *g*/ms | 7.9/5 and 5.2/10 | |
| **Operating frequency *z*** in operating cycles per hour | | | | | | |
| Rated operation | | No-load op. frequency<br>for AC-1<br>for AC-2<br>for AC-3 | | 1/h<br>1/h<br>1/h<br>1/h | 10000<br>1000<br>500<br>1000 | |

### Short-circuit protection

| | | | | |
|---|---|---|---|---|
| **Fuse links** | | | | |
| Utilisation category gL/gG | NH<br>DIAZED<br>NEOZED | Type 3NA<br>Type 5SB<br>Type 5SE | | |
| acc. to IEC 60 947-4-1 (DIN VDE 0660 Part 102) | Type of coordination "1"<br>Type of coordination "2" | | A<br>A | 25<br>10 |
| Miniature circuit-breaker | C-characteristic | | A | 10 |

### Load ratings with AC

| | | | | |
|---|---|---|---|---|
| **AC-1 utilisation category, switching resistive load** | | | | |
| **Rated operational current $I_e$** at 55 °C to 400 V [1]) | | | | |
| with screw connection | | | A | 20 |
| with tab connector | | | A | 16 |
| **Ratings $U_e$** of three-phase loads p.f. = 1 | | | V | 400 |
| with screw connection | | | kW | 13 |
| with tab connector | | | kW | 10 |
| | | | V | 230/220 |
| | | | kW | 7.5 |
| | | | kW | 6.0 |
| Minimum conductor cross-section with $I_{e\ load}$ | | | $mm^2$ | 2.5 |

1) If the three main conducting paths are loaded with 20 A and $I$ > 10 A for the fourth conducting path: the permissible ambient temperature is 40 °C.

## Technical data

### Load ratings with AC

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **AC-2 and AC-3 utilisation categories** | | | | | | | | | | |
| Rated operational currents $I_e$ up to 400 V | | A | 8.4 | | | | | | | |
| Ratings of motors with slipring or squirrel-cage rotor at 50 Hz and 60 Hz and at 400 V | | kW | 4 | | | | | | | |
| **AC-5a utilisation category** (permissible supply impedance: ≥ 0.5 Ω)<br>**Switching gas discharge lamps**<br>per main conducting path at 50 Hz 230 V | | | Uncorrected | | | | Lead-lag | | | |
| Rating per lamp | | W | 18 | 36 | 58 | | 18 | 36 | 58 | |
| Rated operational current per lamp | | A | 0.37 | 0.43 | 0.67 | | 2 x 0.11 | 2 x 0.21 | 2 x 0.32 | |
| Number of lamps | | unit | 43 | 37 | 24 | | 2 x 81 | 2 x 42 | 2 x 28 | |
| **Switching gas discharge lamps with correction, electronic ballast**<br>per main conducting path at 50 Hz 230 V | | | Parallel correction | | | Electr. ballast, 1 lamp | | | Electr. ballast, 2 lamps | |
| Rating per lamp | | W | 18 | 36 | 58 | 18 | 36 | 58 | 18 | 36 | 58 |
| Capacitor | | µF | 4.5 | 4.5 | 7 | 6.8 | 6.8 | 10 | 10 | 10 | 22 |
| Rated operational current per lamp | | A | 0.11 | 0.21 | 0.32 | 0.10 | 0.18 | 0.27 | 0.18 | 0.35 | 0.52 |
| Number of lamps | | unit | 15 | 15 | 10 | 39 | 39 | 26 | 2 x26 | 2 x 26 | 2 x1 |
| **AC-5b utilisation category, switching incandescent lamps**<br>per main conducting path at 50 Hz 230 V | | kW | 1.6 | | | | | | | |

### Load ratings with DC

**DC-1 utilisation category, switching resistive load** ($\frac{L}{R}$ ≤ 1 ms)

| **Rated operational current $I_e$** | | | | | | |
|---|---|---|---|---|---|---|
| Conducting paths connected in series | | | 1 | 2 | 3 | 4 |
| | up to 24 V | A | 16 | 16 | 18 | 20 |
| | 60 V | A | 6 | 16 | 18 | 20 |
| | 110 V | A | 2 | 6 | 16 | 20 |
| | 220 V/240 V | A | 0.8 | 1.6 | 6 | 20 |

**DC-3 and DC-5 utilisation categories, shunt and series motors** ($\frac{L}{R}$ ≤ 15 ms)

| **Rated operational current $I_e$** | | | | | | |
|---|---|---|---|---|---|---|
| Conducting paths connected in series | | | 1 | 2 | 3 | 4 |
| | up to 24 V | A | 10 | 16 | 16 | 18 |
| | 60 V | A | 0.5 | 5 | 16 | 16 |
| | 110 V | A | 0.15 | 0.35 | 10 | 10 |
| | 220 V/240 V | A | – | – | 1.75 | 2 |

### Conductor cross-sections for designs

| | | | |
|---|---|---|---|
| **with screw connections** | | | |
| Screw connection | | | M3 |
| Finely stranded with end sleeve (DIN 46 228, style A/D/C) | | mm² | 2 x (0.75 to 2.5) |
| Solid | | mm² | 2 x (1 to 2.5) |
| | | mm² | 1 x 4 |
| **with tab connectors** | | | |
| Finely stranded | 6.3 to 1 | mm² | 0.5 to 1 |
| When using push-on contact acc. to DIN 46 245/46 247 | 6.3 to 2.5 | mm² | 1 to 2.5 |

### CSA and UL ratings (screw connection)

| | | | | |
|---|---|---|---|---|
| **Rated insulation voltage** | AC | V | 600 | |
| **Conventional thermal current** | Free air and enclosed | A | 20 | |
| **Maximum horsepower ratings**<br>(CSA and UL-approved values)<br>Ratings of three-phase motors<br>at 60 Hz | | | 1-phase | 3-phase |
| | at 115 V | hp | 1/2 | – |
| | 200 V | hp | 1 | 3 |
| | 230 V | hp | 1 1/2 | 3 |
| | 460 V/575 V | hp | – | 5 |
| | 600 V | hp | – | 5 |

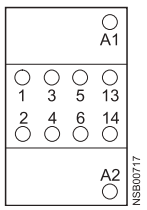
## Accessories

| For contactor | Design | | Order No. | List Price $ | Weight approx. | Pack |
|---|---|---|---|---|---|---|
| | Max. rated operational currents $I_e$/AC-1 (at 55 °C) of contactors | Max. conductor cross-sections | | | | |
| Type | A | mm² | PG 101 | | kg | Units |
| **Links for paralleling (star jumpers)** | | | | | | |
| • **3-pole without terminal** [1)2)] | | | | | | |
| 3TG10 | 16<br>Star jumpers can be reduced by one pole | – | **3RT1 916-4BA31** | | 0.004 | 1 |
| • **3-pole with terminal** [1)3)] | | | | | | |
| 3TG10 | 40 | 25 | **3RT1 916-4BB31** | | 0.013 | 1 |
| • **4-pole with terminal** [1)4)] | | | | | | |
| 3TG10 | 50 | 25 | **3RT1 916-4BB41** | | 0.02 | 1 |

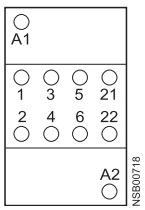
## Circuit diagrams

### *Position of terminals*

**3TG10 10**
1 NO

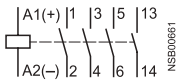



**3TG10 01**
1 NC

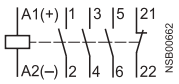



### *Internal circuit diagram*

**3TG10 10**
1 NO
Ident. 10E



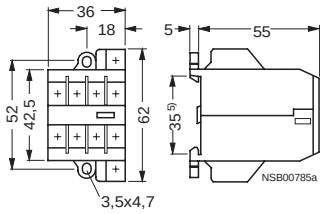

**3TG10 01**
1 NC
01E



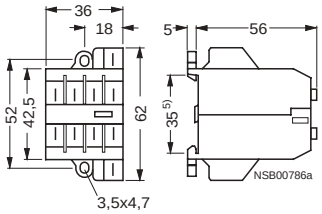

## Dimension drawings

### *AC and DC operation*

**3TG10 ..-0..**
with screw connections

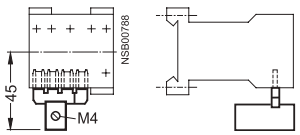



**3TG10 ..-1..**
with tab connectors




### *Accessories for 3TG10*

**3RT19 16-4BB41 links for paralleling, 4-pole, with terminal**




The links for paralleling can be reduced by one pole.

1) The links for paralleling can be reduced by one pole. The rated operational currents are valid for each pole. The links for paralleling are insulated.
2) Replacement type for 3TX44 90-2C.
3) Replacement type for 3TX44 90-2A.
4) Replacement type for 3TX44 90-2B.
5) Can be snapped onto 35 mm standard mounting rails.

## Selection and ordering data

Siemens offers two lines of plug-in style relays to meet your industrial needs – **3TX71** and **LZS**.

**3TX71** relays are available as open power, enclosed power and plug-in style relays. The plug-in family includes basic, premium and bifurcated styles, screw terminals only, and must be ordered as individual components; the selection guide shows which base and accessories belong with which relay. Basic style relays are the most economical and are equipped with a mechanical flag indicator only. Premium style relays offer LED and mechanical flag indication, push-to-test and a latching function for testing without power to the coil. Premium Bifurcated style relays are ideal for low minimum holding current requirements on the contacts (3mA vs. 100mA).

**LZS** plug-in relays can be ordered as complete units or as individual components and are available with screw or push-in terminals. Complete unit order numbers include the relay, base, LED (with surge suppression in 24VDC version) and retainer/ ejector clip and are available with changeover contacts (1CO to 4CO) and coil voltages from 12VDC to 230VAC. PT & MT versions have a push-to-test and a latching function for testing without power to the coil. RT versions are miniature, only 15mm wide and feature 1CO or 2CO contacts. MT versions are 11-pin octal base relays, with 3CO contacts with or without LED and components must be ordered individually.

### Square Base (Narrow)

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay | Premium Relay | Uses Socket 3TX7144- | Uses Clip 3TX7144- | Socket Access Set |
|---|---|---|---|---|---|---|---|
| SPDT | 15 | 12VDC | 3TX7110-5BB03C | 3TX7110-5JB03 | 4E7 | 1L7 | B |
| | | 24 VDC | 3TX7110-5BC03C | 3TX7110-5JC03 | 4E7 | 1L7 | B |
| | | 24 VAC | 3TX7110-5BC13C | 3TX7110-5JC13 | 4E7 | 1L7 | B |
| | | 120 VAC | 3TX7110-5BF13C | 3TX7110-5JF13 | 4E7 | 1L7 | B |
| | | 240 VAC | — | 3TX7110-5JG13 | 4E7 | 1L7 | B |

### Square Base (Standard)

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay | Premium Relay | Uses Socket 3TX7144- | Uses Clip 3TX7144- | Socket Access Set |
|---|---|---|---|---|---|---|---|
| DPDT | 12 | 24 VDC | 3TX7111-3DC03C | 3TX7111-3LC03 | 4E5 [1)] | 1L11 | B |
| | | 24 VAC | 3TX7111-3DC13C | 3TX7111-3LC13 | 4E5 [1)] | 1L11 | B |
| | | 120 VAC | 3TX7111-3DF13C | 3TX7111-3LF13 | 4E5 [1)] | 1L11 | B |
| DPDT | 15 | 12 VDC | 3TX7114-5DB03C | — | 4E6 | 1L11 | B |
| | | 24VDC | 3TX7114-5DC03C | 3TX7114-5LC03 | 4E6 | 1L11 | B |
| | | 24VAC | 3TX7114-5DC13C | 3TX7114-5LC13 | 4E6 | 1L11 | B |
| | | 120 VAC | 3TX7114-5DF13C | 3TX7114-5LF13 | 4E6 | 1L11 | B |
| | | 240 VAC | — | 3TX7114-5LH13 | 4E6 | 1L11 | B |
| DPDT | 10 | 12 VDC | 3TX7115-5DB03C | — | 4E4 | 1L12 | A |
| | | 24VDC | 3TX7115-5DC03C | — | 4E4 | 1L12 | A |
| | | 24VAC | 3TX7115-5DC13C | 3TX7115-5LC13 | 4E4 | 1L12 | A |
| | | 120 VAC | 3TX7115-5DF13C | 3TX7115-5LF13 | 4E4 | 1L12 | A |

| Option | Basic | Premium |
|---|---|---|
| Mechanical Flag | √ | √ |
| Push To Test | | √ |
| Lock Down Door | | √ |
| LED | | √ |

Note: See page 11/139 for socket accessories.

1) Derate Relay Thermal Current Rating to 300V, 10A when using 3TX7144-4E5 socket connection type. If you wish to use the relay at its full 300V, 12A thermal rating, the connection must be hard wired to the Relay Terminals with properly rated Quick Connects or Solder Connections.
See 3TX7111 DPDT illustration on page 11/146.

## Selection and ordering data

Square Base (Standard)

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay | Premium Relay | Premium Bifurcated | Uses Socket 3TX7144- | Uses Clip 3TX7144- | Socket Access Set |
|---|---|---|---|---|---|---|---|---|
| 3PDT | 15 | 24VDC | 3TX7116-5FC03C | 3TX7116-5NC03 | — | 4E8 | 1L9 | A |
| | | 24VAC | 3TX7116-5FC13C | 3TX7116-5NC13 | — | 4E8 | 1L9 | A |
| | | 120 VAC | 3TX7116-5FF13C | 3TX7116-5NF13 | — | 4E8 | 1L9 | A |
| 3PDT | 10 | 24VDC | 3TX7115-5FC03C | 3TX7115-5NC03 | — | 4E4 | 1L12 | A |
| | | 120 VAC | 3TX7115-5FF13C | 3TX7115-5NF13 | — | 4E4 | 1L12 | A |
| 4PDT | 6A for Basic and Premium and 3A for Bifurcated | 24VDC | 3TX7111-3HC03C | 3TX7111-3PC03 | — | 4E5 | 1L11 | B |
| | | 24VAC | 3TX7111-3HC13C | 3TX7111-3PC13 | 3TX7111-5PC13B | 4E5 | 1L11 | B |
| | | 120 VAC | 3TX7111-3HF13C | 3TX7111-3PF13 | 3TX7111-5PF13B | 4E5 | 1L11 | B |
| | | 240 VAC | — | — | — | 4E5 | 1L11 | B |
| 4PDT | 15 | 24VDC | 3TX7117-5HC03C | 3TX7117-5PC03 | — | 4E9 | 1L10 | A |
| | | 24VAC | 3TX7117-5HC13C | — | — | 4E9 | 1L10 | A |
| | | 120 VAC | 3TX7117-5HF13C | 3TX7117-5PF13 | — | 4E9 | 1L10 | A |

| Option | Basic | Premium | Premium Bifurcated |
|---|---|---|---|
| Mechanical Flag | √ | √ | √ |
| Push To Test | | √ | √ |
| Lock Down Door | | √ | √ |
| LED | | √ | √ |

Note: See page 11/139 for socket accessories.

## Selection and ordering data

### Standard Octal Base

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay | Premium Relay | Uses Socket 3TX7144- | Uses Clip 3TX7144- | Socket Access Set |
|---|---|---|---|---|---|---|---|
| DPDT | 10 | 12 VDC | 3TX7112-1DB03C | 3TX7112-1LB03 | 4E2 | 1L14 | A |
| | | 24VDC | 3TX7112-1DC03C | 3TX7112-1LC03 | 4E2 | 1L14 | A |
| | | 24VAC | 3TX7112-1DC13C | 3TX7112-1LC13 | 4E2 | 1L14 | A |
| | | 120 VAC | 3TX7112-1DF13C | 3TX7112-1LF13 | 4E2 | 1L14 | A |
| | | 240 VAC | 3TX7112-1DG13C | 3TX7112-1LG13 | 4E2 | 1L14 | A |
| 3PDT | 10 | 24VDC | 3TX7112-1FC03C | 3TX7112-1NC03 | 4E3 | 1L14 | A |
| | | 24VAC | 3TX7112-1FC13C | 3TX7112-1NC13 | 4E3 | 1L14 | A |
| | | 120 VAC | 3TX7112-1FF13C | 3TX7112-1NF13 | 4E3 | 1L14 | A |
| | | 240 VAC | — | 3TX7112-1NG13 | 4E3 | 1L14 | A |

### Hermetically Sealed

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay | Uses Socket 3TX7144- | Uses Clip 3TX7144- | Socket Access Set |
|---|---|---|---|---|---|---|
| 3PDT | 12 | 24 VDC | 3TX7127-7HC00 | 4E3 | 1L12 | A |
| 4PDT | 3 | 24VDC | 3TX7127-3HC00 | 4E5 | 1L11 | B |
| | | 24VAC | 3TX7127-3HC10 | 4E5 | 1L11 | B |
| | | 120 VAC | 3TX7127-3HF10 | 4E5 | 1L11 | B |
| 4PDT | 5 | 12 VDC | 3TX7127-3HB03 | 4E5 | 1L11 | B |
| | | 24VDC | 3TX7127-3HC03 | 4E5 | 1L11 | B |
| | | 120 VAC | 3TX7127-3HF13 | 4E5 | 1L11 | B |

### Socket Accessories

| Access. Series | MOV | MOV | R/C | R/C | Diode |
|---|---|---|---|---|---|
| | 24VAC/DC | 120VAC/DC | 6-24VAC/DC | 110-240VAC/DC | 6-250VDC |
| A | 3TX7144-H1 | 3TX7144-H20 | 3TX7144-H4 | 3TX7144-H5 | 3TX7144-H6 |
| B | 3TX7144-H9 | 3TX7144-H17 | — | — | 3TX7144-H12 |

Note: See socket accessories above.

## Selection and ordering data

### Open Power Relays

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay | Metal Cover 7144- |
|---|---|---|---|---|
| SPST NO-DM | 40 | 24VAC | 3TX7130-0AC13 | 1M0 |
| SPST NO-DM | | 120 VAC | 3TX7130-0AF13 | 1M0 |
| SPST NO-DM | | 240 VAC | 3TX7130-0AH13 | 1M0 |
| SPST NC-DB | 40 | 120 VAC | 3TX7130-0QF13 | 1M0 |
| SPDT | | 24 VAC | 3TX7130-0BC13 | 1M0 |
| SPDT | | 120 VAC | 3TX7130-0BF13 | 1M0 |
| SPDT | | 240 VAC | 3TX7130-0BH13 | 1M0 |
| SPDT | | 277 VAC | 3TX7130-0BS13 | 1M0 |
| DPDT | 40 | 24 VAC | 3TX7130-0DC13 | 1M0 |
| | | 120 VAC | 3TX7130-0DF13 | 1M0 |
| | | 240 VAC | 3TX7130-0DH13 | 1M0 |
| | | 277 VAC | 3TX7130-0DS13 | 1M0 |
| | | 12 VDC | 3TX7130-0DB03 | 1M0 |
| | | 24 VDC | 3TX7130-0DC03 | 1M0 |
| | | 48 VDC | 3TX7130-0DD03 | 1M0 |
| | | 110 VDC | 3TX7130-0DF03 | 1M0 |
| DPST NO | 40 | 24 VAC | 3TX7130-0CC13 | 1M0 |
| | | 120 VAC | 3TX7130-0CF13 | 1M0 |
| | | 240 VAC | 3TX7130-0CH13 | 1M0 |
| | | 12 VDC | 3TX7130-0CB03 | 1M0 |
| | | 24 VDC | 3TX7130-0CC03 | 1M0 |
| | | 48 VDC | 3TX7130-0CD03 | 1M0 |
| DPDT (Mag Blowout) | 40 | 120 VAC | 3TX7130-0RF13 | 1M0 |
| | | 12 VDC | 3TX7130-0RB03 | 1M0 |
| | | 24 VDC | 3TX7130-0RC03 | 1M0 |
| | | 48 VDC | 3TX7130-0RD03 | 1M0 |
| | | 110 VDC | 3TX7130-0RF03 | 1M0 |

### Enclosed Power Relays

| Contacts | Contact Rating (A) | Coil Voltage | Basic Relay |
|---|---|---|---|
| DPST-NO | 30 | 24VAC | 3TX7131-4CC13 |
| | | 120 VAC | 3TX7131-4CF13 |
| | | 230 VAC | 3TX7131-4CH13 |
| DPDT | 30 NO/ 3 NC | 24 VDC | 3TX7131-4DC03 |
| | | 24VAC | 3TX7131-4DC13 |
| | | 120 VAC | 3TX7131-4DF13 |
| | | 230 VAC | 3TX7131-4DH13 |

Note: See page 11/139 for socket accessories.

## General specifications

| Contact Characteristics | | Units | 3TX7110 | 3TX7111 | | |
|---|---|---|---|---|---|---|
| Number and Type of Contacts | | | SPDT | DPDT | 4PDT | 4PDT |
| Contact Material | | | Silver Alloy | Silver Alloy | Silver Alloy | Silver Alloy |
| Thermal (Carrying) Current | | A | 15 | 12 | 6 | 3 (Bifurcated) |
| Maximum Switching Voltage | | V | 300 | 300 | 300 | 300 |
| Switching Current at Voltage | | Resistive | 15A @240V | — | 6A @240V | 3A @240V |
| | | Resistive | 15A @120V | 12A @120V | 6A @120V | 3A @120V |
| | | Resistive | 15A @ 28 | 12A @ 28 | 6A @ 28 | 3A @ 30 |
| | | HP | 1/2 @ 120VAC | 1/3 @ 120VAC | 1/3 @ 120VAC | 1/16 @ 120VAC |
| | | HP | 1 @ 240VAC | — | 1 @ 240VAC | — |
| | | Pilot Duty | B300 | B300 | B300 | — |
| Minimum Switching Requirement | | mA | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 3 @ 17VDC (.4W) |
| **Coil Characteristics** | | | | | | |
| Voltage Range | AC | V | 24, 120, 240 | 6…240 | 24, 120 | 24, 120, 240 |
| | DC | V | 12, 24 | 6…125 | 24 | N/A |
| Operating Range | AC | % | 85 to 110 | 85 to 110 | 85 to 110 | 85 to 110 |
| | DC | % | 80 to 110 | 80 to 110 | 80 to 110 | 80 to 110 |
| Average Consumption | AC | VA | 0.9 | 1.2 | 1.2 | 1.2 |
| | DC | W | 0.7 | 0.9 | 0.9 | 0.9 |
| Drop-out Voltage Threshold | AC | % | 15 | 15 | 15 | 15 |
| | DC | % | 10 | 10 | 10 | 10 |
| **Performance Characteristics** | | | | | | |
| Electrical Life (UL508) | Operations @ Rated Current | (Resistive) | 100,000 | 200,000 | 200,000 | 200,000 |
| Mechanical Life | Unpowered | | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 |
| Operating Time (response time) | | ms | 20 | 20 | 20 | 20 |
| Dialectric Strength | Between Coil and Contact | V(rms) | 2500 | 2500 | 2500 | 2500 |
| | Between Poles | V(rms) | 1500 | 1500 | 1500 | 1500 |
| | Between Contacts | V(rms) | 1500 | 1500 | 1500 | 1500 |
| **Environment** | | | | | | |
| Product Certifications | Standard Version | | UL,RoHS | UL,RoHS | UL,RoHS | UL,RoHS |
| Ambient Air Temperature | Storage | °C | -40…+85 | -40…+85 | -40…+85 | -40…+85 |
| around the Device | Operational | °C | -40…+55 | -40…+55 | -40…+55 | -40…+55 |
| Vibration Resistance | Operational | g-n | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz |
| Shock Resistance | | g-n | 10 | 10 | 10 | 10 |
| Degree of Protection | | | IP40 | IP40 | IP40 | IP40 |
| Weight | | grams | 29 | 36 | 36 | 36 |

| Contact Characteristics | | Units | 3TX7112 | | 3TX7114 | 3TX7115 | | 3TX7116 | 3TX7117 |
|---|---|---|---|---|---|---|---|---|---|
| Number and Type of Contacts | | | DPDT | 3PDT | DPDT | DPDT | 3PDT | 3PDT | 4PDT |
| Contact Material | | | Silver Alloy | Silver Alloy | Silver Alloy | Silver Alloy | Silver Alloy | Silver Alloy | Silver Alloy |
| Thermal (Carrying) Current | | A | 10 | 10 | 15 | 10 | 10 | 15 | 15 |
| Maximum Switching Voltage | | V | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| Switching Current at Voltage | | Resistive | 10A @240V | 10A @240V | 12A @277V | 10A @277V | 10A @277V | 12A @277V | 12A @277V |
| | | Resistive | 10A @120V | 10A @120V | 15A @120V | 10A @120V | 10A @120V | 15A @120V | 15A @120V |
| | | Resistive | 10A @ 28 | 10A @ 28 | 12A @ 28 | 10A @ 28 | 10A @ 28 | 12A @ 28 | 12A @ 28 |
| | | HP | 1/3 @ 120VAC | 1/3 @ 120VAC | 1/2 @ 120VAC | 1/3 @ 120VAC | 1/3 @ 120VAC | 1/2 @ 120VAC | 1/2 @ 120VAC |
| | | HP | 1/2 @ 240VAC | 1/2 @ 240VAC | 1 @ 240VAC | 1/2 @ 240VAC | 1/2 @ 240VAC | 3/4 @ 240VAC | 3/4 @ 240VAC |
| | | Pilot Duty | B300 | B300 | B300 | B300 | B300 | B300 | B300 |
| Minimum Switching Requirement | | mA | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 100 @ 5VDC (.5W) |
| **Coil Characteristics** | | | | | | | | | |
| Voltage Range | AC | V | 24, 120, 240 | 24, 120, 240 | 24, 120, 240 | 24, 120 | 24, 120 | 24, 120 | 24, 120 |
| | DC | V | 12, 24 | 24 | 12, 24 | 12, 24 | 12, 24 | 24 | 24 |
| Operating Range | AC | % | 85 to 110 | 85 to 110 | 85 to 110 | 85 to 110 | 85 to 110 | 85 to 110 | 85 to 110 |
| | DC | % | 80 to 110 | 80 to 110 | 80 to 110 | 80 to 110 | 80 to 110 | 80 to 110 | 80 to 110 |
| Average Consumption | AC | VA | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.5 | 1.5 |
| | DC | W | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.4 | 1.5 |
| Drop-out Voltage Threshold | AC | % | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | DC | % | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| **Performance Characteristics** | | | | | | | | | |
| Electrical Life (UL508) | Operations @ Rated Current | (Resistive) | 200,000 | 200,000 | 100,000 | 100,000 | 100,000 | 200,000 | 200,000 |
| Mechanical Life | Unpowered | | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 |
| Operating Time (response time) | | ms | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Dialectric Strength | Between Coil and Contact | V(rms) | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |
| | Between Poles | V(rms) | 1500 | 1500 | 1500 | 1500 | 1500 | 2500 | 2500 |
| | Between Contacts | V(rms) | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 2500 |
| **Environment** | | | | | | | | | |
| Product Certifications | Standard Version | | UL,RoHS | UL,RoHS | UL,RoHS | UL,RoHS | UL,RoHS | UL,RoHS | UL,RoHS |
| Ambient Air Temperature | Storage | °C | -40…+85 | -40…+85 | -40…+85 | -40…+85 | -40…+85 | -40…+85 | -40…+85 |
| around the Device | Operational | °C | -40…+55 | -40…+55 | -40…+55 | -40…+55 | -40…+55 | -40…+55 | -40…+55 |
| Vibration Resistance | Operational | g-n | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz |
| Shock Resistance | | g-n | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Degree of Protection | | | IP40 | IP40 | IP40 | IP40 | IP40 | IP40 | IP40 |
| Weight | | grams | 89 | 89 | 36 | 88 | 88 | 60 | 60 |

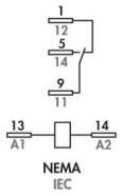
## General specifications

| Contact Characteristics | | Units | 3TX7127 | | | 3TX7130 |
|---|---|---|---|---|---|---|
| Number and Type of Contacts | | | 3PDT | 4PDT | 4PDT | All |
| Contact Material | | | Silver Alloy | Fine Silver | Silver Alloy | Silver Alloy |
| Thermal (Carrying) Current | | A | 12 | 3 | 5 | 40 |
| Maximum Switching Voltage | | V | 300 | 300 | 300 | 600 |
| Switching Current at Voltage | | Resistive | 12A @240V | 3A @240V | 12A @240V | 40A @277V |
| | | Resistive | 12A @120V | 3A @120V | | — |
| | | Resistive | 12A @ 28 | 3A @ 30 | | 40A @ 28 |
| | | HP | 1/3 @ 120VAC | 1/16 @ 120VAC | — | — |
| | | HP | 1/2 @ 240VAC | 1/10 @ 240VAC | — | — |
| | | Pilot Duty | B300 | — | — | — |
| Minimum Switching Requirement | | mA | 100 @ 5VDC (.5W) | 10 @ 5VDC (.5W) | 100 @ 5VDC (.5W) | 1000 @ 12VAC/DC |
| **Coil Characteristics** | | | | | | |
| Voltage Range | AC | V | N/A | 24, 120 | 120 | 24, 120, 240, 277 |
| | DC | V | 24 | 12, 24 | 12, 24 | 12, 24, 48, 110 |
| Operating Range | AC | % | 85 to 110 | 85 to 110 | 85 to 110 | 85 to 110 |
| | DC | % | 80 to 110 | 80 to 110 | 80 to 110 | 80 to 110 |
| Average Consumption | AC | VA | 1.2 | 1.2 | 1.2 | 10 |
| | DC | W | 0.9 | 0.9 | 0.9 | 4 |
| Drop-out Voltage Threshold | AC | % | 15 | 15 | 15 | 10 |
| | DC | % | 10 | 10 | 10 | 10 |
| **Performance Characteristics** | | | | | | |
| Electrical Life (UL508) | Operations @ Rated Current | (Resistive) | 100,000 | 100,000 | 100,000 | 100,000 |
| Mechanical Life | Unpowered | | 10,000,000 | 10,000,000 | 10,000,000 | 1,000,000 |
| Operating Time (response time) | | ms | 20 | 20 | 20 | 30 |
| Dialectric Strength | Between Coil and Contact | V(rms) | 1,500 | 1240 | 1240 | 2200 |
| | Between Poles | V(rms) | 1,500 | 1240 | 1240 | 2200 |
| | Between Contacts | V(rms) | 1500 | 500 | 500 | 1500 |
| **Environment** | | | | | | |
| Product Certifications | Standard Version | | UL,RoHS | UL,RoHS | UL,RoHS | UL |
| Ambient Air Temperature | Storage | °C | -40…+85 | -40…+85 | -40…+85 | -40…+85 |
| around the Device | Operational | °C | -40…+55 | -40…+70 | -40…+70 | -40…+70 |
| Vibration Resistance | Operational | g-n | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz |
| Shock Resistance | | g-n | 10 | 10 | 10 | — |
| Degree of Protection | | | IP67 | IP67 | IP67 | Open |
| Weight | | grams | 130 | 45 | 45 | 227 to 312 |

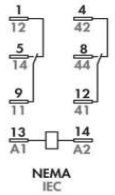
| Contact Characteristics | | Units | 3TX7131 | | |
|---|---|---|---|---|---|
| Number and Type of Contacts | | | DPST-NO | DPDT | DPDT |
| Contact Material | | | Silver Alloy | Silver Alloy | Silver Alloy |
| Thermal (Carrying) Current | | A | 30 | 30 DPDT-NO | 3 DPDT-NC |
| Maximum Switching Voltage | | V | 600 | 300 | 300 |
| Switching Current at Voltage | | Resistive | 20A @300V | 30A @277V | 3A @277V |
| | | Resistive | — | — | — |
| | | Resistive | 20A @ 28 | 20A @ 28 | 3A @ 28 |
| | | HP | 1/3 @ 120VAC | 1 @ 120VAC | — |
| | | HP | 1/2 @ 600VAC | 3 @ 240VAC | — |
| | | Pilot Duty | — | — | — |
| Minimum Switching Requirement | | mA | 500 @ 12VAC/DC | 500 @ 12VAC/DC | 500 @ 12VAC/DC |
| **Coil Characteristics** | | | | | |
| Voltage Range | AC | V | 24, 120, 240 | 24, 120, 240 | 24, 120, 240 |
| | DC | V | 24 | 24 | 24 |
| Operating Range | AC | % | 85 to 120 | 85 to 120 | 85 to 120 |
| | DC | % | 75 to 120 | 75 to 120 | 75 to 120 |
| Average Consumption | AC | VA | 4 | 4 | 4 |
| | DC | W | 1.7 | 1.7 | 1.7 |
| Drop-out Voltage Threshold | AC | % | 10 | 10 | 10 |
| | DC | % | 10 | 10 | 10 |
| **Performance Characteristics** | | | | | |
| Electrical Life (UL508) | Operations @ Rated Current | (Resistive) | 100,000 | 100,000 | 100,000 |
| Mechanical Life | Unpowered | | 5,000,000 | 5,000,000 | 5,000,000 |
| Operating Time (response time) | | ms | 15 | 15 | 15 |
| Dialectric Strength | Between Coil and Contact | V(rms) | 4000 | 4000 | 4000 |
| | Between Poles | V(rms) | 2000 | 2000 | 2000 |
| | Between Contacts | V(rms) | 1500 | 1500 | 1500 |
| **Environment** | | | | | |
| Product Certifications | Standard Version | | UL | UL | UL |
| Ambient Air Temperature | Storage | °C | -40…+85 | -40…+85 | -40…+85 |
| around the Device | Operational | °C | -40…+55 | -40…+55 | -40…+55 |
| Vibration Resistance | Operational | g-n | 3, 10 - 55 Hz | 3, 10 - 55 Hz | 3, 10 - 55 Hz |
| Shock Resistance | | g-n | 10 | 10 | 10 |
| Degree of Protection | | | — | — | — |
| Weight | | grams | 86 | 86 | 86 |

## Circuit diagrams

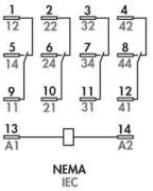
**3TX7110**
SPDT




**3TX7111**
DPDT

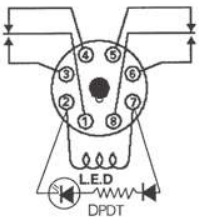



**3TX7111**
4PDT

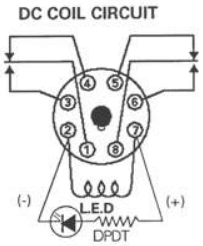



**3TX7112**
DPDT

AC COIL CIRCUIT

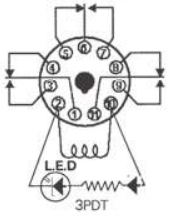



DC COIL CIRCUIT

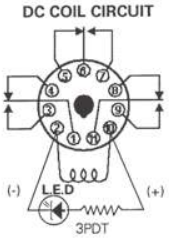



**3TX7112**
3PDT

AC COIL CIRCUIT

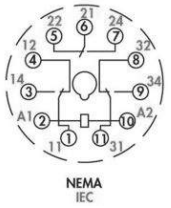



DC COIL CIRCUIT

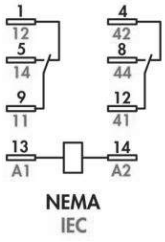



**3TX7112-1L, -1D**
DPDT

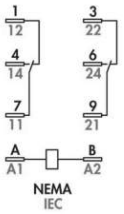
**3TX7112-1N, -1F**
3PDT



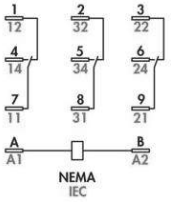

**3TX7114**
DPDT




**3TX7115**
DPDT

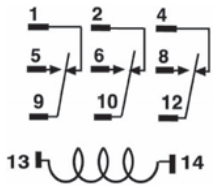



**3TX7115**
3PDT

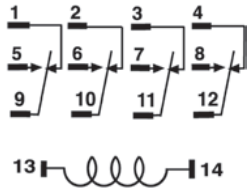


## Circuit diagrams

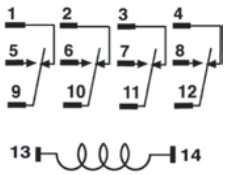
**3TX7116**
3PDT



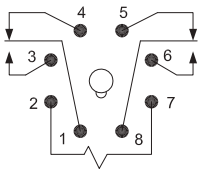

**3TX7117**
4PDT



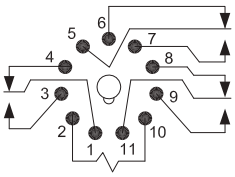

**3TX7127**
4PDT




**3TX7127 (DPDT)**

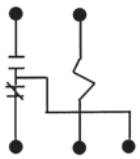



**3TX7127 (3PDT)**

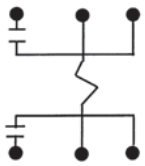



**3TX7130**
SPST-NO

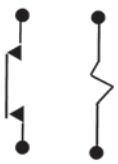
**3TX7130**
SPDT



**3TX7130**
DPST-NO

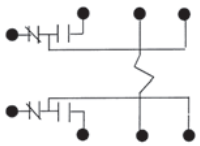


**3TX7130**
SPST-NC

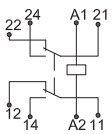


SPST-NC-DB

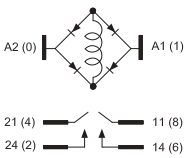
**3TX7130**
DPDT



**3TX7130 (DPDT)**

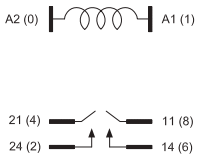



**3TX7131 (DPST-NO) (AC)**

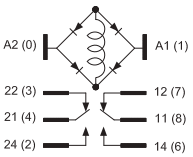


## Circuit diagrams

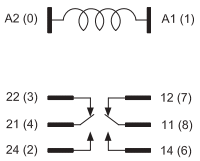
**3TX7131 (DPST-NO) (DC)**




**3TX7131 (DPDT) (AC)**

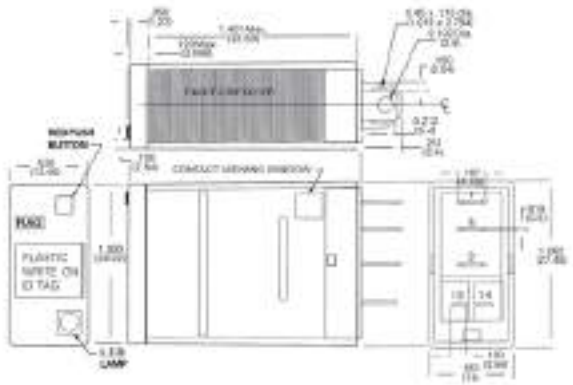



**3TX7131 (DPDT) (DC)**

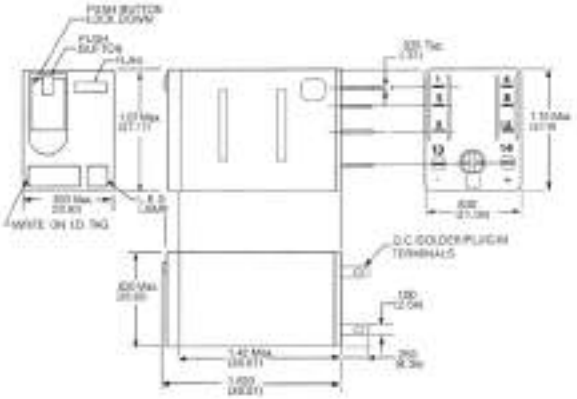


## Dimension drawings

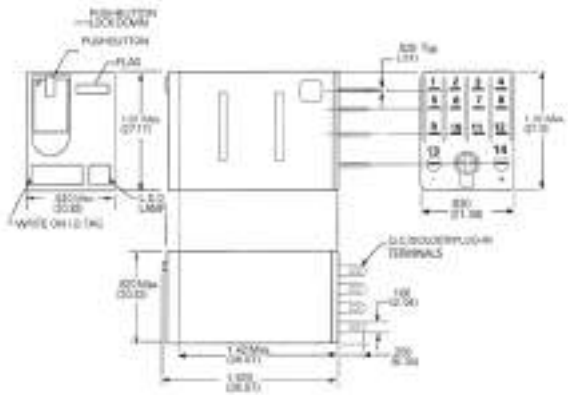
**3TX7110 SPDT**



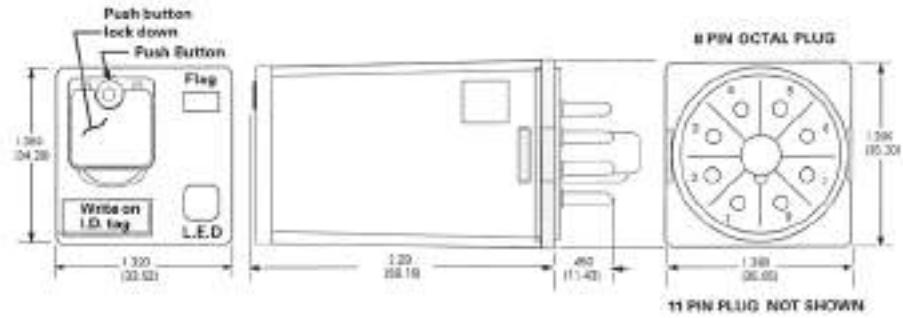
**3TX7111 DPDT**



**3TX7111 4PDT**

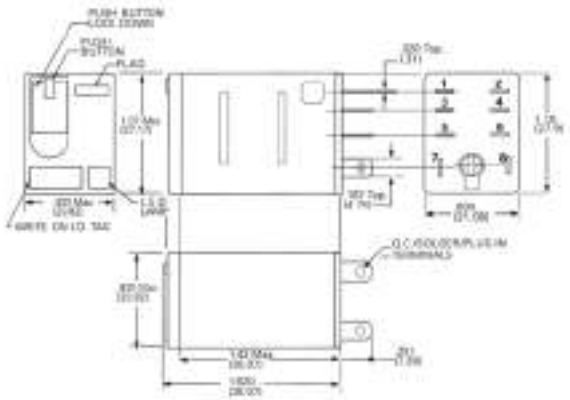


**3TX7112 DPDT**

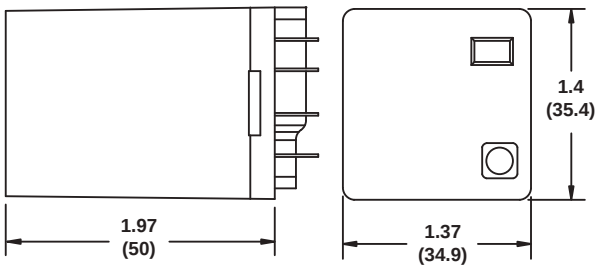


## Dimension drawings

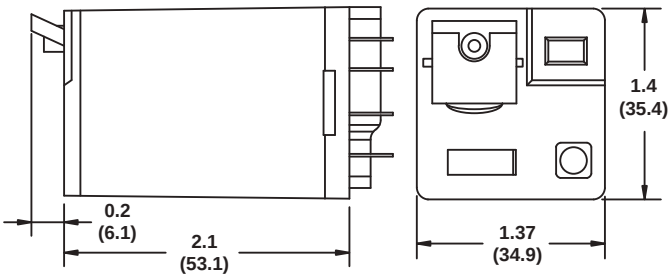
### 3TX7114 DPDT



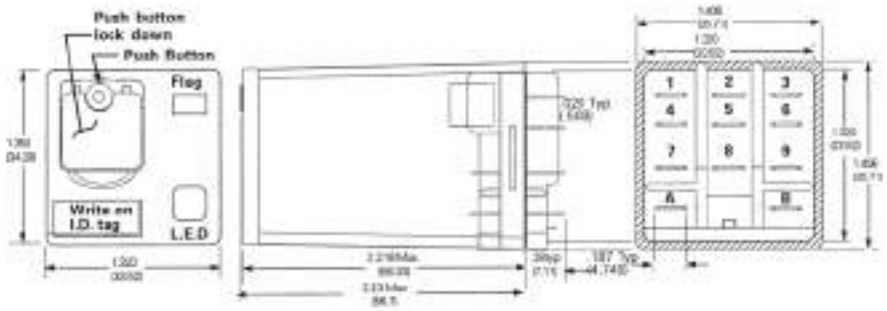
### 3TX7115 (DPDT) (clear cover)



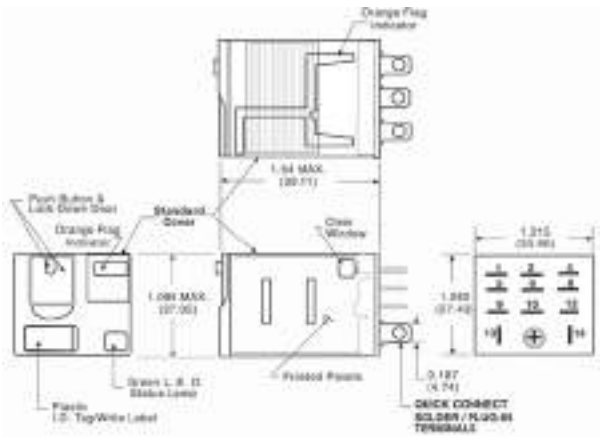

### 3TX7115 (DPDT) (full feature)



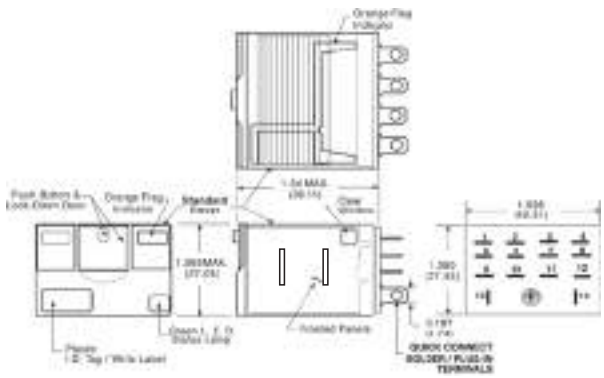

### 3TX7115 3PDT




### 3TX7116 3PDT

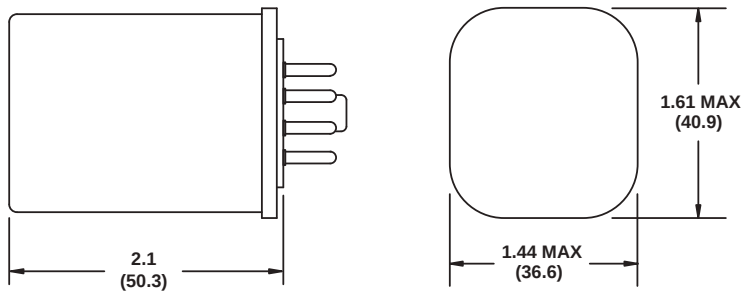


### 3TX7117 4PDT

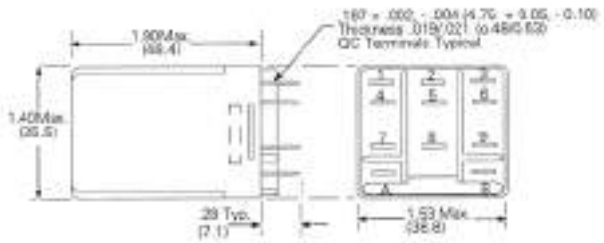


## Dimension drawings

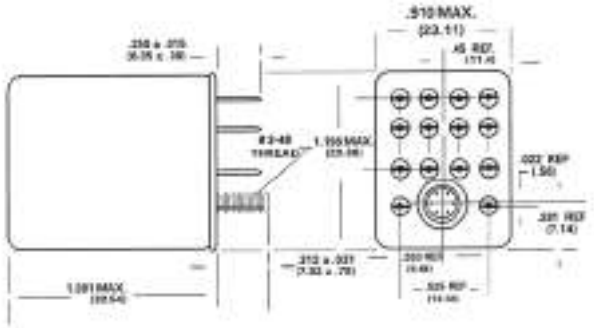
**3TX7127 (DPDT)**



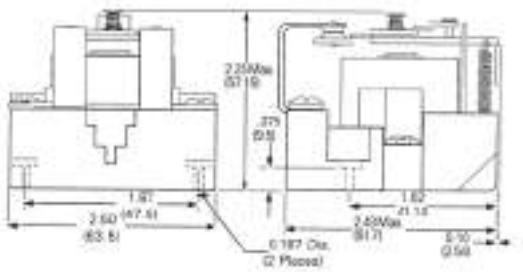

**3TX7127 3PDT**



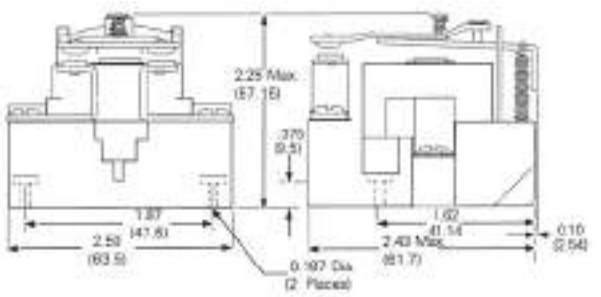
**3TX7127 4PDT**




**3TX7130 SPST NC**

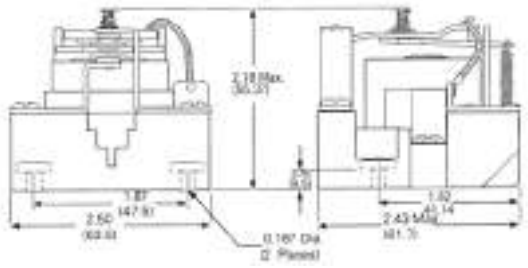


**3TX7130 SPST NO**

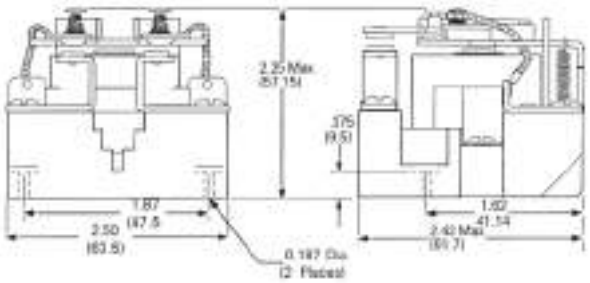


## Dimension drawings

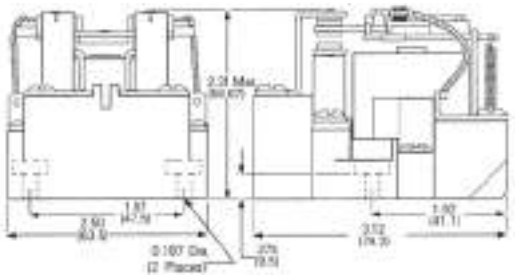
**3TX7130 SPDT**



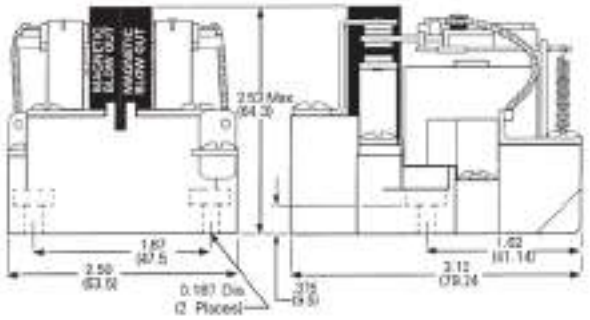
**3TX7130 DPST NO**



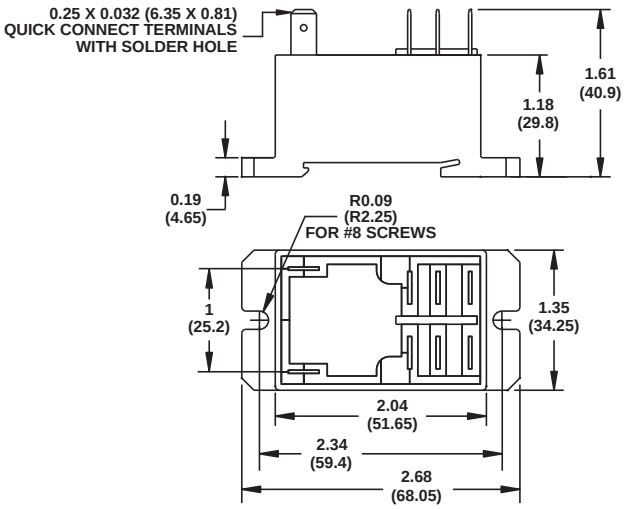
**3TX7130 DPDT**



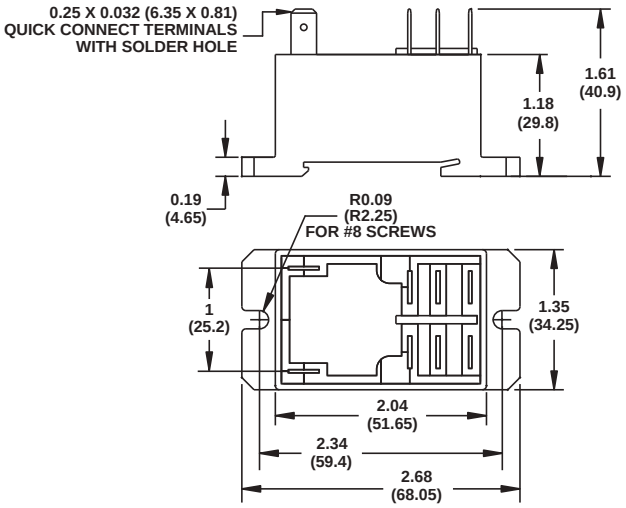
**3TX7130 DPDT with magnetic blowout**



**3TX7131 (DPST-NO)**

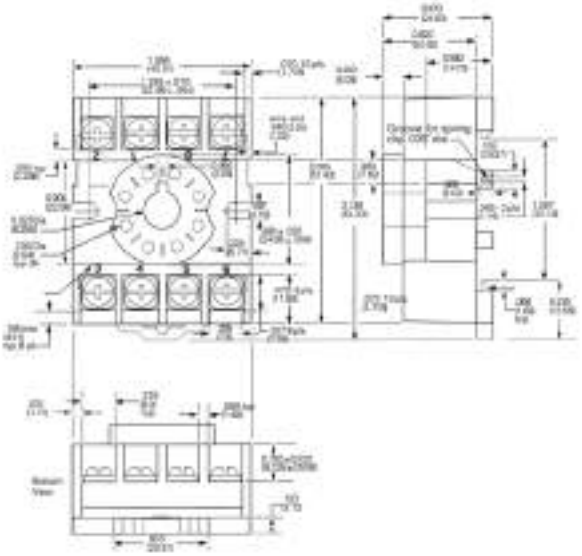



**3TX7131 (DPDT)**

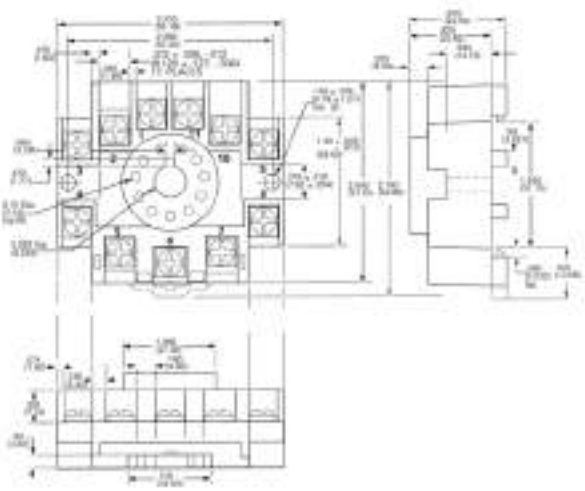


## Dimension drawings

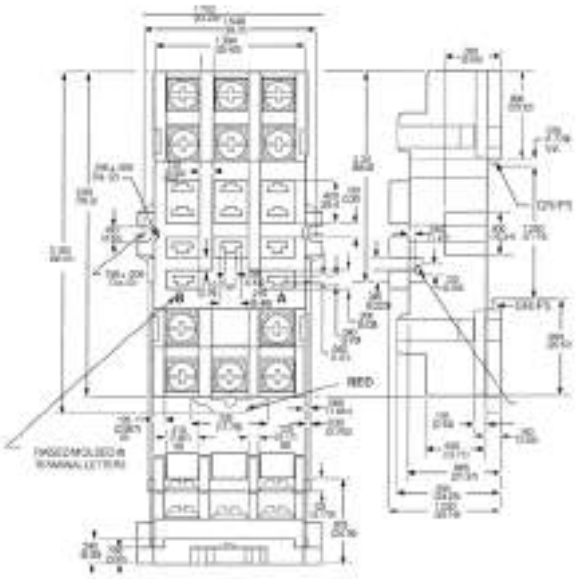
**3TX7144-1E2**



**3TX7144-1E3**

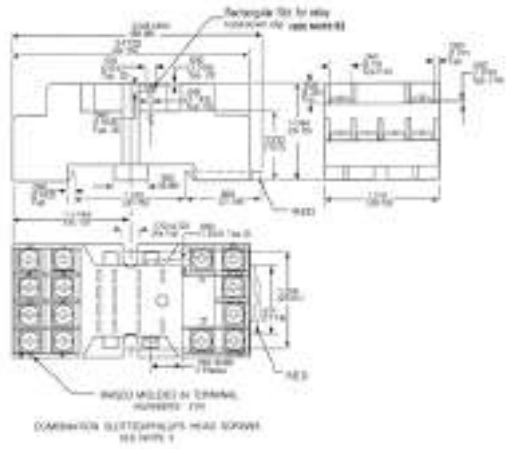


**3TX7144-1E4**

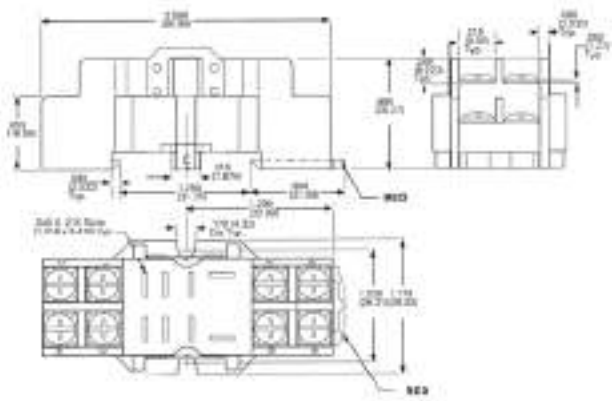


## Dimension drawings

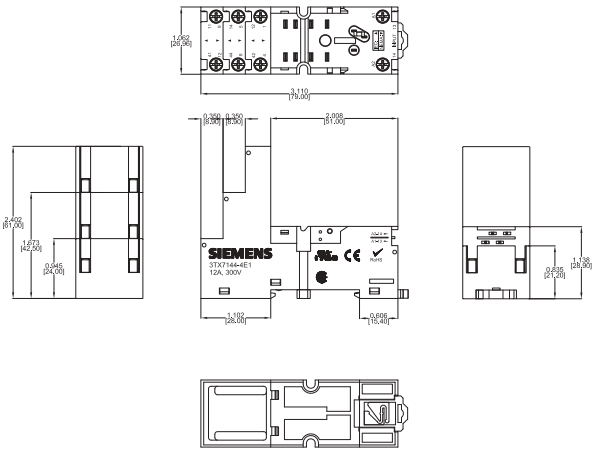
**3TX7144-1E5**



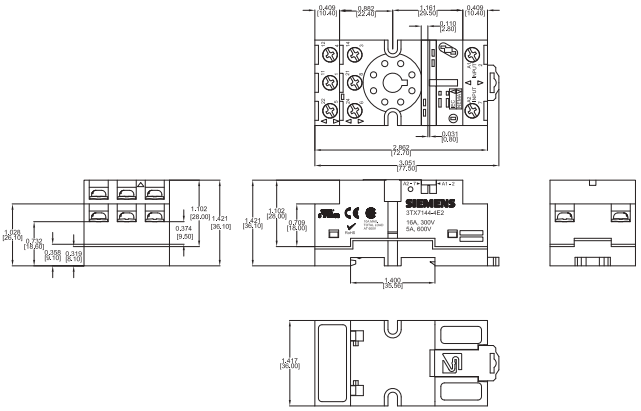
**3TX7144-1E6**



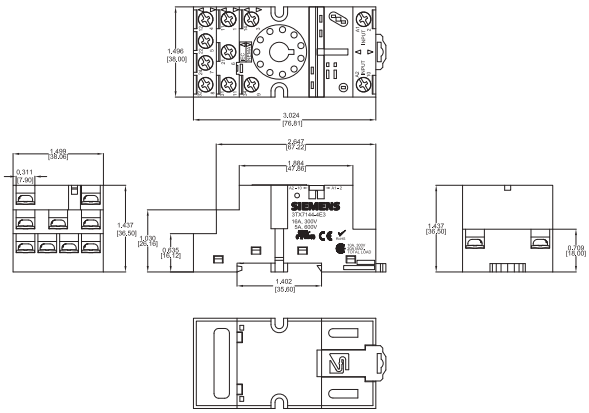
**3TX7144-4E1**




**3TX7144-4E2**

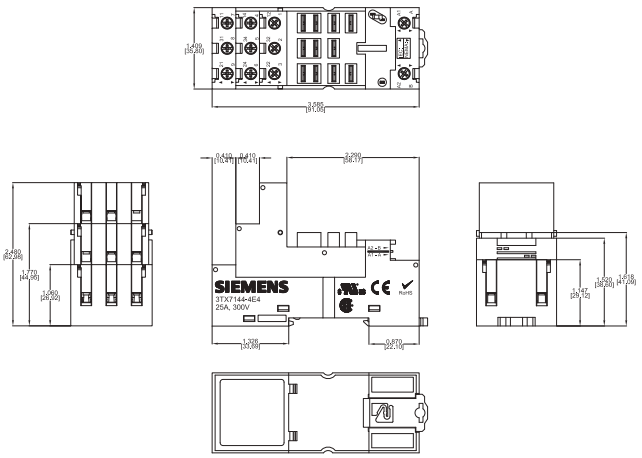



**3TX7144-4E3**

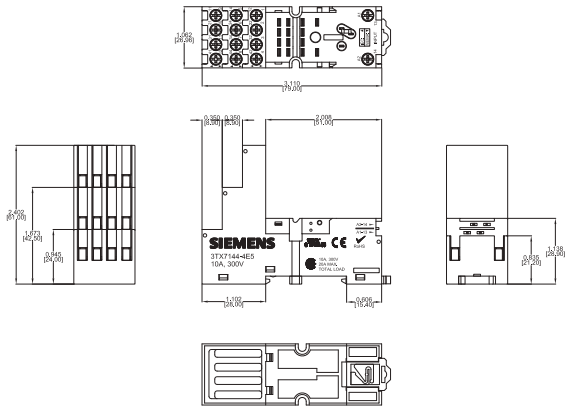


## Dimension drawings

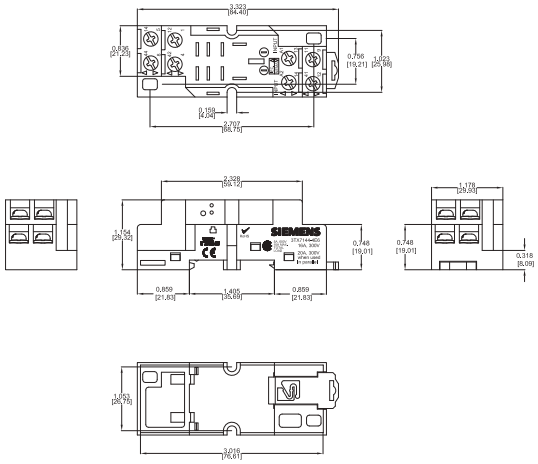
### 3TX7144-4E4



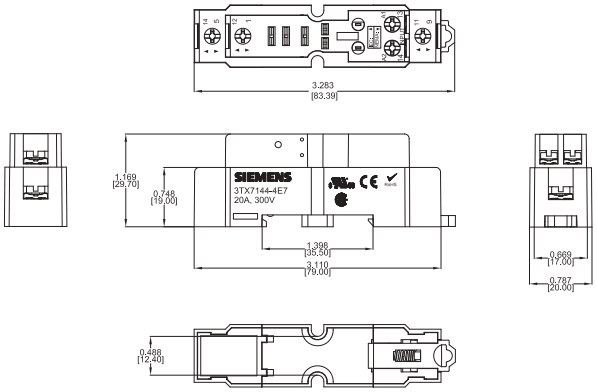

### 3TX7144-4E5



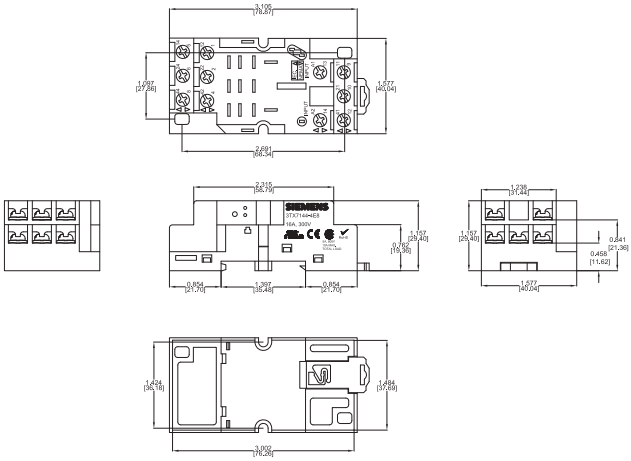

### 3TX7144-4E6



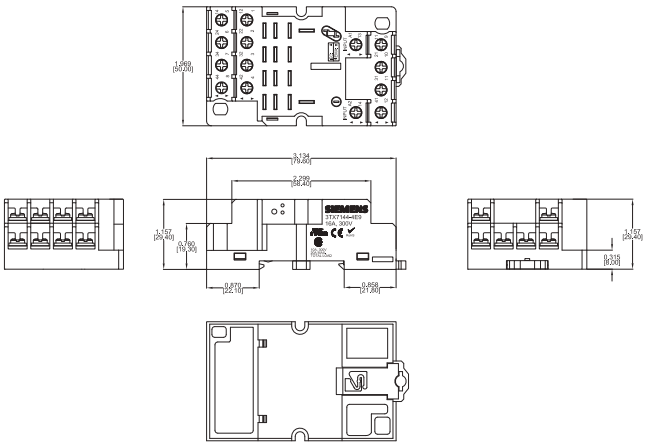

### 3TX7144-4E7




### 3TX7144-4E8




### 3TX7144-4E9



# Coupling Relays

## LZS coupling relays with plug-in relays



### Selection and ordering data

| Version | Rated control supply voltage $U_s$ (at AC: 50/60 Hz) | Contacts, number of CO contacts | Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | | mm | d | | | | |
| **Complete units, 3CO and 4CO contacts, PT series** | | | | | | | | |
| LZS:PT3A5L24 | | | | | **Screw terminals** | | | |
| **Complete units with plug-in base**<br>For snap-on mounting onto DINrail<br>Comprising:<br>• Plug-in relays<br>• Standard plug-in base with screw terminals<br>• LED module (24 V DC version: LED module with freewheel diode)<br>• Fixing/ejection brackets<br>• Labels | | | | | | | | |
| 3 CO contacts | 24 DC | 3 | 28 | 2 | **LZS:PT3A5L24** | | 1 | 5 units |
| | 24 AC | | | 2 | **LZS:PT3A5R24** | | 1 | 5 units |
| | 115 AC | | | 2 | **LZS:PT3A5S15** | | 1 | 5 units |
| | 230 AC | | | 2 | **LZS:PT3A5T30** | | 1 | 5 units |
| 4 CO contacts | 24 DC | 4 | 28 | 2 | **LZS:PT5A5L24** | | 1 | 5 units |
| | 24 AC | | | 2 | **LZS:PT5A5R24** | | 1 | 5 units |
| | 115 AC | | | 2 | **LZS:PT5A5S15** | | 1 | 5 units |
| | 230 AC | | | 2 | **LZS:PT5A5T30** | | 1 | 5 units |
| **Complete units with plug-in base**<br>**With logical separation**<br>For snap-on mounting onto DIN rail<br>Comprising:<br>• Plug-in relays<br>• Plug-in base with logical separation and screw terminals<br>• LED module (24 V DC version: LED module with freewheel diode)<br>• Fixing/ejection brackets<br>• Labels | | | | | | | | |
| 4 CO contacts | 24 DC | 4 | 28 | 2 | **LZS:PT5B5L24** | | 1 | 5 units |
| | 24 AC | | | 2 | **LZS:PT5B5R24** | | 1 | 5 units |
| | 115 AC | | | 2 | **LZS:PT5B5S15** | | 1 | 5 units |
| | 230 AC | | | 2 | **LZS:PT5B5T30** | | 1 | 5 units |
| **Complete units, 2CO and 4CO contacts, PT series** | | | | | | | | |
| LZS:PT5D5L24 | | | | | **Push-in terminals** | | | |
| **Complete units with plug-in base**<br>**With logical separation**<br>For snap-on mounting onto DIN rail<br>Comprising:<br>• Plug-in relays<br>• Plug-in base with logical separation and push-in terminals<br>• LED module (24 V DC version: LED module with freewheel diode)<br>• Fixing/ejection brackets<br>• Labels | | | | | | | | |
| 2 CO contacts | 24 DC | 2 | 28 | 2 | **LZS:PT2D5L24** | | 1 | 5 units |
| | 230 AC | | | 2 | **LZS:PT2D5T30** | | 1 | 5 units |
| 4 CO contacts | 24 DC | 4 | 28 | 2 | **LZS:PT5D5L24** | | 1 | 5 units |
| | 24 AC | | | 2 | **LZS:PT5D5R24** | | 1 | 5 units |
| | 115 AC | | | 2 | **LZS:PT5D5S15** | | 1 | 5 units |
| | 230 AC | | | 2 | **LZS:PT5D5T30** | | 1 | 5 units |

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

# Coupling Relays

## LZS coupling relays with plug-in relays



### Individual modules for customer assembly, PT series

| Version | Rated control supply voltage $U_s$ at 50/60 Hz AC | Contacts, number of CO contacts | Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | | mm | d | | | | |
| **Mini industrial relays** | | | | | | | | |
| • With push-to-test and mechanical flag, without LED[1] | | | | | | | | |
| | 24 DC | 2 | 22.5 | ▶ | **LZX:PT270024** | | 1 | 1 unit |
| | | 3 | | ▶ | **LZX:PT370024** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZX:PT570024** | | 1 | 1 unit |
| | 24 AC | 2 | 22.5 | ▶ | **LZX:PT270524** | | 1 | 1 unit |
| | | 3 | | 2 | **LZX:PT370524** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZX:PT570524** | | 1 | 1 unit |
| | 115 AC | 2 | 22.5 | 5 | **LZX:PT270615** | | 1 | 1 unit |
| | | 3 | | 2 | **LZX:PT370615** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZX:PT570615** | | 1 | 1 unit |
| | 230 AC | 2 | 22.5 | ▶ | **LZX:PT270730** | | 1 | 1 unit |
| | | 3 | | ▶ | **LZX:PT370730** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZX:PT570730** | | 1 | 1 unit |
| • With hard gold-plating | | | | | | | | |
| | 24 DC | 4 | 22.5 | ▶ | **LZX:PT580024** | | 1 | 1 unit |
| | 230 AC | | | ▶ | **LZX:PT580730** | | 1 | 1 unit |
| • Without push-to-test | | | | | | | | |
| | 24 DC | 4 | 22.5 | ▶ | **LZX:PT520024** | | 1 | 1 unit |
| | 230 AC | | | 5 | **LZX:PT520730** | | 1 | 1 unit |
| ***Plug-in bases for PT relays*** | | | | | | | | |
| **Standard plug-in bases** For mounting onto DIN rail | | | | | **Screw terminals** | | | |
| | -- | 2 | 28 | ▶ | **LZS:PT78720** | | 1 | 1 unit |
| | | 3 | | ▶ | **LZS:PT78730** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZS:PT78740** | | 1 | 1 unit |
| **Plug-in bases with logical separation** For mounting onto DIN rail | | | | | | | | |
| | -- | 2 | 28 | ▶ | **LZS:PT78722** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZS:PT78742** | | 1 | 1 unit |
| **Plug-in bases with logical separation** For mounting onto DIN rail | | | | | **Push-in terminals** | | | |
| | -- | 2 | 28 | ▶ | **LZS:PT7872P** | | 1 | 1 unit |
| | | 4 | | ▶ | **LZS:PT7874P** | | 1 | 1 unit |

LZX:PT370024

LZS:PT78740

LZS:PT78722

LZS:PT7874P

[1] The push-to-test is designed to be non-latching. If the push-to-test is pressed further until 90° has been reached, two small lugs break off and the push-to-test can be latched in position.

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

# Coupling Relays

## LZS coupling relays with plug-in relays



| | Version | Rated control supply voltage $U_s$ at 50/60 Hz AC | Contacts, number of CO contacts | Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | V | | mm | d | | | | |
| **Individual modules for customer assembly, PT series** | | | | | | | | | |
| | ***More individual modules*** | | | | | | | | |
| LZS:PTML0024 | **LED modules** | | | | | | | | |
| | • Red | | | | | | | | |
| | - With freewheel diode | 24 DC | -- | 12.5 | ► | **LZS:PTML0024** | | 1 | 1 unit |
| | - Without freewheel diode | 24 AC/DC | | | ► | **LZS:PTML0524** | | 1 | 1 unit |
| | | 110 … 230 AC/DC | | | ► | **LZS:PTML0730** | | 1 | 1 unit |
| LZS:PT17021 | • Green | | | | | | | | |
| | - With freewheel diode | 24 DC | -- | 12.5 | ► | **LZS:PTMG0024** | | 1 | 1 unit |
| | - Without freewheel diode | 24 AC/DC | | | ► | **LZS:PTMG0524** | | 1 | 1 unit |
| | | 110 … 230 AC/DC | | | ► | **LZS:PTMG0730** | | 1 | 1 unit |
| | **Fixing/ejection brackets for PT base with logical separation** | | | | | | | | |
| LZS:PT17024 | Screw terminals and plug-in terminals (push-in) | -- | -- | 26 | ► | **LZS:PT17024** | | 100 | 10 units |
| | **Fixing/ejection brackets for standard plug-in base without logical separation** | | | | | | | | |
| | Screw terminals | -- | -- | 26 | ► | **LZS:PT17040** | | 100 | 10 units |
| LZS:PT17040 | **Labels** | | | | | | | | |
| | | -- | -- | 26 | ► | **LZS:PTMU0524** | | 100 | 10 units |
| | **RC elements** | | | | | | | | |
| LZS:PTMU0730 | | 6 ... 60 AC | -- | 26 | ► | **LZS:PTMU0730** | | 1 | 1 unit |
| | | 110 … 230 AC | | | ► | **LZS:PTMT00A0** | | 1 | 1 unit |
| | **Freewheel diodes with connection to A1** | | | | | | | | |
| | | 6 … 230 DC | -- | 26 | ► | **3TX7004-8BA00** | | 1 | 1 unit |
| | **Connecting cables,** 24-pole | | | | | | | | |
| 3TX7004-8BA00 | Current carrying capacity 12 A, with supply cable, blue | | | | 2 | | | | |
| | | -- | -- | -- | | | | | |
| | **Connecting combs for PT screw base** | | | | | | | | |
| | 6-pole, 10 A current carrying capacity, natural-colored | | | | | | | | |
| | | -- | -- | -- | 5 | **LZS:PT170R6** | | 1 | 10 units |
| | **Connecting brackets for PT push-in base** | | | | | | | | |
| | 2-pole, 10 A current carrying capacity, natural-colored | | | | 5 | **LZS:PT170P1** | | 1 | 10 units |
| | | -- | -- | -- | | | | | |
| **Individual modules for customer assembly, MT series, octal base** | | | | | | | | | |
| | ***Industrial relays, 3CO*** | | | | | | | | |
| LZX:MT326024 | **Industrial relays with push-to-test** | | | | | | | | |
| | Without LED | 24 DC | 3 | 35.5 | 2 | **LZX:MT321024** | | 1 | 1 unit |
| | With LED | | | | ► | **LZX:MT323024** | | 1 | 1 unit |
| | Without LED | 24 AC | 3 | 35.5 | 2 | **LZX:MT326024** | | 1 | 1 unit |
| | With LED | | | | 15 | **LZX:MT328024** | | 1 | 1 unit |
| | Without LED | 115 AC | 3 | 35.5 | 15 | **LZX:MT326115** | | 1 | 1 unit |
| | With LED | | | | 15 | **LZX:MT328115** | | 1 | 1 unit |
| | Without LED | 230 AC | 3 | 35.5 | 2 | **LZX:MT326230** | | 1 | 1 unit |
| | With LED | | | | 2 | **LZX:MT328230** | | 1 | 1 unit |
| LZS:MT78750 | **Plug-in bases** For mounting onto DIN rail | | | | | **Screw terminals** | | | |
| | | -- | -- | 38 | ► | **LZS:MT78750** | | 1 | 1 unit |
| | **Fixing brackets** | | | | | | | | |
| | | -- | -- | 38 | ► | **LZS:MT28800** | | 1 | 1 unit |

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

# Coupling Relays

## LZS coupling relays with plug-in relays



| Version | Rated control supply voltage $U_s$ at 50/60 Hz AC | Contacts, number of CO contacts | Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | | mm | d | | | | |
| **Complete units, 1CO and 2CO, 5 mm pinning, RT series** | | | | | | | | |
| LZS:RT4A4T30 | **Complete units with standard plug-in base**<br>For snap-on mounting onto DIN rail<br>Comprising:<br>• Plug-in relays<br>• Standard plug-in base with screw terminals<br>• LED module (24 V DC version: LED module with freewheel diode)<br>• Fixing/ejection brackets<br>• Labels | | | | **Screw terminals** | | | |
| | 1 CO contact | 24 DC | 1 | 15.5 | 2 | **LZS:RT3A4L24** | 1 | 5 units |
| | | 24 AC | | | 2 | **LZS:RT3A4R24** | 1 | 5 units |
| | | 115 AC | | | 2 | **LZS:RT3A4S15** | 1 | 5 units |
| | | 230 AC | | | 2 | **LZS:RT3A4T30** | 1 | 5 units |
| | 2 CO contacts | 24 DC | 2 | 15.5 | 2 | **LZS:RT4A4L24** | 1 | 5 units |
| | | 24 AC | | | 2 | **LZS:RT4A4R24** | 1 | 5 units |
| | | 115 AC | | | 2 | **LZS:RT4A4S15** | 1 | 5 units |
| | | 230 AC | | | 2 | **LZS:RT4A4T30** | 1 | 5 units |
| LZS:RT4B4T30 | **Complete units with plug-in base**<br>**With logical separation**<br>For snap-on mounting onto DIN rail<br>Comprising:<br>• Plug-in relays<br>• Plug-in base with logical separation and screw terminals<br>• LED module (24 V DC version: LED module with freewheel diode)<br>• Fixing/ejection brackets<br>• Labels | | | | | | | |
| | 1 CO contact | 24 DC | 1 | 15.5 | 2 | **LZS:RT3B4L24** | 1 | 5 units |
| | | 24 AC | | | 2 | **LZS:RT3B4R24** | 1 | 5 units |
| | | 115 AC | | | 2 | **LZS:RT3B4S15** | 1 | 5 units |
| | | 230 AC | | | 2 | **LZS:RT3B4T30** | 1 | 5 units |
| | 2 CO contacts | 24 DC | 2 | 15.5 | 2 | **LZS:RT4B4L24** | 1 | 5 units |
| | | 24 AC | | | 2 | **LZS:RT4B4R24** | 1 | 5 units |
| | | 115 AC | | | 2 | **LZS:RT4B4S15** | 1 | 5 units |
| | | 230 AC | | | 2 | **LZS:RT4B4T30** | 1 | 5 units |
| LZS:RT3D4L24 | **Complete units with plug-in base**<br>**With logical separation**<br>For snap-on mounting onto DIN rail<br>Comprising:<br>• Plug-in relays<br>• Plug-in base with logical separation and push-in terminals<br>• LED module (24 V DC version: LED module with freewheel diode)<br>• Fixing/ejection brackets<br>• Labels | | | | **Push-in terminals** | | | |
| | 1 CO contact | 24 DC | 1 | 15.5 | 2 | **LZS:RT3D4L24** | 1 | 5 units |
| | | 24 AC | | | 2 | **LZS:RT3D4R24** | 1 | 5 units |
| | | 115 AC | | | 2 | **LZS:RT3D4S15** | 1 | 5 units |
| | | 230 AC | | | 2 | **LZS:RT3D4T30** | 1 | 5 units |
| | 2 CO contacts | 24 DC | 2 | 15.5 | 2 | **LZS:RT4D4L24** | 1 | 5 units |
| | | 24 AC | | | 2 | **LZS:RT4D4R24** | 1 | 5 units |
| | | 115 AC | | | 2 | **LZS:RT4D4S15** | 1 | 5 units |
| | | 230 AC | | | 2 | **LZS:RT4D4T30** | 1 | 5 units |

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

# Coupling Relays

## LZS coupling relays with plug-in relays



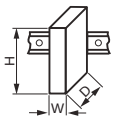
| Version | Rated control supply voltage $U_s$ at 50/60 Hz AC | Contacts, number of CO contacts | Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | V | | mm | d | | | | |
| **Individual modules for customer assembly, RT series** | | | | | | | | |
| ***Print relays, 1CO and 2CO, 5 mm pinning*** | | | | | | | | |
| LZX:RT314024 | | | | | | | | |
| **Print relays** | | | | | | | | |
| With hard gold-plating | | | | | | | | |
| Version with 1 CO contact | | | | | | | | |
| | 24 DC | 1 | 12.7 | ▶ | **LZX:RT315024** | | 1 | 1 unit |
| | 230 AC | | | 15 | **LZX:RT315730** | | 1 | 1 unit |
| LZS:RT78725 | | | | | | | | |
| **Print relays** | | | | | | | | |
| Version with 1 CO contact | | | | | | | | |
| | 24 DC | 1 | 12.7 | ▶ | **LZX:RT314024** | | 1 | 1 unit |
| | 24 AC | | | 15 | **LZX:RT314524** | | 1 | 1 unit |
| | 115 AC | | | 15 | **LZX:RT314615** | | 1 | 1 unit |
| | 230 AC | | | ▶ | **LZX:RT314730** | | 1 | 1 unit |
| Version with 2 CO contacts | | | | | | | | |
| | 12 DC | 2 | 12.7 | 5 | **LZX:RT424012** | | 1 | 1 unit |
| | 24 DC | | | ▶ | **LZX:RT424024** | | 1 | 1 unit |
| | 24 AC | | | ▶ | **LZX:RT424524** | | 1 | 1 unit |
| | 115 AC | | | ▶ | **LZX:RT424615** | | 1 | 1 unit |
| | 230 AC | | | ▶ | **LZX:RT424730** | | 1 | 1 unit |
| LZS:RT78726 | | | | | | | | |
| **Standard plug-in bases** For mounting onto DIN rail | | | | | **Screw terminals** | | | |
| | -- | -- | 15.5 | ▶ | **LZS:RT78725** | | 1 | 1 unit |
| **Plug-in bases with logical separation** For mounting onto DIN rail | | | | | | | | |
| | -- | -- | 15.5 | ▶ | **LZS:RT78726** | | 1 | 1 unit |
| LZS:RT7872P | | | | | | | | |
| **Plug-in bases with logical separation** For mounting onto DIN rail | | | | | **Push-in terminals** | | | |
| | -- | -- | 15.5 | ▶ | **LZS:RT7872P** | | 1 | 1 unit |
| **LED modules** | | | | | | | | |
| • Red | | | | | | | | |
| With freewheel diode | 24 DC | -- | 15.5 | ▶ | **LZS:PTML0024** | | 1 | 1 unit |
| Without freewheel diode | 24 AC/DC | -- | | ▶ | **LZS:PTML0524** | | 1 | 1 unit |
| | 110 ... 230 AC/DC | -- | | ▶ | **LZS:PTML0730** | | 1 | 1 unit |
| • Green | | | | | | | | |
| With freewheel diode | 24 DC | -- | 15.5 | ▶ | **LZS:PTMG0024** | | 1 | 1 unit |
| Without freewheel diode | 24 AC/DC | -- | | ▶ | **LZS:PTMG0524** | | 1 | 1 unit |
| | 110 ... 230 AC/DC | -- | | ▶ | **LZS:PTMG0730** | | 1 | 1 unit |
| LZS:PTML0024 | | | | | | | | |
| **Fixing/ejection brackets** for RT base | | | | | | | | |
| | -- | -- | 15.5 | ▶ | **LZS:RT17016** | | 100 | 10 units |
| LZS:RT17016 | | | | | | | | |
| **Labels** | | | | | | | | |
| | -- | -- | 15.5 | ▶ | **LZS:RT17040** | | 100 | 10 units |
| **RC elements** | | | | | | | | |
| | 6 ... 60 AC | -- | 15.5 | ▶ | **LZS:PTMU0524** | | 1 | 1 unit |
| | 110 ... 230 AC | | | ▶ | **LZS:PTMU0730** | | 1 | 1 unit |
| LZS:RT17040 | | | | | | | | |
| **Freewheel diodes with connection to A1** | | | | | | | | |
| | 6 … 230 DC | -- | 15.5 | ▶ | **LZS:PTMT00A0** | | 1 | 1 unit |
| LZS:PTMU0730 | | | | | | | | |
| **Connecting cables,** 24-pole | | | | | | | | |
| Current carrying capacity 12 A, with supply cable, blue | -- | -- | -- | 2 | **3TX7004-8BA00** | | 1 | 1 unit |
| **Connecting combs for RT screw base** | | | | | | | | |
| 8-pole, 10 A current carrying capacity, natural-colored | -- | -- | -- | ▶ | **LZS:RT170R8** | | 1 | 10 units |
| **Connecting brackets for push-in base** | | | | | | | | |
| 2-pole, 10 A current carrying capacity, natural-colored | -- | -- | -- | 5 | **LZS:RT170P1** | | 100 | 10 units |
| 3TX7004-8BA00 | | | | | | | | |

## Technical specifications

**More information**

Technical specifications, see
https://support.industry.siemens.com/cs/ww/en/ps/16204/td

Manuals, see
https://support.industry.siemens.com/cs/ww/en/ps/16204/man

| Relay type | | | LZX:RT print relay, 8-pin, (12.7 mm) 1 CO / 2 CO | | | | LZX:PT industrial relay, 8-, 11- and 14-pin, (22.5 mm) 2 CO / 3 CO / 4 CO | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **General data** | | | | | | | | | | |
| **Dimensions (W x H x D)** |  | | | | | | | | | |
| • LZS:RT.A4 / LZS:PT.A5 | | mm | 15.5 x 78 x 71 | | | | 28 x 74 x 72 | | | |
| • LZS:RT.B4 / LZS:PT.B5 | | mm | 15.5 x 77 x 71 | | | | 28 x 77 x 79 | | | |
| • LZS:RT.D4 / LZS:PT.D5 | | mm | 15.5 x 98 x 71 | | | | 28 x 98 x 79 | | | |
| **Rated control supply voltage $U_S$** [1] | | V | 24 DC | 24 AC | 115 AC | 230 AC | 24 DC | 24 AC | 115 AC | 230 AC |
| **Rated insulation voltage $U_i$** (Pollution degree 3) | | V | 250 | | | | | | | |
| **Overvoltage category** Acc. to IEC 60664-1 | | | III | | | | | | | |
| **Protective separation** Between coil and contacts Acc. to IEC 60947-1, Appendix N | | | Up to 250 V (with plug-in base LZS:RT78726) No (for complete units with standard base) | | | | No | | | |
| **Degree of protection** | | | | | | | | | | |
| • Relays | | | IP67 | | | | IP50 | | | |
| • Bases | | | IP20 | | | | | | | |
| **Permissible ambient temperature** | | | | | | | | | | |
| • During operation | | °C | -40 ... +70 | | | | | | | |
| • During storage | | °C | -40 ... +80 | | | | | | | |
| **Conductor cross-sections** | | | | | | | | | | |
| Connection type | | | **Screw terminals** | | | | | | | |
| • Solid | | $mm^2$ | 2 x 2.5 | | | | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 2 x 1.5 | | | | | | | |
| • Corresponding opening tool | | | Screwdriver, size 3.0 ... 3.5 mm x 0.5 mm (3RA2908-1A) | | | | | | | |
| Connection type | | | **Push-in terminals** | | | | | | | |
| • Solid | | $mm^2$ | 1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5 | | | | | | | |
| • Finely stranded without end sleeve | | $mm^2$ | 1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5 | | | | | | | |
| • Finely stranded with end sleeve | | $mm^2$ | 1 x (0.75 ... 1.0), 2 x 0.75, 1 x 1.5 | | | | | | | |

[1] AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

# Coupling Relays

## LZS coupling relays with plug-in relays



| Relay type | | LZX:RT print relay, 8-pin, (12.7 mm) 1 CO / 2 CO | | | | LZX:PT industrial relay, 8-, 11- and 14-pin, (22.5 mm) 2 CO / 3 CO / 4 CO | | | |
|---|---|---|---|---|---|---|---|---|---|
| Rated control supply voltage $U_S$[1] | V | 24 DC | 24 AC | 115 AC | 230 AC | 24 DC | 24 AC | 115 AC | 230 AC |
| **Control side** | | | | | | | | | |
| **Operating range factor** | | 0.9 ... 1.4 | 0.9 ... 1.1 | | | 0.9 ... 1.4 | 0.9 ... 1.1 | | |
| **Power consumption at $U_S$** | | | | | | | | | |
| • AC | VA | -- | 0.75 | | | -- | 1 | | |
| • DC | W | 0.4 | -- | | | 0.75 | -- | | |
| **Release voltage** | V | 2.4 | 7.2 | 34.5 | 69 | 3.6 | 7.2 | 34.5 | 69 |
| **Protection circuit** | | Freewheel diode for complete unit | -- | | | Freewheel diode in LED module | -- | | |
| **Load side** | | | | | | | | | |
| **Switching voltage** AC/DC | V | 24 ... 250 | | | | | | | |
| **Rated currents**[2] | | | | | | | | | |
| • Conventional thermal current $I_{th}$ | | | | | | | | | |
| - 1 CO contact | A | 16 | | | | -- | | | |
| - 2 CO contacts | A | 6 | | | | 12 | | | |
| - 3 CO contacts | A | -- | | | | 10 | | | |
| - 4 CO contacts | A | -- | | | | 6 | | | |
| • Rated operational current $I_e$ /AC-15 acc. to utilization categories (IEC 60947-5-1) | A | RT3 (1 CO contact): 6<br>RT4 (2 CO contacts): 2.5 | | | | PT2 (2 CO contacts): 5<br>PT3 (3 CO contacts): 5<br>PT5 (4 CO contacts): 4 (DC coils), 2 (AC coils) | | | |
| • Rated operational current $I_e$ DC-13 with suppressor diode acc. to utilization categories (IEC 60947-5-1) | A | 2 at 24 V,<br>0.27 at 230 V | | | | PT2, PT3, PT5:<br>4 at 24 V,<br>0.5 at 230 V | | | |
| **Short-circuit protection** | | | | | | | | | |
| Short-circuit test with fuse links of operational class gG with short-circuit current $I_k$ = 1 kA acc. to IEC 60947-5-1 | | | | | | | | | |
| • DIAZED, type 5SB | A | 10 | | | | 6 | | | |
| **Min. contact load** (reliability: 1 ppm) | | Standard 17 V, 10 mA; hard gold-plated 17 V/0.1 mA | | | | Standard 17 V, 10 mA; hard gold-plated 20 V/1 mA | | | |
| **Mechanical endurance** | Operating cycles | $30 \times 10^6$ | $10 \times 10^6$ | | | | | | |
| **Electrical endurance** (resistive load at 250 V AC) | Operating cycles | $1 \times 10^5$ | | | | | | | |

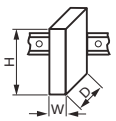
1) AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

2) Capacitive loads can result in micro-welding on the contacts.

# Coupling Relays

## LZS coupling relays with plug-in relays



| Relay type | | | LZS industrial relays: MT, 11-pin, octal base (35.5 mm) 3 CO contacts | | | |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Dimensions (W x H x D)** |  | mm | 36 x 69 x 36 | | | |
| **Rated control supply voltage $U_s$** [1] | | V | 24 DC | 24 AC | 115 AC | 230 AC |
| **Rated insulation voltage $U_i$**<br>(Pollution degree 3) | | V | 250 | | | |
| **Overvoltage category**<br>Acc. to IEC 60664-1 | | | III | | | |
| **Protective separation**<br>Between coil and contacts<br>Acc. to IEC 60947-1, Appendix N | | | No | | | |
| **Degree of protection of relays/bases** | | | | | | |
| • Relays | | | IP50 | | | |
| • Bases | | | IP20 | | | |
| **Permissible ambient temperature** | | | | | | |
| • During operation | | °C | -40 ... +60 | -45 ... +50 | | |
| • During storage | | °C | -45 ... +80 | | | |
| **Conductor cross-sections** | | | | | | |
| Connection type | | | Screw terminals | | | |
| • Solid | | $mm^2$ | 2 x 2.5 | | | |
| • Finely stranded with or without end sleeve | | $mm^2$ | 2 x 1.5 | | | |
| • Corresponding opening tool | | | Screwdriver, size 1 or Pozidriv 1 | | | |
| **Control side** | | | | | | |
| **Operating range** | | V | 18 ... 38 | 19.2 ... 38 | 92 ... 137 | 184 ... 264 |
| **Power consumption** | | | | | | |
| • AC | | VA | -- | 2.3 | | |
| • DC | | W | 1.2 | -- | | |
| **Release voltage** | | V | 2.4 | 9.6 | 46 | 92 |
| **Protection circuit** | | | -- | | | |
| **Load side** | | | | | | |
| **Switching voltage**<br>• AC/DC | | V | 24 ... 250 | | | |
| **Rated currents** [2] | | | | | | |
| • Conventional thermal current $I_{th}$ | | A | 10 | | | |
| • Rated operational current $I_e$ /DC-13<br>acc. to utilization categories (IEC 60947-5-1) | | A | 2 at 24 V,<br>0.27 at 230 V | | | |
| • Rated operational current $I_e$ /AC-15<br>acc. to utilization categories (IEC 60947-5-1) | | A | 5 at 24 V and 230 V | | | |
| **Short-circuit protection**<br>Short-circuit test with fuse links of operational class gG<br>with short-circuit current $I_k$ = 1 kA acc. to IEC 60947-5-1 | | | | | | |
| • DIAZED, type 5SB | | A | 10 | | | |
| **Min. contact load**<br>(reliability: 1 ppm) | | | 12 V DC/10 mA | | | |
| **Mechanical endurance** | | Operating cycles | 20 x $10^6$ | | | |
| **Electrical endurance**<br>(resistive load at 250 V AC) | | Operating cycles | 4 x $10^5$ | | | |

1) AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

2) Capacitive loads can result in micro-welding on the contacts.

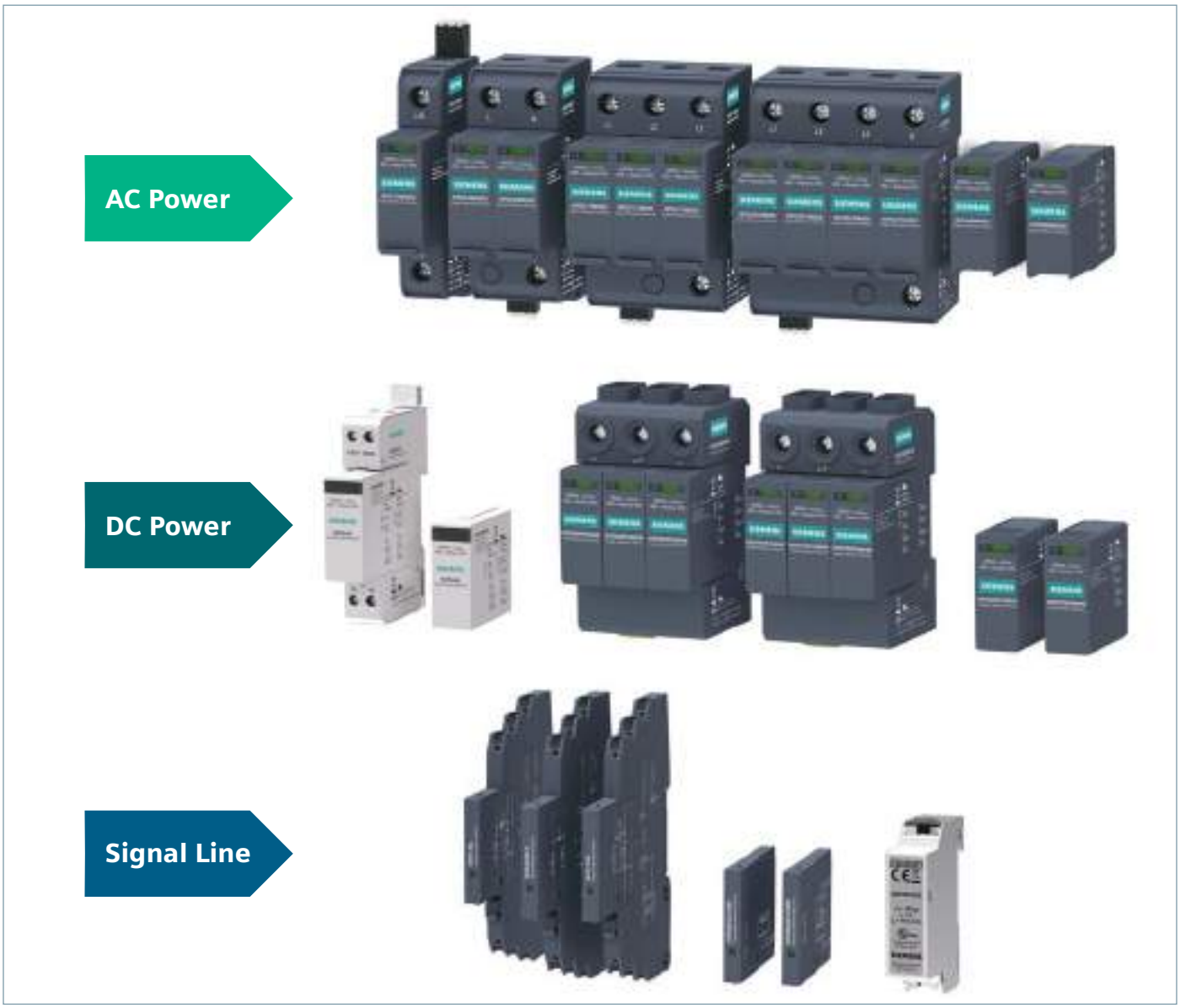
## contents

Industrial Power Protection Portfolio NEW 12/2

AC Power Protection NEW 12/3

DC Power Protection — 24VDC and PV Solar NEW 12/4

Signal Line Protection NEW 12/5




## Industrial Power Protection Portfolio

Electrical safety foundation reports that 34% of unplanned power outages are caused by power surges and unexpected resetting or mis-operation of equipment commonly also caused by power surges.* With a significant growth of interconnected, smart equipment and sophisticated electronic devices, the National Electric Code (NEC) continues to increase requirements in surge protection in different applications to ensure safety of personnel and equipment.

Siemens Industrial Surge Protective Devices (ISPDs) offer a reliable DIN-Rail mountable solution for increasing NEC requirements to safeguard your critical equipment and safety circuits. In today's industrial environment, protection from damaging power surges is essential to maintaining smooth operations and minimizing costly downtime. Our complete portfolio protects your AC power, DC power, and signal line communications, covering all industrial applications.

* Source: esfi.org

## AC Power Protection

### AC Power Protection

- UL 1449 Type 1 Devices
- Replaceable Modules
- Remote Contacts Standard
- Surge Current Rating = 35kA/50kA
- UL SCCR = 100kA – 200kA
- Available Voltages:
  AC - 120V, 240V, 277V, 347V, 480V and 600V

### ISPD AC Power Part Numbers

| Catalog numbers | Description |
|---|---|
| **120V Nominal Voltage** | |
| **ISPD1201050R** | 1P L-N Only I 120V AC |
| **ISPD1202050R** | 2P I 120V Split AC |
| **ISPD1203050R** | 3P I 120V Split + N AC |
| **ISPD1204050R** | 4P I 120/208V Wye AC |
| **240V Nominal Voltage** | |
| **ISPD2401050R** | 1P I 240V AC |
| **ISPD2402050R** | 2P I 240V Split AC |
| **ISPD2403050R** | 3P I 240V Split + N or 240V Delta AC |
| **ISPD2404050R** | 4P I 240V AC |
| **277V Nominal Voltage** | |
| **ISPD2771050R** | 1P I 277V AC |
| **ISPD2772050R** | 2P I 277V AC |
| **ISPD2773050R** | 3P I 480/277V Wye AC |
| **ISPD2774050R** | 4P I 480/277V Wye + N AC |
| **347V Nominal Voltage** | |
| **ISPD3471050R** | 1P I 347V AC |
| **ISPD3472050R** | 2P I 347V AC |
| **ISPD3473050R** | 3P I 600/347V Wye AC |
| **ISPD3474050R** | 4P I 600/347V Wye + N AC |
| **480V Nominal Voltage** | |
| **ISPD4801050R** | 1P I 480V AC |
| **ISPD4802050R** | 2P I 480V AC |
| **ISPD4803050R** | 3P I 480V Delta AC |
| **ISPD4804050R** | 4P I 480V AC |
| **600V Nominal Voltage** | |
| **ISPD6001035R** | 1P I 600V AC |
| **ISPD6002035R** | 2P I 600V AC |
| **ISPD6003035R** | 3P I 600V Delta AC |

### Replacement Modules

| | |
|---|---|
| **ISPD120M050** | 120V AC Replacement Module |
| **ISPD240M050** | 240V AC Replacement Module |
| **ISPD277M050** | 277V AC Replacement Module |
| **ISPD347M050** | 400V AC Replacement Module |
| **ISPD480M050** | 480V AC Replacement Module |
| **ISPD600M050** | 600V AC Replacement Module |

☐ Most common voltage configurations

**ISPD 1P 120V L-N AC only**

**ISPD 2P 120/240V Split-Phase AC**

**ISPD 3P 480 277V WYE AC**

**ISPD 4P 600 347V WYE + N AC**

### Catalog Logic

Catalog # ISPD □□□□□□□ R

| Series | Nominal Voltage | Number of Poles | Surge Current Rating | |
|---|---|---|---|---|
| ISPD | **120** = 120V<br>**240** = 240V<br>**277** = 277V<br>**347** = 347V<br>**480** = 480V<br>**600** = 600V | **1** = 1 pole<br>**2** = 2 pole<br>**3** = 3 pole<br>**4** = 4 pole | **050** = 50kA<br>**035** = 35kA | **R** = Remote Contacts (standard) |

## DC Power Protection

### 24V DC Protection

- UL 1449 Device
- Replaceable Module
- Green/Red LED Status

### PV Solar Protection

- UL 1449 Type 1 Devices
- Replaceable Modules
- Remote Contacts Standard
- 1000VDC & 1500VDC

### ISPD DC Power Part Numbers

| Full Unit Catalog numbers | Replacement modules Catalog numbers | Description |
|---|---|---|
| **ISPD1000PV040R** | **ISPD500PVM040** | Higher Voltage PV Full unit / Replacement module |
| **ISPD1500PV040R** | **ISPD750PVM040** | Higher Voltage PV Full unit / Replacement module |
| **ISPD24DC** | **ISPD24DCM** | 24V DC Power Din Rail |

**ISPD 1500V PV**

**24V DC Power Din Rail**

## Signal Line Protection

### ISPD Signal Line Protection

- UL 497B 4th Edition
- Available for 5V, 12V, 15V, 24V Applications
- Protects:
  - 4-20mA Data Signals
  - Paired Loop
  - FieldBus Communications
- Replaceable Modules
- Optional LED Status Indication Receiver/Transmitter
- Cat 6 POE

**ISPD Signal Line Protection**

### ISPD Signal Line Part Numbers

| Catalog numbers | Catalog numbers for Replacement modules | Description |
|---|---|---|
| **ISPD12SL** | **ISPD12SLM** | For Signal Line Communications – 12V |
| **ISPD12SLLF** | **ISPD12SLLFM** | For Signal Line Communications – 12V Low Frequency |
| **ISPD24SL** | **ISPD24SLM** | For Signal Line Communications – 24V |
| **ISPD24SLLF** | **ISPD24SLLFM** | For Signal Line Communications – 24V Low Frequency |
| **ISPD24SP** | **ISPD24SPM** | For Single Pair Communications – 24V |
| **ISPD24SPLF** | **ISPD24SPLFM** | For Single Pair Communications – 24V Low Frequency |
| **ISPDPOE** | — | For LAN Cat 6 Networks |
| **ISPD05SB** | **ISPD05SBM** | For Industrial Fieldbus Systems – 5V |
| **ISPD05SBLF** | **ISPD05SBLFM** | For Industrial Fieldbus Systems – 5V Low Frequency |
| **ISPD12SB** | **ISPD12SBM** | For Industrial Fieldbus Systems – 12V |
| **ISPD12SBLF** | **ISPD12SBLFM** | For Industrial Fieldbus Systems – 12V Low Frequency |
| **ISPDBASECOMT** | — | Signal Line Base Transmitter |
| **ISPDBASECOMR** | — | Signal Line Base Receiver |

**Cat 6 Line Protection**

## Notes

3SE5 position switches with plastic and metal enclosures

3SE5 safety switches with head for separate actuator

3SE5 safety hinge switches

3SE5 mechanical position switch, roller plunger

## contents

**Introduction** 13/4 – 13/6

**SIRIUS 3SE5 mechanical position switches**

General data 13/7 – 13/13

***3SE5, plastic enclosures***

– Enclosure width 31 mm according to EN 50047 13/14 – 13/19
– Enclosure width 40 mm according to EN 50041 13/20 – 13/23
– Enclosure width 50 mm 3SE5, metal enclosures 13/24 – 13/27

***3SE5, metal enclosures***

– Enclosure width 31 mm according to EN 50047 13/28 – 13/31
– Enclosure width 40 mm according to EN 50041 13/32 – 13/35
– Enclosure width 56 mm 13/36 – 13/39
– Enclosure width 56 mm, XL 13/40 – 13/42
– Compact design 13/43 – 13/44

***3SE5, open-type design***

– Enclosure width 30 mm 13/45

Accessories and spare parts 13/46 – 13/48

**SIRIUS 3SE5, 3SE2 mechanical safety switches**

With separate actuator
General data 13/49 – 13/50
3SE5, plastic enclosures 13/51 – 13/53
3SE5, metal enclosures 13/54 – 13/55
Accessories 13/56
3SE2, plastic enclosures 13/57
With tumbler
General data 13/58 – 13/60
3SE5, plastic enclosures, locking force greater than 1 200 N 13/61 – 13/62
3SE5, metal enclosures, locking force greater than 2 000 N 13/63
Accessories 13/64 – 13/65

**SIRIUS 3SE5, 3SE2 mechanical safety hinge switches**

General data 13/66
3SE5, plastic enclosures 13/67
3SE5, metal enclosures 13/68
3SE2, plastic enclosures
– with integrated hinge 13/69 – 13/70

**SIRIUS 3SE5 mechanical position switches for ambient temperatures down to -40 °C**

***Shock and vibration test***

SIRIUS 3SE5 mechanical position switches
– 3SE5, plastic enclosures 13/71
SIRIUS 3SE5 mechanical safety switches with tumbler
– 3SE5, plastic enclosures 13/72
SIRIUS 3SE5 mechanical safety hinge switches
– 3SE5, plastic enclosures 13/73

***Shock and vibration test according to railway standard***

SIRIUS 3SE5 mechanical position switches
– 3SE5, plastic enclosures 13/74 – 13/77
– 3SE5, metal enclosures 13/78 – 13/82
SIRIUS 3SE5 mechanical safety switches with separate actuator
– 3SE5, plastic enclosures 13/83
SIRIUS 3SE5 mechanical safety switches with tumbler
– 3SE5, plastic enclosures 13/84

## contents (cont.)


**SIRIUS 3SF1 mechanical safety switches for AS-Interface**

General data 13/85 – 13/86
3SF1, plastic enclosures 13/87 – 13/91
12/87 3SF1, metal enclosures
With separate actuator
General data 13/92 – 13/93
3SF1, plastic enclosures 13/94
3SF1, metal enclosures 13/95
Accessories 13/96
With tumbler
General data 13/97
3SF1, plastic enclosures with locking force greater than 1 200 N 13/98
3SF1, metal enclosures with locking force greater than 2 000 N 13/99
Safety hinge switches
3SF1, plastic enclosures 13/100
3SF1, metal enclosures 13/101

**SIRIUS 3SE6 non-contact safety switches**

Magnet
3SE66, 3SE67 magnetically operated switches 13/102 – 13/107
RFID
3SE63 RFID safety switches 13/108 – 13/111

**3SE03 North American (NEMA) Limit Switches**

**Plug-in and NEMA 6P Submersible**

Overview 13/114
Technical specifications, modular plug-in and
NEMA Type 6P submersible 13/115
Ordering and selection data:
Modular, plug-in metal housing 13/116
NEMA type 6P submersible, prewired cable 13/117
NEMA type 6P submersible, prewired receptacle 13/118
Modular, Plug-in and NEMA 6P sumbersible as components 13/119
Levers for plug-in and NEMA type 6P submersible 13/120 - 13/121
Wiring Diagrams 13/122
Dimension Diagrams 13/123 - 13/125

**Metal Enclosure**

Ordering and selection data 13/126 - 13/127
Specifications 13/126 - 13/127
Technical Data 13/127
Dimension drawings 13/126 - 13/127

**3SF1 mechanical safety switches modular system**

**3SF1 safety switches with head for separate actuator**

**3SE03 heavy duty limit switches modular plug-in**

**3SE03 factory sealed**

3SE7 metal enclosures

3SK2 basic units

3RK3 modular safety system

## contents (cont.)


**3SE Mechanical Safety**

**3SE7 Cable-operated Switches**

Overview, technical data and travel diagrams 13/128
Selection and ordering data 13/129 - 13/131

**3SB3 Two-hand Control.**

3SB3, selection and ordering data 13/132

**Safety relays**

**SIRIUS 3SK safety relays**

General data 13/133 – 13/139
Basic units
- SIRIUS 3SK1 Standard basic units 13/140
- SIRIUS 3SK1 Advanced basic units 13/141
- SIRIUS 3SK2 basic units 13/142

Expansion units
- Output expansions 13/143
- Input expansions 13/144

Accessories 13/145 – 13/147

**SIRIUS 3TK28 safety relays**

With special functions 13/148 – 13/149
Accessories 13/150

**SIRIUS 3RK3 Modular Safety System**

General data 13/151 – 13/158
3RK31 central units 13/159
3RK32, 3RK33 expansion modules 13/160
3RK35 interface modules 13/160
Accessories 13/161

**SIRIUS 3RK and 3SK Safety Software**

SIRIUS Safety ES 13/162 – 13/164

## Introduction

### Overview

**3SE523., 3SE521., 3SF12.4**

**3SE524., 3SF1244**

**3SE513., 3SE511., 3SF1114**

**3SE512., 3SF1124**

**3SE516.**

**3SE5413, 3SE5423**

**3SE5250**

| | Position switches, standard | | | | | Compact design | Open-type |
|---|---|---|---|---|---|---|---|
| **Enclosure** | | | | | | | |
| Plastic | ✓ | ✓ | ✓ | -- | -- | -- | ✓ |
| Metal | ✓ | -- | ✓ | ✓ | ✓ | ✓ | -- |
| Dimensions (W x H x D) in mm | 31 × 68 × 33 | 50 × 53 × 33 | 40 × 78 × 38 | 56 × 78 × 38 | 56 × 100 × 38 | 30 × 50 × 16<br>40 × 50 × 16 | 30 × 48.5 × 20 |
| Degree of protection | IP65, IP66/IP67 | IP66/IP67 | IP66/IP67 | IP66/IP67 | IP66/IP67 | IP66/IP67 | IP10 |
| **Standards** | | | | | | | |
| IEC 60947-5-1 | Mounting and operating points acc. to EN 50047 | Operating points acc. to EN 50047 | Mounting and operating points acc. to EN 50041 | Operating points acc. to EN 50041 | Operating points acc. to EN 50041 | -- | Mounting and operating points acc. to EN 50047 |
| **Approvals** | CE, TÜV, UL, CSA, CCC | | CE, TÜV, UL, CSA, CCC | | | CE, UL, CSA, CCC | CE, TÜV, UL, CSA, CCC |
| **Contact blocks** | | | | | | | |
| 2 slow-action contacts | 1 NO + 1 NC; 2 NC | | 1 NO + 1 NC; 2 NC | | 2 × (1 NO + 1 NC) | -- | 1 NO + 1 NC |
| 2 snap-action contacts | 1 NO + 1 NC | | 1 NO + 1 NC | | 2 × (1 NO + 1 NC) | 1 NO + 1 NC | 1 NO + 1 NC |
| • Short stroke | 1 NO + 1 NC | | ✓ | | -- | -- | ✓ |
| • With 2 × 2 mm contact gap | 1 NO + 1 NC | | ✓ | | -- | -- | ✓ |
| 3 slow-action contacts | 1 NO + 2 NC; 2 NO + 1 NC | | 1 NO + 2 NC; 2 NO + 1 NC | | -- | -- | 1 NO + 2 NC; 2 NO + 1 NC |
| • With make-before-break | 1 NO + 2 NC | | 1 NO + 2 NC | | 2 × (1 NO + 2 NC) | -- | 1 NO + 2 NC |
| 3 snap-action contacts | 1 NO + 2 NC | | 1 NO + 2 NC | | -- | -- | 1 NO + 2 NC |
| **Special features** | | | | | | | |
| LED status display | ✓ | | ✓ | | -- | -- | -- |
| Increased corrosion protection | ✓ | | ✓ | | ✓ | -- | -- |
| ASIsafe integrated | ✓ | | ✓ | | -- | -- | -- |
| **Electrical specifications** | | | | | | | |
| Insulation voltage $U_i$ | 400 V | | 400 V | | | 400 V | 400 V |
| Conventional thermal current $I_{th}$ | 6 A/10 A (3-/2-pole) | | 6 A/10 A (3-/2-pole) | | | 6 A | 6 A |
| **Connections** | | | | | | | |
| Cable entry | 1 × M20 × 1.5 | 2 × M20 × 1.5 | 1 × M20 × 1.5 | 3 × M20 × 1.5 | 3 × M20 × 1.5 | -- | -- |
| M12 plug, 4-, 5- or 8-pole | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | -- |
| Plug, 6-pole + PE | -- | -- | ✓ | ✓ | -- | -- | -- |
| Molded cables | -- | -- | -- | -- | -- | ✓ | -- |
| **Actuators** | | | | | | | |
| Rounded plungers and roller plungers | ✓ | | ✓ | | ✓ | -- | -- |
| Roller levers and angular roller levers | ✓ | | ✓ | | ✓ | -- | -- |
| Spring rod | ✓ | | ✓ | | -- | -- | -- |
| Twist levers and rod actuators | ✓ | | ✓ | | ✓ | -- | -- |
| Fork lever | -- | | ✓ | | -- | -- | -- |
| Hinge switches | -- | | -- | | -- | -- | -- |
| Plungers, twist levers | -- | | -- | | ✓ | ✓ | ✓ |
| **Page** | | | | | | | |
| Complete units | 13/14, 13/28 | 13/24 | 13/20, 13/32 | 13/36 | 13/40 | 13/43 | 13/45 |
| Modular system | 13/18, 13/30 | 13/26 | 13/22, 13/34 | 13/38 | 13/41 | — | — |
| Ambient temperature –40 °C | 13/71, 13/74 | 13/74 | 13/77 | 13/80 | 13/81 | — | — |
| ASIsafe | 13/87, 13/89 | 13/87 | 13/91 | 13/91 | — | — | — |

✓ Available -- Not available

## Introduction

**3SE5232, 3SE5212, 3SF12.4**

**3SE5132, 3SE5112, 3SF11.4**

**3SE5232, 3SE5242, 3SF12.4**

**3SE5112, 3SE5122, 3SF11.4**

**3SE5322, 3SE5312, 3SF13.4**

| | Safety hinge switches | | Safety switches with separate actuator | | Safety switches with tumbler |
|---|---|---|---|---|---|
| **Enclosure** | | | | | |
| Plastic | ✓ | ✓ | ✓ | ✓ | ✓ |
| Metal | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dimensions (W x H x D) in mm | 31 × 68 × 33 | 40 × 78 × 38 | 31 × 68 × 33, 50 × 53 × 33 | 40 × 78 × 38, 56 × 78 × 38 | 54 × 185 × 44 |
| Degree of protection | IP65, IP66/IP67 | IP66/IP67 | IP65, IP66/IP67 | IP66/IP67 | IP66/IP67, IP69K |
| **Standards** IEC 60947-5-1 | Mounting and operating points acc. to EN 50047 | Mounting and operating points acc. to EN 50041 | Mounting acc. to EN 50047 | Mounting acc. to EN 50041 | EN ISO 14119 |
| **Approvals** | CE, TÜV, UL, CSA, CCC | | CE, TÜV, UL, CSA, CCC | | CE, TÜV, UL, CSA, CCC |
| **Contact blocks/outputs** | | | | | |
| 2 slow-action contacts | -- | | 1 NO + 1 NC; 2 NC | | -- |
| 2 snap-action contacts | 1 NO + 1 NC | | -- | | -- |
| • Short stroke | -- | | -- | | -- |
| • With 2 × 2 mm contact gap | -- | | -- | | -- |
| 3 slow-action contacts | -- | | 1 NO + 2 NC | | 2 × (1 NO + 2 NC) |
| • With make-before-break | -- | | -- | | -- |
| 3 snap-action contacts | 1 NO + 2 NC | | -- | | -- |
| Electronic safety outputs | -- | | -- | | -- |
| **Special features** | | | | | |
| LED status display | ✓ | | ✓ | | ✓ |
| Increased corrosion protection | ✓ | | ✓ | | ✓ |
| ASIsafe integrated | ✓ | | ✓ | | ✓ |
| **Electrical specifications** | | | | | |
| Insulation voltage $U_i$ | 400 V | | 400 V | | 400 V |
| Conventional thermal current $I_{th}$ | 6 A/10 A (3-/2-pole) | | 6 A | | 6 A |
| **Connections** | | | | | |
| Cable entry | 1 × M20 × 1.5 | 1 × M20 × 1.5 | 1 × M20 × 1.5, 2 × M20 × 1.5 | 1 × M20 × 1.5, 3 × M20 × 1.5 | 3 × M20 × 1.5 |
| M12 plug, 4-, 5- or 8-pole | ✓ | | ✓ | ✓ | ✓ |
| Molded cables | -- | | -- | -- | -- |
| AS-Interface | -- | | ✓ | ✓ | ✓ |
| **Actuators** | | | | | |
| Plungers, twist levers | -- | | -- | -- | -- |
| Separate actuators | -- | | ✓ | ✓ | ✓ |
| Hinge switches | ✓ | | -- | -- | -- |
| **Page** | | | | | |
| Complete units | 13/67 | 13/67 | 13/51, 13/54 | 13/52, 13/55 | 13/61, 13/63 |
| Modular system | — | — | — | — | — |
| ASIsafe | 13/73 | — | 13/83 | — | 13/84 |
| ATEX | 13/100 | 13/101 | 13/94 | 13/95 | 13/98, 13/99 |

✓ Available
-- Not available

## Introduction

**3SE66, 3SE67**

**3SE66, 3SE67**

**3SE63**

| | Safety switches, solenoid | Safety switches, solenoid supplementary range in new design[1)] | RFID safety switches[1)] |
|---|---|---|---|
| **Enclosure** | | | |
| Plastic | ✓ | ✓ | ✓ |
| Metal | -- | -- | -- |
| Dimensions (W x H x D) in mm | M30; 25 x 88; 25 x 33 | 25 x 88; 26 x 36 | 25 × 91 × 22 |
| Degree of protection | IP67 | IP67 | IP69K |
| **Standards** | IEC 60947-5-3 Category 4 acc. to ISO 13849-1, PL e acc. to ISO 13849-1, SIL 3 acc. to IEC 61508 | IEC 60947-5-3 | Category 4 acc. to ISO 13849-1, PL e acc. to ISO 13849-1, SIL 3 acc. to IEC 61508 |
| **Approvals** | CE, TÜV, UL, CSA, CCC | CE, TÜV, UL, CSA | CE, TÜV, UL, CSA |
| **Contact blocks/outputs** | | | |
| Reed contacts | 1 NO + 1 NC<br>2 NC<br>1 NO + 1 NC (+ 1 NC signaling contact) | 1 NO + 1 NC (+ 1 NC signaling contact)<br>2 NC<br>2 NC (+ 1 NC signaling contact) | -- |
| **Special features** | | | |
| LED status display | -- | ✓ | ✓ |
| Increased corrosion protection | -- | -- | ✓ |
| ASIsafe integrated | -- | -- | -- |
| **Electrical specifications** | | | |
| Insulation voltage $U_i$ | 100 V AC/DC<br>24 V DC | 75 V DC<br>50 V AC | -- |
| Conventional thermal current $I_{th}$ | 250 mA<br>400 mA | 250 mA | -- |
| **Connections** | | | |
| M8 plug, 4-pole | ✓ | ✓ | -- |
| 8 mm ∅, latching connection, plug, 6-pole | -- | ✓ | -- |
| M12 plug, 4-pole | ✓ | -- | ✓ |
| Molded cables | ✓ | ✓ | -- |
| AS-Interface | -- | -- | -- |
| **Actuators** | | | |
| RFID | -- | -- | ✓ |
| Switching magnet | ✓ | ✓ | -- |
| **Page** | 13/102 | 13/102 | 13/108 |

✓ Available
-- Not available
1) CCC not required for voltages < 36 V.

## Overview

**More information**

Homepage, see www.usa.siemens.com/limit-switches
Industry Mall, see www.siemens.com/product?3SE
Configurator, see www.siemens.com/sirius/configurators
System Manual, see https://support.industry.siemens.com/cs/ww/en/view/43920150
Conversion tool, see www.siemens.com/sirius/conversion-tool

The innovative SIRIUS 3SE5 position switches are modern in design, compact, modular and simple to connect. They save time and increase flexibility during installation of a whole range of switch variants. In principle it is possible to combine any enclosure with any operating mechanism, paying due consideration to the EN 50041 and EN 50047 standards where necessary.

### *Complete units*

Popular versions of the position switches in standard enclosures are available as complete units.

3SE5 position switches with plastic and metal enclosures

### *Modular system*

The 3SE5 series is the modular system comprising different sizes of the basic switch and an actuator which must be ordered separately. Thanks to the modular design of the switch the user can select the right solution for his application from numerous versions and install it himself in a very short time.

Simple plug-in mounting enables fast replacement of the actuator heads.

Examples of selection options in the modular system

### *Design*

All enclosure variants have an integrated chlorinated rubber diaphragm for high functional safety in cold and aggressive environments.

Enclosure sizes

The 3SE5 switches are available in five different enclosure sizes with 2 or 3 contacts and with the XL enclosure:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries
- XL metal enclosures with 4 to 6 contacts, 56 mm wide, IP66/IP67, 3 cable entries

Enclosure versions

Various basic switches can be selected for the enclosures of the 3SE5 series:

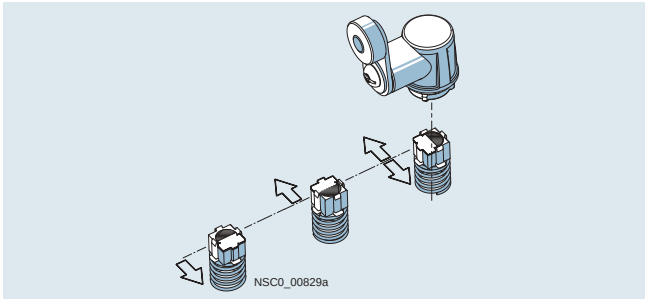
- With contact blocks with two or three contacts (screw terminals) designed as slow-action or snap-action contacts; the slow-action contacts also with make-before-break
- Optional LED status display
- With mounted 4- or 5-pole M12 device plug (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole device plug + PE on the metal enclosures
- Versions with increased corrosion protection
- Versions for operating temperatures down to -40 °C
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 13/85).

Actuator variants

All operating mechanisms can be rotated around the axis in increments of 22.5°. The following actuator variants are available:

- Plain, rounded and roller plungers
- Roller levers and angular roller levers
- Spring rod
- Twist levers and rod actuators with twist actuator
- Fork levers with twist actuator

The actuator rollers are available with various materials and diameters.




Twist actuator for twist levers and rod levers, with setting of switching direction to right, left or right/left (standard for all twist actuators except fork levers)

## General data



### *Cover design*

The mechanical position switches have a turquoise cover and the mechanical safety switches have a yellow cover.

On request the switches can be delivered ex works with a yellow cover. The cover has no effect on the mode of operation. Both versions can be used in safety applications, (see also page 13/16).

### *Mounting*

Easy plug-in method for fast replacement of the actuator heads

Open the cover (1)
Actuate the locking lever (2)
Replace the head (turnable by 16 x 22.5°) (3)
Lock and close the cover (4)

### *Diverse contact types*

Exchangeable two- and three-pole contact blocks for all enclosure sizes

The three-pole contact block with snap-action or slow-action contacts is regularly available for all enclosure forms. The same installation space is required as for a two-pole block. The version with 1 NO + 2 NC offers, for example, more safety through redundant shutdowns (2 NC contacts) with simultaneous signaling (NO contact). The three-pole blocks are also available with make-before-break and with 2 NO + 1 NC.

### *Contact reliability*

The contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

### *Positive opening* ➔

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

### *Quick-connect technology*

For plastic enclosure with a width of 31 mm

These position switches can be wired quickly and easily as an added customer benefit. The connecting cable is first connected to the terminals of the contact block and then guided through a slit into the cable gland opening. The time saved through this new connection method is approx. 20 to 25%.

A cable gland with seal must be used with the quick-connect method.

### *Optional LED indicators*

LED indicators are available for all enclosure sizes except for XL. The enclosures are supplied with an LED signaling indicator (1 × green + 1 × yellow). This is the first time that optical signaling equipment is also available for small standard enclosures according to EN 50047. The LEDs are implemented in 24 V DC and 230 V AC.

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIRIUS position and safety switches | | **3SE** | ☐ | ☐ | ☐ | ☐ | – | ☐ | ☐ | ☐ | ☐ | ☐ | |
| Series | | | **5** | | | | | | | | | | |
| Standard | EN 50041<br>EN 50047<br>with tumbler | | | **1**<br>**2**<br>**3** | | | | | | | | | |
| Enclosure material and width | e.g. 1 = metal, narrow | | | | ☐ | | | | | | | | |
| Connection | Cable entry,<br>device plug | | | | | **2**<br>**4/5** | | | | | | | |
| LEDs | None<br>24 V DC<br>115 V AC<br>230 V AC | | | | | | | **0**<br>**1**<br>**2**<br>**3** | | | | | |
| Version of contacts | e.g. C = snap-action 1 NO + 1 NC | | | | | | | | ☐ | | | | |
| Version of operating mechanism | e.g. C02 = rounded plunger | | | | | | | | | ☐ | ☐ | ☐ | |
| Example | | **3SE** | **5** | **1** | **1** | **2** | **–** | **0** | **C** | **C** | **0** | **2** | |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

The 3SE5 position switches differ from the previous series through the following new characteristics:

- The modular design of the product range allows a number of versions with a smaller number of bearing types for enclosures and operating mechanisms.
- All actuators can be turned around the axis in increments of 22.5° (see picture, page 13/8).
- Rounded and roller plungers according to EN 50041 with 3 mm overtravel (total travel 9 mm) for greater tolerance when switching.
- All enclosure sizes – now also including the small enclosure 31 mm wide – are optionally available with an LED signaling indicator (see picture, page 13/8).
- All enclosure variants have an integrated chlorinated rubber diaphragm for high functional safety in cold and aggressive environments.
- All contact blocks are replaceable (see page 13/47).
- The three-pole contact blocks are available for all enclosure sizes (see picture, page 13/8).
- Elements with 1 NO + 2 NC slow-action contacts with make-before-break and 2 NO + 1 NC.
- The short-stroke contact block 1 NO + 1 NC improves the precision of the switching operation through a reduced actuation path.
- The contact block with 1 NO + 1 NC snap-action contacts with 2 x 2 mm contact opening is suitable for simultaneous shutdown and signaling, particularly in the elevator industry.
- XL metal enclosures for accommodating two 2- or 3-pole contact blocks.
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save approx. 20 to 25% of the time when connecting (see picture, page 13/8).

## Application

With the standard position switches, mechanical positions of moving machine parts are converted into electrical signals. Through their modular and uniform design and large number of variants, the devices can comply with practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the contact blocks best suited for the particular purpose. And many different actuator variants are available to match the mechanical configuration of the moving machine parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

### *Standards*

IEC/EN 60947-5-1

The protective measure of "total insulation" by the molded-plastic enclosure is ensured by the use of molded-plastic screw glands.

### *Safety position switches*

For controls according to IEC/EN 60204-1, the devices can be used as a safety position switch. They comply with the standard EN ISO 14119. A TÜV certificate is available. To secure position switches against changes in their position, keyed techniques must be employed on installation.

### *Safety circuits*

The IEC/EN 60947-5-1 standard requires positive opening of the NC contacts. In other words, for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked in accordance with the standard IEC 60947-5-1 with the symbol ➔.

Category 2 according to EN ISO 13849-1 can be attained with 3SE5 position switches with ➔, and category 3 or 4 when using an additional position switch, if the corresponding fail-safe evaluation units are selected and correctly connected. Example: 3SK or 3TK28 safety relays or the corresponding devices from the ASIsafe, SIMATIC or SINUMERIK programs. The operating mechanisms (actuators) must also be connected to the enclosure by keyed techniques. The corresponding operating mechanisms are marked in the catalog with ➔.

## General data



***Contacts for every application***

- Snap-action contacts: NC and NO contacts switch simultaneously – regardless of the actuating speed ($v_{min}$ = 0.01 m/s) and contact erosion.
- Slow-action contacts: Difference in travel between "NC contact opens" and "NO contact closes"; the switching speed is the same as or proportional to the actuating speed ($v_{min}$ = 0.4 m/s).
- Slow-action contacts with make-before-break: e.g. suitable for adding a second function to a sequence control.

***Operating mechanisms for every application***

Standard, rounded and roller plungers

- Operation in direction of the plunger axis or in case of roller plunger with bar at right angles to the plunger axis.
- The roller plunger is recommended for lateral actuation and relatively long overtravel.

Roller levers and angular roller levers

- For actuators made of finely ground steel in the form of cams, straight-edges (approach angle 30°) or cam disks.

Spring rod

- Can be used for undefined actuations and changing starting conditions
- Starting from any direction is possible

Twist levers and rod actuators

- For high starting speeds ($v$ = 1.5 m/s)
- Variety of starting options
- Insensitive to oil, grinding dust and coarse-grained material
- Adjustment of the lever in increments of 10°
- Can be adjusted with left or right switching

Fork lever

- Switchable in two directions
- Latching actuator
- For reciprocating movements

***Monitoring with fail-safe evaluation units from the 3SK and 3RK3 series***

| Safe evaluation units | | Maximum achievable safety level according to type of switch | | | | |
|---|---|---|---|---|---|---|
| | | Compact | Standard | Hinge | Separate actuator | Tumbler |
| 3SK | 3RK3 | 3SE54 | 3SE51/3SE52 | 3SE51/3SE52 | 3SE51/3SE52 | 3SE53 |
| **Use of only one position/safety switch** | | | | | | |
| Monitoring with 1 contact: 1 x NC contact | | **SIL 1 / PL c** | | | | |
| Monitoring with 2 contacts: 2 x NC contact or 1 x NC contact + 1 x NO contact | | **SIL 1 / PL c** | | **SIL 2 / PL d** | | |
| **Use of a second position/safety switch** | | | | | | |
| Standard switch | 3SE51/3SE52 | **SIL 3 / PL e** | | | | |
| Safety switch/hinge switch | 3SE51/3SE52 | | | | | |
| Safety switch with separate actuator | 3SE51/3SE52 | | | | | |
| Safety switch with tumbler | 3SE53 | | | | | |

Note:

Taking account of certain fault exclusions (e.g. actuator breakage), use of just one hinge switch or a switch with separate actuator with or without tumbler up to SIL 2 or PL d is possible as described in the table.

Since the machine manufacturer must provide proof of fault exclusion, the component manufacturer is unable to carry out a definitive assessment of the measures taken.

For more information, see https://support.industry.siemens.com/cs/ww/en/view/35443942.

The maximum achievable SIL or PL always depends on other assumptions as well. Factors to be taken into account include the DC (declaration), the CCF, and the number of actuations.

For information on the safe evaluation units and an introduction to safety systems, see page 13/133 onwards.

## Technical specifications

| Type | | 3SE51..[1], 3SE52..[1] | 3SE541. | 3SE542. |
|---|---|---|---|---|
| **General data** | | | | |
| **Standards** | | IEC/EN 60947-5-1, EN ISO 14119 | | |
| **Rated insulation voltage $U_i$** | V | 400[2] | 400 | |
| **Degree of pollution** according to IEC 60664-1 | | Class 3 | Class 3 | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | 4 | |
| **Rated operational voltage $U_e$** | V | 400 AC; over 300 V AC same potential only[3] | 300 AC | |
| **Conventional thermal current $I_{th}$** | A | 10 | 10 | |
| **Rated operational current $I_e$** | | | | |
| • For alternating current 50/60 Hz | | $I_e$ / AC-15 | $I_e$ / AC-15 | |
| - At 24 V | A | 6 | 6 | |
| - At 120 V | A | 6 | 6 | |
| - At 240 V | A | 6 | 3 | |
| - At 400 V | A | 4 | -- | |
| • For direct current | | $I_e$ / DC-13 | $I_e$ / DC-13 | |
| - At 24 V | A | 3 | 3 | |
| - At 125 V | A | 0.55 | 0.55 | |
| - At 250 V | A | 0.27 | 0.27 | |
| - At 400 V | A | 0.12 | -- | |
| **Short-circuit protection**[4] | | | | |
| • With DIAZED fuse links, utilization category gG | A | 6 | 10 | |
| • With miniature circuit breaker, C char. ($I_{K< 400A}$) | A | 1 | 3 | |
| **Mechanical endurance** | | | | |
| • Basic switch | | $15 \times 10^6$ operating cycles | $10 \times 10^6$ operating cycles | $10 \times 10^6$ operating cycles |
| • With spring rod, 3SE5...-..R.. | | $10 \times 10^6$ operating cycles | -- | -- |
| • With fork lever, 3SE51..-..T.. | | $1 \times 10^6$ operating cycles | -- | -- |
| **Electrical endurance** | | | | |
| • With 3RH.1, 3RT contactors in size S00, S0 | | $10 \times 10^6$ operating cycles | 500 000 operating cycles | 500 000 operating cycles |
| • For utilization category AC-15 when switching off $I_e$ / AC-15 at 240 V | | 100 000 operating cycles | 100 000 operating cycles | 100 000 operating cycles |
| • With utilization category DC-12/DC-13 | | For direct current depending on the loading of the switch | | |
| **Switching frequency** With 3RH.1, 3RT contactors in size S00, S0 | | 6 000 operating cycles/h | 1 800 operating cycles/h | |
| **Switching accuracy** | | | | |
| • For repeated switching, measured at the plunger of the contact block | mm | 0.05 | 0.05 | |
| • With twist actuators | | 1° | 1° | |
| **Rated data according to cULus and CSA** | | | | |
| • Rated voltage | V | 300 | 300 | |
| • Uninterrupted current | A | 6 | 10 | |
| • Switching capacity | | Heavy duty, A 300/B 300/Q 300 | A 300/Q 300 | |

1) Special versions, see data sheet.
2) For slow-action contacts 1 NO + 2 NC with make-before-break ("M") and 2 NO + 1 NC ("P") the following applies: 250 V.
3) For slow-action contacts 1 NO + 2 NC with make-before-break ("M") and 2 NO + 1 NC ("P") the following applies: Over 250 V AC same potential only.
4) Without any welds according to IEC 60947-5-1.

| Type | | 3SE523. | 3SE513. | 3SE524. | 3SE521. | 3SE511. | 3SE512., 3SE516. | 3SE54.. | 3SE525. |
|---|---|---|---|---|---|---|---|---|---|
| **Enclosure** | | | | | | | | | |
| • Material | | Plastic P66 | | | Zinc die-casting | | | Zn/Al | -- |
| • Width | mm | 31 | 40 | 50 | 31 | 40 | 56 | 30/40 | 30 |
| **Degree of protection** acc. to IEC 60529 | | IP65 | IP66/IP67[1] | | | | | IP67 | IP10 |
| **Ambient temperature** | | | | | | | | | |
| • During operation | °C | -25 ... +85; -40...+85 for 3SE5*-1AJ0 and 3SE5*-1AY0 versions | | | | | | -25 ... +85 | -25 ... +85 |
| • In operation, switch with LEDs | °C | -25 ... +60 | | | | | | -- | -- |
| • Storage, transport | °C | -40 ... +90 | | | | | | -40 ... +90 | -40 ... +90 |
| **Mounting position** | | Any | | | | | | | |
| **Connection** | | | | | | | | | |
| **Cable entry** | | 1 x (M20 x 1.5) | | 2 x (M20 x 1.5) | 1 x (M20 x 1.5) | | 3 x (M20 x 1.5) | -- | -- |
| **Conductor cross-sections** | | | | | | | | | |
| • Solid | $mm^2$ | 1 x (0.5 ... 1.5), 2 x (0.5 ... 0.75) | | | | | | | |
| • Finely stranded with end sleeve | $mm^2$ | 1 x (0.5 ... 1.5), 2 x (0.5 ... 0.75) | | | | | | | |
| • AWG cables, solid or stranded | AWG | 1 x (AWG 20 ... 16), 2 x (AWG 20 ... 18) | | | | | | | |
| **Tightening torque**, contact block | Nm | 0.8 ... 1.0 | | | | | | | |
| **Protective conductor connection** inside enclosure | | -- | | | M3.5 | | | -- | -- |

1) For actuator heads with spring rod and rod actuators: IP65/IP67.

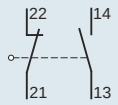
## General data



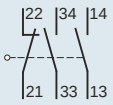
### *Circuit diagrams*

Enclosure widths 31, 40, 50 and 56 mm

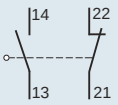
**Slow-action contacts**
**1 NO + 1 NC**
**3SE5...-.B..., -.R...**



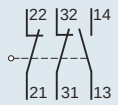

**Slow-action contacts**
**2 NO + 1 NC**
**3SE5...-.P...**



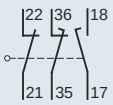

**Snap-action contacts**
**1 NO + 1 NC**
**3SE5...-.C..., -.F..., -.G..., -.H..., -.N...**



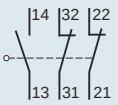

**Slow-action contacts**
**1 NO + 2 NC**
**3SE5...-.K..., -.Q...**




**Slow-action contacts**
**1 NO + 2 NC with**
**make-before-break, 3SE5...-.M...**

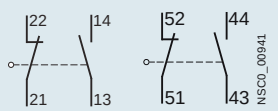



**Snap-action contacts**
**1 NO + 2 NC**
**3SE5...-.L...**

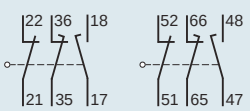



XL enclosures, width 56 mm

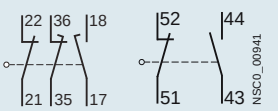
**Slow-action contacts**
**2 x (1 NO + 1 NC)**
**3SE5162-0B...**



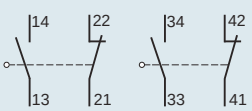

**Slow-action contacts**
**2 x (1 NO + 2 NC) with**
**make-before-break, 3SE5162-0D...**




**Slow-action contacts**
**1 NO + 2 NC with make-before-break,**
**1 NO + 1 NC**
**3SE5162-0E...**



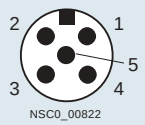

**Snap-action contacts**
**2 x (1 NO + 1 NC)**
**3SE5162-0C...**




### *3SE5 pin assignment*

**M12 device plug, 4-pole**
**3SY3127**

**M12 device plugs, 5-pole**
**3SY3128**




**M12 device plugs, 8-pole**
**3SX5100-1SS08**

**Device plugs, 6-pole + PE**
**3SY3131**

| Type | Device plugs | Contacts | LEDs | Connections | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type | Version | Version | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | PE |
| **M12 device plugs, 4-, 5- or 8-pole** | | | | | | | | | | | | |
| **3SE5..4-0....-1AC4** | 3SY3127 | 1 NO + 1 NC | -- | 21 | 22 | 13 | 14 | -- | -- | -- | -- | -- |
| **3SE5..4-0....-1AL0** | 3SY3128 | 1 NO + 1 NC | -- | 21 | 22 | 13 | 14 | PE | -- | -- | -- | -- |
| **3SE5..4-0....-1AE0** | 3SY3127 | 2 NC | -- | 21 | 22 | 31 | 32 | -- | -- | -- | -- | -- |
| **3SE5..4-0....-1AE1** | 3SY3128 | 2 NC | -- | 21 | 22 | 31 | 32 | PE | -- | -- | -- | -- |
| **3SE5..4-1C...-1AF5** | 3SY3128 | 1 NO + 1 NC snap-action | 2 LEDs | 21 | 22 | 13/ LED gn | 14/ LED ye | Ground LED | -- | -- | -- | -- |
| **3SE5..4-1B...-1AF3** | 3SY3128 | 1 NO + 1 NC slow-action | 2 LEDs | 21 | 22 | 14/ LED gn | 13/ LED ye | Ground LED | -- | -- | -- | -- |
| **3SE5..4-1L...-1AD4** | 3SY3134 | 1 NO + 2 NC snap-action | 2 LEDs | 21 | 22 | 13/ LED gn | 14/ LED ye | 31 | 32 | Ground LED | PE | -- |
| **3SE5..4-1K...-1AD4** | 3SY3134 | 1 NO + 2 NC slow-action | 2 LEDs | 21 | 22 | 14/ LED gn | 13/ LED ye | 31 | 32 | Ground LED | PE | -- |
| **Device plugs, 6-pole + PE** | | | | | | | | | | | | |
| **3SE5..5-0....-1AD0** | 3SY3131 | 1 NO + 1 NC | -- | 21 | 22 | 13 | 14 | -- | -- | -- | -- | ✓ |
| **3SE5..5-0....-1AD1** | 3SY3131 | 1 NO + 2 NC | -- | 21 | 22 | 13 | 14 | 31 | 32 | -- | -- | ✓ |
| **3SE5..5-.C...-1AF2** | 3SY3131 | 1 NO + 1 NC snap-action | 2 LEDs | 21 | 22 | 13/ LED gn | 14/ LED ye | -- | Ground LED | -- | -- | ✓ |
| **3SE5..5-.B...-1AF2** | 3SY3131 | 1 NO + 1 NC slow-action | 2 LEDs | 21 | 22 | 14/ LED gn | 13/ LED ye | -- | Ground LED | -- | -- | ✓ |
| **3SE5..5-.L...-1AD2** | 3SY3131 | 2 NC snap-action | 2 LEDs | 21 | 22 | 31 | 32 | 13/ LED gn | Ground LED | -- | -- | ✓ |
| **3SE5..5-.K...-1AD2** | 3SY3131 | 2 NC slow-action | 2 LEDs | 21 | 22 | 31 | 32 | 14/ LED gn | Ground LED | -- | -- | ✓ |

Legend: gn = green, ye = yellow ✓ Connected -- Not available

## Options

On the following pages you will find selection tables for complete units as well as components of the modular system.

☐ Complete units

☒ Modular system

The differences between the units are indicated in the selection and ordering data by the symbols shown on orange backgrounds.

Using the modular system you can assemble switch variants which are not available as complete units. Each complete unit can also be supplied as a module.

A basic switch for the modular system comprises an enclosure with a contact block and a cover. Among the basic switches the following versions, for example, can be selected:

- Basic enclosure with teflon plunger
- Version with increased corrosion protection
- Version with M12 device plug and/or with 2 LEDs
- Version with M12 device plug or 6-pole + PE

### *Support functions*

The 3SE5/3SF1 position and safety switches can also be ordered using an online configurator.

This also enables a complete documentation to be prepared:

- Product data sheets
- Dimension drawings
- Operating travel diagrams
- CAD data in 2D and 3D model images
- Ordering data
- Product photos

For online configurator, see www.siemens.com/sirius/configurators.

### *Complete units*

Ordering example

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered:

| | Version | Complete units ☐ |
|---|---|---|
| | | Article No. |
| **Complete units · Enclosure width 31 mm** | | |
| | ***Angular roller lever*** **With metal lever and plastic roller 13 mm** Slow-action contacts 1 NO + 1 NC | **3SE5232-0BF10** |

### *Modular system*

Ordering example 1

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered separately:

| | Version | Modular system ☒ |
|---|---|---|
| | | Article No. |
| **Basic switches · Enclosure width 31 mm** | | |
| | **With teflon plunger** Slow-action contacts 1 NO + 1 NC | **3SE5232-0BC05** |
| | | + |
| **Operating mechanisms** | | |
| | **Angular roller levers** Metal lever, plastic roller | **3SE5000-0AF10** |

Ordering example 2

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Twist levers, high-grade steel lever and plastic roller

To be ordered separately:

| | Version | Modular system ☒ |
|---|---|---|
| | | Article No. |
| **Basic switches · Enclosure width 31 mm** | | |
| | **With teflon plunger** Slow-action contacts 1 NO + 1 NC | **3SE5232-0BC05** |
| | | + |
| **Twist actuators** | | |
| | **Twist actuators** | **3SE5000-0AK00** |
| | **Twist levers** High-grade steel lever, plastic roller | **3SE5000-0AA31** |

## Enclosure width 31 mm according to EN 50047



### Selection and ordering data

***Complete units for installation in control cabinets***

2 contacts · Degree of protection IP40 · Cable entry by means of a locking plug with ∅ 6 mm

| | Version | Contacts | LEDs | SD | Complete units | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | d | Article No. / Price per PU | | |
| **Complete units[1] • Enclosure width 31 mm** | | | | | | | |
| | ***Control cabinet type, IP40, rounded plungers, type B, acc. to EN 50047*** | | | | | | |
| 3SE5232-0HC05-1AB1 | **Flat cover** Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0HC05-1AB1** | 1 | 1 unit |
| 3SE5232-0HC05-1AB2 | With mounting plate and screws for attachment profile Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0HC05-1AB2** | 1 | 1 unit |
| 3SE5232-0HC05-1AB3 | **Standard cover** Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0HC05-1AB3** | 1 | 1 unit |
| 3SE5232-0HC05-1AB4 | With mounting plate and screws for attachment profile Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0HC05-1AB4** | 1 | 1 unit |
| **Accessories** | | | | | | | |
| 3SX5100-1A | **Mounting plate** Suitable for 3SE523. and 3SE521. position switches with a width of 31 mm | -- | -- | 5 | **3SX5100-1A** | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) The control cabinet types are not basic switches for the modular system.

2) Subsequent replacement of contact blocks is not possible.

## Enclosure width 31 mm according to EN 50047

### *Complete units*

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1]

| Version | Contacts | LEDs | | SD | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[2] • Enclosure width 31 mm** | | | | | | | | |
| ***Rounded plungers, type B, acc. to EN 50047*** | | | | | | | | |
| **With teflon plunger** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5232-0BC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0CC05** | | 1 | 1 unit |
| Snap-action contacts, integrated[3] | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5232-0HC05** | | 1 | 1 unit |
| Snap-action contacts • Short stroke, integrated[3] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0FC05** | | 1 | 1 unit |
| Snap-action contacts • 2 × 2 mm contact gap | 1 NO + 1 NC | -- | ⊖ | 15 | **3SE5232-0GC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | ▶ | **3SE5232-0KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | ▶ | **3SE5232-0LC05** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 2 | **3SE5232-0MC05** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 2 | **3SE5232-0PC05** | | 1 | 1 unit |
| **With increased corrosion protection** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0BC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0CC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0KC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0LC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0MC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0PC05-1CA0** | | 1 | 1 unit |
| **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5234-0BC05-1AC4** | | 1 | 1 unit |
| Snap-action contacts, integrated[3] | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5234-0HC05-1AC4** | | 1 | 1 unit |
| Slow-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5234-0KC05-1AE0** | | 1 | 1 unit |
| Snap-action contacts | 2 NC | -- | ⊖ | 2 | **3SE5234-0LC05-1AE0** | | 1 | 1 unit |
| **With 2 LEDs, yellow/green** | | | | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5232-1KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5232-1LC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5232-3KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5232-3LC05** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5234-1BC05-1AF3** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5234-1CC05-1AF3** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[4]** NEW | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | X | **3SE5234-0LC05-1AE2** | | 1 | 1 unit |

3SE5232-0HC05-1AB1

3SE5232-0BC05-1CA0

3SE5232-1KC05

3SE5234-0LC05-1AE2

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

4) The 3SE5234-.....-1AE2 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

# 3SE5, Plastic Enclosures

## Enclosure width 31 mm according to EN 50047

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]



| Version | Contacts | LEDs | SD | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Complete units[2)] · Enclosure width 31 mm** | | | | | | | |
| ***Roller plungers, type C, acc. to EN 50047*** | | | | | | | |
| **With plastic roller 10 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0BD03** | | 1 | 1 unit |
| Snap-action contacts • Integrated[3)] | 1 NO + 1 NC | -- | ⊖ ▶ | **3SE5232-0HD03** | | 1 | 1 unit |
| Snap-action contacts • Short stroke, integrated[3)] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0FD03** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0KD03** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0LD03** | | 1 | 1 unit |
| **Actuator head rotated by 90°** | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0LD03-1AH0** | | 1 | 1 unit |
| **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5234-0HD03-1AC4** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[4)]** NEW | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ X | **3SE5234-0LD03-1AE2** | | 1 | 1 unit |
| **With yellow cover** | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0LD03-1AG0** | | 1 | 1 unit |
| ***Roller plungers with central fixing*** | | | | | | | |
| **With plastic roller 10 mm** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0HD10** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0KD10** | | 1 | 1 unit |
| ***Roller levers, type E acc. to EN 50047*** | | | | | | | |
| **With metal lever and plastic roller 13 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5232-0BE10** | | 1 | 1 unit |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ ▶ | **3SE5232-0HE10** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0KE10** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0LE10** | | 1 | 1 unit |
| **With increased corrosion protection, with high-grade steel lever and plastic roller 13 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0CE12-1CA0** | | 1 | 1 unit |
| **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5234-0HE10-1AC4** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[4)]** NEW | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ X | **3SE5234-0LE11-1AE2** | | 1 | 1 unit |
| **With high-grade steel lever and plastic roller 13 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0LE12** | | 1 | 1 unit |
| ***Angular roller lever*** | | | | | | | |
| **With metal lever and plastic roller 13 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0BF10** | | 1 | 1 unit |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5232-0HF10** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0KF10** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0LF10** | | 1 | 1 unit |

3SE5232-0BD03

3SE5232-0LD03-1AG0

3SE5232-0HD10

3SE5232-0HE10

3SE5232-0BF10

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

4) The 3SE5234-.....-1AE2 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

# 3SE5, Plastic Enclosures

## Enclosure width 31 mm according to EN 50047

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

| Version | Contacts | LEDs | | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[2)] • Enclosure width 31 mm** | | | | | | | | |
| <br>3SE5232-0HR01 | ***Spring rod*** | | | | | | | |
| | **Length 142.5 mm, with plastic plunger 50 mm** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | 2 | **3SE5232-0HR01** | | 1 | 1 unit |
| | **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | 5 | **3SE5234-0HR01-1AC4** | | 1 | 1 unit |
| <br>3SE5232-0BK21 | ***Twist levers, type A, acc. to EN 50047*** | | | | | | | |
| | **With metal lever 21 mm and plastic roller 19 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5232-0BK21** | | 1 | 1 unit |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0HK21** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0KK21** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0LK21** | | 1 | 1 unit |
| | **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5234-0HK21-1AC4** | | 1 | 1 unit |
| | **With metal lever 35 mm and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0HK15** | | 1 | 1 unit |
| <br>3SE5232-0HK60 | ***Twist levers, adjustable length*** | | | | | | | |
| | **With metal lever with grid hole and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5232-0HK60** | | 1 | 1 unit |
| <br>3SE5232-0BK50 | **With metal lever and plastic roller 19 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | | 5 | **3SE5232-0BK50** | | 1 | 1 unit |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | ▶ | **3SE5232-0HK50** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | | 5 | **3SE5232-0LK50** | | 1 | 1 unit |
| | **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | 5 | **3SE5234-0HK50-1AC4** | | 1 | 1 unit |
| <br>3SE5232-0HK80 | ***Rod actuator*** | | | | | | | |
| | **With aluminum rod, length 200 mm** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | 5 | **3SE5232-0HK80** | | 1 | 1 unit |
| | **With plastic rod, length 200 mm** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | 5 | **3SE5232-0HK82** | | 1 | 1 unit |
| | **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | | 5 | **3SE5234-0HK82-1AC4** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/18.

# 3SE5, Plastic Enclosures

## Enclosure width 31 mm according to EN 50047



### *Modular system*

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

| Version | Contacts | LEDs | | SD | Modular system<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Basic switches · Enclosure width 31 mm (with rounded plunger[2)])** | | | | | | | | |
| **Teflon plungers** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5232-0BC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0CC05** | | 1 | 1 unit |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5232-0HC05** | | 1 | 1 unit |
| Snap-action contacts<br>• Short stroke, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0FC05** | | 1 | 1 unit |
| Snap-action contacts<br>• 2 × 2 mm contact gap | 1 NO + 1 NC | -- | ⊖ | 15 | **3SE5232-0GC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | ▶ | **3SE5232-0KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | ▶ | **3SE5232-0LC05** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 2 | **3SE5232-0MC05** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 2 | **3SE5232-0PC05** | | 1 | 1 unit |
| **Increased corrosion protection[4)]** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0BC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0CC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0KC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0LC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0MC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0PC05-1CA0** | | 1 | 1 unit |
| **M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5234-0BC05-1AC4** | | 1 | 1 unit |
| Snap-action contacts, integrated[3)] | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5234-0HC05-1AC4** | | 1 | 1 unit |
| Slow-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5234-0KC05-1AE0** | | 1 | 1 unit |
| Snap-action contacts | 2 NC | -- | ⊖ | 2 | **3SE5234-0LC05-1AE0** | | 1 | 1 unit |
| **2 LEDs yellow/green** | | | | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5232-1KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5232-1LC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5232-3KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5232-3LC05** | | 1 | 1 unit |
| **M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5234-1BC05-1AF3** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5234-1CC05-1AF3** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[5)]** NEW | | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | X | **3SE5234-0LC05-1AE2** | | 1 | 1 unit |

3SE5232-0BC05

3SE5232-0BC05-1CA0

3SE5234-0HC05-1AC4

3SE5232-1KC05

3SE5234-1BC05-1AF3

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) A cable gland with seal must be used with the quick-connect method.

2) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

3) Subsequent replacement of contact blocks is not possible.

4) Use corresponding high-grade steel lever.

5) The 3SE5234-.....-1AE2 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

Note:

For the selection aid, see page 13/13

## Enclosure width 31 mm according to EN 50047

| | Version | Diameter | SD | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | mm | d | | | | |
| 3SE5000-0AD03 | **Roller plungers, type C, acc. to EN 50047** | | | | | | |
| | Plastic rollers | 10 | ➔ 2 | **3SE5000-0AD03** | | 1 | 1 unit |
| | High-grade steel rollers | 10 | ➔ 5 | **3SE5000-0AD04** | | 1 | 1 unit |
| 3SE5000-0AD10 | **Roller plungers with central fixing** | | | | | | |
| | Plastic rollers | 10 | ➔ 2 | **3SE5000-0AD10** | | 1 | 1 unit |
| | High-grade steel rollers | 10 | ➔ 5 | **3SE5000-0AD11** | | 1 | 1 unit |
| 3SE5000-0AE10 | **Roller levers, type E, acc. to EN 50047** | | | | | | |
| | Metal lever, plastic roller | 13 | ➔ 2 | **3SE5000-0AE10** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AE11** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ➔ 5 | **3SE5000-0AE12** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AE13** | | 1 | 1 unit |
| 3SE5000-0AF10 | **Angular roller levers** | | | | | | |
| | Metal lever, plastic roller | 13 | ➔ 2 | **3SE5000-0AF10** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AF11** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ➔ 2 | **3SE5000-0AF12** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AF13** | | 1 | 1 unit |
| 3SE5000-0AR01 | **Spring rods** | | | | | | |
| | (for switches with snap-action contacts only) | | | | | | |
| | Plunger made of plastic, spring of high-grade steel: | 7 | | | | | |
| | • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | | 1 | 1 unit |
| | • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | | 1 | 1 unit |
| | • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | | 1 | 1 unit |
| | Plunger and spring made of high-grade steel: | 7 | | | | | |
| | • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | | 1 | 1 unit |
| 3SE5000-0AK00 | **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | | |
| | Switching right and/or left, adjustable | | ➔ 2 | **3SE5000-0AK00** | | 1 | 1 unit |
| | ***Levers*** | | | | | | |
| | **Twist levers 21 mm, straight, type A acc. to EN 50047** | | | | | | |
| 3SE5000-0AA21 | Metal lever, plastic roller | 19 | ➔ 2 | **3SE5000-0AA21** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA22** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ➔ 5 | **3SE5000-0AA23** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ➔ 5 | **3SE5000-0AA25** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA31** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA32** | | 1 | 1 unit |
| 3SE5000-0AA60 3SE5000-0AA50 | **Twist levers 30 mm, straight** | | | | | | |
| | Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA24** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ➔ 5 | **3SE5000-0AA26** | | 1 | 1 unit |
| | **Twist levers, adjustable length, with grid hole** | | | | | | |
| | Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA60** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA61** | | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ➔ 5 | **3SE5000-0AA67** | | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ➔ 5 | **3SE5000-0AA68** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA62** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA63** | | 1 | 1 unit |
| | **Twist levers, adjustable length** | | | | | | |
| | Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | 5 | **3SE5000-0AA57** | | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | | 1 | 1 unit |
| 3SE5000-0AA80 | **Rod actuator** | | | | | | |
| | Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | | 1 | 1 unit |
| | Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | | 1 | 1 unit |
| | Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | | 1 | 1 unit |

➔ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| Version | Contacts | LEDs | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Complete units[1] • Enclosure width 40 mm** | | | | | | | |
| 3SE5132-0BB01 | ***Plain plungers*** | | | | | | |
| | **With high-grade steel plunger** | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0BB01** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0CB01** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0KB01** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LB01** | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0PB01** | 1 | 1 unit |
| 3SE5132-0BC03 | ***Rounded plungers, type B, acc. to EN 50041*** | | | | | | |
| | **With plastic plunger** | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0BC03** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5132-0CC03** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0KC03** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LC03** | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0PC03** | 1 | 1 unit |
| 3SE5132-0BD05 | ***Roller plungers, type C, acc. to EN 50041*** | | | | | | |
| | **With plastic roller 13 mm** | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0BD05** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5132-0CD05** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0KD05** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LD05** | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0PD05** | 1 | 1 unit |
| 3SE5132-0BE05 | ***Roller levers*** | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0BE05** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5132-0CE05** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0KE05** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LE05** | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0PE05** | 1 | 1 unit |
| 3SE5132-0BF05 | ***Angular roller lever*** | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0BF05** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0CF05** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LF05** | 1 | 1 unit |
| 3SE5132-0CR01 | ***Spring rod*** | | | | | | |
| | **Length 142.5 mm, with plastic plunger 50 mm** | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5132-0CR01** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | 5 | **3SE5132-0LR01** | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

# 3SE5, Plastic Enclosures

## Enclosure width 40 mm according to EN 50041

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version | Contacts | LEDs | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[1] • Enclosure width 40 mm** | | | | | | | | |
| 3SE5132-0BJ01 | ***Twist levers, type A, acc. to EN 50041*** | | | | | | | |
| | **With metal lever 27 mm and plastic roller 19 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5132-0BJ01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5132-0CJ01** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0KJ01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LJ01** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0PJ01** | | 1 | 1 unit |
| 3SE5132-0CJ60 | ***Twist levers, adjustable length*** | | | | | | | |
| | **With metal lever with grid hole and plastic roller 19 mm** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5132-0CJ60** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5132-0LJ60** | | 1 | 1 unit |
| 3SE5132-0CJ50 | **With metal lever and plastic roller 19 mm** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | 2 | **3SE5132-0CJ50** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | 5 | **3SE5132-0LJ50** | | 1 | 1 unit |
| 3SE5132-0CJ80 | ***Rod actuators, type D, acc. to EN 50041*** | | | | | | | |
| | **With aluminum rod, length 200 mm** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5132-0CJ80** | | 1 | 1 unit |
| | **With plastic rod, length 200 mm** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | 2 | **3SE5132-0CJ82** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/22.

# 3SE5, Plastic Enclosures

## Enclosure width 40 mm according to EN 50041



***Modular system***

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version | Contacts | LEDs | | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **Basic switches • Enclosure width 40 mm** | | | | | | | | | |
| 3SE5132-0BA00 | **Connecting thread M20 × 1.5** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5132-0BA00** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5132-0CA00** | | 1 | 1 unit |
| | • Gold-plated contacts | | | ⊖ | 5 | **3SE5132-0CA00-1AC1** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0KA00** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0LA00** | | 1 | 1 unit |
| | Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0MA00** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5132-0PA00** | | 1 | 1 unit |
| 3SE5132-0BA00-1CA0 | **Increased corrosion protection[1)]** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5132-0BA00-1CA0** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5132-0CA00-1CA0** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0KA00-1CA0** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0LA00-1CA0** | | 1 | 1 unit |
| | Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0MA00-1CA0** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5132-0PA00-1CA0** | | 1 | 1 unit |
| 3SE5134-0BA00-1AC4 | **M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5134-0BA00-1AC4** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5134-0CA00-1AC4** | | 1 | 1 unit |
| | Slow-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5134-0KA00-1AE0** | | 1 | 1 unit |
| | Snap-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5134-0LA00-1AE0** | | 1 | 1 unit |
| 3SE5132-1KA00 | **2 LEDs, yellow/green** | | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5132-1KA00** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5132-1LA00** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5132-3KA00** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5132-3LA00** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

For the selection aid, see page 13/13

## Enclosure width 40 mm according to EN 50041

| | Version | Diameter | SD | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | mm | d | | | | |
| **Operating mechanisms** | | | | | | | |
| 3SE5000-0AB01 | **Plain plungers** | | | | | | |
| | High-grade steel plunger | 10 | ⊖ 2 | **3SE5000-0AB01** | | 1 | 1 unit |
| 3SE5000-0AC03 3SE5000-0AD05 | **Rounded plungers, type B, acc. to EN 50041** | | | | | | |
| | Plastic plungers | 10 | ⊖ 5 | **3SE5000-0AC03** | | 1 | 1 unit |
| | **Roller plungers, type C, acc. to EN 50041** | | | | | | |
| | Plastic plunger, plastic roller | 13 | ⊖ 5 | **3SE5000-0AD05** | | 1 | 1 unit |
| | Plastic plunger, high-grade steel roller | 13 | ⊖ 5 | **3SE5000-0AD06** | | 1 | 1 unit |
| 3SE5000-0AE05 | **Roller levers** | | | | | | |
| | Metal lever with plastic roller, plastic base | 22 | ⊖ 5 | **3SE5000-0AE05** | | 1 | 1 unit |
| 3SE5000-0AF05 | **Angular roller levers** | | | | | | |
| | Metal lever with plastic roller, plastic base | 22 | ⊖ 5 | **3SE5000-0AF05** | | 1 | 1 unit |
| 3SE5000-0AR01 | **Spring rods** (for switches with snap-action contacts only) | | | | | | |
| | Plunger made of plastic, spring of high-grade steel: | 7 | | | | | |
| | • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | | 1 | 1 unit |
| | • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | | 1 | 1 unit |
| | • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | | 1 | 1 unit |
| | Plunger and spring made of high-grade steel: | 7 | | | | | |
| | • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | | 1 | 1 unit |
| **Twist actuators** | | | | | | | |
| 3SE5000-0AH00 | **Twist actuators, for 40 mm, EN 50041** | | | | | | |
| | • For twist levers and rod actuators, switching right and/or left, adjustable | | ⊖ 2 | **3SE5000-0AH00** | | 1 | 1 unit |
| | ***Levers*** | | | | | | |
| | **Twist levers, offset, type A, acc. to EN 50041** | | | | | | |
| 3SE5000-0AA01 | Metal lever 27 mm, plastic roller | 19 | ⊖ 2 | **3SE5000-0AA01** | | 1 | 1 unit |
| | Metal lever 27 mm, high-grade steel roller | 19 | ⊖ 2 | **3SE5000-0AA02** | | 1 | 1 unit |
| | Metal lever 27 mm, high-grade steel roller with ball bearing | 19 | ⊖ 5 | **3SE5000-0AA03** | | 1 | 1 unit |
| | Metal lever 27 mm, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AA04** | | 1 | 1 unit |
| | Metal lever 27 mm, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA05** | | 1 | 1 unit |
| | Metal lever 27 mm, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA08** | | 1 | 1 unit |
| | High-grade steel lever 27 mm, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA11** | | 1 | 1 unit |
| | High-grade steel lever 27 mm, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA12** | | 1 | 1 unit |
| | Metal lever 35 mm, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA15** | | 1 | 1 unit |
| | High-grade steel lever 35 mm, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA16** | | 1 | 1 unit |
| 3SE5000-0AA60 3SE5000-0AA50 | **Twist levers 30 mm, straight** | | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA24** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA26** | | 1 | 1 unit |
| | **Twist levers, adjustable length, with grid hole** | | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA60** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA61** | | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA68** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA62** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA63** | | 1 | 1 unit |
| 3SE5000-0AA80 | **Twist levers, adjustable length** | | | | | | |
| | Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | | 1 | 1 unit |
| | **Rod actuators, type D, acc. to EN 50041** | | | | | | |
| | Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | | 1 | 1 unit |
| | Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | | 1 | 1 unit |
| | Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | | 1 | 1 unit |

⊖ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

| Version | Contacts | LEDs | | SD | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[1] • Enclosure width 50 mm** | | | | | | | | |
| 3SE5242-0BC05 | | | | | | | | |
| ***Rounded plungers*** | | | | | | | | |
| **With teflon plunger** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5242-0BC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0CC05** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5242-0HC05** | | 1 | 1 unit |
| Snap-action contacts • Short stroke, integrated[2] | 1 NO + 1 NC | -- | ⊖ | 15 | **3SE5242-0FC05** | | 1 | 1 unit |
| Snap-action contacts • 2 × 2 mm contact gap | 1 NO + 1 NC | -- | ⊖ | 30 | **3SE5242-0GC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0LC05** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0MC05** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 2 | **3SE5242-0PC05** | | 1 | 1 unit |
| 3SE5242-0BC05-1CA0 | | | | | | | | |
| **With increased corrosion protection** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0BC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ | 30 | **3SE5242-0HC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0KC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0LC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0MC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0PC05-1CA0** | | 1 | 1 unit |
| 3SE5242-1KC05 | | | | | | | | |
| **With 2 LEDs, yellow/green** | | | | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5242-1KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5242-1LC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5242-3KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5242-3LC05** | | 1 | 1 unit |
| 3SE5242-0BD03 | | | | | | | | |
| ***Roller plunger*** | | | | | | | | |
| **With plastic roller 10 mm** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0BD03** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0HD03** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0LD03** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

# 3SE5, Plastic Enclosures

## Enclosure width 50 mm

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

| Version | Contacts | LEDs | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Complete units[1] • Enclosure width 50 mm** | | | | | | | |
| ***Roller levers*** | | | | | | | |
| **With metal lever and plastic roller 13 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5242-0BE10** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5242-0HE10** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0LE10** | | 1 | 1 unit |
| **With M12 device plug, 4-pole right (250 V, 4 A)** | | | | | | | |
| Snap-action contacts | 2 NC | -- | ⊖ 5 | **3SE5244-0LE10-1AE0** | | 1 | 1 unit |
| ***Twist levers*** | | | | | | | |
| **With metal lever 21 mm and plastic roller 19 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5242-0BK21** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5242-0HK21** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0LK21** | | 1 | 1 unit |
| ***Twist levers, adjustable length*** | | | | | | | |
| **With metal lever and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | 5 | **3SE5242-0HK50** | | 1 | 1 unit |

3SE5242-0BE10

3SE5242-0BK21

3SE5242-0HK50

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/26.

# 3SE5, Plastic Enclosures

## Enclosure width 50 mm



### *Modular system*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

| Version | Contacts | LEDs | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Basic switches • Enclosure width 50 mm (with rounded plunger[1])** | | | | | | | |
| 3SE5242-0BC05 | | | | | | | |
| **Teflon plungers** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5242-0BC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5242-0CC05** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ ▶ | **3SE5242-0HC05** | | 1 | 1 unit |
| Snap-action contacts • Short stroke, integrated[2] | 1 NO + 1 NC | -- | ⊖ 15 | **3SE5242-0FC05** | | 1 | 1 unit |
| Snap-action contacts • 2 × 2 mm contact gap | 1 NO + 1 NC | -- | ⊖ 30 | **3SE5242-0GC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0LC05** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0MC05** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 2 | **3SE5242-0PC05** | | 1 | 1 unit |
| 3SE5242-0BC05-1CA0 | | | | | | | |
| **Increased corrosion protection[3]** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5242-0BC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ 30 | **3SE5242-0HC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0KC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0LC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5242-0MC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5242-0PC05-1CA0** | | 1 | 1 unit |
| 3SE5242-1KC05 | | | | | | | |
| **2 LEDs yellow/green** | | | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ 5 | **3SE5242-1KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ 5 | **3SE5242-1LC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ 5 | **3SE5242-3KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ 5 | **3SE5242-3LC05** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

3) Use corresponding high-grade steel lever.

Note:

For the selection aid, see page 13/13

| Version | Diameter mm | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AD03 | | | | | | |
| **Roller plungers, type C, acc. to EN 50047** | | | | | | |
| Plastic rollers | 10 | ⊖ 2 | **3SE5000-0AD03** | | 1 | 1 unit |
| High-grade steel rollers | 10 | ⊖ 5 | **3SE5000-0AD04** | | 1 | 1 unit |
| 3SE5000-0AD10 | | | | | | |
| **Roller plungers with central fixing** | | | | | | |
| Plastic rollers | 10 | ⊖ 2 | **3SE5000-0AD10** | | 1 | 1 unit |
| High-grade steel rollers | 10 | ⊖ 5 | **3SE5000-0AD11** | | 1 | 1 unit |

⊖ Positively driven actuator, necessary in safety circuits.

# 3SE5, Plastic Enclosures

## Enclosure width 50 mm

| | Version | Diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | | Article No. Price per PU | | |
| | | mm | d | | | |
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AE10 | **Roller levers, type E, acc. to EN 50047** | | | | | |
| | Metal lever, plastic roller | 13 | ⊖ 2 | **3SE5000-0AE10** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ⊖ 5 | **3SE5000-0AE11** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊖ 5 | **3SE5000-0AE12** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ⊖ 5 | **3SE5000-0AE13** | 1 | 1 unit |
| 3SE5000-0AF10 | **Angular roller levers** | | | | | |
| | Metal lever, plastic roller | 13 | ⊖ 2 | **3SE5000-0AF10** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ⊖ 5 | **3SE5000-0AF11** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊖ 2 | **3SE5000-0AF12** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ⊖ 5 | **3SE5000-0AF13** | 1 | 1 unit |
| 3SE5000-0AR01 | **Spring rods** (for switches with snap-action contacts only) | | | | | |
| | Plunger made of plastic, spring of high-grade steel: | 7 | | | | |
| | • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | 1 | 1 unit |
| | • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | 1 | 1 unit |
| | • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | 1 | 1 unit |
| | Plunger and spring made of high-grade steel: | 7 | | | | |
| | • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | 1 | 1 unit |
| **Twist actuators** | | | | | | |
| 3SE5000-0AK00 | **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | |
| | Switching right and/or left, adjustable | | ⊖ 2 | **3SE5000-0AK00** | 1 | 1 unit |
| | ***Levers*** | | | | | |
| | **Twist levers 21 mm, straight, type A acc. to EN 50047** | | | | | |
| 3SE5000-0AA21 | Metal lever, plastic roller | 19 | ⊖ 2 | **3SE5000-0AA21** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA22** | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ⊖ 5 | **3SE5000-0AA23** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA25** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA31** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA32** | 1 | 1 unit |
| 3SE5000-0AA60 3SE5000-0AA24 | **Twist levers 30 mm, straight** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA24** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA26** | 1 | 1 unit |
| | **Twist levers, adjustable length, with grid hole** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA60** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA61** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊖ 5 | **3SE5000-0AA67** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA68** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA62** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA63** | 1 | 1 unit |
| 3SE5000-0AA50 | **Twist levers, adjustable length** | | | | | |
| | Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | 5 | **3SE5000-0AA57** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | 1 | 1 unit |
| | **Rod actuator** | | | | | |
| | Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | 1 | 1 unit |
| | Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | 1 | 1 unit |
| | Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | 1 | 1 unit |

⊖ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| Version | Contacts | LEDs | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Complete units[1] • Enclosure width 31 mm** | | | | | | | |
| ***Rounded plungers, type B, acc. to EN 50047*** | | | | | | | |
| **With plunger** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5212-0BC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5212-0CC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 2 | **3SE5212-0LC05** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ 2 | **3SE5212-0MC05** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0PC05** | | 1 | 1 unit |
| **With increased corrosion protection** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0BC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0CC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0LC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0MC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0PC05-1CA0** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A)** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5214-0BC05-1AC5** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5214-0CC05-1AC5** | | 1 | 1 unit |
| Slow-action contacts | 2 NC | -- | ⊖ 5 | **3SE5214-0KC05-1AE1** | | 1 | 1 unit |
| Snap-action contacts | 2 NC | -- | ⊖ 5 | **3SE5214-0LC05-1AE1** | | 1 | 1 unit |
| **With 2 LEDs, yellow/green** | | | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ 5 | **3SE5212-1KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ 2 | **3SE5212-1LC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ 5 | **3SE5212-3KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ 5 | **3SE5212-3LC05** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5214-1BC05-1AF3** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5214-1CC05-1AF3** | | 1 | 1 unit |
| ***Plain plungers*** | | | | | | | |
| **With high-grade steel plunger** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0BB01** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0CB01** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KB01** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0LB01** | | 1 | 1 unit |
| ***Roller plungers, type C, acc. to EN 50047*** | | | | | | | |
| **With plastic roller 10 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5212-0BD03** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0CD03** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KD03** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0LD03** | | 1 | 1 unit |

3SE5212-0BC05

3SE5212-0BC05-1CA0

3SE5212-1KC05

3SE5212-0BB01

3SE5212-0BD03

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

# 3SE5, Metal Enclosures

## Enclosure width 31 mm according to EN 50047

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version | Contacts | LEDs | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[1] • Enclosure width 31 mm** | | | | | | | | |
| 3SE5212-0KD10 | ***Roller plungers with central fixing*** | | | | | | | |
| | **With plastic roller 10 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0KD10** | | 1 | 1 unit |
| 3SE5212-0BE10 | ***Roller levers, type E acc. to EN 50047*** | | | | | | | |
| | **With metal lever and plastic roller 13 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0BE10** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0CE10** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0KE10** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0LE10** | | 1 | 1 unit |
| 3SE5212-0BF10 | ***Angular roller lever*** | | | | | | | |
| | **With metal lever and plastic roller 13 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0BF10** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0CF10** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0KF10** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0LF10** | | 1 | 1 unit |
| 3SE5212-0BK21 | ***Twist levers, type A, acc. to EN 50047*** | | | | | | | |
| | **With metal lever 21 mm and plastic roller 19 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0BK21** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0CK21** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0KK21** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0LK21** | | 1 | 1 unit |
| 3SE5212-0CK60 | ***Twist levers, adjustable length*** | | | | | | | |
| | **With metal lever with grid hole and plastic roller 19 mm** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0CK60** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0KK60** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0LK60** | | 1 | 1 unit |
| | **With metal lever and plastic roller 19 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5212-0BK50** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5212-0CK50** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | 5 | **3SE5212-0LK50** | | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/30.

## Enclosure width 31 mm according to EN 50047

### *Modular system*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5



| Version | Contacts | LEDs | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Basic switches · Enclosure width 31 mm (with rounded plunger[1])** | | | | | | | |
| **Plunger** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5212-0BC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5212-0CC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 2 | **3SE5212-0LC05** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ 2 | **3SE5212-0MC05** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0PC05** | | 1 | 1 unit |
| **Increased corrosion protection[2]** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0BC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0CC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KC05-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0LC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0MC05-1CA0** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0PC05-1CA0** | | 1 | 1 unit |
| **M12 device plug, 5-pole (125 V, 4 A)** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5214-0BC05-1AC5** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5214-0CC05-1AC5** | | 1 | 1 unit |
| Slow-action contacts | 2 NC | -- | ⊖ 5 | **3SE5214-0KC05-1AE1** | | 1 | 1 unit |
| Snap-action contacts | 2 NC | -- | ⊖ 5 | **3SE5214-0LC05-1AE1** | | 1 | 1 unit |
| **2 LEDs yellow/green** | | | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ 5 | **3SE5212-1KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ 2 | **3SE5212-1LC05** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ 5 | **3SE5212-3KC05** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ 5 | **3SE5212-3LC05** | | 1 | 1 unit |
| **M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5214-1BC05-1AF3** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5214-1CC05-1AF3** | | 1 | 1 unit |
| Snap-action contacts | NEW 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5114-1CA00-1AF5** | | 1 | 1 unit |

3SE5212-0BC05

3SE5212-0BC05-1CA0

3SE5214-0BC05-1AC5

3SE5212-1KC05

3SE5214-1BC05-1AF3

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

2) Use corresponding high-grade steel lever.

Note:
For the selection aid, see page 13/13

| Version | Diameter mm | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Operating mechanisms** | | | | | | |
| **Plain plungers** | | | | | | |
| High-grade steel plunger | 10 | ⊖ 2 | **3SE5000-0AB01** | | 1 | 1 unit |
| **Roller plungers, type C, acc. to EN 50047** | | | | | | |
| Plastic rollers | 10 | ⊖ 2 | **3SE5000-0AD03** | | 1 | 1 unit |
| High-grade steel rollers | 10 | ⊖ 5 | **3SE5000-0AD04** | | 1 | 1 unit |

3SE5000-0AB01

3SE5000-0AD03

⊖ Positively driven actuator, necessary in safety circuits.

# 3SE5, Metal Enclosures

## Enclosure width 31 mm according to EN 50047

| Version | Diameter | SD | Modular system<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | mm | d | | | | |
| **Operating mechanisms** | | | | | | |
| <br>3SE5000-0AD10 | **Roller plungers with central fixing** | | | | | |
| Plastic rollers | 10 | ➔ 2 | **3SE5000-0AD10** | | 1 | 1 unit |
| High-grade steel rollers | 10 | ➔ 5 | **3SE5000-0AD11** | | 1 | 1 unit |
| <br>3SE5000-0AE10 | **Roller levers, type E, acc. to EN 50047** | | | | | |
| Metal lever, plastic roller | 13 | ➔ 2 | **3SE5000-0AE10** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AE11** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 13 | ➔ 5 | **3SE5000-0AE12** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AE13** | | 1 | 1 unit |
| <br>3SE5000-0AF10 | **Angular roller levers** | | | | | |
| Metal lever, plastic roller | 13 | ➔ 2 | **3SE5000-0AF10** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AF11** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 13 | ➔ 2 | **3SE5000-0AF12** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AF13** | | 1 | 1 unit |
| <br>3SE5000-0AR01 | **Spring rods** (for switches with snap-action contacts only) | | | | | |
| Plunger made of plastic, spring of high-grade steel: | 7 | | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | | 1 | 1 unit |
| • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | | 1 | 1 unit |
| • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | | 1 | 1 unit |
| Plunger and spring made of high-grade steel: | 7 | | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | | 1 | 1 unit |
| **Twist actuators** | | | | | | |
| <br>3SE5000-0AK00 | **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | |
| Switching right and/or left, adjustable | | ➔ 2 | **3SE5000-0AK00** | | 1 | 1 unit |
| | ***Levers*** | | | | | |
| <br>3SE5000-0AA21 | **Twist levers, straight, type A, acc. to EN 50047** | | | | | |
| Metal lever 21 mm, plastic roller | 19 | ➔ 2 | **3SE5000-0AA21** | | 1 | 1 unit |
| Metal lever 21 mm, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA22** | | 1 | 1 unit |
| Metal lever 21 mm, high-grade steel roller with ball bearing | 19 | ➔ 5 | **3SE5000-0AA23** | | 1 | 1 unit |
| Metal lever 21 mm, plastic roller | 30 | ➔ 5 | **3SE5000-0AA25** | | 1 | 1 unit |
| High-grade steel lever 21 mm, plastic roller | 19 | ➔ 5 | **3SE5000-0AA31** | | 1 | 1 unit |
| High-grade steel lever 21 mm, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA32** | | 1 | 1 unit |
| **Twist levers 30 mm, straight** | | | | | | |
| Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA24** | | 1 | 1 unit |
| Metal lever, plastic roller | 30 | ➔ 5 | **3SE5000-0AA26** | | 1 | 1 unit |
| <br>3SE5000-0AA60<br>3SE5000-0AA50 | **Twist levers, adjustable length, with grid hole** | | | | | |
| Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA60** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA61** | | 1 | 1 unit |
| Metal lever, plastic roller | 50 | ➔ 5 | **3SE5000-0AA67** | | 1 | 1 unit |
| Metal lever, rubber roller | 50 | ➔ 5 | **3SE5000-0AA68** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA62** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA63** | | 1 | 1 unit |
| | **Twist levers, adjustable length** | | | | | |
| Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | | 1 | 1 unit |
| Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | | 1 | 1 unit |
| Metal lever, plastic roller | 50 | 5 | **3SE5000-0AA57** | | 1 | 1 unit |
| Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | | 1 | 1 unit |
| <br>3SE5000-0AA80 | **Rod actuators, type D, acc. to EN 50041** | | | | | |
| Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | | 1 | 1 unit |
| Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | | 1 | 1 unit |
| Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | | 1 | 1 unit |
| Plastic rod, length 330 mm | 6 | 5 | **3SE5000-0AA83** | | 1 | 1 unit |

➔ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version | Contacts | LEDs | | SD | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **Complete units[1] · Enclosure width 40 mm** | | | | | | | | | |
| 3SE5112-0BB01 | ***Plain plungers*** | | | | | | | | |
| | **With high-grade steel plunger** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5112-0BB01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5112-0CB01** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0KB01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LB01** | | 1 | 1 unit |
| 3SE5112-0BC02 | ***Rounded plungers, type B, acc. to EN 50041*** | | | | | | | | |
| | **With high-grade steel plungers, with 3 mm overtravel** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0BC02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5112-0CC02** | | 1 | 1 unit |
| | Snap-action contacts[2] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0CC02-1AA7** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0KC02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LC02** | | 1 | 1 unit |
| | Snap-action contacts with M12 device plug, 4-pole | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5114-0CC02-1AC4** | | 1 | 1 unit |
| 3SE5112-0BD02 | ***Roller plungers, type C, acc. to EN 50041*** | | | | | | | | |
| | **With high-grade steel roller 13 mm, with 3 mm overtravel** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0BD02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5112-0CD02** | | 1 | 1 unit |
| | Snap-action contacts[2] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0CD02-1AA7** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0KD02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LD02** | | 1 | 1 unit |
| | Snap-action contacts[2] | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LD02-1AA7** | | 1 | 1 unit |
| | Slow-action contacts[2] | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0PD02-1AA7** | | 1 | 1 unit |
| | **With M12 device plug, 5-pole (125 V, 4 A)** | | | | | | | | |
| | Snap-action contacts with 2 LEDs | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-1CD02-1AF3** | | 1 | 1 unit |
| | NEW Snap-action contacts with 2 LEDs | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-1CD02-1AF5** | | 1 | 1 unit |
| | Snap-action contacts without LED | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-0CD02-1AC5** | | 1 | 1 unit |
| | Snap-action contacts without LED[2)3)] | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-0CD02-1AL0** | | 1 | 1 unit |
| 3SE5112-0BE01 | **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[3]** | | | | | | | | |
| | NEW Snap-action contacts without LED | 1 NO + 2 NC | 24 V DC | ⊖ | X | **3SE5114-0LD02-1AE3** | | 1 | 1 unit |
| | ***Roller levers*** | | | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0BE01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | ▶ | **3SE5112-0CE01** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0KE01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LE01** | | 1 | 1 unit |
| 3SE5112-0BF01 | ***Angular roller lever*** | | | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0BF01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5112-0CF01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LF01** | | 1 | 1 unit |
| 3SE5112-0CR01 | ***Spring rod*** | | | | | | | | |
| | **Length 142.5 mm, with plastic plunger 50 mm** | | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | | ▶ | **3SE5112-0CR01** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Increased operation or restoring force 30 N; only available as complete unit, no modular design

3) The 3SE5114-.....-1AE3 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

# 3SE5, Metal Enclosures

## Enclosure width 40 mm according to EN 50041

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| Version | Contacts | LEDs | | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[1] · Enclosure width 40 mm** | | | | | | | | |
| 3SE5112-0BH01 | | | | | | | | |
| ***Twist levers, type A, acc. to EN 50041*** | | | | | | | | |
| **With metal lever 27 mm and plastic roller 19 mm** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊕ | 5 | **3SE5112-0BH01** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | ▶ | **3SE5112-0CH01** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊕ | 5 | **3SE5112-0KH01** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊕ | 5 | **3SE5112-0LH01** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A)** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | 2 | **3SE5114-0CH01-1AC5** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[3] NEW** | | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊕ | X | **3SE5114-0LH01-1AE3** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊕ | 5 | **3SE5114-1CH01-1AF3** | | 1 | 1 unit |
| **With metal lever 27 mm and high-grade steel roller 19 mm** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊕ | 5 | **3SE5112-0BH02** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | 2 | **3SE5112-0CH02** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | 5 | **3SE5114-1CH02-1AF3** | | 1 | 1 unit |
| **With metal lever 30 mm and plastic roller 19 mm** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | ▶ | **3SE5112-0CH24** | | 1 | 1 unit |
| ***Twist levers, adjustable length*** | | | | | | | | |
| 3SE5112-0BH60 | | | | | | | | |
| **Metal lever, grid hole and plastic roller 19 mm** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊕ | 5 | **3SE5112-0BH60** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | ▶ | **3SE5112-0CH60** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊕ | 5 | **3SE5112-0LH60** | | 1 | 1 unit |
| 3SE5112-0BH50 | | | | | | | | |
| **Metal lever, grid hole with high-grade steel roller NEW** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | | X | **3SE5114-0CH61-1AC5** | | 1 | 1 unit |
| **With metal lever and plastic roller 19 mm** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | | 5 | **3SE5112-0BH50** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | | ▶ | **3SE5112-0CH50** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | | 5 | **3SE5112-0LH50** | | 1 | 1 unit |
| **With M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | 24 V DC | | 5 | **3SE5114-1CH60-1AF3** | | 1 | 1 unit |
| **With M12 device plug, 8-pole (30 V, 2 A), and 2 LEDs** | | | | | | | | |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | | 5 | **3SE5114-1LH50-1AD4** | | 1 | 1 unit |
| **With metal lever and high-grade steel roller 19 mm** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | | 5 | **3SE5112-0CH51** | | 1 | 1 unit |
| ***Fork levers, latching*** | | | | | | | | |
| 3SE5112-0CT11 | | | | | | | | |
| **With metal lever and 2 plastic rollers 19 mm** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊕ | 5 | **3SE5112-0CT11** | | 1 | 1 unit |
| ***Rod actuators, type D, acc. to EN 50041*** | | | | | | | | |
| 3SE5112-0CH80 | | | | | | | | |
| **With aluminum rod, length 200 mm** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | | ▶ | **3SE5112-0CH80** | | 1 | 1 unit |
| **With plastic rod, length 200 mm** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | | 5 | **3SE5112-0CH82** | | 1 | 1 unit |
| **Nagara switch[2] With M12 device plug, 5-pole (125 V, 4 A) NEW** | | | | | | | | |
| Snap-action contacts, short-stroke | 1 NO + 1 NC | -- | | 5 | **3SE5114-0NH82-1AM2** | | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Start switch triggerable via one-hand operation (during operation)

3) The 3SE5114-.....-1AE3 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/34.

## Enclosure width 40 mm according to EN 50041

### *Modular system*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version | Contacts | LEDs | | SD | Modular system ◇ | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | d | Article No. / Price per PU | | |
| **Basic switches · Enclosure width 40 mm** | | | | | | | | |
| 3SE5112-0BA00 | **Connecting thread M20 × 1.5** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0BA00** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 2 | **3SE5112-0CA00** | 1 | 1 unit |
| | • Gold-plated contacts | | | ⊖ | 5 | **3SE5112-0CA00-1AC1** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 2 | **3SE5112-0KA00** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 2 | **3SE5112-0LA00** | 1 | 1 unit |
| | Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 2 | **3SE5112-0MA00** | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 2 | **3SE5112-0PA00** | 1 | 1 unit |
| 3SE5112-0BA00-1CA0 | **Increased corrosion protection**[1] | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0BA00-1CA0** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0CA00-1CA0** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0KA00-1CA0** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0LA00-1CA0** | 1 | 1 unit |
| | Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0MA00-1CA0** | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ | 5 | **3SE5112-0PA00-1CA0** | 1 | 1 unit |
| 3SE5114-0BA00-1AC5 | **M12 device plug, 5-pole (125 V, 4 A)** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5114-0BA00-1AC5** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5114-0CA00-1AC5** | 1 | 1 unit |
| | Slow-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5114-0KA00-1AE1** | 1 | 1 unit |
| | Snap-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5114-0LA00-1AE1** | 1 | 1 unit |
| 3SE5115-0KA00-1AD1 | **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200**[2] NEW | | | | | | | |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | X | **3SE5114-0LA00-1AE3** | 1 | 1 unit |
| | **Device plug, 6-pole + PE (250 V, 10 A)** | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5115-0KA00-1AD1** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5115-0LA00-1AD1** | 1 | 1 unit |
| 3SE5112-1KA00 | **Device plug, 6-pole + PE (250 V, 10 A), and quick-release device** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5115-0CA00-1AD0** | 1 | 1 unit |
| | **2 LEDs, yellow/green** | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5112-1KA00** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5112-1LA00** | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5112-3KA00** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5112-3LA00** | 1 | 1 unit |
| 3SE5114-1BA00-1AF3 | **M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-1BA00-1AF3** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-1CA00-1AF3** | 1 | 1 unit |
| 3SE5115-1BA00-1AF2 | **M12 device plug, 8-pole (30 V, 2 A), and 2 LEDs** | | | | | | | |
| | Snap-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5114-1LA00-1AD4** | 1 | 1 unit |
| | **Device plug, 6-pole + PE (10 A), and 2 LEDs** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5115-1BA00-1AF2** | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5115-1CA00-1AF2** | 1 | 1 unit |
| | Snap-action contacts | 2 NC | 24 V DC | ⊖ | 5 | **3SE5115-1LA00-1AD2** | 1 | 1 unit |

1) Use corresponding high-grade steel lever.
2) The 3SE5114-.....-1AE3 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:
For the selection aid, see page 13/13

## Enclosure width 40 mm according to EN 50041

| Version | Diameter | SD | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | mm | d | | | | |
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AC02 3SE5000-0AD02 | | | | | | |
| **Plain plungers** | | | | | | |
| High-grade steel plunger | 10 | ⊕ 2 | **3SE5000-0AB01** | | 1 | 1 unit |
| **Rounded plungers, type B, acc. to EN 50041** | | | | | | |
| High-grade steel plungers, with 3 mm overtravel | 10 | ⊕ 5 | **3SE5000-0AC02** | | 1 | 1 unit |
| **Roller plungers, type C, acc. to EN 50041** | | | | | | |
| High-grade steel roller, with 3 mm overtravel | 13 | ⊕ 5 | **3SE5000-0AD02** | | 1 | 1 unit |
| 3SE5000-0AE01 | | | | | | |
| **Roller levers** | | | | | | |
| Metal lever, plastic roller | 22 | ⊕ 2 | **3SE5000-0AE01** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 22 | ⊕ 5 | **3SE5000-0AE02** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 22 | ⊕ 5 | **3SE5000-0AE03** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 22 | ⊕ 5 | **3SE5000-0AE04** | | 1 | 1 unit |
| 3SE5000-0AF01 | | | | | | |
| **Angular roller levers** | | | | | | |
| Metal lever, plastic roller | 22 | ⊕ 2 | **3SE5000-0AF01** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 22 | ⊕ 5 | **3SE5000-0AF02** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 22 | ⊕ 5 | **3SE5000-0AF03** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 22 | ⊕ 5 | **3SE5000-0AF04** | | 1 | 1 unit |
| 3SE5000-0AR01 | | | | | | |
| **Spring rods** (for switches with snap-action contacts only) | | | | | | |
| Plunger made of plastic, spring of high-grade steel: | 7 | | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | | 1 | 1 unit |
| • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | | 1 | 1 unit |
| • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | | 1 | 1 unit |
| Plunger and spring made of high-grade steel: | 7 | | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | | 1 | 1 unit |
| **Twist actuators** | | | | | | |
| 3SE5000-0AH00 | | | | | | |
| **Twist actuators, for 40/56/56 XL mm EN 50041** | | | | | | |
| • For twist levers and rod actuators, switching right and/or left, adjustable | | ⊕ 2 | **3SE5000-0AH00** | | 1 | 1 unit |
| • For fork levers, latching | | ⊕ 5 | **3SE5000-0AT10** | | 1 | 1 unit |
| ***Levers*** | | | | | | |
| **Twist levers, offset, type A, acc. to EN 50041** | | | | | | |
| 3SE5000-0AA01 | | | | | | |
| Metal lever 27 mm, plastic roller | 19 | ⊕ 2 | **3SE5000-0AA01** | | 1 | 1 unit |
| Metal lever 27 mm, high-grade steel roller | 19 | ⊕ 2 | **3SE5000-0AA02** | | 1 | 1 unit |
| Metal lever 27 mm, high-grade steel roller with ball bearing | 19 | ⊕ 5 | **3SE5000-0AA03** | | 1 | 1 unit |
| Metal lever 27 mm, 2 plastic rollers | 19 | ⊕ 5 | **3SE5000-0AA04** | | 1 | 1 unit |
| Metal lever 27 mm, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA05** | | 1 | 1 unit |
| Metal lever 27 mm, rubber roller | 50 | ⊕ 5 | **3SE5000-0AA08** | | 1 | 1 unit |
| 3SE5000-0AA60 3SE5000-0AA50 | | | | | | |
| High-grade steel lever 27 mm, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA11** | | 1 | 1 unit |
| High-grade steel lever 27 mm, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA12** | | 1 | 1 unit |
| Metal lever 35 mm, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA15** | | 1 | 1 unit |
| High-grade steel lever 35 mm, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA16** | | 1 | 1 unit |
| **Twist levers 30 mm, straight** | | | | | | |
| Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA24** | | 1 | 1 unit |
| Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA26** | | 1 | 1 unit |
| **Twist levers, adjustable length, with grid hole** | | | | | | |
| Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA60** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA61** | | 1 | 1 unit |
| Metal lever, rubber roller | 50 | ⊕ 5 | **3SE5000-0AA68** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA62** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA63** | | 1 | 1 unit |
| 3SE5000-0AT01 | | | | | | |
| **Twist levers, adjustable length** | | | | | | |
| Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | | 1 | 1 unit |
| Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | | 1 | 1 unit |
| Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | | 1 | 1 unit |
| 3SE5000-0AA80 | | | | | | |
| **Fork levers** (for switches with snap-action contacts only) | | | | | | |
| 2 metal levers, 2 plastic rollers | 19 | ⊕ 5 | **3SE5000-0AT01** | | 1 | 1 unit |
| 2 metal levers, 2 high-grade steel rollers | 19 | ⊕ 5 | **3SE5000-0AT02** | | 1 | 1 unit |
| 2 high-grade steel levers, 2 plastic rollers | 19 | ⊕ 5 | **3SE5000-0AT03** | | 1 | 1 unit |
| **Rod actuators, type D, acc. to EN 50041** | | | | | | |
| Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | | 1 | 1 unit |
| Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | | 1 | 1 unit |
| Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | | 1 | 1 unit |

⊕ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

| | Version | Contacts | LEDs | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Complete units[1] • Enclosure width 56 mm** | | | | | | | | |
| 3SE5122-0BB01 | ***Plain plungers*** | | | | | | | |
| | **With high-grade steel plunger** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BB01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CB01** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0KB01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LB01** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0PB01** | | 1 | 1 unit |
| 3SE5122-0BC02 | ***Rounded plungers*** | | | | | | | |
| | **With high-grade steel plungers, with 3 mm overtravel** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BC02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ ▶ | **3SE5122-0CC02** | | 1 | 1 unit |
| | Snap-action contacts[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CC02-1AA7** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0KC02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LC02** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0PC02** | | 1 | 1 unit |
| 3SE5122-0BD02 | ***Roller plunger*** | | | | | | | |
| | **With high-grade steel roller 13 mm, with 3 mm overtravel** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BD02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5122-0CD02** | | 1 | 1 unit |
| | Snap-action contacts[2] | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CD02-1AA7** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0KD02** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LD02** | | 1 | 1 unit |
| 3SE5122-0BE01 | ***Roller levers*** | | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BE01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5122-0CE01** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0KE01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LE01** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0PE01** | | 1 | 1 unit |
| | **With metal lever and high-grade steel roller 22 mm** | | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CE02** | | 1 | 1 unit |
| 3SE5122-0BF01 | ***Angular roller lever*** | | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BF01** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CF01** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0PF01** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Increased operation or restoring force 30 N; only available as complete unit, no modular design

# 3SE5, Metal Enclosures

## Enclosure width 56 mm

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

| Version | Contacts | LEDs | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Complete units[1] • Enclosure width 56 mm** | | | | | | | |
| ***Spring rod*** | | | | | | | |
| **Length 142.5 mm, with plastic plunger 50 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5122-0CR01** | | 1 | 1 unit |
| ***Twist levers*** | | | | | | | |
| **With metal lever 27 mm and plastic roller 19 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BH01** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5122-0CH01** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0KH01** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LH01** | | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0PH01** | | 1 | 1 unit |
| **With metal lever 27 mm and high-grade steel roller 19 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CH02** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LH02** | | 1 | 1 unit |
| ***Twist levers, adjustable length*** | | | | | | | |
| **With metal lever with grid hole and plastic roller 19 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0BH60** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CH60** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5122-0LH60** | | 1 | 1 unit |
| **With metal lever and plastic roller 19 mm** | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5122-0BH50** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | 2 | **3SE5122-0CH50** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | 5 | **3SE5122-0LH50** | | 1 | 1 unit |
| ***Fork levers, latching*** | | | | | | | |
| **With metal lever and 2 plastic rollers 19 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5122-0CT11** | | 1 | 1 unit |
| ***Rod actuator*** | | | | | | | |
| **With aluminum rod, length 200 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5122-0CH80** | | 1 | 1 unit |
| **With plastic rod, length 200 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | 5 | **3SE5122-0CH82** | | 1 | 1 unit |

3SE5122-0CR01

3SE5122-0BH01

3SE5122-0BH60

3SE5122-0CT11

3SE5122-0CH80

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/38.

## Enclosure width 56 mm

### *Modular system*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

| Version | Contacts | LEDs | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | d | Article No. / Price per PU | | |
| **Basic switches • Enclosure width 56 mm** | | | | | | |
| 3SE5122-0BA00 | **With 3 × connection thread M20 × 1.5** | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ➔ 2 | **3SE5122-0BA00** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 2 | **3SE5122-0CA00** | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5122-0KA00** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ 2 | **3SE5122-0LA00** | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ➔ 2 | **3SE5122-0MA00** | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ➔ 2 | **3SE5122-0PA00** | 1 | 1 unit |
| 3SE5122-0BA00-1CA0 | **With increased corrosion protection**[1] | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5122-0BA00-1CA0** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5122-0CA00-1CA0** | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5122-0KA00-1CA0** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5122-0LA00-1CA0** | 1 | 1 unit |
| Slow-action contacts with make-before-break | 1 NO + 2 NC | -- | ➔ 5 | **3SE5122-0MA00-1CA0** | 1 | 1 unit |
| Slow-action contacts | 2 NO + 1 NC | -- | ➔ 5 | **3SE5122-0PA00-1CA0** | 1 | 1 unit |
| 3SE5122-1KA00 | **With 2 LEDs, yellow/green** | | | | | |
| Slow-action contacts | 1 NO + 2 NC | 24 V DC | ➔ 5 | **3SE5122-1KA00** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 24 V DC | ➔ 5 | **3SE5122-1LA00** | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | 230 V AC | ➔ 5 | **3SE5122-3KA00** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | 230 V AC | ➔ 5 | **3SE5122-3LA00** | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

For the selection aid, see page 13/13

| Version | Diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | mm | d | Article No. / Price per PU | | |
| **Operating mechanisms** | | | | | |
| 3SE5000-0AC02 3SE5000-0AD02 | **Plain plungers** | | | | |
| High-grade steel plungers | 10 | ➔ 2 | **3SE5000-0AB01** | 1 | 1 unit |
| | **Rounded plungers, type B, acc. to EN 50041** | | | | |
| High-grade steel plungers, with 3 mm overtravel | 10 | ➔ 5 | **3SE5000-0AC02** | 1 | 1 unit |
| | **Roller plungers, type C, acc. to EN 50041** | | | | |
| High-grade steel roller, with 3 mm overtravel | 13 | ➔ 5 | **3SE5000-0AD02** | 1 | 1 unit |
| 3SE5000-0AE01 | **Roller levers** | | | | |
| Metal lever, plastic roller | 22 | ➔ 2 | **3SE5000-0AE01** | 1 | 1 unit |
| Metal lever, high-grade steel roller | 22 | ➔ 5 | **3SE5000-0AE02** | 1 | 1 unit |
| High-grade steel lever, plastic roller | 22 | ➔ 5 | **3SE5000-0AE03** | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 22 | ➔ 5 | **3SE5000-0AE04** | 1 | 1 unit |
| 3SE5000-0AF01 | **Angular roller levers** | | | | |
| Metal lever, plastic roller | 22 | ➔ 2 | **3SE5000-0AF01** | 1 | 1 unit |
| Metal lever, high-grade steel roller | 22 | ➔ 5 | **3SE5000-0AF02** | 1 | 1 unit |
| High-grade steel lever, plastic roller | 22 | ➔ 5 | **3SE5000-0AF03** | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 22 | ➔ 5 | **3SE5000-0AF04** | 1 | 1 unit |
| 3SE5000-0AR01 | **Spring rods** (for switches with snap-action contacts only) | | | | |
| Plunger made of plastic, spring of high-grade steel: | 7 | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | 1 | 1 unit |
| • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | 1 | 1 unit |
| • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | 1 | 1 unit |
| Plunger and spring made of high-grade steel: | 7 | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | 1 | 1 unit |

# 3SE5, Metal Enclosures

## Enclosure width 56 mm



| | Version | Diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | | Article No. Price per PU | | |
| | | mm | d | | | |
| **Twist actuators** | | | | | | |
| 3SE5000-0AH00 | **Twist actuators, for 40/56/56 XL mm EN 50041** | | | | | |
| | • For twist levers and rod actuators, switching right and/or left, adjustable | | ⊖ 2 | **3SE5000-0AH00** | 1 | 1 unit |
| | • For fork levers, latching | | ⊖ 5 | **3SE5000-0AT10** | 1 | 1 unit |
| | ***Levers*** | | | | | |
| 3SE5000-0AA01 | **Twist levers 27 mm, offset, type A, acc. to EN 50041** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 2 | **3SE5000-0AA01** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 2 | **3SE5000-0AA02** | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ⊖ 5 | **3SE5000-0AA03** | 1 | 1 unit |
| | Metal lever, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AA04** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA05** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊖ 5 | **3SE5000-0AA07** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA08** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA11** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA12** | 1 | 1 unit |
| | **Twist levers 35 mm, offset** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA15** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA16** | 1 | 1 unit |
| | **Twist levers 30 mm, straight (can be mounted rotated by 180°)** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA24** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA26** | 1 | 1 unit |
| 3SE5000-0AA60 3SE5000-0AA50 | **Twist levers, adjustable length, with grid hole** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA60** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA61** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊖ 5 | **3SE5000-0AA67** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA68** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA62** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA63** | 1 | 1 unit |
| | **Twist levers, adjustable length** | | | | | |
| | Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | 5 | **3SE5000-0AA57** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | 1 | 1 unit |
| 3SE5000-0AT01 | **Fork levers** (for switches with snap-action contacts only) | | | | | |
| | 2 metal levers, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AT01** | 1 | 1 unit |
| | 2 metal levers, 2 high-grade steel rollers | 19 | ⊖ 5 | **3SE5000-0AT02** | 1 | 1 unit |
| | 2 high-grade steel levers, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AT03** | 1 | 1 unit |
| | 2 high-grade steel levers, 2 high-grade steel rollers | 19 | ⊖ 5 | **3SE5000-0AT04** | 1 | 1 unit |
| 3SE5000-0AA80 | **Rod actuators, type D, acc. to EN 50041** | | | | | |
| | Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | 1 | 1 unit |
| | Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | 1 | 1 unit |
| | Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | 1 | 1 unit |

⊖ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

4 or 5 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

| | Version | Contacts | LEDs | SD<br>d | Complete units<br>Article No. | PU (UNIT, SET, M)<br>Price per PU | PS* |
|---|---|---|---|---|---|---|---|
| **Complete units[1] · Enclosure width 56 mm, XL** | | | | | | | |
| 3SE5162-0CB01 | ***Plain plungers*** | | | | | | |
| | **With high-grade steel plunger** | | | | | | |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0CB01** | 1 | 1 unit |
| 3SE5162-0EC02 | ***Rounded plungers*** | | | | | | |
| | **With high-grade steel plungers, with 3 mm overtravel** | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5162-0EC02** | 1 | 1 unit |
| | Slow-action contacts with make-before-break<br>2 mm travel difference | 1 NO + 2 NC | | | | | |
| 3SE5162-0BD02 | ***Roller plunger*** | | | | | | |
| | **With high-grade steel roller 13 mm, with 3 mm overtravel** | | | | | | |
| | Slow-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0BD02** | 1 | 1 unit |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 2 | **3SE5162-0CD02** | 1 | 1 unit |
| 3SE5162-0BE01 | ***Roller levers*** | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | |
| | Slow-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0BE01** | 1 | 1 unit |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 2 | **3SE5162-0CE01** | 1 | 1 unit |
| | **With metal lever and high-grade steel roller 22 mm** | | | | | | |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0CE02** | 1 | 1 unit |
| 3SE5162-0CF01 | ***Angular roller lever*** | | | | | | |
| | **With metal lever and plastic roller 22 mm** | | | | | | |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0CF01** | 1 | 1 unit |
| | ***Twist levers*** | | | | | | |
| | **With metal lever 27 mm and plastic roller 19 mm** | | | | | | |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ 2 | **3SE5162-0CH01** | 1 | 1 unit |
| 3SE5162-0CH01 | **With high-grade steel lever 27 mm and high-grade steel roller 19 mm, increased corrosion protection** | | | | | | |
| | Snap-action contacts (gold contacts) | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0CH12-1CC1** | 1 | 1 unit |
| | ***Twist levers, adjustable length*** | | | | | | |
| | **High-grade steel lever with grid hole and high-grade steel roller 19 mm, increased corrosion protection**<br>**Adapter 3SX5100-3B included** | | | | | | |
| | Snap-action contacts (gold contacts) | 2 × (1 NO + 1 NC) | -- | ➔ 5 | **3SE5162-0CH63-1AN4** | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K.
1) Popular versions.

Note:
If the device you require is not available as a complete unit, see Modular system, page 13/41.

## Enclosure width 56 mm, XL

### *Modular system*

4 or 6 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

| Version | Contacts | LEDs | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Basic switches • Enclosure width 56 mm, XL** | | | | | | | |
| 3SE5162-0BA00 | | | | | | | |
| **With 3 × connection thread M20 × 1.5** | | | | | | | |
| Slow-action contacts | 2 × (1 NO + 1 NC) | -- | ⊖ 2 | **3SE5162-0BA00** | | 1 | 1 unit |
| Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ⊖ 2 | **3SE5162-0CA00** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 2 × (1 NO + 2 NC) | -- | ⊖ 30 | **3SE5162-0DA00** | | 1 | 1 unit |
| **With increased corrosion protection[1)]** | | | | | | | |
| Slow-action contacts | 2 × (1 NO + 1 NC) | -- | ⊖ 5 | **3SE5162-0BA00-1CA0** | | 1 | 1 unit |
| Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ⊖ 5 | **3SE5162-0CA00-1CA0** | | 1 | 1 unit |
| Slow-action contacts with make-before-break | 2 × (1 NO + 2 NC) | -- | ⊖ 30 | **3SE5162-0DA00-1CA0** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

For the selection aid, see page 13/13

| Version | Diameter mm | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AB01 | | | | | | |
| **Plain plungers** | | | | | | |
| High-grade steel plunger | 10 | ⊖ 2 | **3SE5000-0AB01** | | 1 | 1 unit |
| 3SE5000-0AC02 | | | | | | |
| **Rounded plungers, type B, acc. to EN 50041** | | | | | | |
| High-grade steel plungers, with 3 mm overtravel | 10 | ⊖ 5 | **3SE5000-0AC02** | | 1 | 1 unit |
| 3SE5000-0AD02 | | | | | | |
| **Roller plungers, type C, acc. to EN 50041** | | | | | | |
| High-grade steel roller, with 3 mm overtravel | 13 | ⊖ 5 | **3SE5000-0AD02** | | 1 | 1 unit |
| 3SE5000-0AE01 | | | | | | |
| **Roller levers** | | | | | | |
| Metal lever, plastic roller | 22 | ⊖ 2 | **3SE5000-0AE01** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AE02** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 22 | ⊖ 5 | **3SE5000-0AE03** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AE04** | | 1 | 1 unit |
| 3SE5000-0AF01 | | | | | | |
| **Angular roller levers** | | | | | | |
| Metal lever, plastic roller | 22 | ⊖ 2 | **3SE5000-0AF01** | | 1 | 1 unit |
| Metal lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AF02** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 22 | ⊖ 5 | **3SE5000-0AF03** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AF04** | | 1 | 1 unit |
| 3SE5000-0AR01 | | | | | | |
| **Spring rods** (for switches with snap-action contacts only) | | | | | | |
| Plunger made of plastic, spring of high-grade steel: | 7 | | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR01** | | 1 | 1 unit |
| • Length 76 mm (spring 23.5 mm, plunger 10 mm) | | 5 | **3SE5000-0AR03** | | 1 | 1 unit |
| • Length 242.5 mm (spring 150 mm, plunger 50 mm) | | 5 | **3SE5000-0AR04** | | 1 | 1 unit |
| Plunger and spring made of high-grade steel: | 7 | | | | | |
| • Length 142.5 mm (spring 50 mm, plunger 50 mm) | | 5 | **3SE5000-0AR02** | | 1 | 1 unit |

⊖ Positively driven actuator, necessary in safety circuits.

# 3SE5, Metal Enclosures

## Enclosure width 56 mm, XL



| | Version | Diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | | Article No. / Price per PU | | |
| | | mm | d | | | |
| **Twist actuators** | | | | | | |
| 3SE5000-0AH00 | **Twist actuators, for 40/56/56 XL mm EN 50041** | | | | | |
| | • For twist levers and rod actuators, switching right and/or left, adjustable | | ⊕ 2 | **3SE5000-0AH00** | 1 | 1 unit |
| | • For fork levers, latching | | ⊕ 5 | **3SE5000-0AT10** | 1 | 1 unit |
| 3SE5000-0AA01 | ***Levers*** | | | | | |
| | **Twist levers 27 mm, offset, type A, acc. to EN 50041** | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 2 | **3SE5000-0AA01** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊕ 2 | **3SE5000-0AA02** | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ⊕ 5 | **3SE5000-0AA03** | 1 | 1 unit |
| | Metal lever, 2 plastic rollers | 19 | ⊕ 5 | **3SE5000-0AA04** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA05** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊕ 5 | **3SE5000-0AA07** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊕ 5 | **3SE5000-0AA08** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA11** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA12** | 1 | 1 unit |
| | **Twist levers 35 mm, offset** | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA15** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA16** | 1 | 1 unit |
| | **Twist levers 30 mm, straight** | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA24** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA26** | 1 | 1 unit |
| 3SE5000-0AA60 3SE5000-0AA50 | **Twist levers, adjustable length, with grid hole** | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA60** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA61** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊕ 5 | **3SE5000-0AA67** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊕ 5 | **3SE5000-0AA68** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA62** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA63** | 1 | 1 unit |
| | **Twist levers, adjustable length** | | | | | |
| | Metal lever, plastic roller | 19 | 2 | **3SE5000-0AA50** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA51** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | 5 | **3SE5000-0AA55** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | 5 | **3SE5000-0AA57** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | 5 | **3SE5000-0AA58** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | 5 | **3SE5000-0AA52** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | 5 | **3SE5000-0AA53** | 1 | 1 unit |
| 3SE5000-0AT01 | **Fork levers** (for switches with snap-action contacts only) | | | | | |
| | 2 metal levers, 2 plastic rollers | 19 | ⊕ 5 | **3SE5000-0AT01** | 1 | 1 unit |
| | 2 metal levers, 2 high-grade steel rollers | 19 | ⊕ 5 | **3SE5000-0AT02** | 1 | 1 unit |
| | 2 high-grade steel levers, 2 plastic rollers | 19 | ⊕ 5 | **3SE5000-0AT03** | 1 | 1 unit |
| | 2 high-grade steel levers, 2 high-grade steel rollers | 19 | ⊕ 5 | **3SE5000-0AT04** | 1 | 1 unit |
| 3SE5000-0AA80 | **Rod actuators, type D, acc. to EN 50041** | | | | | |
| | Aluminum rod, length 200 mm | 6 | 5 | **3SE5000-0AA80** | 1 | 1 unit |
| | Spring rod, length 200 mm | 6 | 5 | **3SE5000-0AA81** | 1 | 1 unit |
| | Plastic rod, length 200 mm | 6 | 5 | **3SE5000-0AA82** | 1 | 1 unit |
| | Plastic rod, length 330 mm | 6 | 5 | **3SE5000-0AA83** | 1 | 1 unit |

⊕ Positively driven actuator, necessary in safety circuits.

## Overview

Compact design in width 30 mm

Particularly in harsh environments or on equipment with limited space, the small 3SE54 position switches in compact design with a depth of 16 mm and a weight of only 80 g (without cable) are ideal. Above all the versions with molded cable can be mounted in the most confined spaces.

3SE54 compact position switches are available in two different widths as complete units:

- The 3SE5413 series complies with the EU standard and features a 30-mm-wide enclosure with drilled holes at a distance of 20 mm.
- The 3SE5423 series meets the requirements of the US market and features a 40-mm-wide enclosure with drilled holes at a spacing of 25 mm.

Both the enclosure and the actuator head are made of metal and comply with the high IP67 degree of protection. The following actuators are available:

- Rounded plungers
- Rounded plungers with central fixing
- Rounded plungers with external seal
- Roller plungers
- Roller plungers with central fixing
- Twist levers

The contact block is designed with snap-action contacts 1 NO + 1 NC. The NC contact complies with the requirements for positive opening acc. to IEC 60947-5-1.

Use in safety circuits up to category 4 according to EN ISO 13849-1.

Connection:
- With molded cable, 2 m or 5 m long
- With M12 device plug

## Benefits

- Very compact yet with the same rating as the 3SE51 standard switches, for notable space savings in confined installation conditions
- Various actuator versions available
- Roller plungers can be rotated through 90°
- Twist levers can be rotated through 180°; twist levers can be adjusted in 15° increments
- Time is saved when mounting the fully assembled unit
- With metal enclosure of degree of protection IP67, ideal for use in rough industrial environments
- Insensitive to electromagnetic interference

## Selection and ordering data

2 snap-action contacts 1 NO + 1 NC · Degree of protection IP67 · With connecting cable or M12 device plug

| | Operating mechanism | Enclosure width | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | mm | | d | | | | |
| **Complete units • Enclosure width 30 or 40 mm** | | | | | | | | |
| | ***Rounded plungers*** | | | | | | | |
| 3SE5413-0CC20-1EA2 | • Standard mounting | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CC20-1EA2** | | 1 | 1 unit |
| | | 40 | | ⊖ 2 | **3SE5423-0CC20-1EA2** | | 1 | 1 unit |
| | - With 5 m cable 5 x 0.75 mm² | 30 | | ⊖ 5 | **3SE5413-0CC20-1EA5** | | 1 | 1 unit |
| | - With M12 device plug, 5-pole | 30 | | ⊖ 2 | **3SE5413-0CC20-1EB1** | | 1 | 1 unit |
| | | 40 | | ⊖ 5 | **3SE5423-0CC20-1EB1** | | 1 | 1 unit |
| 3SE5413-0CC21-1EA2 | • With central fixing M12 x 1 | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CC21-1EA2** | | 1 | 1 unit |
| | | 40 | | ⊖ 5 | **3SE5423-0CC21-1EA2** | | 1 | 1 unit |
| 3SE5413-0CC22-1EA2 | • With external seal | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 5 | **3SE5413-0CC22-1EA2** | | 1 | 1 unit |
| | | 40 | | ⊖ 5 | **3SE5423-0CC22-1EA2** | | 1 | 1 unit |
| | ***Roller plungers*** | | | | | | | |
| 3SE5413-0CD20-1EA2 | • Standard mounting | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CD20-1EA2** | | 1 | 1 unit |
| | | 40 | | ⊖ 2 | **3SE5423-0CD20-1EA2** | | 1 | 1 unit |
| | - With 5 m cable 5 x 0.75 mm² | 30 | | ⊖ 5 | **3SE5413-0CD20-1EA5** | | 1 | 1 unit |
| | - With M12 device plug, 5-pole | 30 | | ⊖ 2 | **3SE5413-0CD20-1EB1** | | 1 | 1 unit |
| | | 40 | | ⊖ 2 | **3SE5423-0CD20-1EB1** | | 1 | 1 unit |
| 3SE5413-0CD23-1EA2 | • With central fixing M12 x 1 | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CD21-1EA2** | | 1 | 1 unit |
| | | 40 | | ⊖ 5 | **3SE5423-0CD21-1EA2** | | 1 | 1 unit |
| | • Actuator head rotated 90° | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CD23-1EA2** | | 1 | 1 unit |
| | ***Twist levers*** | | | | | | | |
| 3SE5413-0CN20-1EA2 | • Standard mounting | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CN20-1EA2** | | 1 | 1 unit |
| | | 40 | | ⊖ 5 | **3SE5423-0CN20-1EA2** | | 1 | 1 unit |
| | - With 5 m cable 5 x 0.75 mm² | 30 | | ⊖ 2 | **3SE5413-0CN20-1EA5** | | 1 | 1 unit |
| | - With M12 device plug, 5-pole | 30 | | ⊖ 2 | **3SE5413-0CN20-1EB1** | | 1 | 1 unit |
| | | 40 | | ⊖ 5 | **3SE5423-0CN20-1EB1** | | 1 | 1 unit |
| | • Twist levers with a smaller mounting depth and lower height | | | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ 5 | **3SE5413-0CP20-1EA2** | | 1 | 1 unit |
| | • Twist levers, adjustable length | | NEW | | | | | |
| | - With 2 m cable 5 x 0.75 mm² | 30 | | ⊖ X | **3SE5413-0CQ20-1EA2** | | 1 | 1 unit |

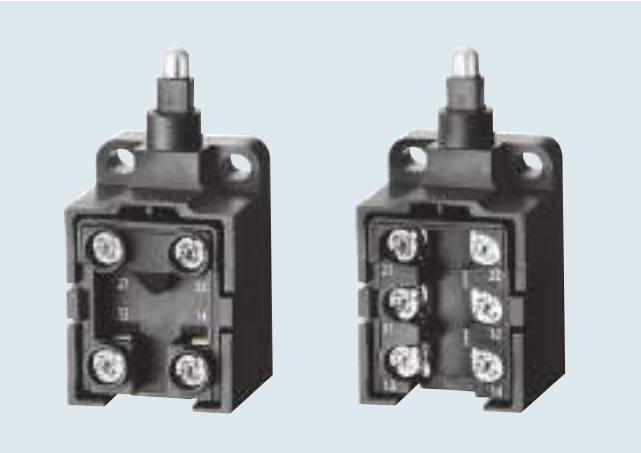
⊖ Positive opening according to IEC 60947-5-1, Appendix K.

# 3SE5, Open-Type Design

## Enclosure width 30 mm



### Overview



Open-type design

Their compact design makes these switches particularly suitable for use in confined conditions. The fixing dimensions and operating points are according to EN 50047.

The switches are equipped with two or three contacts in snap-action, slow-action or slow-action with make-before-break versions. The stroke is 6 mm.

The empty enclosure can be equipped with all contact block versions, (see page 13/47).

Improved version

The switches have a robust metal plunger with increased abrasion resistance (instead of the teflon plunger). This enables the switch to be approached from a 30° angle.

### Selection and ordering data

2 or 3 contacts

| | Version | Contacts | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Plastic enclosures · Enclosure width 30 mm** | | | | | | | |
| | **With metal plunger** | | | | | | |
| 3SE5250-0BC05 | Slow-action contacts | 1 NO + 1 NC | ⊖ 2 | **3SE5250-0BC05** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 1 NC | ⊖ ▶ | **3SE5250-0CC05** | | 1 | 1 unit |
| 3SE5250-0KC05 | Slow-action contacts | 1 NO + 2 NC | ⊖ 5 | **3SE5250-0KC05** | | 1 | 1 unit |
| | Snap-action contacts | 1 NO + 2 NC | ⊖ ▶ | **3SE5250-0LC05** | | 1 | 1 unit |
| | Slow-action contacts with make-before-break | 1 NO + 2 NC | ⊖ 2 | **3SE5250-0MC05** | | 1 | 1 unit |
| | Slow-action contacts | 2 NO + 1 NC | ⊖ 2 | **3SE5250-0PC05** | | 1 | 1 unit |
| 3SE5250-0AC05 | Empty enclosures without contact block | -- | ⊖ 5 | **3SE5250-0AC05** | | 1 | 1 unit |
| 3SE5050-0BA00 | **Contact blocks with 2 contacts**<br>For open-type design[1] | | | | | | |
| | • Slow-action contacts | 1 NO + 1 NC | ⊖ 5 | **3SE5050-0BA00** | | 1 | 1 unit |
| | • Snap-action contacts | 1 NO + 1 NC | | | | | |
| | - Standard | | ⊖ 5 | **3SE5050-0CA00** | | 1 | 1 unit |
| | - 2 × 2 mm switching interval | | ⊖ 30 | **3SE5050-0GA00** | | 1 | 1 unit |
| | - Short stroke | | ⊖ 30 | **3SE5050-0NA00** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Contact blocks with 3 contacts, see page 13/47.

## Selection and ordering data

The quick-release devices and plug-in connections are used for fast installation and replacement of position switches.

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Quick-release devices for enclosure width 40 mm** | | | | | | |
| 3SY3110 3SY3027 | **Adapter plates with screws** | 5 | **3SY3110** | | 1 | 1 unit |
| | **Base plate with locking lever** | 5 | **3SY3027** | | 1 | 1 unit |
| **Plug-in connections for M20 × 1.5 connecting threads** | | | | | | |
| 3SY3131 3SY3136 | **Device plugs (6-pole + PE), for M20 × 1.5**<br>For max. 250 V, 10 A<br>With connecting cable 0.75 mm², plastic, degree of protection IP65, ambient temperature -40 ... +90 °C | 5 | **3SY3131** | | 1 | 1 unit |
| | **Cable box (6-pole + PE)**[1]<br>With terminal compartment, can be pre-assembled, plastic, degree of protection IP65 | 2 | **3SY3136** | | 1 | 1 unit |
| 3SY3127 3SX5100-1SS51 | **Device plugs (4-pole), M12, for M20 × 1.5, fixed**<br>For max. 250 V, 4 A, $U_{imp}$ = 2 500 V<br>With 4 connecting cables 0.25 mm², plastic, degree of protection IP67, ambient temperature -40 ... +85 °C | 5 | **3SY3127** | | 1 | 1 unit |
| | **Device plugs (5-pole), M12, for M20 × 1.5, fixed**<br>For max. 125 V, 4 A, $U_{imp}$ = 1 500 V<br>With 5 connecting cables 0.25 mm², plastic, degree of protection IP67, ambient temperature -40 ... +85 °C | 5 | **3SY3128** | | 1 | 1 unit |
| | **Device plugs (8-pole), M12, for M20 × 1.5, fixed, plastic version**[2]<br>For max. 30 V, 1.5 A, $U_{imp}$ = 800 V<br>With 8 connecting cables 0.25 mm², metal, degree of protection IP67, ambient temperature -25 ... +85 °C | NEW X | **3SX5100-1SS51** | | 1 | 1 unit |
| 3RK1902-4CA00-4AA0 | **M12 cable box, angled, 4-pole**<br>For AS-Interface, max. 4 A<br>With cabling box, max. 0.75 mm² | 5 | **3RK1902-4CA00-4AA0** | | 1 | 1 unit |
| **Adapters and cable glands for M20 × 1.5 connecting threads** | | | | | | |
| 3SX9917 3SX9918 | **Adapters acc. to** , **and** ,<br>For cable entry from M20 × 1.5 to NPT 1/2 | | | | | |
| | • Metal | 5 | **3SX9917** | | 1 | 1 unit |
| | • Plastic | 30 | **3SX9918** | | 1 | 1 unit |
| 3SX9926 | **Cable glands M20 × 1.5**<br>Plastic | | | | | |
| | • Plastic, degree of protection IP67 | 2 | **3SX9926** | | 1 | 1 unit |
| | • High degree of protection IP69, IEC 60529 | 5 | **3SX5601-1A** | | 1 | 1 unit |

[1] For wiring, a crimping tool is necessary, max. conductor cross-section 1 mm².

[2] Suitable for wiring sensors to be connected to all compact block I/O modules in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series.

## Accessories and spare parts

| | Version | Color/ contacts | | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Optional accessories for 3SE51, 3SE52** | | | | | | | | |
| 3SE5000-0AC30 | **Protective caps** For rounded plungers acc. to EN 50047, 3SE5...-..C05 | Black | | 2 | **3SE5000-0AC30** | | 1 | 1 unit |
| 3SX5100-3B | **Adapters** with screw[1] For an increase in the mounting depth on the 3SE5000-0AH00 twist actuator, in combination with twist lever with adjustable length or rod actuator | | | 5 | **3SX5100-3B** | | 1 | 1 unit |
| 3SX5100-1A | **Mounting plate** Suitable for 3SE523. and 3SE521. position switches with a width of 31 mm (in particular for control cabinet types) | | | 5 | **3SX5100-1A** | | 1 | 1 unit |
| **Spare parts for 3SE51, 3SE52** | | | | | | | | |
| 3SE5232-0AC05 | **Empty enclosures, plastic** | Turquoise | | | | | | |
| | Enclosure width 31 mm | | | 5 | **3SE5232-0AC05** | | 1 | 1 unit |
| | • With increased corrosion protection | | | 5 | **3SE5232-0AC05-1CA0** | | 1 | 1 unit |
| | Enclosure width 40 mm | | | 5 | **3SE5132-0AA00** | | 1 | 1 unit |
| | Enclosure width 50 mm | | | 5 | **3SE5242-0AC05** | | 1 | 1 unit |
| | • With increased corrosion protection | | | 5 | **3SE5242-0AC05-1CA0** | | 1 | 1 unit |
| 3SE5212-0AC05 | **Empty enclosures, metal** | Turquoise | | | | | | |
| | Enclosure width 31 mm | | | 5 | **3SE5212-0AC05** | | 1 | 1 unit |
| | • With increased corrosion protection | | | 5 | **3SE5212-0AC05-1CA0** | | 1 | 1 unit |
| | Enclosure width 40 mm | | | 5 | **3SE5112-0AA00** | | 1 | 1 unit |
| | • With increased corrosion protection | | | 5 | **3SE5112-0AA00-1CA0** | | 1 | 1 unit |
| | Enclosure width 56 mm | | | 5 | **3SE5122-0AA00** | | 1 | 1 unit |
| | • With increased corrosion protection | | | 5 | **3SE5122-0AA00-1CA0** | | 1 | 1 unit |
| | Enclosure width 56 mm, XL[2] | | | 5 | **3SE5162-0AA00** | | 1 | 1 unit |
| 3SE5000-0BA00 | **Contact blocks with 2 contacts**[3] | | | | | | | |
| | • Slow-action contacts | 1 NO + 1 NC | ⊖ | 5 | **3SE5000-0BA00** | | 1 | 1 unit |
| | • Snap-action contacts | 1 NO + 1 NC | | | | | | |
| | - Standard | | ⊖ | 5 | **3SE5000-0CA00** | | 1 | 1 unit |
| | - Gold-plated contacts | | ⊖ | 5 | **3SE5000-0CA00-1AC1** | | 1 | 1 unit |
| | - 2 × 2 mm switching interval | | ⊖ | 30 | **3SE5000-0GA00** | | 1 | 1 unit |
| | - Short stroke | | ⊖ | 5 | **3SE5000-0NA00** | | 1 | 1 unit |
| 3SE5000-0KA00 | **Contact blocks with 3 contacts** | | | | | | | |
| | • Slow-action contacts | 1 NO + 2 NC | ⊖ | 5 | **3SE5000-0KA00** | | 1 | 1 unit |
| | • Snap-action contacts | 1 NO + 2 NC | ⊖ | 5 | **3SE5000-0LA00** | | 1 | 1 unit |
| | • Slow-action contacts with make-before-break | 1 NO + 2 NC | ⊖ | 2 | **3SE5000-0MA00** | | 1 | 1 unit |
| | • Slow-action contacts | 2 NO + 1 NC | ⊖ | 2 | **3SE5000-0PA00** | | 1 | 1 unit |
| 3SE5060-0BA00 | **Contact blocks for XL enclosure**[2] | | | | | | | |
| | • Slow-action contacts | 1 NO + 1 NC | ⊖ | 5 | **3SE5060-0BA00** | | 1 | 1 unit |
| | • Snap-action contacts | 1 NO + 1 NC | ⊖ | 5 | **3SE5060-0CA00** | | 1 | 1 unit |
| | • Slow-action contacts with make-before-break | 1 NO + 2 NC | ⊖ | 30 | **3SE5060-0MA00** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Possibly required for the conversion from 3SE21 to 3SE51.

2) Equip XL enclosures only with contact combinations, see pages 13/12, 13/40 and 13/41

3) Unsuitable for open-type position switches, see page 13/45.

| | Version | Rated voltage LED | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | V | d | | | | |
| **Spare parts for 3SE51, 3SE52** | | | | | | | |
| 3SE5230-1AA00 | **Covers for plastic enclosures, width 31 mm** | | | | | | |
| | • Turquoise with LED | 24 DC | 5 | **3SE5230-1AA00** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5230-3AA00** | | 1 | 1 unit |
| | • Yellow | -- | 5 | **3SE5230-0AA00-1AG0** | | 1 | 1 unit |
| | • Yellow with LED | 24 DC | 5 | **3SE5230-1AA00-1AG0** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5230-3AA00-1AG0** | | 1 | 1 unit |
| 3SE5130-1AA00-1AG0 | **Covers for plastic enclosures, width 40 mm** | | | | | | |
| | • Turquoise with LED | 24 DC | 5 | **3SE5130-1AA00** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5130-3AA00** | | 1 | 1 unit |
| | • Yellow | -- | 5 | **3SE5130-0AA00-1AG0** | | 1 | 1 unit |
| | • Yellow with LED | 24 DC | 5 | **3SE5130-1AA00-1AG0** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5130-3AA00-1AG0** | | 1 | 1 unit |
| 3SE5240-1AA00 | **Covers for plastic enclosures, width 50 mm** | | | | | | |
| | • Turquoise with LED | 24 DC | 5 | **3SE5240-1AA00** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5240-3AA00** | | 1 | 1 unit |
| | • Yellow | -- | 5 | **3SE5240-0AA00-1AG0** | | 1 | 1 unit |
| | • Yellow with LED | 24 DC | 5 | **3SE5240-1AA00-1AG0** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5240-3AA00-1AG0** | | 1 | 1 unit |
| 3SE5210-1AA00 | **Covers for metal enclosures, width 31 mm** | | | | | | |
| | • Turquoise with LED | 24 DC | 5 | **3SE5210-1AA00** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5210-3AA00** | | 1 | 1 unit |
| | • Yellow | -- | 5 | **3SE5210-0AA00-1AG0** | | 1 | 1 unit |
| | • Yellow with LED | 24 DC | 5 | **3SE5210-1AA00-1AG0** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5210-3AA00-1AG0** | | 1 | 1 unit |
| 3SE5110-1AA00 | **Covers for metal enclosures, width 40 mm** | | | | | | |
| | • Turquoise with LED | 24 DC | 5 | **3SE5110-1AA00** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5110-3AA00** | | 1 | 1 unit |
| | • Yellow | -- | 5 | **3SE5110-0AA00-1AG0** | | 1 | 1 unit |
| | • Yellow with LED | 24 DC | 5 | **3SE5110-1AA00-1AG0** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5110-3AA00-1AG0** | | 1 | 1 unit |
| 3SE5120-0AA00-1AG0 | **Covers for metal enclosures, width 56 mm** | | | | | | |
| | • Turquoise with LED | 24 DC | 5 | **3SE5120-1AA00** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5120-3AA00** | | 1 | 1 unit |
| | • Yellow | -- | 5 | **3SE5120-0AA00-1AG0** | | 1 | 1 unit |
| | • Yellow with LED | 24 DC | 5 | **3SE5120-1AA00-1AG0** | | 1 | 1 unit |
| | | 230 AC | 5 | **3SE5120-3AA00-1AG0** | | 1 | 1 unit |
| | **Covers for XL metal enclosures, width 56 mm** | | | | | | |
| | • Yellow | -- | 5 | **3SE5160-0AA00-1AG0** | | 1 | 1 unit |

## Overview

Safety switches with separate actuator are used where the position of doors, covers or protective grilles must be monitored for safety reasons.

3SE5 safety switches with separate actuator have the same enclosures as the 3SE5 position switches (modular system).

3SE5 safety switches with head for separate actuator

### *Design*

Enclosure sizes

The 3SE5 safety switches are available in four different enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries

Also available are safety switches in the 3SE2 series which have been developed in this form according to general market requirements:

- Molded-plastic enclosures outside of the standards, enclosure width 52 mm, IP67

Enclosure versions

Various basic versions can be selected for the enclosures of the 3SE5 series:

- Available with two- or three-pole contact blocks designed as slow-action contacts
- Optional LED status display
- With mounted four or five-pole M12 device plug (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole device plug + PE on the metal enclosures
- Similarly with a combination of plug and LED indicators
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 13/93).

For a description of the basic switches, (see page 13/7).

### *Operation*

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuator heads of the 3SE2243 and 3SE2257 switches with special enclosures cannot be changed. The switches can be approached from the two broad sides and from above.

The actuator is not included in the scope of supply of the safety switches and must be ordered separately from a choice of different versions to suit the application (see page 13/56).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The safety switches with radius actuators are particularly suitable for rotary protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more security (see page 13/56).

Blocking inserts with padlock

Dust protection

For use in dusty environments, a rubber cap is offered that protects the actuator entries of the actuator head from contamination (see page 13/56).

### *Contact reliability*

The contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

### *Positive opening* ⊖

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

# With Separate Actuator

## 3SE5, plastic enclosures, enclosure width 31 mm according to EN 50047



### Benefits

The 3SE5 safety switches with separate actuator differ from the previous series through the following new properties:

- All enclosure sizes with increased corrosion protection are optionally available with an LED signaling indicator.
- The three-pole contact block 1 NO + 2 NC is available for all enclosure sizes.
- The plastic enclosure has simple and fast wiring equipment which makes it possible to save approx. 20 to 25% of the time when connecting.
- The ASIsafe electronics are integrated in the enclosure for the versions with AS-Interface connection (see page 13/93); an additional adapter is not required. .

### Application

Safety switches with separate actuator are used where the position of doors, covers or protective grilles must be monitored for safety reasons.

The safety switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. The high-grade steel actuator IP69K with optimized geometry is suitable for extreme environmental conditions as low as -40 °C. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions and fixing points of the enclosure are in accordance with EN 50041 or EN 50047 standards. The devices are suitable for use in any climate.

### *Standards*

IEC/EN 60947-5-1

The protective measure of "total insulation" by the molded-plastic enclosure is ensured by the use of molded-plastic screw glands.

### *Safety position switches*

For controls according to IEC/EN 60204-1, the devices can be used as a safety position switch. They comply with the standard EN ISO 14119. A TÜV certificate is available. To secure position switches against changes in their position, keyed techniques must be employed on installation.

### *Safety circuits*

The IEC/EN 60947-5-1 standard requires positive opening of the NC contacts. In other words, for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked in accordance with the standard IEC 60947-5-1 with the symbol ⊖.

Category 3 according to EN ISO 13849-1 can be attained with a safety switch with separate actuator if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK, 3TK28 safety relays or matching units from the ASI-safe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional 3SE5 safety switch.

### Technical specifications

| Type | | 3SE51..-..V.., 3SE52..-..V.. | 3SE2257-.XX.. | | 3SE2243-.XX.. | |
|---|---|---|---|---|---|---|
| **General data** | | | | | | |
| **Standards** | | IEC 60947-5-1, EN 60947-5-1, EN ISO 14119 | | | | |
| **Rated insulation voltage $U_i$** | V | 400 | 500 | | | |
| **Degree of pollution** according to IEC 60664-1 | | Class 3 | Class 3 | | | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 6 | | | | |
| **Rated operational voltage $U_e$** | V | 400 AC; over 300 V AC same potential only | 500 AC; over 380 V AC same potential only | | | |
| **Conventional thermal current $I_{th}$** | A | 6 | 10 | | | |
| **Rated operational current $I_e$** | | | 1-pole | | 3-pole | |
| • With alternating current 50/60 Hz | | $I_e$ / AC-15 | $I_e$ / AC-12 | $I_e$ / AC-15 | $I_e$ / AC-12 | $I_e$ / AC-15 |
| - At 24 V | A | 6 | 10 | 10 | 10 | 10 |
| - At 120 V | A | 6 | 10 | 10 | 10 | 10 |
| - At 240 V | A | 4 | 10 | 6 | 10 | 4 |
| - At 400 V | A | 4 | 10 | 4 | 10 | 4 |
| - At 500 V | A | -- | 10 | 3 | 10 | 3 |
| • For direct current | | $I_e$ / DC-13 | $I_e$ / DC-12 | $I_e$ / DC-13 | $I_e$ / DC-12 | $I_e$ / DC-13 |
| - At 24 V | A | 3 | 10 | 10 | 10 | 10 |
| - At 125 V | A | 0.55 | -- | -- | -- | -- |
| - At 250 V | A | 0.27 | -- | -- | -- | -- |
| - At 110 V | A | -- | 4 | 1 | 4 | 1 |
| - At 220 V | A | -- | 1 | 0.4 | 1 | 0.4 |
| - At 400 V | A | 0.12 | -- | -- | -- | -- |
| - At 440 V | A | -- | 0.5 | 0.2 | 0.5 | 0.2 |
| **Short-circuit protection** | | | | | | |
| • With DIAZED fuse links, operational class gG | A | 6 | 6 | | | |
| • With fuse links, quick | A | -- | 10 | | | |
| • With miniature circuit breaker, C char. ($I_{K< 400A}$) | A | 1 | -- | | | |
| **Mechanical endurance** | | 1 ×10$^6$ operating cycles | | | | |
| **Electrical endurance** | | | | | | |
| • With 3RH.1, 3RT contactors in size S00, S0 | | 1 ×10$^6$ operating cycles | > 1 ×10$^6$ operating cycles | | | |
| • For utilization category AC-15 when switching off $I_e$ / AC-15 at 240 V | | 100 000 operating cycles | 500 000 operating cycles | | | |
| **Switching frequency** With 3RH.1, 3RT contactors in size S00, S0 | | 6 000 operating cycles/h | | | | |
| **Minimum pull-out force** for positive opening | N | 20 | 10 | | 30 | |

# With Separate Actuator

## 3SE5, plastic enclosures, enclosure width 40 mm according to EN 50041

### Selection and ordering data

2 or 3 contacts · 5 directions of approach · Degree of protection IP65 · Cable entry M20 × 1.5

| | Version[1] | Contacts | LEDs | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Enclosure width 31 mm according to EN 50047** | | | | | | | | |
| 3SE5232-0RV40 | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5232-0RV40** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ ▶ | **3SE5232-0QV40** | | 1 | 1 unit |
| | **With increased minimum pull-out force 30 N** | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5232-0QV40-1AA1** | | 1 | 1 unit |
| 3SE5234-0RV40-1AC4 | **With M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5234-0RV40-1AC4** | | 1 | 1 unit |
| | Slow-action contacts | 2 NC | -- | ⊖ 5 | **3SE5234-0QV40-1AE0** | | 1 | 1 unit |
| | **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[2]** NEW | | | | | | | |
| | Slow-action contacts | 2 NC | -- | ⊖ X | **3SE5234-0QV40-1AE2** | | 1 | 1 unit |
| 3SE5232-1RV40 | **With 2 LEDs, yellow/green** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5232-1RV40** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 1 NC | 230 V AC | ⊖ 5 | **3SE5232-3RV40** | | 1 | 1 unit |
| | **With M12 device plug, 5-pole** (125 V, 4 A)**, and 2 LEDs** | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5234-1RV40-1AF3** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 13/56).

2) The 3SE5234-.....-1AE2 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

# With Separate Actuator

## 3SE5, plastic enclosures, enclosure width 40 mm according to EN 50041



### Selection and ordering data

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version[1] | Contacts | LEDs | | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Article No. | Price per PU | | |
| | | | | | d | | | | |
| **Enclosure width 40 mm acc. to EN 50041** | | | | | | | | | |
| 3SE5132-0QV20 | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5132-0QV20** | | 1 | 1 unit |
| | **With 2 LEDs, yellow/green** | | | | | | | | |
| 3SE5132-1QV20 | Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5132-1QV20** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5132-3QV20** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/56).

# With Separate Actuator

## 3SE5, plastic enclosures, enclosure width 50 mm

### Selection and ordering data

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version[1] | Contacts | LEDs | | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | Article No. | Price per PU | | |
| **Enclosure width 50 mm** | | | | | | | | | |
| 3SE5242-0QV40 | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5242-0QV40** | | 1 | 1 unit |
| | **With increased minimum pull-out force 30 N** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0RV40-1AA1** | | 1 | 1 unit |
| | **With 2 LEDs, yellow/green** | | | | | | | | |
| 3SE5242-1QV40 | Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5242-1QV40** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5242-3QV40** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/56).

# With Separate Actuator

## 3SE5, metal enclosures, enclosure width 31 mm according to EN 50047

### Selection and ordering data

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version[1] | Contacts | LEDs | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Enclosure width 31 mm according to EN 50047** | | | | | | | | |
| 3SE5212-0RV40 | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ 2 | **3SE5212-0RV40** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0QV40** | | 1 | 1 unit |
| | **With 2 LEDs, yellow/green** | | | | | | | |
| 3SE5212-1RV40 | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ 5 | **3SE5212-1RV40** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 1 NC | 230 V AC | ⊖ 5 | **3SE5212-3RV40** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/56).

# With Separate Actuator

## 3SE5, metal enclosures, enclosure width 40 mm according to EN 50041 / 56 mm

### Selection and ordering data

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version[1] | Contacts | LEDs | | SD | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | | |
| **Enclosure width 40 mm acc. to EN 50041** | | | | | | | | | |
| 3SE5112-0QV10 | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | ▶ | **3SE5112-0QV10** | | 1 | 1 unit |
| | **With increased minimum pull-out force 30 N** | | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5112-0QV10-1AA7** | | 1 | 1 unit |
| 3SE5114-0RV10-1AC5 | **With M12 device plug, 5-pole (125 V, 4 A)** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5114-0RV10-1AC5** | | 1 | 1 unit |
| | Slow-action contacts | 2 NC | -- | ⊖ | 5 | **3SE5114-0QV10-1AE1** | | 1 | 1 unit |
| | **With M12 device plug, 5-pole (125 V, 4 A), with pin assignment as for SIMATIC ET 200[2]** NEW | | | | | | | | |
| | Slow-action contacts | 2 NC | -- | ⊖ | X | **3SE5114-0QV10-1AE3** | | 1 | 1 unit |
| | **With device plug, 6-pole + PE (250 V, 10 A)** | | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5115-0QV10-1AD1** | | 1 | 1 unit |
| 3SE5112-1QV10 | **With 2 LEDs, yellow/green** | | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5112-1QV10** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5112-3QV10** | | 1 | 1 unit |
| | **With M12 device plug, 5-pole (125 V, 4 A), and 2 LEDs** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5114-1RV10-1AF3** | | 1 | 1 unit |
| | **With device plug, 6-pole + PE (250 V, 10 A), and 2 LEDs** | | | | | | | | |
| | Slow-action contacts | 1 NO + 1 NC | 24 V DC | ⊖ | 5 | **3SE5115-1RV10-1AF2** | | 1 | 1 unit |
| **Enclosure width 56 mm** | | | | | | | | | |
| 3SE5122-0QV10 | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5122-0QV10** | | 1 | 1 unit |
| | **With increased minimum pull-out force 30 N** | | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5122-0QV10-1AA7** | | 1 | 1 unit |
| 3SE5122-1QV10 | **With 2 LEDs, yellow/green** | | | | | | | | |
| | Slow-action contacts | 1 NO + 2 NC | 24 V DC | ⊖ | 5 | **3SE5122-1QV10** | | 1 | 1 unit |
| | Slow-action contacts | 1 NO + 2 NC | 230 V AC | ⊖ | 5 | **3SE5122-3QV10** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 13/56).

2) The 3SE5114-.....-1AE3 position switches, prewired with an M12 plug, 5-pole, have the same pin assignment as all compact block I/O modules with a PROFINET connection in the SIMATIC ET 200eco PN, ET 200eco PN-F and ET 200AL series with IP65/IP67 degree of protection for cabinet-free installation directly at the machine.

## Selection and ordering data

| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **IP66/IP67** | | | | | | |
| 3SE5000-0AV01 | **Standard actuator**<br>• Length 75.6 mm | ▶ | **3SE5000-0AV01** | | 1 | 1 unit |
| 3SE5000-0AV02 | • With vertical fixing, length 53 mm | 5 | **3SE5000-0AV02** | | 1 | 1 unit |
| 3SE5000-0AV03 | • With transverse fixing, length 47 mm | 5 | **3SE5000-0AV03** | | 1 | 1 unit |
| 3SE5000-0AW11 | • With transverse fixing, plastic[1], length 40 mm | 5 | **3SE5000-0AW11** | | 1 | 1 unit |
| | **High-grade steel actuator, IP69K[2]** | | | | | |
| 3SE5000-0AW51 | • Length 75.6 mm | 5 | **3SE5000-0AW51** | | 1 | 1 unit |
| | **Radius actuator**, length 51 mm | | | | | |
| 3SE5000-0AV06 | • Direction of approach from the left | 2 | **3SE5000-0AV04** | | 1 | 1 unit |
| | • Direction of approach from the right | 5 | **3SE5000-0AV06** | | 1 | 1 unit |
| | **Universal radius actuator** | | | | | |
| 3SE5000-0AV05-1AA6 | • Length 77 mm | 5 | **3SE5000-0AV05** | | 1 | 1 unit |
| | • Length 77 mm, tab rotated 90° | 5 | **3SE5000-0AV05-1AA6** | | 1 | 1 unit |
| | **Universal radius actuator, heavy duty** | | | | | |
| 3SE5000-0AV07 | • Length 67 mm | 2 | **3SE5000-0AV07-1AK2** | | 1 | 1 unit |
| | • Length 77 mm | 5 | **3SE5000-0AV07** | | 1 | 1 unit |
| **Optional accessories for 3SE5** | | | | | | |
| 3SE5000-0AV08-1AA2 | **Protective caps**, black rubber<br>For the actuator head, to protect the actuator openings from contamination<br>(Only for enclosure width 40 or 56 mm) | 5 | **3SE5000-0AV08-1AA2** | | 1 | 1 unit |
| 3SE5000-0AV08-1AA3 | **Blocking inserts**, high-grade steel, for actuator head<br>For up to eight padlocks | 5 | **3SE5000-0AV08-1AA3** | | 1 | 1 unit |
| **Connections for 3SE5, 3SE2** | | | | | | |
| 3SY3127 3SX9926 | **Device plugs (4-pole), M12, fixed for M20 × 1.5**<br>With connecting cable 0.25 mm², plastic, degree of protection IP67, ambient temperature -40 to +85 °C | | | | | |
| | For max. 250 V, 4 A | 5 | **3SY3127** | | 1 | 1 unit |
| | For max. 125 V, 4 A | 5 | **3SY3128** | | 1 | 1 unit |
| | **Cable glands M20 × 1.5**<br>Plastic | 2 | **3SX9926** | | 1 | 1 unit |

[1] Not suitable for safety switches with tumbler.

[2] With optimized geometry and suitable for extreme environmental conditions such as -40 °C

# With Separate Actuator

## 3SE2, plastic enclosures, special width 52 mm

### Selection and ordering data

1 or 3 contacts · 3 directions of approach · Degree of protection IP67

| | Version | Operation | | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | Article No. | Price per PU | | |
| | | | | d | | | | |
| **Plastic enclosures in special width of 52 mm** | | | | | | | | |
| 3SE2243 | **Lateral and front-end actuation**[1] | 6 mm stroke | | | | | | |
| | • With connecting thread M20 × 1.5 | | | | | | | |
| | - Slow-action contacts 1 NO + 2 NC | Holding force 5 N | ⊕ | 2 | **3SE2243-0XX40** | | 1 | 1 unit |
| | | Holding force 30 N | ⊕ | 2 | **3SE2243-0XX** | | 1 | 1 unit |
| | | With automatic ejection | ⊕ | 2 | **3SE2243-0XX30** | | 1 | 1 unit |
| | - Slow-action contacts 1 NC | Holding force 5 N | ⊕ | 15 | **3SE2257-6XX40** | | 1 | 1 unit |
| | | Holding force 30 N | ⊕ | 15 | **3SE2257-6XX** | | 1 | 1 unit |
| | | With automatic ejection | ⊕ | 5 | **3SE2257-6XX30** | | 1 | 1 unit |
| | • With connecting thread M16 × 1.5 | | | | | | | |
| | - Slow-action contacts 1 NO + 2 NC | Holding force 30 N | ⊕ | 10 | **3SE2243-0XX18** | | 1 | 1 unit |
| **Accessories** | | | | | | | | |
| | **Actuators** | | | | | | | |
| 3SX3218 | • Standard actuators ($r_{min}$ = 150 mm), length 28 mm | | | 2 | **3SX3218** | | 1 | 1 unit |
| 3SX3228 | • Universal radius actuator ($r_{min}$ = 45 mm), length 34 mm | | | 2 | **3SX3228** | | 1 | 1 unit |
| 3SX3256 | • Radius actuator, adjustable radius, length 34 mm | | | 10 | **3SX3256** | | 1 | 1 unit |
| 3SX3217 | • Ball locating, force adjustable up to max. 100 N by 2 adjustable screws, length 28 mm | | | 2 | **3SX3217** | | 1 | 1 unit |
| 3SX3234 | • Actuator, length 34 mm, with dust protection and slit cover | | | 30 | **3SX3234** | | 1 | 1 unit |
| | **Accessories** | | | | | | | |
| | • Slit cover (1 set = 3 units) | | | 30 | **3SX3233** | | 1 | 3 units |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator.

## Overview

The safety switches with tumbler are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched-off machine).

3SE5 safety switch with tumbler

The safety switches with tumbler are comprised of a switch part with electromechanical tumbler and a mechanical actuator which has to be ordered separately.

They are rugged protective devices that enable the greatest possible safety for man and machine.

The safety switches with tumbler are offered in plastic or metal enclosures.

Dimensions (W × H × D): 54 mm × 185 mm × 43.5 mm

### *Operation*

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuator is not included in the scope of supply of the safety switches and must be ordered separately from a choice of different versions to suit the application (see page 13/64).

Actuation data:

- Maximum actuating speed $v_{max}$ = 1.5 m/s
- Minimum actuating speed $v_{min}$ = 0.4 mm/s
- Minimum force in the direction of actuation $F_{min}$ = 30 N

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The safety switches with radius actuators are particularly suitable for rotary protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel locking device for attaching up to eight padlocks is available for even more security (see page 13/65).

Dust protection

A rubber cap to protect the actuator entry of the actuator head from contamination is available for operation in dusty environments (see page 13/65).

### *Tumbler*

There are two versions for interlocking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Solenoid-locked (open-circuit principle)

The spring-actuated lock switch is equipped with an auxiliary release for emergency situations or setup mode. Available as options:

- Escape release or
- Emergency release

### *Contact blocks*

The safety switches with tumbler have one switching block each for:

- Monitoring the actuator or the position of the protective door
- Monitoring the position of the solenoid

The mechanical design of the switches corresponds to the requirements of the fail-safe principle according to EN ISO 14119.

### *Optical signaling equipment*

The safety switches with tumbler are available with an optional optical signaling device.

The signaling device indicates the switch position of the interlock and the protective device optically by means of 2 LEDs on the front.

| Protective device | Tumbler | Display | Meaning |
|---|---|---|---|
| Closed | Released | | Actuator able to be pulled |
| Closed | Locked | | Actuator locked |
| Open | Released | | Actuator pulled |

Internal wiring:

- The yellow LED is pre-wired to the solenoid monitoring NO contact.
- The green LED is pre-wired to the actuator monitoring NC contact.
- LED ground is pre-wired to the ground of the solenoid.

Note:

- The operational voltage must be connected to the corresponding contacts by the customer.
- This voltage for the LEDs must match the operational voltage of the solenoid (same potential).

## Benefits

The new generation of 3SE53 safety switches offers:

- More safety through higher locking forces:
  - 1 300 N with plastic enclosure
  - 2 600 N with metal enclosure
- Various release mechanisms: lock release, escape release and emergency release
- Two contact blocks each with three contacts as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure versions: Plastic, metal or with integrated ASIsafe
- An extensive range of actuators
- An optional LED status display 24 V DC, 115 V or 230 V AC for all switch versions
- Devices with ASIsafe electronics integrated in the enclosure/ wired to 8-pole M12 device plug (see page 13/97).
- 3SE5322-1S.21-1AG4 series with high degree of protection IP69, IP69K in accordance with IEC 60529, cover with foamed seal

## Application

The safety switches with tumbler are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched-off machine).

The safety position switches with tumbler have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and tumbler

### *Standards*

The switches comply with the standards IEC 60947-1 (Low-Voltage Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN ISO 14119.

### *Approvals*

The switches are approved for use with locking devices according to EN ISO 14119 and EN 292, Parts 1 and 2.

Category 3 according to EN ISO 13849-1 can be attained with a safety switch with tumbler if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK or 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional 3SE5 safety switch.

These switches are approved according to UL 508, UL 50 and UL 746-C.

### *Tumbler*

The separate actuator works like a key using coding and protects against manipulation. It transmits the locking force to the protective device and helps to monitor its position.

There are two versions of locking:

Spring-actuated lock (closed-circuit principle)

- In the standard version, the safety switch locks by means of spring force and releases by means of electromagnetic force. In the case of voltage failure, it reliably prevents the protective device from opening when machine parts are still moving.
- The switch is equipped with an auxiliary release for emergency situations or setup mode.
- An auxiliary release which can be secured with a lock to prevent misuse is available as a version.

Auxiliary release

Auxiliary release with lock

The 3SE5 3 safety switches are also available with an escape release or emergency release.

- Personnel working inside the hazard zone can use the escape release feature to manually release the tumbler without tools from the escape side (hazardous area side) so that they can exit the hazard area. An intentional act (in this case pulling the gray actuator) is required to release the locking mechanism and restore the normal operating state.
- The emergency release enables someone in an emergency situation to manually release the tumbler without tools from the access side (outside the hazardous area). Releasing the lock and restoring the normal operating state must require effort which is comparable to repair activity: in this case disassembly of the red actuator and resetting of the mechanical lock.

Escape release from the front

Emergency release from the back

Solenoid-locked (open-circuit principle)

- The second version offers locking by means of electromagnetic force and release by means of spring force. This version has an advantage when it is necessary to quickly access the machine after a power failure occurs, or in the case of very short coasting times.

## Technical specifications

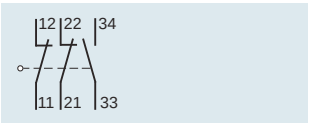
| Type | | 3SE5322 | 3SE5312 |
|---|---|---|---|
| **General data** | | | |
| **Standards** | | IEC/EN 60947-5-1, EN ISO 14119 | |
| **Rated insulation voltage $U_i$** | V | 250 | |
| **Degree of pollution** according to IEC 60664-1 | | Class 3 | |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 4 | |
| **Rated operational voltage $U_e$** | | | |
| • DC | V | 24 | |
| • 50/60 Hz AC | V | 230 | |
| **Conventional thermal current $I_{th}$** | A | 6 | |
| **Rated operational current $I_e$** | | | |
| • With alternating current 50/60 Hz | | $I_e$ / AC-15 or B300 | |
| - At 24 V | A | 6 | |
| - At 120 V | A | 6 | |
| - At 240 V | A | 3 | |
| • For direct current | | $I_e$ / DC-13 or Q300 | |
| - At 24 V | A | 3 | |
| - At 125 V | A | 0.55 | |
| - At 250 V | A | 0.27 | |
| **Solenoid** | | | |
| • Locking force, max. | N | 1 300 | 2 600 |
| • Locking force acc. to EN ISO 14119 | N | 1 000 | 2 000 |
| • Power consumption at $U_C$ | W | 3.5 | |
| **Short-circuit protection**[1] | | | |
| • With DIAZED fuse links, utilization category gG | A | 6 | |
| • With miniature circuit breaker, C char. | A | 0.5 | |
| **Mechanical endurance** | Operating cycles | $1 \times 10^6$ | |
| **Electrical endurance** | | | |
| • With 3RH.1, 3RT contactors in size S00, S0 | Operating cycles | $1 \times 10^6$ | |
| • For utilization category AC-15 when switching off $I_e$ / AC-15 at 230 V | Operating cycles | 100 000 | |
| • With utilization category DC-12/DC-13 | | For direct current depending on the loading of the switch | |
| **Switching frequency** With 3RH.1, 3RT contactors in size S00, S0 | Operating cycles/h | 6 000 | |
| **Shock resistance** acc. to IEC 60068-2-27 | g/ms | 30/11 | |

[1] Without any welds according to IEC 60947-5-1.

### Circuit diagrams

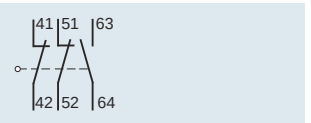
**Monitoring the actuator**

Slow-action contacts 1 NO + 2 NC




**Monitoring the solenoid**

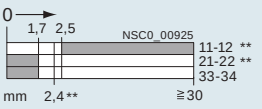
Slow-action contacts 1 NO + 2 NC




### Operating travel

**Monitoring the actuator**

Slow-action contacts 1 NO + 2 NC



## 3SE5, plastic enclosures with locking force greater than 1 200 N

### Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5 · Locking force 1 300 N

| | Tumbler[1] | LEDs | Solenoid, rated operational voltage | | SD | Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC<br>Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | V | | d | | | |
| **1 300 N locking force · Enclosure width 54 mm** | | | | | | | | |
| 3SE5322-0SD21 | **Spring-actuated lock** | | | | | | | |
| | • With auxiliary release | -- | 24 DC | ⊕ | ▶ | **3SE5322-0SD21** | 1 | 1 unit |
| | | -- | 115 AC | ⊕ | 5 | **3SE5322-0SD22** | 1 | 1 unit |
| | | -- | 230 AC | ⊕ | 5 | **3SE5322-0SD23** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊕ | 2 | **3SE5322-1SD21** | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊕ | 5 | **3SE5322-2SD22** | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊕ | 5 | **3SE5322-3SD23** | 1 | 1 unit |
| 3SE5322-0SE21 | • With auxiliary release with lock | -- | 24 DC | ⊕ | 5 | **3SE5322-0SE21** | 1 | 1 unit |
| | | -- | 115 AC | ⊕ | 5 | **3SE5322-0SE22** | 1 | 1 unit |
| | | -- | 230 AC | ⊕ | 5 | **3SE5322-0SE23** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊕ | 5 | **3SE5322-1SE21** | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊕ | 5 | **3SE5322-2SE22** | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊕ | 5 | **3SE5322-3SE23** | 1 | 1 unit |
| 3SE5322-0SF21 | • With escape release from the front | -- | 24 DC | ⊕ | 5 | **3SE5322-0SF21** | 1 | 1 unit |
| | | -- | 115 AC | ⊕ | 5 | **3SE5322-0SF22** | 1 | 1 unit |
| | | -- | 230 AC | ⊕ | 5 | **3SE5322-0SF23** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊕ | 5 | **3SE5322-1SF21** | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊕ | 5 | **3SE5322-2SF22** | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊕ | 5 | **3SE5322-3SF23** | 1 | 1 unit |
| | • With escape release from the front and emergency release from the back | -- | 24 DC | ⊕ | 5 | **3SE5322-0SL21** | 1 | 1 unit |
| 3SE5322-0SG21 | • With escape release from the back and auxiliary release from the front | -- | 24 DC | ⊕ | 5 | **3SE5322-0SG21** | 1 | 1 unit |
| | | -- | 115 AC | ⊕ | 5 | **3SE5322-0SG22** | 1 | 1 unit |
| | | -- | 230 AC | ⊕ | 5 | **3SE5322-0SG23** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊕ | 5 | **3SE5322-1SG21** | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊕ | 5 | **3SE5322-2SG22** | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊕ | 5 | **3SE5322-3SG23** | 1 | 1 unit |
| | • With escape release from the back and auxiliary release with lock from the front | -- | 24 DC | ⊕ | 5 | **3SE5322-0SH21** | 1 | 1 unit |
| 3SE5322-0SJ21 | • With emergency release from the back and auxiliary release from the front | -- | 24 DC | ⊕ | 5 | **3SE5322-0SJ21** | 1 | 1 unit |
| | | -- | 115 AC | ⊕ | 5 | **3SE5322-0SJ22** | 1 | 1 unit |
| | | -- | 230 AC | ⊕ | 5 | **3SE5322-0SJ23** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊕ | 5 | **3SE5322-1SJ21** | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊕ | 5 | **3SE5322-2SJ22** | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊕ | 5 | **3SE5322-3SJ23** | 1 | 1 unit |
| 3SE5322-1SB21 | **Solenoid-locked** | -- | 24 DC | ⊕ | ▶ | **3SE5322-0SB21** | 1 | 1 unit |
| | | -- | 115 AC | ⊕ | 5 | **3SE5322-0SB22** | 1 | 1 unit |
| | | -- | 230 AC | ⊕ | 5 | **3SE5322-0SB23** | 1 | 1 unit |
| | • With device plug, 8-pole Head rotated clockwise by 90° | Yellow/Green | 24 DC | NEW ⊕ | 5 | **3SE5334-0SB21-1AC8** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | NEW ⊕ | 5 | **3SE5324-0SB21-1AP0** | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊕ | 2 | **3SE5322-1SB21** | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊕ | 5 | **3SE5322-2SB22** | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊕ | 5 | **3SE5322-3SB23** | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/64).

# With Tumbler

## 3SE5, plastic enclosures with locking force greater than 1 200 N

6 slow-action contacts · 5 directions of approach · **Degree of protection IP69K** · Cable entry 3 × M20 × 1.5 · Locking force 1 300 N

- With foamed seal and special cover



| | Tumbler[1] | LEDs | Solenoid, rated operational voltage | | SD | Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC — Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | V | | d | | | | |
| **1 300 N locking force · Enclosure width 54 mm · Degree of protection IP69K** | | | | | | | | | |
| 3SE5322-1SD21-1AG4 | **Spring-actuated locks** • With auxiliary release | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5322-1SD21-1AG4** | | 1 | 1 unit |
| 3SE5322-1SE21-1AG4 | • With auxiliary release with lock | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5322-1SE21-1AG4** | | 1 | 1 unit |
| 3SE5322-1SF21-1AG4 | • With escape release from the front | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5322-1SF21-1AG4** | | 1 | 1 unit |
| 3SE5322-1SG21-1AG4 | • With escape release from the back and auxiliary release from the front | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5322-1SG21-1AG4** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/64).

### *Accessories*

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Accessories** | | | | | | |
| 3SX5601-1A | **Cable glands M20 × 1.5** Plastic High degree of protection IP69, IEC 60529 | 5 | **3SX5601-1A** | | 1 | 1 unit |

## Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5 · Locking force 2 600 N

| | Tumbler[1] | LEDs | Solenoid, rated operational voltage | | SD | Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | | V | | d | Article No. | Price per PU | | |
| **2 600 N locking force · Enclosure width 54 mm** | | | | | | | | | |
| 3SE5312-0SD11 | **Spring-actuated locks** | | | | | | | | |
| | • With auxiliary release | -- | 24 DC | ⊖ | ▶ | **3SE5312-0SD11** | | 1 | 1 unit |
| | | -- | 115 AC | ⊖ | 5 | **3SE5312-0SD12** | | 1 | 1 unit |
| | | -- | 230 AC | ⊖ | 5 | **3SE5312-0SD13** | | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5312-1SD11** | | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊖ | 5 | **3SE5312-2SD12** | | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊖ | 5 | **3SE5312-3SD13** | | 1 | 1 unit |
| 3SE5312-0SE11 | • With auxiliary release with lock | -- | 24 DC | ⊖ | 5 | **3SE5312-0SE11** | | 1 | 1 unit |
| | | -- | 115 AC | ⊖ | 5 | **3SE5312-0SE12** | | 1 | 1 unit |
| | | -- | 230 AC | ⊖ | 5 | **3SE5312-0SE13** | | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5312-1SE11** | | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊖ | 5 | **3SE5312-2SE12** | | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊖ | 5 | **3SE5312-3SE13** | | 1 | 1 unit |
| 3SE5312-0SF11 | • With escape release from the front | -- | 24 DC | ⊖ | 5 | **3SE5312-0SF11** | | 1 | 1 unit |
| | | -- | 115 AC | ⊖ | 5 | **3SE5312-0SF12** | | 1 | 1 unit |
| | | -- | 230 AC | ⊖ | 5 | **3SE5312-0SF13** | | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5312-1SF11** | | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊖ | 5 | **3SE5312-2SF12** | | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊖ | 5 | **3SE5312-3SF13** | | 1 | 1 unit |
| 3SE5312-0SG11 | • With escape release from the back and auxiliary release from the front | -- | 24 DC | ⊖ | 5 | **3SE5312-0SG11** | | 1 | 1 unit |
| | | -- | 115 AC | ⊖ | 5 | **3SE5312-0SG12** | | 1 | 1 unit |
| | | -- | 230 AC | ⊖ | 5 | **3SE5312-0SG13** | | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5312-1SG11** | | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊖ | 5 | **3SE5312-2SG12** | | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊖ | 5 | **3SE5312-3SG13** | | 1 | 1 unit |
| 3SE5312-0SJ11 | • With escape release from the back and auxiliary release with lock from the front | -- | 24 DC | ⊖ | 5 | **3SE5312-0SH11** | | 1 | 1 unit |
| | • With emergency release from the back and auxiliary release from the front | -- | 24 DC | ⊖ | 5 | **3SE5312-0SJ11** | | 1 | 1 unit |
| | | -- | 115 AC | ⊖ | 5 | **3SE5312-0SJ12** | | 1 | 1 unit |
| | | -- | 230 AC | ⊖ | 5 | **3SE5312-0SJ13** | | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5312-1SJ11** | | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊖ | 5 | **3SE5312-2SJ12** | | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊖ | 5 | **3SE5312-3SJ13** | | 1 | 1 unit |
| 3SE5312-0SB11 | **Solenoid-locked** | -- | 24 DC | ⊖ | ▶ | **3SE5312-0SB11** | | 1 | 1 unit |
| | | -- | 115 AC | ⊖ | 5 | **3SE5312-0SB12** | | 1 | 1 unit |
| | | -- | 230 AC | ⊖ | 5 | **3SE5312-0SB13** | | 1 | 1 unit |
| | | Yellow/Green | 24 DC | ⊖ | 5 | **3SE5312-1SB11** | | 1 | 1 unit |
| | | Yellow/Green | 115 AC | ⊖ | 5 | **3SE5312-2SB12** | | 1 | 1 unit |
| | | Yellow/Green | 230 AC | ⊖ | 5 | **3SE5312-3SB13** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/64).

## Selection and ordering data

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **IP66/IP67** | | | | | | |
| 3SE5000-0AV01 | **Standard actuator**<br>• Length 75.6 mm | ▶ | **3SE5000-0AV01** | | 1 | 1 unit |
| 3SE5000-0AV02 | • With vertical fixing, length 53 mm | 5 | **3SE5000-0AV02** | | 1 | 1 unit |
| 3SE5000-0AV03 | • With transverse fixing, length 47 mm | 5 | **3SE5000-0AV03** | | 1 | 1 unit |
| 3SE5000-0AV51 | **High-grade steel actuator, IP69K**[1]<br>• Length 75.6 mm | 5 | **3SE5000-0AW51** | | 1 | 1 unit |
| 3SE5000-0AV52 | • With vertical fixing, length 53 mm | 5 | **3SE5000-0AW52** | | 1 | 1 unit |
| 3SE5000-0AW53 | • With transverse fixing, length 47 mm | 5 | **3SE5000-0AW53** | | 1 | 1 unit |
| 3SE5000-0AV06 | **Radius actuator**, length 51 mm<br>• Direction of approach from the left<br>• Direction of approach from the right | <br>2<br>5 | <br>**3SE5000-0AV04**<br>**3SE5000-0AV06** | | <br>1<br>1 | <br>1 unit<br>1 unit |
| 3SE5000-0AV05-1AA6 | **Universal radius actuator**<br>• Length 77 mm<br>• Length 77 mm, tab rotated 90° | <br>5<br>5 | <br>**3SE5000-0AV05**<br>**3SE5000-0AV05-1AA6** | | <br>1<br>1 | <br>1 unit<br>1 unit |
| 3SE5000-0AV07 | **Universal radius actuator, heavy duty**<br>• Length 67 mm<br>• Length 77 mm | <br>2<br>5 | <br>**3SE5000-0AV07-1AK2**<br>**3SE5000-0AV07** | | <br>1<br>1 | <br>1 unit<br>1 unit |

For further plug versions, see page 13/46.

[1] With optimized geometry and suitable for extreme environmental conditions such as -40 °C

# With Tumbler

## Accessories

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Optional accessories for 3SE5** | | | | | | |
| <br>3SE5000-0AV08-1AA2 | **Protective caps**, black rubber<br>For the actuator head, to protect the actuator openings from contamination | 5 | **3SE5000-0AV08-1AA2** | | 1 | 1 unit |
| <br>3SE5000-0AV08-1AA3 | **Blocking inserts**, high-grade steel, for actuator head<br>For up to eight padlocks | 5 | **3SE5000-0AV08-1AA3** | | 1 | 1 unit |
| **Spare parts for 3SE5** | | | | | | |
| | **Spare keys** | 5 | **3SX5100-1F** | | 1 | 1 unit |
| **Connection for 3SE5** | | | | | | |
| <br>3SY3127 | **Device plugs (4-pole), M12, fixed for M20 × 1.5**<br>For max. 250 V, 4 A<br>With connecting cable 0.25 mm$^2$, plastic, degree of protection IP67, ambient temperature -40 to +85 °C | 5 | **3SY3127** | | 1 | 1 unit |
| | **Device plugs (5-pole), M12, fixed for M20 × 1.5**<br>For max. 125 V, 4 A<br>With connecting cable 0.25 mm$^2$, plastic, degree of protection IP67, ambient temperature -40 to +85 °C | 5 | **3SY3128** | | 1 | 1 unit |
| <br>3SX9926 | **Cable glands M20 × 1.5**<br>Plastic | | | | | |
| | • Degree of protection IP67 | 2 | **3SX9926** | | 1 | 1 unit |
| | • High degree of protection IP69, IEC 60529 | 5 | **3SX5601-1A** | | 1 | 1 unit |

For further plug versions, see page 13/46.

## General data



### Overview

3SE5 hinge switches have the same enclosures as the 3SE5 position switches (modular system).

Hinge switches

#### *Design*

Enclosure sizes

The 3SE5 switches are available as complete units in two enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry

Enclosure versions

Various basic versions can be selected for the enclosures:

- With two or three-pole switching elements designed as snap-action contacts
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 13/100).

For a description of the basic switches, (see page 13/7).

Operating mechanism

The hinge switches are provided for mounting on hinges. The actuator head is included in the scope of supply. There are two versions:

- Operating mechanism with hollow shaft, inner diameter 8 mm, outer 12 mm
- Operating mechanism with solid shaft, diameter 10 mm

#### *3SE2283 hinge switches*

The 3SE2283 hinge switches with integrated hinge are available in a special design. They are particularly suitable for use in machine doors and flaps.

### Benefits

The 3SE5 hinge switches differ from the previous series through the following new characteristics:

- All actuators can be turned around the axis in increments of 22.5° (see picture, page 13/8).
- The new three-pole contact block 1 NO + 2 NC is available for all enclosure sizes (see picture, page 13/8).
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save approx. 20 to 25% of the time when connecting (see picture, page 13/8).
- The ASIsafe electronics are integrated in the enclosure for the versions with AS-Interface connection (see page 13/85); an additional adapter is not required.

### Application

The hinge switches are used in those areas where the position of swiveling protective devices such as doors or flaps must be monitored. With these switches, the position of the doors and flaps is converted into electric signals. The switches allow shutdown and signaling without delay in the event of a small opening angle through the snap-action contacts with an operating angle of 10°.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the contact blocks best suited for the particular purpose. Dimensions and fixing points of the enclosures are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

#### *Standards*

IEC/EN 60947-5-1

The protective measure of "total insulation" by the plastic enclosure is ensured by the use of molded-plastic screw glands.

#### *Safety position switches*

For controls according to IEC/EN 60204-1, the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

#### *Safety circuits*

The IEC/EN 60947-5-1 standard requires positive opening of the NC contacts. In other words, for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked in accordance with IEC 60947-5-1 with the symbol ⊖.

Category 4 according to EN ISO 13849-1 can be attained with the 3SE5 hinge switches with ⊖ if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK or 3TK28 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges.

# 3SE5, Plastic Enclosures

## Enclosure width 31 mm acc. to EN 50047 / 40 mm according to EN 50041

### Technical specifications

The technical specifications are the same as for the standard switches, (see page 13/11).

### Selection and ordering data

***Complete units***

2 or 3 contacts · Degree of protection IP65 (31 mm) or IP67/IP68 (40 mm) · Cable entry M20 × 1.5

| | Version | Snap-action contacts | | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Plastic enclosures · Enclosure width 31 mm acc. to EN 50047** | | | | | | | | |
| 3SE5232-0HU21 | **With hollow shaft** | | | | | | | |
| | Operating angle 10° | 1 NO + 1 NC[1)] | ⊕ | 5 | **3SE5232-0HU21** | | 1 | 1 unit |
| | Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5232-0LU21** | | 1 | 1 unit |
| 3SE5232-0HU22 | **With solid shaft** | | | | | | | |
| | Operating angle 10° | 1 NO + 1 NC[1)] | ⊕ | 5 | **3SE5232-0HU22** | | 1 | 1 unit |
| | Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5232-0LU22** | | 1 | 1 unit |
| **Plastic enclosures · Enclosure width 40 mm acc. to EN 50041** | | | | | | | | |
| 3SE5132-0LU21 | **With hollow shaft** | | | | | | | |
| | Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5132-0LU21** | | 1 | 1 unit |
| 3SE5132-0LU22 | **With solid shaft** | | | | | | | |
| | Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5132-0LU22** | | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

1) Contact blocks permanently integrated, replacement not available.

***Spare parts***

| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Actuator heads** | | | | | | |
| 3SE5000-0AU21 | **With hollow shaft** | | | | | |
| | Operating angle 10° | 5 | **3SE5000-0AU21** | | 1 | 1 unit |
| 3SE5000-0AU22 | **With solid shaft** | | | | | |
| | Operating angle 10° | 5 | **3SE5000-0AU22** | | 1 | 1 unit |

Note: The respective actuators are included in the scope of supply for the complete units.

## Enclosure width 31 mm acc. to EN 50047 / 40 mm according to EN 50041



### Selection and ordering data

***Complete units***

3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

| | Version | Snap-action contacts | | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Metal enclosures · Enclosure width 31 mm acc. to EN 50047** | | | | | | | | |
| 3SE5212-0LU21 | **With hollow shaft** Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5212-0LU21** | | 1 | 1 unit |
| 3SE5212-0LU22 | **With solid shaft** Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5212-0LU22** | | 1 | 1 unit |
| **Metal enclosures · Enclosure width 40 mm acc. to EN 50041** | | | | | | | | |
| 3SE5112-0LU21 | **With hollow shaft** Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5112-0LU21** | | 1 | 1 unit |
| 3SE5112-0LU22 | **With solid shaft** Operating angle 10° | 1 NO + 2 NC | ⊕ | 5 | **3SE5112-0LU22** | | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

***Spare parts***

| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Actuator heads** | | | | | | |
| 3SE5000-0AU21 | **With hollow shaft** Operating angle 10° | 5 | **3SE5000-0AU21** | | 1 | 1 unit |
| 3SE5000-0AU22 | **With solid shaft** Operating angle 10° | 5 | **3SE5000-0AU22** | | 1 | 1 unit |

Note: The respective actuators are included in the scope of supply for the complete units.

# 3SE2, Plastic Enclosures

## With integrated hinge

### Overview

The 3SE2283 hinge switches with built-in hinge are particularly suitable for use in doors and flaps of machines that must be closed to ensure the safety of operating personnel. Their thin profile and the compact design allow them to be directly mounted on a hinged protective cover and the stable frame.

### Benefits

- Easy mounting through use of versions with integrated hinge
- Versions with small operating angle of 4° or 8°
- Protection against personal injury provided by positively driven NC contacts according to IEC 60947-5-1
- Simultaneous shutdown and signaling by 1 NO + 2 NC contacts

### Technical specifications

| Type | | 3SE2283 |
|---|---|---|
| **Rated insulation voltage $U_i$** | V | 250 |
| **Conventional thermal current $I_{th}$** | A | 2.5 |
| **Rated operational current $I_e$** | | |
| • At AC-15, 120 V | A | 4.2 |
| • At AC-15, 250 V | A | 2 |
| • At DC-13, 24 V | A | 1 |
| **Min. make-break capacity** | | > 5 V/1 mA |
| **Short-circuit protection** | | |
| • Operational class gG | A | 2 |
| **Mechanical endurance** | | > 1 × $10^6$ operating cycles |
| **Switching frequency** | | 1 200 operating cycles/h |
| **Positive opening** | | 2 mm after opening point |
| **Enclosure material** | | Plastic |
| **Degree of protection** | | IP65 |
| **Ambient temperature** | °C | -25 ... +65 |
| **Shock resistance** | | 30 *g* /18 ms |
| **Resistance to vibrations** | | 20 *g* /10 ... 200 Hz |
| **Cable entry** | | 2 × (M20 × 1.5) |
| **Screw terminals** | | 0.5 ... 1.5 $mm^2$ / AWG 15 |

## Selection and ordering data

3 contacts · Degree of protection IP65 · Cable entry 2 × (M20 × 1.5)

| Version | Slow-action contacts | | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Plastic enclosures with integrated hinge** | | | | | | | |
| 3SE2283 **With integrated hinge** (Scope of supply includes additional hinge and fixing accessories) | | | | | | | |
| • Aluminum hinge | | | | | | | |
| - 4° actuating angle | 1 NO + 2 NC | ➔ | 15 | **3SE2283-0GA43** | | 1 | 1 unit |
| - 4° actuating angle | 3 NC | ➔ | 5 | **3SE2283-6GA43** | | 1 | 1 unit |
| - 8° actuating angle | 1 NO + 2 NC | ➔ | 10 | **3SE2283-0GA53** | | 1 | 1 unit |
| - 8° actuating angle | 3 NC | ➔ | 15 | **3SE2283-6GA53** | | 1 | 1 unit |
| • High-grade steel hinge | | | | | | | |
| - 4° actuating angle | 1 NO + 2 NC | ➔ | 5 | **3SE2283-0GA44** | | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K.

### *Accessories/spare parts*

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **Accessories** | | | | | |
| 3SX3225 **Additional hinge** (Scope of supply includes fixing accessories) | | | | | |
| • Made of aluminum | 10 | **3SX3225** | | 1 | 1 unit |

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| | Version | Contacts | | SD | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Complete units[1] • Enclosure width 31 mm** | | | | | | | | |
| 3SE5232-0LK21-1AY0 | ***Twist levers, 21 mm long, acc. to EN 50047***<br>**With plastic roller 19 mm**<br>Snap-action contacts | 1 NO + 2 NC | ⊕ | 5 | **3SE5232-0LK21-1AY0** | | 1 | 1 unit |
| 3SE5232-0LE10-1AY0 | ***Roller levers, acc. to EN 50047***<br>**With plastic roller 13 mm**<br>Snap-action contacts | 1 NO + 2 NC | ⊕ | 5 | **3SE5232-0LE10-1AY0** | | 1 | 1 unit |
| 3SE5232-0HK82-1AY0 | ***Rod actuators, acc. to EN 50047***<br>**Plastic rod, length 200 mm**<br>Snap-action contacts | 1 NO + 1 NC | | 30 | **3SE5232-0HK82-1AY0** | | 1 | 1 unit |
| 3SE5232-0HR01-1AY0 | ***Spring rod***<br>Snap-action contacts | 1 NO + 1 NC | | 30 | **3SE5232-0HR01-1AY0** | | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Popular versions.

## Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5 · Locking force 1 300 N

| Tumbler[1] | Solenoid, rated operational voltage | SD | Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC ☐ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | V | d | | | | |
| **1 300 N locking force · Enclosure width 54 mm** | | | | | | |
| **Spring-actuated locks** | | | | | | |
| • With front auxiliary release | 24 DC | ⊕ 5 | **3SE5322-0SD21-1AY0** | | 1 | 1 unit |

3SE5322-0SD21-1AY0

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately.

### *Accessories/spare parts*

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Accessories** | | | | | |
| **Standard actuator** | ▶ | **3SE5000-0AV01** | | 1 | 1 unit |
| • Length 75.6 mm | | | | | |
| **High-grade steel actuator, standard, IP69K[1]** | | | | | |
| • Length 75.6 mm | 5 | **3SE5000-0AW51** | | 1 | 1 unit |
| • With vertical fixing, length 53 mm | 5 | **3SE5000-0AW52** | | 1 | 1 unit |
| • With transverse fixing, length 47 mm | 5 | **3SE5000-0AW53** | | 1 | 1 unit |

3SE5000-0AV01

3SE5000-0AW51

3SE5000-0AW52

3SE5000-0AW53

[1] With optimized geometry and suitable for extreme environmental conditions such as -40 °C

## Selection and ordering data

With increased corrosion protection

| Version | Contacts | | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | Article No. | Price per PU | | |
| | | | d | | | | |
| **Complete units[1] • Enclosure width 31 mm** | | | | | | | |
| 3SE5232-0HU21-1AY0 | | | | | | | |
| ***Hinge switches, acc. to EN 50047*** | | | | | | | |
| **With hollow shaft D = 8 mm, operating angle 10 degrees,** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | ➔ | 30 | **3SE5232-0HU21-1AY0** | | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) With optimized geometry and suitable for extreme environmental conditions such as -40 °C

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| Version | Contacts | LEDs | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Complete units[1] • Enclosure width 31 mm** | | | | | | | |
| 3SE5234-0CD03-1AJ1 | | | | | | | |
| ***Roller plungers, type C, acc. to EN 50047*** **With plastic roller 10 mm, with M12 device plug, 4-pole (250 V, 4 A)** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5234-0CD03-1AJ1** | | 1 | 1 unit |
| 3SE5232-0CD10-1AJ0 | | | | | | | |
| ***Roller plungers with central fixing*** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5232-0CD10-1AJ0** | | 1 | 1 unit |
| 3SE5232-0CK31-1AJ0 | | | | | | | |
| ***Twist levers, type A, acc. to EN 50047*** **With high-grade steel lever 21 mm and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 2 | **3SE5232-0CK31-1AJ0** | | 1 | 1 unit |
| 3SE5232-0CK62-1AJ0 | | | | | | | |
| ***Twist levers, adjustable length*** **With high-grade steel lever with grid hole and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5232-0CK62-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5232-0LK62-1AJ0** | | 1 | 1 unit |
| **Complete units[1] • Enclosure width 50 mm** | | | | | | | |
| 3SE5242-0HK21-1AJ0 | | | | | | | |
| ***Twist levers*** **With metal lever 21 mm and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ➔ 5 | **3SE5242-0HK21-1AJ0** | | 1 | 1 unit |
| ***Twist levers, adjustable length*** **With high-grade steel lever with grid hole and plastic roller 19 mm** | | | | | | | |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ➔ 5 | **3SE5242-0HK62-1AJ0** | | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/75.

## 3SE5, plastic enclosures, enclosure width 31 mm according to EN 50047 / 50 mm

***Modular system***

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| Version | Contacts | LEDs | | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Basic switches • Enclosure width 31 mm (with rounded plunger[1])** | | | | | | | | |
| 3SE5232-0CC05-1AJ0 | | | | | | | | |
| **With teflon plunger** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5232-0CC05-1AJ0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0KC05-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ | 5 | **3SE5232-0LC05-1AJ0** | | 1 | 1 unit |
| **Basic switches • Enclosure width 50 mm (with rounded plunger[1])** | | | | | | | | |
| 3SE5242-0BC05-1AJ0 | | | | | | | | |
| **With teflon plunger** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0BC05-1AJ0** | | 1 | 1 unit |
| Snap-action contacts, integrated[2] | 1 NO + 1 NC | -- | ⊖ | 5 | **3SE5242-0HC05-1AJ0** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 and 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

Note:

For the selection aid, see page 13/13

## 3SE5, plastic enclosures, enclosure width 31 mm according to EN 50047 / 50 mm



| | Version | Diameter | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | mm | d | | | | |
| **Operating mechanisms** | | | | | | | |
| 3SE5000-0AD03 | **Roller plungers, type C, acc. to EN 50047** | | | | | | |
| | Plastic roller | 10 | ➔ 5 | **3SE5000-0AD03-1AJ0** | | 1 | 1 unit |
| | **Roller levers, type E, acc. to EN 50047** | | | | | | |
| | Metal lever, plastic roller | 13 | ➔ 5 | **3SE5000-0AE10-1AJ0** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ➔ 5 | **3SE5000-0AE12-1AJ0** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ➔ 5 | **3SE5000-0AE13-1AJ0** | | 1 | 1 unit |
| 3SE5000-0AF10-1AJ0 | **Angular roller levers** | | | | | | |
| | Metal lever, plastic roller | 13 | ➔ 5 | **3SE5000-0AF10-1AJ0** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ➔ 5 | **3SE5000-0AF12-1AJ0** | | 1 | 1 unit |
| **Twist actuators** | | | | | | | |
| 3SE5000-0AK00-1AJ0 | **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | | |
| | Switching right and/or left, adjustable | | ➔ 5 | **3SE5000-0AK00-1AJ0** | | 1 | 1 unit |
| 3SE5000-0AA21-1AJ0 | ***Levers*** | | | | | | |
| | **Twist levers straight, 21 mm, type A acc. to EN 50047** | | | | | | |
| | Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA21-1AJ0** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA31-1AJ0** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ➔ 5 | **3SE5000-0AA32-1AJ0** | | 1 | 1 unit |
| 3SE5000-0AA60-1AJ0 | **Twist levers, adjustable length, with grid hole** | | | | | | |
| | Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA60-1AJ0** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA62-1AJ0** | | 1 | 1 unit |

➔ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Modular system*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| Version | Contacts | LEDs | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | d | Article No. / Price per PU | | |
| **Basic switches • Enclosure width 40 mm** | | | | | | |
| 3SE5132-0CA00-1AJ0 | | | | | | |
| **With connecting thread M20 × 1.5** | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5132-0CA00-1AJ0** | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5132-0KA00-1AJ0** | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5132-0LA00-1AJ0** | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

For the selection aid, see page 13/13

| Version | Diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | mm | d | Article No. / Price per PU | | |
| **Operating mechanisms** | | | | | |
| 3SE5000-0AC03-1AJ0 | | | | | |
| **Rounded plungers, type B, acc. to EN 50041** | | | | | |
| Plastic plungers | 10 | ➔ 5 | **3SE5000-0AC03-1AJ0** | 1 | 1 unit |
| 3SE5000-0AD05-1AJ0 | | | | | |
| **Roller plungers, type C, acc. to EN 50041** | | | | | |
| Plastic plunger, plastic roller | 13 | ➔ 5 | **3SE5000-0AD05-1AJ0** | 1 | 1 unit |
| 3SE5000-0AE05-1AJ0 | | | | | |
| **Roller levers** | | | | | |
| Metal lever with plastic roller, plastic base | 22 | ➔ 5 | **3SE5000-0AE05-1AJ0** | 1 | 1 unit |
| **Twist actuators** | | | | | |
| 3SE5000-0AH00-1AJ0 | | | | | |
| **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | |
| • For twist levers and rod actuators, switching right and/or left, adjustable | | ➔ 5 | **3SE5000-0AH00-1AJ0** | 1 | 1 unit |
| 3SE5000-0AA01-1AJ0 | | | | | |
| ***Levers*** | | | | | |
| **Twist levers, type A, acc. to EN 50041** | | | | | |
| Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA01-1AJ0** | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA11-1AJ0** | 1 | 1 unit |
| 3SE5000-0AA60-1AJ0 | | | | | |
| **Twist levers, adjustable length, with grid hole** | | | | | |
| Metal lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA60-1AJ0** | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | ➔ 5 | **3SE5000-0AA62-1AJ0** | 1 | 1 unit |

➔ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| Version | Contacts | LEDs | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Complete units • Enclosure width 31 mm** | | | | | | | |
| ***Rounded plungers, type B, acc. to EN 50047*** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0CC05-1AJ0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0KC05-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ 5 | **3SE5212-0LC05-1AJ0** | | 1 | 1 unit |

3SE5212-0CC05-1AJ0

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***Twist levers, type A, acc. to EN 50047*** | | | | | | | |
| **With metal lever 21 mm and high-grade steel roller 19 mm, twist actuator for 40 mm** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ 5 | **3SE5212-0CH22-1AJ0** | | 1 | 1 unit |

3SE5212-0CH22-1AJ0

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/77.

***Modular system***

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| Version | Contacts | LEDs | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Basic switches • Enclosure width 31 mm (with rounded plunger[1])** | | | | | | | |
| 3SE5212-0CC05-1AJ0 | | | | | | | |
| **With plunger** | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ⊖ 5 | **3SE5212-0CC05-1AJ0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0KC05-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ⊖ 5 | **3SE5212-0LC05-1AJ0** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

Note:

For the selection aid, see page 13/13

| Version | Diameter | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | mm | d | | | | |
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AD03-1AJ0 | | | | | | |
| **Roller plungers, type C, acc. to EN 50047** | | | | | | |
| Plastic roller | 10 | ⊖ 5 | **3SE5000-0AD03-1AJ0** | | 1 | 1 unit |
| 3SE5000-0AE10-1AJ0 | | | | | | |
| **Roller levers, type E, acc. to EN 50047** | | | | | | |
| Metal lever, plastic roller | 13 | ⊖ 5 | **3SE5000-0AE10-1AJ0** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 13 | ⊖ 5 | **3SE5000-0AE12-1AJ0** | | 1 | 1 unit |
| High-grade steel lever, high-grade steel roller | 13 | ⊖ 5 | **3SE5000-0AE13-1AJ0** | | 1 | 1 unit |
| 3SE5000-0AF10-1AJ0 | | | | | | |
| **Angular roller levers** | | | | | | |
| Metal lever, plastic roller | 13 | ⊖ 5 | **3SE5000-0AF10-1AJ0** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 13 | ⊖ 5 | **3SE5000-0AF12-1AJ0** | | 1 | 1 unit |
| **Twist actuators** | | | | | | |
| 3SE5000-0AK00-1AJ0 | | | | | | |
| **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | | |
| Switching right and/or left, adjustable | | ⊖ 5 | **3SE5000-0AK00-1AJ0** | | 1 | 1 unit |
| ***Levers*** | | | | | | |
| 3SE5000-0AA21-1AJ0 | | | | | | |
| **Twist levers straight, 21 mm, type A acc. to EN 50047** | | | | | | |
| Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA21-1AJ0** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA31-1AJ0** | | 1 | 1 unit |
| 3SE5000-0AA60-1AJ0 | | | | | | |
| **Twist levers, adjustable length, with grid hole** | | | | | | |
| Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA60-1AJ0** | | 1 | 1 unit |
| High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA62-1AJ0** | | 1 | 1 unit |

⊖ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| | Version | Contacts | | SD | Complete units<br>Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | d | Price per PU | | |
| **Complete units • Enclosure width 40 mm** | | | | | | | |
| 3SE5112-0CC02-1AJ0 | ***Rounded plungers, type B, acc. to EN 50041***<br>**With high-grade steel plungers, with 3 mm overtravel** | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | ⊕ | 5 | **3SE5112-0CC02-1AJ0** | 1 | 1 unit |
| 3SE5112-0LD02-1AJ0 | ***Roller plungers, type C, acc. to EN 50041***<br>**With high-grade steel plungers, with 3 mm overtravel** | | | | | | |
| | Snap-action contacts | 1 NO + 2 NC | ⊕ | 5 | **3SE5112-0LD02-1AJ0** | 1 | 1 unit |
| 3SE5112-0LH11-1AJ0 | ***Twist levers, type A, acc. to EN 50041***<br>**With high-grade steel lever 27 mm and plastic roller 19 mm** | | | | | | |
| | Snap-action contacts | 1 NO + 2 NC | ⊕ | 5 | **3SE5112-0LH11-1AJ0** | 1 | 1 unit |
| | **With high-grade steel lever 27 mm and high-grade steel roller 19 mm** | | | | | | |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | NEW ⊕ | 10 | **3SE5162-0CH12-1AN5** | 1 | 1 unit |
| 3SE5112-0CH62-1AJ0 | ***Twist levers, adjustable length***<br>**With high-grade steel lever with grid hole and plastic roller 19 mm** | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | ⊕ | 5 | **3SE5112-0CH62-1AJ0** | 1 | 1 unit |
| **Complete units • Enclosure width 56 mm, XL, 3 x M20 x 1.5** | | | | | | | |
| 3SE5162-0CH60-1AJ0 | ***Twist levers, adjustable length***<br>**With metal lever with grid hole and plastic roller 19 mm** | | | | | | |
| | Snap-action contacts | 1 NO + 1 NC | ⊕ | 5 | **3SE5162-0CH60-1AJ0** | 1 | 1 unit |
| | **With high-grade steel lever and high-grade steel roller 19 mm** | | | | | | |
| | Snap-action contacts | 2 × (1 NO + 1 NC) | NEW ⊕ | 10 | **3SE5162-0CH63-1AN6** | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

If the device you require is not available as a complete unit, see Modular system, page 13/81.

## Selection and ordering data

### *Modular system*

2, 3 or 4 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with increased corrosion protection

| Version | Contacts | LEDs | | SD | Modular system ◇ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | | | | |
| **Basic switches • Enclosure width 40 mm** | | | | | | | | |
| 3SE5112-0CA00-1AJ0 | | | | | | | | |
| **With connecting thread M20 × 1.5** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ | 5 | **3SE5112-0CA00-1AJ0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ➔ | 5 | **3SE5112-0KA00-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ | 5 | **3SE5112-0LA00-1AJ0** | | 1 | 1 unit |
| **Basic switches • Enclosure width 56 mm** | | | | | | | | |
| 3SE5122-0CA00-1AJ0 | | | | | | | | |
| **With 3 x connecting thread M20 × 1.5** | | | | | | | | |
| Snap-action contacts | 1 NO + 1 NC | -- | ➔ | 5 | **3SE5122-0CA00-1AJ0** | | 1 | 1 unit |
| Slow-action contacts | 1 NO + 2 NC | -- | ➔ | 5 | **3SE5122-0KA00-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 1 NO + 2 NC | -- | ➔ | 5 | **3SE5122-0LA00-1AJ0** | | 1 | 1 unit |
| **Basic switches • Enclosure width 56 mm, XL** | | | | | | | | |
| 3SE5162-0BA00-1AJ0 | | | | | | | | |
| **With 3 × connection thread M20 × 1.5** | | | | | | | | |
| Slow-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ | 5 | **3SE5162-0BA00-1AJ0** | | 1 | 1 unit |
| Snap-action contacts | 2 × (1 NO + 1 NC) | -- | ➔ | 5 | **3SE5162-0CA00-1AJ0** | | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

For the selection aid, see page 13/13

# SIRIUS 3SE5 Mechanical Position Switches, Shock & Vibration Railway Standard

## 3SE5, metal enclosures, enclosure width 40 mm according to EN 50041 / 56 mm / 56 mm, XL



| | Version | Diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | mm | d | Article No. / Price per PU | | |
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AC02-1AJ0 | **Rounded plungers, type B, acc. to EN 50041** | | | | | |
| | High-grade steel plunger, with 3 mm overtravel | 10 | ⊕ 5 | **3SE5000-0AC02-1AJ0** | 1 | 1 unit |
| 3SE5000-0AD02-1AJ0 | **Roller plungers, type C, acc. to EN 50041** | | | | | |
| | High-grade steel roller, with 3 mm overtravel | 10 | ⊕ 5 | **3SE5000-0AD02-1AJ0** | 1 | 1 unit |
| 3SE5000-0AE01-1AJ0 | **Roller levers** | | | | | |
| | Metal lever, plastic roller | 13 | ⊕ 5 | **3SE5000-0AE01-1AJ0** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊕ 5 | **3SE5000-0AE03-1AJ0** | 1 | 1 unit |
| 3SE5000-0AF01-1AJ0 | **Angular roller levers** | | | | | |
| | Metal lever, plastic roller | 13 | ⊕ 5 | **3SE5000-0AF01-1AJ0** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊕ 5 | **3SE5000-0AF03-1AJ0** | 1 | 1 unit |
| **Twist actuators** | | | | | | |
| 3SE5000-0AH00-1AJ0 | **Twist actuators, for 40/56/56 XL mm EN 50041** | | | | | |
| | Switching right and/or left, adjustable | | ⊕ 5 | **3SE5000-0AH00-1AJ0** | 1 | 1 unit |
| | ***Levers*** | | | | | |
| 3SE5000-0AA01-1AJ0 | **Twist levers, type A, acc. to EN 50041** | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA01-1AJ0** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA11-1AJ0** | 1 | 1 unit |
| 3SE5000-0AA60-1AJ0 | **Twist levers, adjustable length, with grid hole** | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA60-1AJ0** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA62-1AJ0** | 1 | 1 unit |

⊕ Positively driven actuator, necessary in safety circuits.

## Selection and ordering data

### *Complete units*

2 or 3 contacts · 5 directions of approach · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · Cable entry M20 × 1.5

| Version | Contacts | LEDs | | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | Article No. | Price per PU | | |
| **Enclosure width 31 mm according to EN 50047** | | | | | | | | |
| 3SE5232-0RV40-1AJ0 | | | | | | | | |
| ***Ambient temperature down to -40° C*** | | | | | | | | |
| **With increased corrosion protection** | | | | | | | | |
| Slow-action contacts | 1 NO + 1 NC | -- | ⊕ | 5 | **3SE5232-0RV40-1AJ0** | | 1 | 1 unit |

### *Accessories/spare parts*

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Accessories** | | | | | |
| **Standard actuator** | | | | | |
| 3SE5000-0AW11 • With transverse fixing, plastic, length 40 mm | 5 | **3SE5000-0AW11** | | 1 | 1 unit |
| **High-grade steel actuator**[1] | | | | | |
| 3SE5000-0AW51 • Length 75.6 mm | 5 | **3SE5000-0AW51** | | 1 | 1 unit |
| 3SE5000-0AW52 • With vertical fixing, length 53 mm | 5 | **3SE5000-0AW52** | | 1 | 1 unit |
| 3SE5000-0AW53 • With transverse fixing, length 47 mm | 5 | **3SE5000-0AW53** | | 1 | 1 unit |

[1] With optimized geometry and suitable for extreme environmental conditions such as -40 °C

## Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5 · Locking force 1 300 N

| | Tumbler[1] | Solenoid, rated operational voltage | | SD | Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC ☐ Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | V | | d | | | | |
| **1 300 N locking force • Enclosure width 54 mm** | | | | | | | | |
| 3SE5322-0SL21-1AJ0 | **Spring-actuated locks** | | | | | | | |
| | • With escape release from the front and emergency release from the back | 24 DC | ⊕ | 5 | **3SE5322-0SL21-1AJ0** | | 1 | 1 unit |
| | • With auxiliary release | | NEW | 5 | **3SE5322-0SD21-1AJ0** | | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately.

### *Accessories/spare parts*

| | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Accessories** | | | | | | |
| 3SE5000-0AV01 | **Standard actuator** • Length 75.6 mm | ▶ | **3SE5000-0AV01** | | 1 | 1 unit |
| | **High-grade steel actuator**[1] | | | | | |
| 3SE5000-0AW51 | • Length 75.6 mm | 5 | **3SE5000-0AW51** | | 1 | 1 unit |
| 3SE5000-0AW52 | • With vertical fixing, length 53 mm NEW | 5 | **3SE5000-0AW52** | | 1 | 1 unit |
| 3SE5000-0AW53 | • With transverse fixing, length 47 mm | 5 | **3SE5000-0AW53** | | 1 | 1 unit |

1) With optimized geometry and suitable for extreme environmental conditions such as -40 °C

General data

## Overview

The 3SF1 position switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be wired up conventionally.

With the 3SF1 position switches the ASIsafe electronics are integrated in the switch enclosure.

Examples of selection options in the modular system

### *Modular system*

The position switches of the 3SF11.4 and 3SF12.4 series are designed as a modular system comprising different versions of the basic switch and an actuator which must be ordered separately. Thanks to the modular design of the switch the end users can select the right solution for their application from numerous versions and install it themselves in a very short time.

### *Design*

The 3SF1 switches are available in four different enclosure sizes:

- Plastic and metal enclosures according to EN 50047, 31 mm wide, with M12 device plug
- Metal enclosures according to EN 50041, 40 mm wide, with M12 device plug
- Plastic enclosures, 50 mm wide, with M12 device plug and M12 socket
- Metal enclosures, 56 mm wide, with M12 device plug and M12 socket

### *Display*

The switches have a status display with three LEDs:

- LED 1 (yellow): F-IN1
- LED 2 (yellow): F-IN2
- LED 3 (green/red):AS-i/FAULT

### *Connection*

Connection to the AS-Interface is by means of a 4-pole M12 device plug (plastic version) connected to the yellow AS-Interface bus cable.

The wide enclosures (50 or 56 mm) also have an M12 socket for connecting a second position switch. Category 4 according to EN ISO 13849-1 is thus achieved.

## Benefits

The new generation of 3SF1 position switches offers:

- ASIsafe electronics integrated in the enclosure, with low power consumption < 60 mA
- An extensive range of actuators
- Status display with three LEDs
- Can be integrated easily via TIA Portal

## Application

With the standard position switches, mechanical positions of moving machine parts are converted into electrical signals. Through their modular and uniform design and large number of variants, the devices can comply with practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the contact blocks best suited for the particular purpose. And many different actuator variants are available to match the mechanical configuration of the moving machine parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

### *Standards*

The switches comply with the standards IEC 60947-1 (Low-Voltage Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN ISO 14119.

### *Approvals*

AS-Interface according to EN 50295 and IEC 62026-2.

With a 3SF1 position switch it is possible to achieve Category 2 according to EN ISO 13849-1 or SIL 1 according to IEC 61508.

Categories 3 or 4 according to EN ISO 13849-1 or SIL 2 or 3 according to IEC 61508 can be achieved by using a second 3SE5 position switch.

The 3SF1 position switches are approved according to UL 508, UL 50 and UL 746-C.

## General data

### Technical specifications

| Type | | 3SF11.., 3SF12.. |
|---|---|---|
| **General data** | | |
| **Standards** | | IEC/EN 60947-5-1, EN ISO 14119 |
| **According to AS-Interface specification** | | |
| • I/O configuration/ID configuration | | 0/B |
| • ID1 code/ID2 code (Hex) | | F/F |
| • Power consumption, overall | mA | ≤ 60 |
| **Inputs** | | |
| • Low signal range | | Contact open |
| • High signal range | | Contact closed, $I_{in}$ dynamic ($I_{peak}$ ≥ 5 mA) |
| **Status display** | | Green/red dual LED |
| **Rated impulse withstand voltage $U_{imp}$** | kV | 0.6 |
| **EMC strength** | | |
| • IEC 61000-1-2 | kV | 4 |
| • IEC 61000-4-3 | V/m | 10 |
| • IEC 61000-4-4 (A/B) | kV | 1/2 |
| **Mechanical endurance** | | |
| • Basic switch | | 15 ×$10^6$ operating cycles |
| • With separate actuator, 3SF1...-..V.. | | 1 ×$10^6$ operating cycles |
| **PFH value** | | |
| Probability of failure upon request of the safety function, with 1 actuation per hour and B10 = 5 × $10^6$ | | |
| • Basic switch | 1/h | 4 ×$10^{-9}$ |
| • With separate actuator, 3SF1...-..V.. | 1/h | 2 ×$10^{-9}$ |
| • Hinge switches, 3SF1...-..U.. | 1/h | 2 ×$10^{-9}$ |
| **Shock resistance** acc. to IEC 60068-2-27 | | 30 *g* /11 ms |

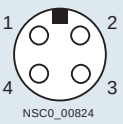
| Type | | 3SF1234 | 3SF1134 | 3SF1244 | 3SF1214 | 3SF1114 | 3SF1124 |
|---|---|---|---|---|---|---|---|
| **Enclosure** | | | | | | | |
| **Enclosure** | | | | | | | |
| • Material | | Ultramid A3X2G7 | | | Zinc die casting GD Zn Al4 Cu1 | | |
| • Width | mm | 31 | 40 | 50 | 31 | 40 | 56 |
| • Dimensions according to EN | | EN 50047 | EN 50041 | -- | EN 50047 | EN 50041 | -- |
| **Degree of protection** acc. to IEC 60529 | | IP65 | IP66/IP67 | | | | |
| **Ambient temperature** | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | | |
| • Storage, transport | °C | -40 ... +80 | | | | | |
| **Mounting position** | | Any | | | | | |

### *Pin assignment*

**M12 device plug, 4-pole**

1 ASi +
2 Not assigned
3 ASi –
4 Not assigned

**M12 socket, 4-pole**




1 Channel 2
2 Channel 2
3 Not assigned
4 Not assigned

### *LEDs*

**Status display (operating state)**

| LED | No voltage on AS-Interface chip | Communication OK | Communication failed | Slave has address "0" |
|---|---|---|---|---|
| ASi/Fault (GN/RD) | | | | |

**Safe inputs**

| LED | Not actuated | Actuated |
|---|---|---|
| F-IN1 (YE) | | |
| F-IN2 (YE) | | |

## 3SF1, plastic enclosures, enclosure width 31 mm according to EN 50047 / 50 mm

### Selection and ordering data

***Modular system***

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

1 or 2 contacts · 3 LEDs · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · M12 device plug

| Version | Contacts | LEDs | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | | Article No. Price per PU | | |
| | | | d | | | |
| **Basic switches (with rounded plunger[1]) • Enclosure width 31 mm acc. to EN 50047** | | | | | | |
| 3SF1234-1KC05-1BA1 | | | | | | |
| **With teflon plunger** | | | | | | |
| With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact | | | | | | |
| Slow-action contacts | 2 NC | 24 V DC | ➔ 5 | **3SF1234-1KC05-1BA1** | 1 | 1 unit |
| Snap-action contacts | 2 NC | 24 V DC | ➔ 5 | **3SF1234-1LC05-1BA1** | 1 | 1 unit |
| **Basic switches (with rounded plunger[1]) • Enclosure width 50 mm** | | | | | | |
| 3SF1244-1KC05-1BA2 | | | | | | |
| **With teflon plunger** | | | | | | |
| With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right | | | | | | |
| Slow-action contacts | 1 NC | 24 V DC | ➔ 5 | **3SF1244-1KC05-1BA2** | 1 | 1 unit |
| Snap-action contacts | 1 NC | 24 V DC | ➔ 5 | **3SF1244-1LC05-1BA2** | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, for use in safety circuits.

1) For enclosures with widths of 31 mm and 50 mm, the basic switch is a complete unit with rounded plungers.

Note:

For the selection aid, see page 13/13

## 3SF1, plastic enclosures, enclosure width 31 mm according to EN 50047 / 50 mm



| | Version | Roller diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | | Article No. Price per PU | | |
| | | mm | d | | | |
| **Operating mechanisms** | | | | | | |
| | **Roller plungers, type C, acc. to EN 50047** | | | | | |
| 3SE5000-0AD03 | Plastic roller | 10 | ⊕ 2 | **3SE5000-0AD03** | 1 | 1 unit |
| | High-grade steel roller | 10 | ⊕ 5 | **3SE5000-0AD04** | 1 | 1 unit |
| | **Roller plungers with central fixing** | | | | | |
| 3SE5000-0AD10 | Plastic roller | 10 | ⊕ 2 | **3SE5000-0AD10** | 1 | 1 unit |
| | High-grade steel roller | 10 | ⊕ 5 | **3SE5000-0AD11** | 1 | 1 unit |
| | **Roller levers, type E, acc. to EN 50047** | | | | | |
| 3SE5000-0AE10 | Metal lever, plastic roller | 13 | ⊕ 2 | **3SE5000-0AE10** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AE11** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊕ 5 | **3SE5000-0AE12** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AE13** | 1 | 1 unit |
| | **Angular roller levers** | | | | | |
| 3SE5000-0AF10 | Metal lever, plastic roller | 13 | ⊕ 2 | **3SE5000-0AF10** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AF11** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊕ 2 | **3SE5000-0AF12** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AF13** | 1 | 1 unit |
| **Twist actuators with lever** | | | | | | |
| | **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | |
| 3SE5000-0AK00 | Switching right or left, adjustable | | ⊕ 2 | **3SE5000-0AK00** | 1 | 1 unit |
| | ***Levers*** | | | | | |
| | **Twist levers, type A, acc. to EN 50047** | | | | | |
| 3SE5000-0AA21 | Metal lever, plastic roller | 19 | ⊕ 2 | **3SE5000-0AA21** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA22** | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ⊕ 5 | **3SE5000-0AA23** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA25** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA31** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA32** | 1 | 1 unit |
| | **Twist levers 30 mm, straight**[1)] | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA24** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA26** | 1 | 1 unit |
| | **Twist levers, adjustable length, with grid hole** | | | | | |
| 3SE5000-0AA60 | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA60** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA61** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊕ 5 | **3SE5000-0AA67** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊕ 5 | **3SE5000-0AA68** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA62** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA63** | 1 | 1 unit |

⊕ Positively driven actuator, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

## 3SF1, metal enclosures, enclosure width 31 mm according to EN 50047

### Selection and ordering data

***Modular system***

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 device plug

| Version | Contacts | LEDs | | SD | Modular system | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | Article No. | Price per PU | | |
| | | | | d | | | | |
| **Basic switches (with rounded plunger[1]) • Enclosure width 31 mm acc. to EN 50047** | | | | | | | | |
| 3SF1214-1KC05-1BA1 | **With plunger** | | | | | | | |
| | With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact | | | | | | | |
| | Slow-action contacts | 2 NC | 24 V DC | ➔ 5 | **3SF1214-1KC05-1BA1** | | 1 | 1 unit |
| | Snap-action contacts | 2 NC | 24 V DC | ➔ 5 | **3SF1214-1LC05-1BA1** | | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, for use in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

Note:

For the selection aid, see page 13/13

## 3SF1, metal enclosures, enclosure width 31 mm according to EN 50047

| | Version | Roller diameter mm | SD d | Modular system Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Operating mechanisms** | | | | | | | |
| 3SE5000-0AB01 | **Plain plungers** | | | | | | |
| | High-grade steel plunger | 10 | ⊕ 2 | **3SE5000-0AB01** | | 1 | 1 unit |
| 3SE5000-0AD03 | **Roller plungers, type C, acc. to EN 50047** | | | | | | |
| | Plastic roller | 10 | ⊕ 2 | **3SE5000-0AD03** | | 1 | 1 unit |
| | High-grade steel roller | 10 | ⊕ 5 | **3SE5000-0AD04** | | 1 | 1 unit |
| 3SE5000-0AD10 | **Roller plungers with central fixing** | | | | | | |
| | Plastic roller | 10 | ⊕ 2 | **3SE5000-0AD10** | | 1 | 1 unit |
| | High-grade steel roller | 10 | ⊕ 5 | **3SE5000-0AD11** | | 1 | 1 unit |
| 3SE5000-0AE10 | **Roller levers, type E, acc. to EN 50047** | | | | | | |
| | Metal lever, plastic roller | 13 | ⊕ 2 | **3SE5000-0AE10** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AE11** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊕ 5 | **3SE5000-0AE12** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AE13** | | 1 | 1 unit |
| 3SE5000-0AF10 | **Angular roller levers** | | | | | | |
| | Metal lever, plastic roller | 13 | ⊕ 2 | **3SE5000-0AF10** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AF11** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 13 | ⊕ 2 | **3SE5000-0AF12** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 13 | ⊕ 5 | **3SE5000-0AF13** | | 1 | 1 unit |
| **Twist actuators with lever** | | | | | | | |
| 3SE5000-0AK00 | **Twist actuators, for 31 mm/50 mm, EN 50047** | | | | | | |
| | Switching right or left, adjustable | | ⊕ 2 | **3SE5000-0AK00** | | 1 | 1 unit |
| | ***Levers*** | | | | | | |
| 3SE5000-0AA21 | **Twist levers, type A, acc. to EN 50047** | | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 2 | **3SE5000-0AA21** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA22** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ⊕ 5 | **3SE5000-0AA23** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA25** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA31** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA32** | | 1 | 1 unit |
| | **Twist levers 30 mm, straight[1)]** | | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA24** | | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊕ 5 | **3SE5000-0AA26** | | 1 | 1 unit |
| 3SE5000-0AA60 | **Twist levers, adjustable length, with grid hole** | | | | | | |
| | Metal lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA60** | | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA61** | | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊕ 5 | **3SE5000-0AA67** | | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊕ 5 | **3SE5000-0AA68** | | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊕ 5 | **3SE5000-0AA62** | | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊕ 5 | **3SE5000-0AA63** | | 1 | 1 unit |

⊕ Positively driven actuator, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

## 3SF1, metal enclosures, enclosure width 40 mm according to EN 50041 / 56 mm

### Selection and ordering data

***Modular system***

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

1 or 2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 device plug

| | Version | Contacts | LEDs | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | d | Article No. / Price per PU | | |
| **Basic switches · Enclosure width 40 mm acc. to EN 50041** | | | | | | | |
| 3SF1114-1KA00-1BA1 | With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact | | | | | | |
| | Slow-action contacts | 2 NC | 24 V DC | ➔ 5 | **3SF1114-1KA00-1BA1** | 1 | 1 unit |
| | Snap-action contacts | 2 NC | 24 V DC | ➔ 5 | **3SF1114-1LA00-1BA1** | 1 | 1 unit |
| **Basic switches · Enclosure width 56 mm** | | | | | | | |
| 3SF1124-1KA00-1BA2 | With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right | | | | | | |
| | Slow-action contacts | 1 NC | 24 V DC | ➔ 5 | **3SF1124-1KA00-1BA2** | 1 | 1 unit |
| | Snap-action contacts | 1 NC | 24 V DC | ➔ 5 | **3SF1124-1LA00-1BA2** | 1 | 1 unit |

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, for use in safety circuits.

Note:

For the selection aid, see page 13/13

| | Version | Roller diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | mm | d | Article No. / Price per PU | | |
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AB01 | **Plain plungers** | | | | | |
| | High-grade steel plunger | 10 | ➔ 2 | **3SE5000-0AB01** | 1 | 1 unit |
| 3SE5000-0AC02 | **Rounded plungers, type B, acc. to EN 50041** | | | | | |
| | High-grade steel plunger, with 3 mm overtravel | 10 | ➔ 5 | **3SE5000-0AC02** | 1 | 1 unit |
| 3SE5000-0AD02 | **Roller plungers, type C, acc. to EN 50041** | | | | | |
| | High-grade steel roller, with 3 mm overtravel | 13 | ➔ 5 | **3SE5000-0AD02** | 1 | 1 unit |

➔ Positively driven actuator, for use in safety circuits.

## 3SF1, metal enclosures, enclosure width 40 mm according to EN 50041 / 56 mm



| | Version | Roller diameter | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | | Article No. / Price per PU | | |
| | | mm | d | | | |
| **Operating mechanisms** | | | | | | |
| 3SE5000-0AE01 | **Roller levers** | | | | | |
| | Metal lever, plastic roller | 22 | ⊖ 2 | **3SE5000-0AE01** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AE02** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 22 | ⊖ 5 | **3SE5000-0AE03** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AE04** | 1 | 1 unit |
| 3SE5000-0AF01 | **Angular roller levers** | | | | | |
| | Metal lever, plastic roller | 22 | ⊖ 2 | **3SE5000-0AF01** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AF02** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 22 | ⊖ 5 | **3SE5000-0AF03** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 22 | ⊖ 5 | **3SE5000-0AF04** | 1 | 1 unit |
| **Twist actuators with lever** | | | | | | |
| 3SE5000-0AH00 | **Twist actuators, for 40/56/56 XL mm EN 50041** | | | | | |
| | • For twist levers, switching right or left, adjustable | | | | | |
| | - For enclosure width 40 and 56 mm | | ⊖ 2 | **3SE5000-0AH00** | 1 | 1 unit |
| | • For fork levers, latching | | ⊖ 5 | **3SE5000-0AT10** | 1 | 1 unit |
| 3SE5000-0AA01 | ***Levers*** | | | | | |
| | **Twist levers 27 mm, offset, type A, acc. to EN 50041** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 2 | **3SE5000-0AA01** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 2 | **3SE5000-0AA02** | 1 | 1 unit |
| | Metal lever, high-grade steel roller with ball bearing | 19 | ⊖ 5 | **3SE5000-0AA03** | 1 | 1 unit |
| | Metal lever, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AA04** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA05** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊖ 5 | **3SE5000-0AA07** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA08** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA11** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA12** | 1 | 1 unit |
| | **Twist levers 35 mm, offset** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA15** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA16** | 1 | 1 unit |
| | **Twist levers 30 mm, straight**[1] | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA24** | 1 | 1 unit |
| | Metal lever, plastic roller | 30 | ⊖ 5 | **3SE5000-0AA26** | 1 | 1 unit |
| 3SE5000-0AA60 | **Twist levers, adjustable length, with grid hole** | | | | | |
| | Metal lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA60** | 1 | 1 unit |
| | Metal lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA61** | 1 | 1 unit |
| | Metal lever, plastic roller | 50 | ⊖ 5 | **3SE5000-0AA67** | 1 | 1 unit |
| | Metal lever, rubber roller | 50 | ⊖ 5 | **3SE5000-0AA68** | 1 | 1 unit |
| | High-grade steel lever, plastic roller | 19 | ⊖ 5 | **3SE5000-0AA62** | 1 | 1 unit |
| | High-grade steel lever, high-grade steel roller | 19 | ⊖ 5 | **3SE5000-0AA63** | 1 | 1 unit |
| 3SE5000-0AT01 | **Fork levers** (for switches with snap-action contacts only) | | | | | |
| | Metal lever, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AT01** | 1 | 1 unit |
| | Metal lever, 2 high-grade steel rollers | 19 | ⊖ 5 | **3SE5000-0AT02** | 1 | 1 unit |
| | High-grade steel lever, 2 plastic rollers | 19 | ⊖ 5 | **3SE5000-0AT03** | 1 | 1 unit |
| | High-grade steel lever, 2 high-grade steel rollers | 19 | ⊖ 5 | **3SE5000-0AT04** | 1 | 1 unit |

⊖ Positively driven actuator, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

## Overview

The 3SF1 safety switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be wired up conventionally.

With the 3SF1 safety switches the ASIsafe electronics are integrated in the switch enclosure.

3SF1 safety switches with head for separate actuator and with integrated ASIsafe electronics

3SF1 safety switches with separate actuator have the same enclosures as the 3SF1 position switches.

### *Operation*

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuators are not included in the scope of supply of the safety switch and must be ordered separately from a choice of different versions to suit the application, (see page 13/96).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety.

A rubber cap to protect the actuator head from contamination is available for operation in dusty environments.

### *Display*

The switches have a status display with three LEDs:

- LED 1 (yellow): F-IN1
- LED 2 (yellow): F-IN2
- LED 3 (green/red): AS-i/FAULT

### *Connection*

Connection to the AS-Interface is by means of a 4-pole M12 device plug (plastic version) connected to the yellow AS-Interface bus cable.

The wide enclosures (50 or 56 mm) also have an M12 socket for connecting a second safety switch. Category 4 according to EN ISO 13849-1 is thus achieved.

## Benefits

The new generation of 3SF1 safety switches with separate actuator offers

- ASIsafe electronics integrated in the enclosure, with low power consumption < 60 mA
- An extensive range of actuators
- Status display with three LEDs

## Application

Safety switches with separate actuator are used where the position of doors, covers or protective grilles must be monitored for safety reasons.

The safety switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the contact blocks best suited for the particular purpose. Dimensions and fixing points of the enclosure are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

### *Standards*

The switches comply with the standards IEC 60947-1 (Low-Voltage Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN ISO 14119.

### *Approvals*

AS-Interface according to EN 50295 and IEC 62026-2.

With a 3SF1 safety switch it is possible to achieve Category 3 according to EN ISO 13849-1 or SIL 2 according to IEC 61508.

Category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508 can be achieved by using an additional 3SE5 safety switch.

The 3SF1 safety switches are approved according to UL 508, UL 50 and UL 746-C.

# With Separate Actuator

## 3SF1, plastic enclosures, enclosure width 31 mm according to EN 50047 / 50 mm



### Overview

- Contacts: 1 or 2 slow-action contacts
- Status display with 3 LEDs 24 V DC;
  1: F–IN1, 2: F–IN2, 3: AS-i/FAULT
- Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm)

### Selection and ordering data

| | Version[1] | Contacts | | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | d | Article No. | Price per PU | | |
| **Enclosure width 31 mm according to EN 50047** | | | | | | | | |
| 3SF1234-1QV40-1BA1 | **5 directions of approach**<br>With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact<br>Slow-action contacts | 2 NC | ⊖ | 5 | **3SF1234-1QV40-1BA1** | | 1 | 1 unit |
| **Enclosure width 50 mm** | | | | | | | | |
| 3SF1244-1QV40-1BA2 | **5 directions of approach**<br>With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right<br>Slow-action contacts | 1 NC | ⊖ | 5 | **3SF1244-1QV40-1BA2** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/96).

## 3SF1, metal enclosures, enclosure width 31 mm according to EN 50047 / 40 mm according to EN 50041 / 56 mm

### Overview

- Contacts: 1 or 2 slow-action contacts
- Status display with 3 LEDs 24 V DC;
  1: F–IN1, 2: F–IN2, 3: AS-i/FAULT
- Degree of protection IP66/IP67

### Selection and ordering data

| | Version[1] | Contacts | SD | Complete units | | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | Article No. | Price per PU | | |
| **Enclosure width 31 mm acc. to EN 50047** | | | | | | | |
| 3SF1214-1QV40-1BA1 | **5 directions of approach**<br>With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact<br>Slow-action contacts | 2 NC | ⊖ 5 | **3SF1214-1QV40-1BA1** | | 1 | 1 unit |
| **Enclosure width 40 mm acc. to EN 50041** | | | | | | | |
| 3SF1114-1QV10-1BA1 | **5 directions of approach**<br>With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact<br>Slow-action contacts | 2 NC | ⊖ 5 | **3SF1114-1QV10-1BA1** | | 1 | 1 unit |
| **Enclosure width 56 mm** | | | | | | | |
| 3SF1124-1QV10-1BA2 | **5 directions of approach**<br>With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right<br>Slow-action contacts | 1 NC | ⊖ 5 | **3SF1124-1QV10-1BA2** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 13/96).

## Selection and ordering data

| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **Actuators** | | | | | | |
| | **Standard actuator** | | | | | |
| 3SE5000-0AV01 | • Length 75.6 mm | ▶ | **3SE5000-0AV01** | | 1 | 1 unit |
| 3SE5000-0AV02 | • With vertical fixing, length 53 mm | 5 | **3SE5000-0AV02** | | 1 | 1 unit |
| 3SE5000-0AV03 | • With transverse fixing, length 47 mm | 5 | **3SE5000-0AV03** | | 1 | 1 unit |
| 3SE5000-0AW11 | • With transverse fixing, plastic[1], length 40 mm | 5 | **3SE5000-0AW11** | | 1 | 1 unit |
| | **Radius actuators** | | | | | |
| 3SE5000-0AV04 | • Length 51 mm, direction of approach from the left | 2 | **3SE5000-0AV04** | | 1 | 1 unit |
| 3SE5000-0AV06 | • Length 51 mm, direction of approach from the right | 5 | **3SE5000-0AV06** | | 1 | 1 unit |
| | **Universal radius actuator** | | | | | |
| 3SE5000-0AV05-1AA6 | • Length 77 mm | 5 | **3SE5000-0AV05** | | 1 | 1 unit |
| | • Length 77 mm, tab rotated 90° | 5 | **3SE5000-0AV05-1AA6** | | 1 | 1 unit |
| | **Universal radius actuator, heavy duty** | | | | | |
| 3SE5000-0AV07 | • Length 67 mm | 2 | **3SE5000-0AV07-1AK2** | | 1 | 1 unit |
| | • Length 77 mm | 5 | **3SE5000-0AV07** | | 1 | 1 unit |
| **Optional accessories** | | | | | | |
| 3SE5000-0AV08-1AA2 | **Protective caps**, black rubber For the actuator head, to protect the actuator openings from contamination (Only for enclosure width 40 mm or 56 mm) | 5 | **3SE5000-0AV08-1AA2** | | 1 | 1 unit |
| 3SE5000-0AV08-1AA3 | **Blocking inserts**, high-grade steel, for actuator head For up to eight padlocks | 5 | **3SE5000-0AV08-1AA3** | | 1 | 1 unit |

[1] Not suitable for safety switches with tumbler.

## Overview

The 3SF1 safety switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be wired up conventionally.

With the 3SF1 safety switches the ASIsafe electronics are integrated in the switch enclosure.

3SF1 safety switch with tumbler and with integrated ASIsafe electronics

### *Operation*

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuators are not included in the scope of supply of the safety switch and must be ordered separately from a choice of different versions to suit the application, (see page 13/96).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety.

A rubber cap to protect the actuator entry of the actuator head from contamination is available for operation of the enclosures in dusty environments.

### *Tumbler*

There are two versions for interlocking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Solenoid-locked (open-circuit principle)

For more explanations, (see page 13/59).

### *Display*

The switches have a status display with four LEDs:

- LED 1 (green): AS-i
- LED 2 (red): FAULT
- LED 3 (yellow): F-IN1
- LED 4 (yellow): F-IN2

### *Connection*

Connection to the AS-Interface is by means of a 4-pole M12 device plug (plastic version) connected to the yellow AS-Interface bus cable (no additional supply of auxiliary power is required thanks to the low current consumption of the solenoid of max. 170 mA).

## Benefits

The new generation of 3SF13 safety switches with tumbler offers:

- More safety through higher locking forces:
  - 1 300 N for the plastic version
  - 2 600 N for the metal version
- Various release mechanisms: lock release, escape release and emergency release
- ASIsafe electronics integrated in the enclosure; connected through 4-pole M12 device plug
- Current consumption of the solenoid no more than 170 mA
- Two contact blocks as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure versions: plastic, metal
- An extensive range of actuators
- Status display with four LEDs
- 3SF1324-1S.21-1BK4 series with high degree of protection IP69K, IP69 in accordance with IEC 60529, cover with foamed seal

## Application

The safety switches with tumbler are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched-off machine).

The safety switches with tumbler have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and tumbler

### *Standards*

The switches comply with the standards IEC 60947-1 (Low-Voltage Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN ISO 14119.

### *Approvals*

AS-Interface according to EN 50295 and IEC 62026-2

The switches are approved for use with locking devices according to EN ISO 14119 and EN 292, Parts 1 and 2.

3SF13 safety switches with tumbler have a VDE test mark.

With a 3SF13 safety switch with tumbler it is possible to achieve Category 3 according to EN ISO 13849-1 or SIL 2 according to IEC 61508.

Category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508 can be achieved by using an additional 3SE5 safety switch.

The 3SF1 safety switches are approved according to UL 508, UL 50 and UL 746-C.

# With Tumbler

## 3SF1, plastic enclosures with locking force greater than 1 200 N



### Overview

***Versions***

- 1BA1: ASIsafe channel 1 on 1 NC contact from the actuator, and channel 2 on 1 NC contact from the solenoid
- 1BA3: ASIsafe channel 1 on the first NC contact from the actuator and channel 2 on the second NC contact from the actuator
- 1BA4: ASIsafe channel 1 on 2 NC contacts (two-channel) from the actuator, and channel 2 on 1 NC contact from the solenoid. The position switch transfers the information of actuators to a transfer channel because the discrepancy of the two actuator contacts is already evaluated in the switch.

The 3SF1324-1S.21-1BA4 safety switches are also recommended where there are several protective door tumblers and reliable diagnostics and quick restart capability of equipment is required.

- A response is received from the solenoid.
- No opening of the doors required after the solenoid is unlocked.

In connection with an ASIsafe MSS modular safety system or an ET 200SP F-CM AS-i Safety ST module, it is possible to achieve SIL 2 according to IEC 61508 or PL d according to ISO 13849-1. They comply with the standard EN ISO 14119. A TÜV certificate is available.

***Features:***

- Slow-action contacts
- 5 directions of approach
- Solenoid: Rated operational voltage 24 V DC
- 1 300 N locking force
- Degree of protection IP66/IP67 (IP69K)
- Status display with 4 LEDs 24 V DC; 1: AS-i, 2: FAULT, 3: F–IN1, 4: F–IN2

Comparison of versions

| Safety switches<br>Type | Contacts<br>Actuator/solenoid | Achievable safety level | Diagnostics<br>Feedback from the solenoid | Reclosing condition after unlocking the solenoid<br>(depending on the type of evaluation) |
|---|---|---|---|---|
| 3SF1324-1S.21-1BA1 | 1 NC/1 NC | SIL 1/PL c | ✓ | Door does not have to be opened |
| | 1 NC/1 NC | SIL 2/PL d | ✓ | Door must be opened |
| 3SF1324-1S.21-1BA3 | 2 NC/-- | SIL 2/PL d | -- | Door does not have to be opened |
| 3SF1324-1S.21-1BA4 | 2 NC/1 NC | SIL 2/PL d | ✓ | Door does not have to be opened |
| 3SF1324-1S.21-1BK4 (IP69K) | 2 NC/1 NC | SIL 2/PL d | ✓ | Door does not have to be opened |

✓ Available -- Not available

### Selection and ordering data

| Tumbler[1] | Contacts Actuator/solenoid | SD d | Complete units Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| **1 300 N locking force · Enclosure width 54 mm** | | | | | | |
| **Spring-actuated locks** | | | | | | |
| • With auxiliary release | 1 NC/1 NC | ➔ 5 | **3SF1324-1SD21-1BA1** | | 1 | 1 unit |
| | 2 NC/-- | ➔ 5 | **3SF1324-1SD21-1BA3** | | 1 | 1 unit |
| | 2 NC/1 NC | ➔ 5 | **3SF1324-1SD21-1BA4** | | 1 | 1 unit |
| - Degree of protection IP69 acc. to 60529; IP69K acc. to DIN 40050 | 2 NC/1 NC | ➔ 5 | **3SF1324-1SD21-1BK4** | | 1 | 1 unit |
| • With auxiliary release with lock | 1 NC/1 NC | ➔ 5 | **3SF1324-1SE21-1BA1** | | 1 | 1 unit |
| • With escape release from the front | 1 NC/1 NC | ➔ 5 | **3SF1324-1SF21-1BA1** | | 1 | 1 unit |
| | 2 NC/1 NC | ➔ 5 | **3SF1324-1SF21-1BA4** | | 1 | 1 unit |
| - Degree of protection IP69 acc. to 60529; IP69K acc. to DIN 40050 | 2 NC/1 NC | ➔ 5 | **3SF1324-1SF21-1BK4** | | 1 | 1 unit |
| • With escape release from the back and auxiliary release from the front | 1 NC/1 NC | ➔ 5 | **3SF1324-1SG21-1BA1** | | 1 | 1 unit |
| | 2 NC/1 NC | ➔ 5 | **3SF1324-1SG21-1BA4** | | 1 | 1 unit |
| - Degree of protection IP69 acc. to 60529; IP69K acc. to DIN 40050 | 2 NC/1 NC | ➔ 5 | **3SF1324-1SG21-1BK4** | | 1 | 1 unit |
| • With emergency release from the back and auxiliary release from the front | 1 NC/1 NC | ➔ 5 | **3SF1324-1SJ21-1BA1** | | 1 | 1 unit |
| **Solenoid-locked** | 1 NC/1 NC | ➔ 5 | **3SF1324-1SB21-1BA1** | | 1 | 1 unit |
| | 2 NC/-- | ➔ 5 | **3SF1324-1SB21-1BA3** | | 1 | 1 unit |

3SF1324-1SD21-1BA1

3SF1324-1SF21-1BA1

3SF1324-1SB21-1BA1

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately. For actuators and optional accessories, see page 13/64.

## 3SF1, metal enclosures with locking force greater than 2 000 N

### Overview

***Version***

- 1BA1: ASIsafe channel 1 on 1 NC contact from the actuator, and channel 2 on 1 NC contact from the solenoid

***Features***

- Slow-action contacts
- Solenoid: Rated operational voltage 24 V DC
- 2 600 N locking force
- Degree of protection IP66/IP67
- Status display with 4 LEDs 24 V DC; 1: AS-i, 2: FAULT, 3: F–IN1, 4: F–IN2

Comparison of versions

| Safety switches<br>Type | Contacts<br>Actuator/solenoid | Achievable safety level | Diagnostics<br>Feedback from the solenoid | Reclosing condition after unlocking the solenoid<br>(depending on the type of evaluation) |
|---|---|---|---|---|
| 3SF1314-1S.11-1BA1 | 1 NC/1 NC | SIL 1/PL c | ✓ | Door does not have to be opened |

✓ Available

### Selection and ordering data

| | Tumbler[1] | Contacts Actuator/ solenoid | SD<br>d | Complete units<br>Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **2 600 N locking force · Enclosure width 54 mm** | | | | | | | |
| 3SF1314-1SD11-1BA1 | **Spring-actuated locks** | | | | | | |
| | • With auxiliary release | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SD11-1BA1** | | 1 | 1 unit |
| | • With auxiliary release with lock | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SE11-1BA1** | | 1 | 1 unit |
| 3SF1314-1SF11-1BA1 | • With escape release from the front | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SF11-1BA1** | | 1 | 1 unit |
| | • With escape release from the back and auxiliary release from the front | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SG11-1BA1** | | 1 | 1 unit |
| | • With escape release from the back and auxiliary release with lock from the front | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SH11-1BA1** | | 1 | 1 unit |
| | • With emergency release from the back and auxiliary release from the front | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SJ11-1BA1** | | 1 | 1 unit |
| 3SF1314-1SB11-1BA1 | **Solenoid-locked** | 1 NC/1 NC | ⊖ 5 | **3SF1314-1SB11-1BA1** | | 1 | 1 unit |

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately.

For actuators and optional accessories, see page 13/64.

# Safety Hinge Switches

## 3SF1, plastic enclosures, enclosure width 31 mm according to EN 50047 / 50 mm



### Overview

The 3SF1 safety hinge switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be wired up conventionally.

With the 3SF1 hinge switches the ASIsafe electronics are integrated in the switch enclosure.

The hinge switches are provided for mounting on hinges. There are two actuator variants here:
- Hollow shaft, inner diameter 8 mm, outer 12 mm
- Solid shaft, diameter 10 mm

For the ASIsafe version of the hinge switch, the basic switch and actuator head must be ordered separately. The basic switches correspond to the 3SF1 position switches (use only versions with snap-action contacts).

The provisions and approvals are the same as for the 3SF1 standard switches, see page 13/85.

### Selection and ordering data

***Modular system***

1 or 2 contacts · 3 LEDs · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · M12 device plug

| | Version | Contacts | LEDs | | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | d | Article No. / Price per PU | | |
| **Basic switches · Enclosure width 31 mm acc. to EN 50047** | | | | | | | | |
| 3SF1234-1LC05-1BA1 | **With Teflon plunger, with M12 device plug**, 4-pole, channel 1 on NC contact, channel 2 on NC contact | | | | | | | |
| | Snap-action contacts | 2 NC | 24 V DC | ⊕ | 5 | **3SF1234-1LC05-1BA1** | 1 | 1 unit |
| **Basic switches · Enclosure width 50 mm** | | | | | | | | |
| 3SF1244-1LC05-1BA2 | **With Teflon plunger, with M12 device plug**, 4-pole channel 1 on NC contact, channel 2 on M12 socket, right | | | | | | | |
| | Snap-action contacts | 1 NC | 24 V DC | ⊕ | 5 | **3SF1244-1LC05-1BA2** | 1 | 1 unit |
| **Actuator heads** | | | | | | | | |
| 3SE5000-0AU21 | **With hollow shaft** | | | | | | | |
| | Operating angle 10° | | | | 5 | **3SE5000-0AU21** | 1 | 1 unit |
| 3SE5000-0AU22 | **With solid shaft** | | | | | | | |
| | Operating angle 10° | | | | 5 | **3SE5000-0AU22** | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

# Safety Hinge Switches

## 3SF1, metal enclosures, enclosure width 31 mm according to EN 50047 / 40 mm according to EN 50041 / 56 mm

### Overview

The 3SF1 safety hinge switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be wired up conventionally.

With the 3SF1 hinge switches the ASIsafe electronics are integrated in the switch enclosure.

The hinge switches are provided for mounting on hinges. There are two actuator variants here:
- Hollow shaft, inner diameter 8 mm, outer 12 mm
- Solid shaft, diameter 10 mm

For the ASIsafe version of the hinge switch, the basic switch and actuator head must be ordered separately. The basic switches correspond to the 3SF1 position switches (use only versions with snap-action contacts).

The provisions and approvals are the same as for the 3SF1 standard switches, see page 13/85.

### Selection and ordering data

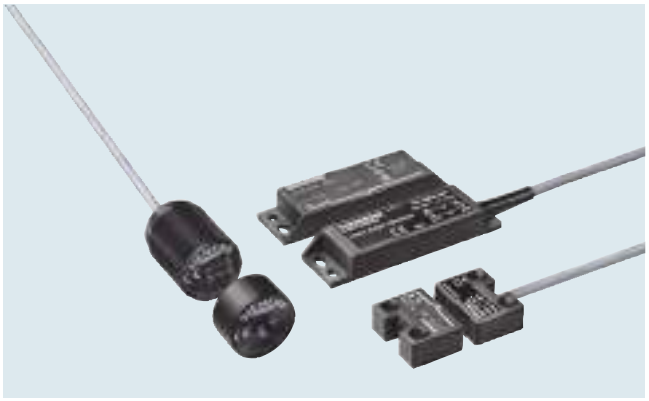
***Modular system***

1 or 2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 device plug

| | Version | Contacts | LEDs | | SD | Modular system | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | d | Article No. / Price per PU | | |
| **Basic switches · Enclosure width 31 mm acc. to EN 50047** | | | | | | | | |
| 3SF1214-1LC05-1BA1 | **With plunger**<br>With M12 device plug, 4-pole, channel 1 on NC contact, channel 2 on NC contact | | | | | | | |
| | Snap-action contacts | 2 NC | 24 V DC | ⊕ | 5 | **3SF1214-1LC05-1BA1** | 1 | 1 unit |
| **Basic switches · Enclosure width 40 mm acc. to EN 50041** | | | | | | | | |
| 3SF1114-1LA00-1BA1 | **With M12 device plug**, 4-pole, channel 1 on NC contact, channel 2 on NC contact | | | | | | | |
| | Snap-action contacts | 2 NC | 24 V DC | ⊕ | 5 | **3SF1114-1LA00-1BA1** | 1 | 1 unit |
| **Basic switches · Enclosure width 56 mm** | | | | | | | | |
| 3SF1124-1LA00-1BA2 | **With M12 device plug**, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right | | | | | | | |
| | Snap-action contacts | 1 NC | 24 V DC | ⊕ | 5 | **3SF1124-1LA00-1BA2** | 1 | 1 unit |
| **Actuator heads** | | | | | | | | |
| 3SE5000-0AU21 | **Hollow shaft**<br>Operating angle 10° | | | | 5 | **3SE5000-0AU21** | 1 | 1 unit |
| 3SE5000-0AU22 | **Solid shaft**<br>Operating angle 10° | | | | 5 | **3SE5000-0AU22** | 1 | 1 unit |

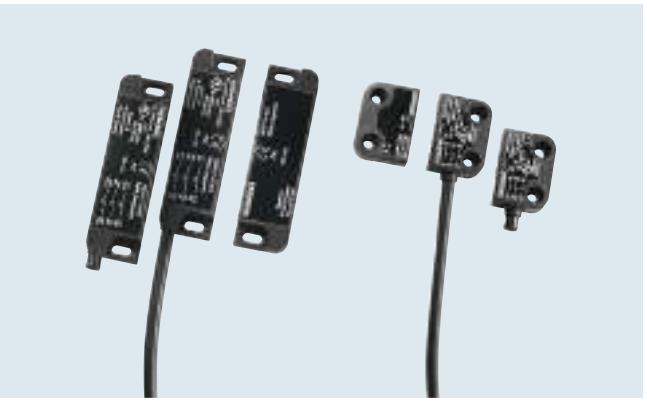
⊕ Positive opening according to IEC 60947-5-1, Appendix K.

## Overview



3SE66 contact blocks and 3SE67 switching magnets

A magnetically operated switch comprises a coded switching magnet and a contact block (sensor unit). The switch must be connected to a safety relay, e.g. SIRIUS 3SK1, or a bus system, e.g. SIMATIC ET 200SP, for evaluation. The switches use reed contacts as mechanical contacts. The status of the contacts is monitored using an evaluation unit.



3SE66 contact blocks and 3SE67 switching magnets, supplementary range in new design

### *Safety relays*

3SK safety relays can be used worldwide since they possess all the required certification. Since they satisfy the most exacting safety requirements, they are suitable for all kinds of safety applications.

The following can be selected:

- 3SK1 Standard basic units:
  simple and compact to satisfy all the essential requirements of safety sensor monitoring systems
- 3SK1 Advanced basic units:
  multifunctional series with relay enabling circuits, semiconductor outputs or time-delay outputs
- 3SK2 basic units:
  multifunctional series whose functionality is parameterized using software. The basic units have solid-state outputs. Relay outputs from the 3SK1 portfolio can also be connected via device connectors.
- Expansion units for inputs and outputs

The 3SE6806 safety relay is also available with two floating enabling circuits (safe circuits) as NO contact circuits and one floating signaling circuit as an NC contact circuit.

## Benefits

### *Standard range*

- Non-contact round, rectangular, small (25 mm x 33 mm) and larger (25 mm x 88 mm) versions
- Small, compact, safe
- Simple mounting with alignment of sensor and actuator, and concealed installation also easy
- Suitable for restricted spaces

### *Supplementary range*

- New design for rectangular shape
- More functionality
- Greater switching intervals and a larger horizontal or vertical displacement
- Various mounting positions possible (e.g. at 90° offset)
- SIL 3 and PL e diagnostics possible because there are two safety contacts and one signaling contact
- LED variant
- Fast connection possible using plug-in variants

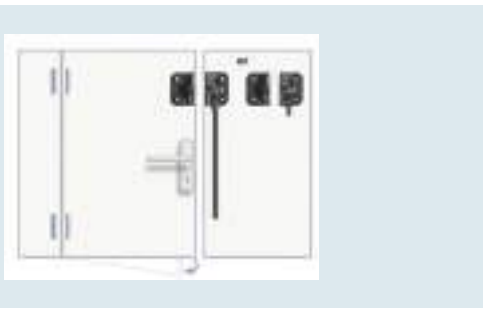
## Application

SIRIUS 3SE6 magnetically operated switches are designed for mounting on movable protective guards (hoods, hinged covers, doors, etc.). Evaluation can be performed by means of a safety relay or through connection to a bus system.

The 3SE66 non-contact, magnetically operated safety switches stand out due to their enclosed design with degree of protection IP67. Since they are coded, they do not have to be concealed when installed. They are particularly suitable therefore for areas exposed to contamination, cleaning or disinfecting.

A magnetic monitoring system comprises one or more magnetically operated switches and an evaluation unit, e.g. a safety relay. When contact blocks 1 NO + 1 NC (+ 1 NC signaling contact) or 2 NC (+ 1 NC signaling contact) are used, the 3SK safety relay, for example, provides a high degree of protection against manipulation and can be installed in safety circuits up to SIL 3 according to IEC 62061 and PL e according to EN ISO 13849-1.

Non-contact safety magnetically operated switches (with plug or cable) for right-hinged door



Non-contact safety magnetically operated switches (with plug or cable) for left-hinged door

***Combination of monitoring units and magnetically operated switches***

| Monitoring units | | | Magnetically operated switches (contact block + switching magnet) | | | Achievable SIL (IEC 61508, IEC 62061) Performance Level (EN ISO 13849-1) |
|---|---|---|---|---|---|---|
| | | | **1 NO + 1 NC**<br>3SE6605-.BA..<br> <br>3SE6704-.BA | **2 NC**<br>3SE6604-2BA..<br>**1 NO + 2 NC**<br>3SE6606-2BA04<br> <br>3SE6704-2BA | -- | |
| | | | **1 NO + 1 NC (+ 1 NC signaling contact)**<br>3SE6616-3CA01<br>3SE6626-3CA01<br> <br>3SE6714-3CA<br>3SE6724-3CA | **2 NC; 2 NC (+ 1 NC signaling contact)**<br>3SE6614-4CA01<br>3SE6624-4CA01<br>3SE6617-2CA01<br>3SE6627-2CA01<br>3SE6617-2CA04<br>3SE6627-2CA04<br> <br>3SE6714-2CA<br>3SE6724-2CA | **2 NC (+ 1 NC signaling contact)**<br>3SE6617-3CA01<br>3SE6627-3CA01<br>3SE6617-3CA04<br>3SE6627-3CA04<br> <br>3SE6714-3CA<br>3SE6724-3CA | |
| **Relay output** | | | | | | |
| SIRIUS safety relays | 3SK1121, 3TK2826 | | ✓ | ✓ | ✓ | SIL 3/PL e |
| **Solid-state outputs** | | | | | | |
| SIRIUS safety relays | 3SK1112, 3SK1122 | | --/✓ | ✓ | ✓ | SIL 3/PL e |
| | 3SK2112, 3SK2122 | | ✓ | ✓ | ✓ | SIL 3/PL e |
| ASIsafe compact safety modules | 3RK1205, 3RK1405 | | -- | ✓ | ✓ | SIL 3/PL e |
| Modular Safety System (MSS) | 3RK3 | | ✓ | ✓ | ✓ | SIL 3/PL e |
| SIMATIC S7-1200F | F-DI 16 x 24 V DC | | ✓ | ✓ | ✓ | SIL 3/PL e |
| SIMATIC ET 200SP PROFIsafe | 4/8 F-DI, 24 V DC | | ✓ | ✓ | ✓ | SIL 3/PL e |
| SIMATIC ET 200eco | 4/8 F-DI, 24 V DC | | ✓ | ✓ | ✓ | SIL 3/PL e |
| SIMATIC ET 200pro | 8/16 F-DI, 24 V DC, 4/8 F-DI/4 F-DQ 2 A, 24 V DC, F-Switch | | ✓ | ✓ | ✓ | SIL 3/PL e |
| SIMATIC ET 200SP | 8F-DI, 24 V DC F-PM-E 24 V DC | | ✓ | ✓ | ✓ | SIL 3/PL e |
| SIMATIC ET 200MP | 16 F-DI, 24 V DC | | ✓ | ✓ | ✓ | SIL 3/PL e |

✓ Suitable magnetically operated switch

-- Not available

## Selection and ordering data

| | Version | Size | Contacts | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | mm | | d | | | | |
| **Standard range – Round sensor units** | | | | | | | | |
| 3SE6704-1BA | **Switching magnet (coded)** | M30 | -- | 2 | **3SE6704-1BA** | | 1 | 1 unit |
| | **Contact blocks** | | | | | | | |
| 3SE6505-1BA | • With cable 3 m | M30 | 1 NO + 1 NC | 2 | **3SE6605-1BA** | | 1 | 1 unit |
| | • With M12 plug, 4-pole | M30 | 1 NO + 1 NC | 2 | **3SE6605-1BA02** | | 1 | 1 unit |
| **Standard range – Rectangular sensor units** | | | | | | | | |
| 3SE6704-2BA | **Switching magnet (coded)** | 25 × 88 | -- | 2 | **3SE6704-2BA** | | 1 | 1 unit |
| | **Contact blocks** | | | | | | | |
| 3SE660.-2BA | • With cable 3 m | 25 × 88 | 1 NO + 1 NC | 2 | **3SE6605-2BA** | | 1 | 1 unit |
| | | | 2 NC | 2 | **3SE6604-2BA** | | 1 | 1 unit |
| | | | 1 NO + 2 NC | 10 | **3SE6606-2BA04** | | 1 | 1 unit |
| | • With cable 10 m | 25 × 88 | 1 NO + 1 NC | 5 | **3SE6605-2BA10** | | 1 | 1 unit |
| | | | 2 NC | 2 | **3SE6604-2BA10** | | 1 | 1 unit |
| | • With M8 plug, 4-pole | 25 × 88 | 1 NO + 1 NC | 2 | **3SE6605-2BA01** | | 1 | 1 unit |
| | | | 2 NC | 2 | **3SE6604-2BA01** | | 1 | 1 unit |
| | **Switching magnet (coded)** | 25 × 33 | -- | 2 | **3SE6704-3BA** | | 1 | 1 unit |
| | **Contact blocks** | | | | | | | |
| 3SE660.-3BA | • With cable 3 m | 25 × 33 | 1 NO + 1 NC | 2 | **3SE6605-3BA** | | 1 | 1 unit |
| | • With cable 5 m | | | 2 | **3SE6605-3BA05** | | 1 | 1 unit |
| | • With cable 10 m | | | 2 | **3SE6605-3BA10** | | 1 | 1 unit |
| **Supplementary range in new design – Rectangular sensor units for left-hinged door** | | | | | | | | |
| | **Switching magnets (coded)** | | | | | | | |
| 3SE6714-2CA | • Same level | 25 x 88 | -- | 5 | **3SE6714-2CA** | | 1 | 1 unit |
| | • 90° offset | | | 5 | **3SE6724-2CA** | | 1 | 1 unit |
| | **Contact blocks** | | | | | | | |
| 3SE6614-4CA01 | • With M8 plug, 4-pole, with LED | 25 × 88 | 2 NC | 5 | **3SE6614-4CA01** | | 1 | 1 unit |
| | • 8 mm ∅, latching connection, plug, 6-pole | | 2 NC + 1 NC[1] | 5 | **3SE6617-2CA01** | | 1 | 1 unit |
| | • With cable 3 m | | 2 NC + 1 NC[1] | 5 | **3SE6617-2CA04** | | 1 | 1 unit |
| | **Switching magnets (coded)** | | | | | | | |
| 3SE6714-3CA | • Same level | 26 x 36 | -- | 5 | **3SE6714-3CA** | | 1 | 1 unit |
| | • 90° offset | | | 5 | **3SE6724-3CA** | | 1 | 1 unit |
| | **Contact blocks** | | | | | | | |
| 3SE6616-3CA01 | • 8 mm ∅, latching connection, plug, 6-pole | 26 × 36 | 1 NO + 1 NC + 1 NC[1] | 5 | **3SE6616-3CA01** | | 1 | 1 unit |
| | | | 2 NC + 1 NC[1] | 5 | **3SE6617-3CA01** | | 1 | 1 unit |
| | • With cable 3 m | | 2 NC + 1 NC[1] | 5 | **3SE6617-3CA04** | | 1 | 1 unit |

[1] The NC is a signaling contact, not a safety contact.

# Magnet

## 3SE66, 3SE67 magnetically operated switches



| | Version | Size | Contacts | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | mm | | d | | | | |
| **Supplementary range in new design – Rectangular sensor units for right-hinged door** | | | | | | | | |
| 3SE6714-2CA | **Switching magnets (coded)** | | | | | | | |
| | • Same level | 25 x 88 | -- | 5 | **3SE6714-2CA** | | 1 | 1 unit |
| | • 90° offset | | | 5 | **3SE6724-2CA** | | 1 | 1 unit |
| 3SE6624-4CA01 | **Contact blocks** | | | | | | | |
| | • With M8 plug, 4-pole, with LED | 25 x 88 | 2 NC | 5 | **3SE6624-4CA01** | | 1 | 1 unit |
| | • 8 mm ∅, latching connection, plug, 6-pole | | 2 NC + 1 NC[1)] | 5 | **3SE6627-2CA01** | | 1 | 1 unit |
| | • With cable 3 m | | 2 NC + 1 NC[1)] | 5 | **3SE6627-2CA04** | | 1 | 1 unit |
| 3SE6714-3CA | **Switching magnets (coded)** | | | | | | | |
| | • Same level | 26 x 36 | -- | 5 | **3SE6714-3CA** | | 1 | 1 unit |
| | • 90° offset | | | 5 | **3SE6724-3CA** | | 1 | 1 unit |
| 3SE6626-3CA01 | **Contact blocks** | | | | | | | |
| | • 8 mm ∅, latching connection, plug, 6-pole | 26 x 36 | 1 NO + 1 NC + 1 NC[1)] | 5 | **3SE6626-3CA01** | | 1 | 1 unit |
| | | | 2 NC + 1 NC[1)] | 5 | **3SE6627-3CA01** | | 1 | 1 unit |
| | • With cable 3 m | | 2 NC + 1 NC[1)] | 5 | **3SE6627-3CA04** | | 1 | 1 unit |
| **Accessories for standard range** | | | | | | | | |
| 3SX3260 | **Spacer** | 25 x 88 | -- | 2 | **3SX3260** | | 1 | 1 unit |
| | | 25 x 33 | -- | 5 | **3SX3261** | | 1 | 1 unit |
| 3SX3261 | **Coupling** With connecting cable, 5 m | | | | | | | |
| | • With M8 socket, 4-pole | | -- | 5 | **3SX5601-3GA05** | | 1 | 1 unit |
| **Accessories for supplementary range in new design** | | | | | | | | |
| 3SX5600-2GA01 | **Spacer** | 25 x 88 | -- | 5 | **3SX5600-2GA01** | | 1 | 1 unit |
| 3SX5600-2GA02 | | 26 x 36 | -- | 5 | **3SX5600-2GA02** | | 1 | 1 unit |
| 3SX5601-3GA05 | **Coupling** With connecting cable, 5 m | | | | | | | |
| | • With M8 socket, 4-pole | | -- | 5 | **3SX5601-3GA05** | | 1 | 1 unit |
| | • With 8 mm ∅ socket, 8 mm, latching connection, 6-pole | | -- | 5 | **3SX5601-4GA05** | | 1 | 1 unit |

[1)] The second NC is a signaling contact, not a safety contact.

## 3SE66, 3SE67 magnetically operated switches

| Version | Rated control voltage | Number of sensors | Enabling/ signaling circuits | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Monitoring units** | | | | | | | | |
| ***3SK1 safety relays*** | | | | | | | | |
| **Standard or Advanced basic units** | | | | | | | | |
| With relay output | 24 V DC | 6[1] | 3 NO/1 NC | ► | **3SK1121-1AB40** | | 1 | 1 unit |
| With semiconductor output | 24 V DC | 1 | 2 x F-DQ/ 1 QM | 2 | **3SK1112-1BB40** | | 1 | 1 unit |

3SK1121-1AB40

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ***3SK2 safety relays*** | | | | | | | | |
| **Basic units** | | | | | | | | |
| With semiconductor output | 24 V DC | 5 | 2 x F-DQ/ 1 QM | 2 | **3SK2112-1AA10** | | 1 | 1 unit |
| | | 10 | 4 x F-DQ/ 2 QM | 2 | **3SK2122-1AA10** | | 1 | 1 unit |

3SK2112-1AA10

[1] Only when up to 5 3SK1220 expansion units are used, see page 13/25.

For more monitoring units, see page 13/109.

## Overview

Non-contact RFID safety switches with maximum tamper resistance

RFID 3SE63 non-contact safety switches comply with the highest safety requirements, SIL 3 or Cat. 4, for monitoring the positions of movable protective devices.

An RFID safety switch consists of a coded RFID switch with an 8-pole M12 connection plug and an identical RFID actuator.

The switch is available in several versions:

- Family coded with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable once, with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable more than once (an unlimited number of times), with M12 plug or variant with additional 18 N magnetic catch

The actuator is therefore available in two versions:

- Standard
- With 18 N magnetic catch

The magnetic catch keeps doors and hinge switches closed with permanent magnets.

### *Mounting and maintenance*

Various options for mounting save on enclosure variants:

- Mounting of the switch on the right or left side
- The actuator can be mounted on all sides

Quick and easy mounting thanks to universal mounting holes:

- Standard gauge/holes for 3SE6 magnetically operated switches
- Fine adjustment thanks to slotted holes

Little adjustment or maintenance required:

- Threshold indication by LED display on the switch for quick and easy adjustment during mounting and maintenance
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Note:

- Keep metal parts and cuttings away from the vicinity of the switch
- Minimum distance between two switches 100 mm

### *Optional accessories (mounting)*

- Covers for sealing mounting holes, also suitable for tamper-proofing screw fixings
- Spacers (approx. 3 mm high) to facilitate cleaning under the installation surface when using high-pressure cleaners, for example

### *Coding*

Family coded

These safety switches are delivered ready to use, i. e. no programming is necessary.

Individually coded, programmable once

The assignment of safety switch and actuator thus created is irreversible.

The actuator is programmed simply by routine during startup, thus permanently preventing any form of tampering by means of a replacement actuator.

Individually coded, programmable several times

The procedure for programming a new actuator can be repeated an unlimited number of times. When a new actuator is programmed the previous code becomes invalid. A protected coding process allows new actuators to be programmed for service purposes.

After this, a ten-minute lockout provides increased tamper protection. The green LED flashes until the lockout time has ended and the new actuator has been detected. If the operational voltage is interrupted during this time, the ten-minute guard time is restarted.

Programming procedure for individual coding

1. Apply operational voltage to safety sensor

2. Move actuator into detection range:
red LED lights up, yellow LED flashes (1 Hz)

3. After 10 s it changes to a shorter flashing frequency (3 Hz). In this state switch off operational voltage.

4. After the next time the operational voltage is switched on, the actuator is detected again to activate the programmed actuator code. The activated code is thus stored permanently.

### *Diagnostics*

The RFID safety switch indicates its operating state including faults by means of the LED indicator in the switch and the short-circuit proof diagnostics output. The signals can then be used for central displays or non-safety-related control tasks.

There are the following diagnostics functions:

- Crossover monitoring
- Open-circuit monitoring
- External voltage monitoring
- Ambient temperature too high
- Wrong or defective actuator
- Switching interval threshold identification with LED display

The signal combination "diagnostics output switched off" and "safety outputs still switched on" can be used to move the machine into a controlled stop position.

Any crossover or a fault that is not currently compromising the safe function of a safety switch results in the disconnection of the safety channels after a 30-minute delay. However, the diagnostics output switches off instantaneously.

Mode of operation of the diagnostics LEDs

The safety switch indicates not only its operating state, but also faults by means of LEDs in three colors at the ends of the RFID switch.

- The green LED indicates readiness for operation when the control supply voltage is connected.
- The yellow LED indicates that there is an actuator in detection range. If the actuator is in the switching interval threshold, this is indicated by flashing. This flashing can be used to identify a change in the distance between sensor and actuator at an early stage (e.g. as a result of the sagging of a protective door). The installation should be tested before the distance increases further, the safety outputs switch off and the machine stops.
- The red LED indicates the individual causes of the fault by means of defined flashing frequencies.

## Benefits

- Maximum tamper resistance by means of individual coding of switches and actuators at the highest safety level
- Plastic enclosure with integrated plug
- Two solid-state short-circuit proof safety outputs, each 250 mA
- Integrated crossover, open circuit and external voltage monitoring, with series circuit as far as the control cabinet
- Safety and diagnostics signals can be connected in series
- Series connection of safety circuits in Cat. 4/PL e/SIL 3
- LED status indication including switching interval threshold indication for quick and easy adjustment during installation and maintenance
- Short-circuit proof conventional diagnostics output
- Optional version with magnetic catch for interlocking hinge switches or small doors even when de-energized
- Highly rugged thanks to the use of tested enclosure materials, resistant to aggressive cleaning products, with a degree of protection of up to IP69K
  IP69 does not automatically mean that it can be used outdoors. The devices must be installed with corresponding protection for this purpose. UV radiation additionally affects the enclosure
- Fine adjustment thanks to slotted holes
- Little adjustment or maintenance required
- Molded switch allows it to be used as an end stop for small and medium-sized doors

## Application

RFID non-contact safety switches are designed for use in safety circuits, and are used to monitor the positions of movable protective devices. They monitor the positions of rotating, laterally sliding or removable protective devices using the coded electronic actuator.

Their high degree of protection (IP69K) and the use of cleaning-product-resistant materials means that these switches are optimized for use under extreme environmental conditions.

Their electronic operating principle makes these switches ideal for metalworking machinery.

The switches have a larger switching interval and switching displacement than mechanical switches, improve the mounting tolerance of the protective door, and offer a wide range of diagnostics options.

The RFID switches can be connected to all standard evaluation units suitable for solid-state inputs and in which the built-in crossover monitoring function can be deactivated, e.g.:

| Monitoring units | |
|---|---|
| **Relay output** | |
| SIRIUS safety relays | 3SK1111-.AB30, 3SK1121 |
| SIRIUS safety relays | 3TK2826-.BB4. |
| **Solid-state outputs** | |
| SIRIUS safety relays | 3SK1112, 3SK1122, 3SK2112, 3SK2122 |
| SIRIUS safety relays | 3TK2841, 3TK2842, 3TK2845<br>3TK2853-.BB40 |
| Modular Safety System (MSS) | 3RK3 (safe inputs) |
| SIMATIC ET 200S | 6ES7138-4FA0.-0AB0<br>6ES7138-4FC0.-0AB0 |
| SIMATIC ET 200M | 6ES7326-1BK0.-0AB0 |
| SIMATIC ET 200eco | 6ES7148-3FA00-0XB0 |
| SIMATIC ET 200pro | 6ES7148-4F.00-0AB0 |
| SIMATIC ET 200SP | 6ES7136-6BA00-0CA0<br>6ES7136-6PA00-0BC0 |
| SIMATIC ET 200MP | 6ES7526-3BH00-0AB0 |
| SIMATIC S7-1200F | 6ES7226-6BA32-0XB0 |

These safety categories can be achieved in safety circuits:

- Category 4 according to EN ISO 13849-1
- PL e according to EN ISO 13849-1
- SIL 3 according to IEC 61508

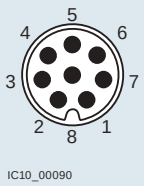
## Technical specifications

| Type | | 3SE63 |
|---|---|---|
| **General data** | | |
| **Standards** | | IEC 60947-5-3, IEC 61508, EN ISO 13849-1, EN ISO 14119 |
| **Enclosure material** | | Glass-fiber reinforced thermoplast, self-extinguishing |
| **Degree of protection** | | IP65/IP67/IP69K |
| **Ambient temperature** | | |
| • During operation | °C | -25 ... +70 |
| • During storage, transport | °C | -25 ... +85 |
| **Shock resistance** | | 30 *g* /11 ms |
| **Vibration resistance** | | 10 ... 55 Hz, amplitude 1 mm |

| Type | | 3SE63 |
|---|---|---|
| **Electrical specifications** | | |
| **Rated insulation voltage $U_i$** | V | 32 |
| **Degree of pollution** according to IEC 60664-1 | | 3 |
| **Rated impulse withstand voltage $U_{imp}$** | V | 800 |
| **Rated conditional short-circuit current** | A | 100 |
| **Rated operational voltage $U_e$** (PELV acc. to EN 60204-1) | V DC | 24 –15/+10% |
| **Protection class** | | II |
| **Overvoltage category** | | III |
| **Rated operational current $I_e$** | A | 0.6 |
| **Lowest operating current $I_m$** | mA | 0.5 |
| **No-load current $I_0$** | mA | 35 |

| Type | | 3SE63 |
|---|---|---|
| **Inputs/outputs** | | |
| **Safety inputs X1/X2** | | |
| • Input voltage | V DC | 24 –15/+10% |
| • Power consumption per input | mA | 5 |
| **Safety outputs OSSD1/OSSD2** | | p operation |
| • Max. rated operating current $I_{e\ max}$ | A | 0.25 |
| • Rated operational current $I_e$/DC-12/DC-13 at $U_e$ | A | 0.25 |
| • Voltage drop $U_e$ | V | < 1 |
| • Switching frequency | Hz | 1 |
| • Response time, max. | ms | 100 |
| • Risk time, max. | ms | 200 |
| • Recovery, max. | s | 5 |
| **Diagnostics output** | | p operation |
| • Max. rated operating current $I_{e2\ max}$ | A | 0.05 |
| • Rated operational current $I_e$/DC-12/DC-13 at $U_e$ | A | 0.05 |
| • Voltage drop $U_e$ | V | < 2 |
| • Operational current | mA | 150 |
| • Conductor capacity, max. | nF | 50 |

### *Pin assignment*

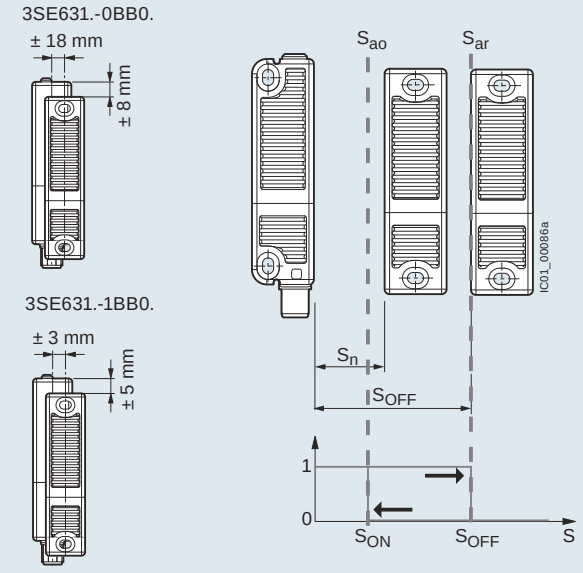



Pin 1: A1 rated operational voltage 24 V DC
Pin 2: X1 safety input 24 V DC
Pin 3: A2 grounding
Pin 4: OSSD1 safety output
Pin 5: OUT conventional diagnostics output
Pin 6: X2 safety input 24 V DC
Pin 7: OSSD2 safety output
Pin 8: Not used

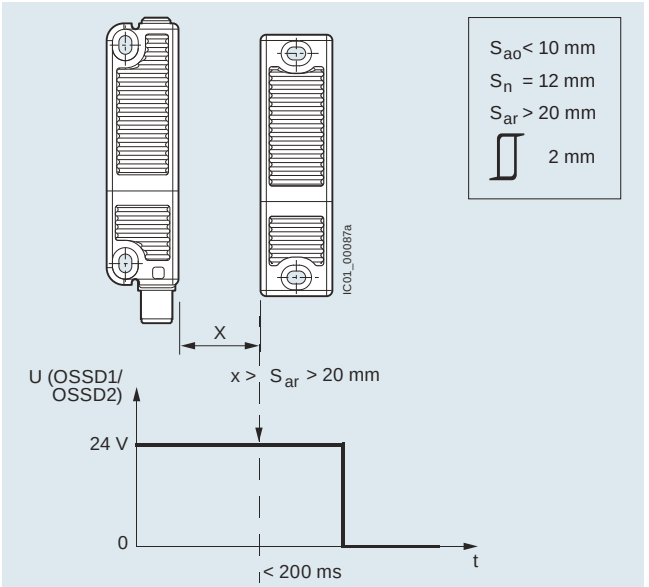
Pin assignment

### *Directions of approach and switching interval*

The side area permits a maximum height offset of the switch and actuator of ± 8 mm (e.g. mounting tolerance or due to sagging of the protective door). The transverse offset also equals max. ± 18 mm.



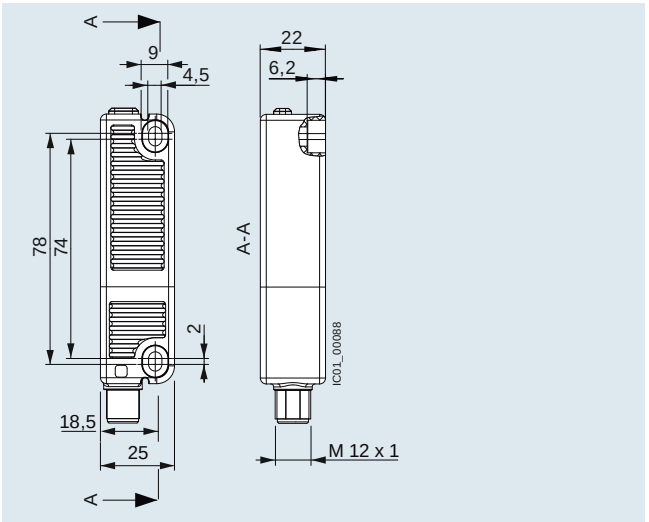

Switching interval: Output signal with hysteresis



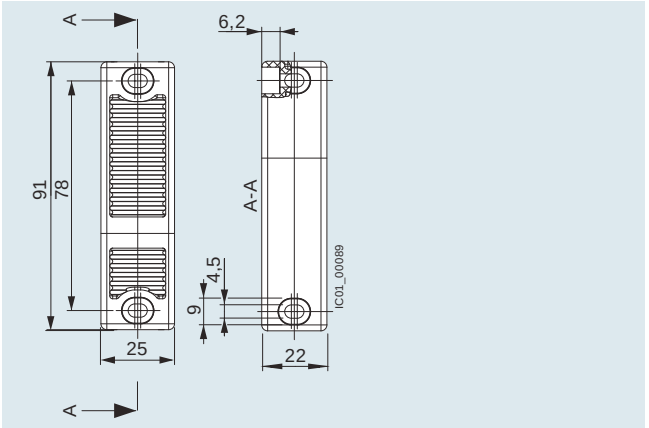

Switching interval: Output signal with OFF delay

### *Dimension drawings*

**RFID switch**
3SE6315

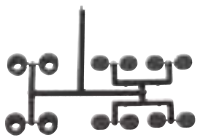



**RFID actuator**
3SE6310



## Selection and ordering data

With M12 connection plug, 8-pole

| | Version/coding | Latching/length | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Rectangular safety switches 91 mm x 25 mm[1)]** | | | | | | | |
| 3SE6315 | **RFID safety switch** | | | | | | |
| | • Family coded | None | 2 | **3SE6315-0BB01** | | 1 | 1 unit |
| | | With 18 N magnetic catch | 2 | **3SE6315-1BB01** | | 1 | 1 unit |
| | • Individually coded, programmable several times | None | 2 | **3SE6315-0BB02** | | 1 | 1 unit |
| | | With 18 N magnetic catch | 5 | **3SE6315-1BB02** | | 1 | 1 unit |
| | • Individually coded, programmable once | None | 2 | **3SE6315-0BB03** | | 1 | 1 unit |
| | | With 18 N magnetic catch | 5 | **3SE6315-1BB03** | | 1 | 1 unit |
| 3SE6310 | **RFID actuator** | | | | | | |
| | • Standard | None | 2 | **3SE6310-0BC01** | | 1 | 1 unit |
| | | With 18 N magnetic catch | 2 | **3SE6310-1BC01** | | 1 | 1 unit |
| **Optional accessories** | | | | | | | |
|  3SX5600-1G | **Covers and spacers** One pack (1 unit) contains 8 covers and 4 spacers | | 2 | **3SX5600-1G** | | 1 | 1 unit |
| 3SX5601-2GA03 | **Connecting cables, 8-pole,** with 1 straight M12 socket Rated voltage 30 V Rated current 2 A | Length 3 m | 2 | **3SX5601-2GA03** | | 1 | 1 unit |
| | | Length 5 m | 2 | **3SX5601-2GA05** | | 1 | 1 unit |
| | | Length 10 m | 2 | **3SX5601-2GA10** | | 1 | 1 unit |

1) Not connectable via AS-i modules.

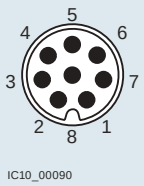
For more monitoring units, see page 13/109.

## General data



| Type | | 3SE63 |
|---|---|---|
| **Inputs/outputs** | | |
| **Safety inputs X1/X2** | | |
| • Input voltage | V DC | 24 –15/+10% |
| • Power consumption per input | mA | 5 |
| **Safety outputs OSSD1/OSSD2** | | p operation |
| • Max. rated operating current $I_{e\ max}$ | A | 0.25 |
| • Rated operational current $I_e$/DC-12/DC-13 at $U_e$ | A | 0.25 |
| • Voltage drop $U_e$ | V | < 1 |
| • Switching frequency | Hz | 1 |
| • Response time, max. | ms | 100 |
| • Risk time, max. | ms | 200 |
| • Recovery, max. | s | 5 |
| **Diagnostics output** | | p operation |
| • Max. rated operating current $I_{e2\ max}$ | A | 0.05 |
| • Rated operational current $I_e$/DC-12/DC-13 at $U_e$ | A | 0.05 |
| • Voltage drop $U_e$ | V | < 2 |
| • Operational current | mA | 150 |
| • Conductor capacity, max. | nF | 50 |

### *Pin assignment*

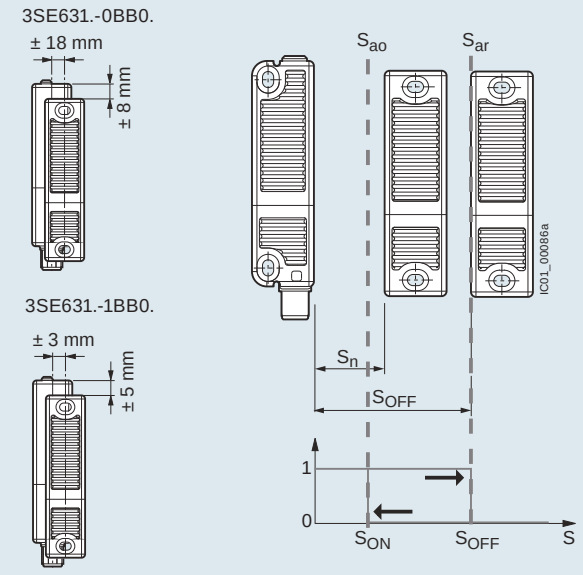



Pin 1: A1 rated operational voltage 24 V DC
Pin 2: X1 safety input 24 V DC
Pin 3: A2 grounding
Pin 4: OSSD1 safety output
Pin 5: OUT conventional diagnostics output
Pin 6: X2 safety input 24 V DC
Pin 7: OSSD2 safety output
Pin 8: Not used

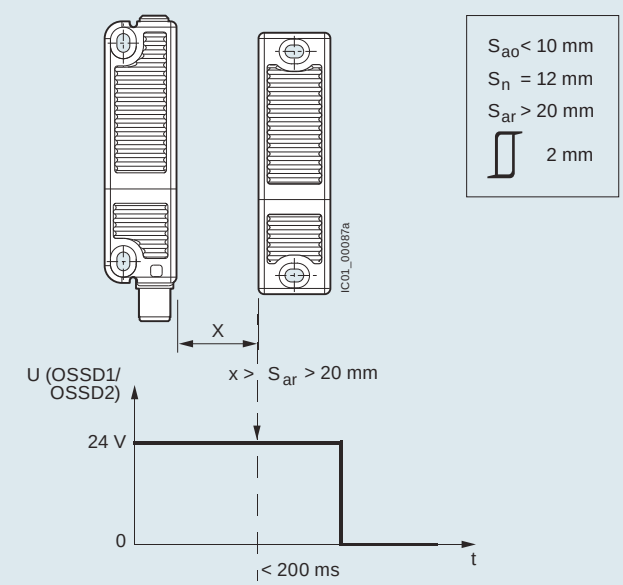
Pin assignment

### *Directions of approach and switching interval*

The side area permits a maximum height offset of the switch and actuator of ± 8 mm (e.g. mounting tolerance or due to sagging of the protective door). The transverse offset also equals max. ± 18 mm.



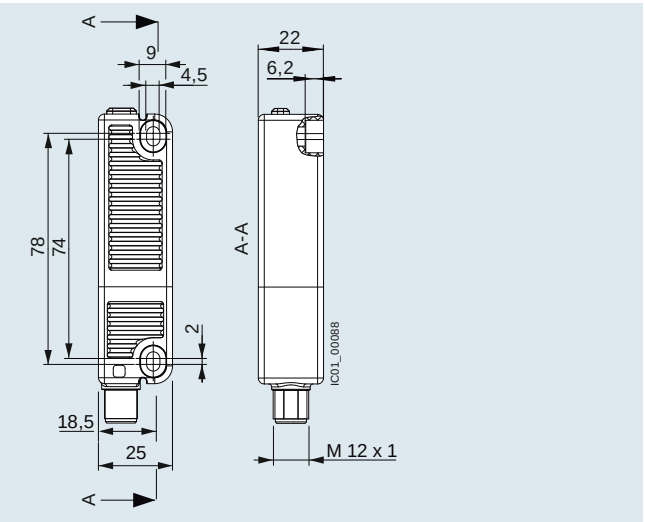

Switching interval: Output signal with hysteresis



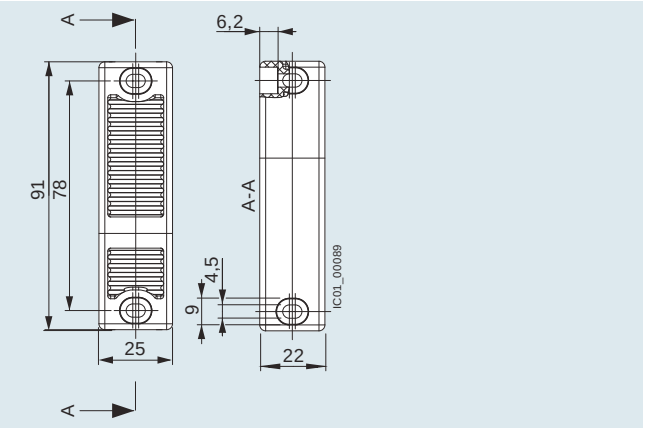

Switching interval: Output signal with OFF delay

### *Dimension drawings*

**RFID switch**
3SE6315




**RFID actuator**
3SE6310



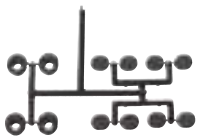
## Selection and ordering data

With M12 connection plug, 8-pole

| Version/coding | Latching/length | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Rectangular safety switches 91 mm x 25 mm**[1] | | | | | | |
| **RFID safety switch** | | | | | | |
| • Family coded | None | 2 | **3SE6315-0BB01** | | 1 | 1 unit |
| | With 18 N magnetic catch | 2 | **3SE6315-1BB01** | | 1 | 1 unit |
| • Individually coded, programmable several times | None | 2 | **3SE6315-0BB02** | | 1 | 1 unit |
| | With 18 N magnetic catch | 5 | **3SE6315-1BB02** | | 1 | 1 unit |
| • Individually coded, programmable once | None | 2 | **3SE6315-0BB03** | | 1 | 1 unit |
| | With 18 N magnetic catch | 5 | **3SE6315-1BB03** | | 1 | 1 unit |
| **RFID actuator** | | | | | | |
| • Standard | None | 2 | **3SE6310-0BC01** | | 1 | 1 unit |
| | With 18 N magnetic catch | 2 | **3SE6310-1BC01** | | 1 | 1 unit |
| **Optional accessories** | | | | | | |
| **Covers and spacers**<br>One pack (1 unit) contains 8 covers and 4 spacers | | 2 | **3SX5600-1G** | | 1 | 1 unit |
| **Connecting cables, 8-pole,** with 1 straight M12 socket<br>Rated voltage 30 V<br>Rated current 2 A | Length 3 m | 2 | **3SX5601-2GA03** | | 1 | 1 unit |
| | Length 5 m | 2 | **3SX5601-2GA05** | | 1 | 1 unit |
| | Length 10 m | 2 | **3SX5601-2GA10** | | 1 | 1 unit |

3SE6315

3SE6310


3SX5600-1G

3SX5601-2GA03

[1] Not connectable via AS-i modules.

For more monitoring units, see page 13/109.

# 3SE03 Heavy Duty Limit Switches

## General Information



### Features

Modular plug-in

**Product Description**

These heavy duty switches define the industry standard with versatility of design and high reliability for low maintenance, installation and inventory costs. Standard Viton gaskets, seals and boots and a zinc die cast enclosure provide exceptional chemical resistance to the common coolants, cleansing agents, and hydraulic fluids found in machine tool, automotive, waste water treatment and other heavy duty industrial applications. Mounting dimensions accommodate both U.S. and DIN standards for easy retrofit installations.

**Features**

- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Modular, plug-in components (head and switch body) provide application flexibility, reduced inventory and less downtime
- Chemical resistant Viton gaskets, seals and boots are standard, and so are captive, posi-drive screws
- A special internal seal on the switch body prevents fluid from entering even when the operating head is not attached
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Factory wired cable features a 350 pound pullout capacity
- Keyed, four direction head positioning. Standard 5° pre-travel and 90° total travel
- Rotary heads are field convertible CW, CCW, or both, without special tools

**Standards and Certifications**

- UL Listed
- CSA certified
- CE (single pole only)
- RoHS Compliant

Factory Sealed

**Product Description**

These heavy duty switches were specifically designed to withstand the penetrating properties of cutting fluids and coolants, such as those used in the automotive industry, as well as extreme shock, vibration and temperature fluctuations. The one-piece, epoxy filled switch body is prewired at the factory to ensure leak-proof, submersible performance. This unique construction positively stops fluid from finding its way to any and all critical connections. Our 6P+ switches can be ordered in separate components or as complete assembled devices. They are available with prewired 16 AWG cables or mini-connectors. Standard and custom cable lengths are available, and these switches use the same operating heads as the standard 3SE03 switches.

**Features**

- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Modular, plug-in components (head and switch body) provide application flexibility, reduced inventory and less downtime
- Chemical resistant Viton gaskets, seals and boots are standard, and so are captive, posi-drive screws
- A special internal seal on the switch body prevents fluid from entering even when the operating head is not attached
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Factory wired cable features a 350 pound pullout capacity
- Keyed, four direction head positioning. Standard 5° pre-travel and 90° total travel
- Rotary heads are field convertible CW, CCW, or both, without special tools

**!! DANGER !!**

**THIS SENSOR IS NOT A SAFETY DEVICE AND IS NOT INTENDED TO BE USED AS A SAFETY DEVICE.**

3SE03 switches are designed only to detect and read certain data in an electronic manner and perform no use apart from that, specifically no safety-related use. This sensor product does not include self-checking redundant circuitry, and the failure of this sensor product could cause either an energized or de-energized output condition, which could result in death, serious bodily injury, or property damage.

For safety-rated limit switches, see page 13/7.

# 3SE03 Heavy Duty Limit Switches

## Modular, plug-in and NEMA type 6P submersible



### Technical data

| Type | Modular, Plug-in and NEMA Type 6P Submersible | | | | | |
|---|---|---|---|---|---|---|
| **Mechanical life** | Side rotary: 13 x $10^6$ make-break operations minimum | | | | | |
| | All others: 10 x $10^6$ make-break operations minimum | | | | | |
| **Electrical life** | Single Pole: 1 x $10^6$ operations typical at full load | | | | | |
| | Double Pole: 1 x $10^5$ operations typical at full load | | | | | |
| **Switching frequency** | 8 x $10^3$ make-break operations per hour (maximum) | | | | | |
| **Operating point accuracy** | Side operated: 0.0012 in. (modular, plug-in housing) | | | | | |
| | Side rotary: 0.0014 in. (modular plug-in). Top operated: 0.0003 in. (modular, plug-in housing) | | | | | |
| **Cable entry** | 1/2 in.-NPT, Prewired Cable or Prewired Receptacle with Pin Connector | | | | | |
| **Ambient temperature** | Without Cable: –10° to +121°C, 14° to 250°F | | | | | |
| | With Cable: –10° to +105°C, 14° to 221°F | | | | | |
| **Degree of protection** | NEMA Type 1, 3, 3S, 4, 4X, 6, 6P, 13; IP67 | | | | | |
| **Conductor size** | 22–12 AWG (modular, plug-in housing), single or stranded wire | | | | | |
| | 5 or 9 conductor, 16 AWG yellow jacketed type SOOW-A cable (prewired cable) | | | | | |
| | 5 or 9 pin, 0.87 in. (22 mm) diameter receptacle (prewired receptacle with pin connector) | | | | | |
| **Mounting** | Any position | | | | | |
| **Tightening Torque** | Switch body screws: 25–30 lb-in. | | | | | |
| | Operating head screws: 14–18 lb-in. | | | | | |
| **NEMA rating** | **DC, NEMA R300** | | **AC, NEMA A600** | | | |
| **Maximum current at** | **125V** | **250V** | **120V** | **240V** | **480V** | **600V** |
| **Make** | 0.22A | 0.11A | 60A | 30A | 15A | 12A |
| **Break** | 0.22A | 0.11A | 6A | 3A | 1.5A | 1.2A |
| **Max. volt-ampere** | | | | | | |
| **Make** | 28VA | 28VA | 7200VA | 7200VA | 7200VA | 7200VA |
| **Break** | 28VA | 28VA | 720VA | 720VA | 720VA | 720VA |
| **Rated thermal current** | DC, 1A | | AC, 10A | | | |
| **Rated operating voltage** | DC, 300V | | AC, 600V | | | |

**Operating temperature [1] [2]**

| Temperature rating | Operation | | Temperature range | |
|---|---|---|---|---|
| | **Type** | **Return** | **Without cable** | **With cable** |
| **1** | Side rotary[3] | Momentary CW only or CCW only | 10°F to 200°F<br>-12°C to 94°C | 10°F to 200°F<br>-12°C to 94°C |
| **2** | Center neutral<br>Side rotary<br>Side plunger<br>Two-sided plunger<br>Roller side plunger[4] | Momentary CW or CCW<br>Maintained<br>Momentary<br>Maintained<br>Momentary | 14°F to 200°F<br>-10°C to 94°C | 14°F to 200°F<br>-10°C to 94°C |
| **3** | Top plunger<br>Top roller plunger[4]<br>Wobble head | Momentary<br>Momentary<br>Momentary | 14°F to 250°F<br>-10°C to 121°C | 14°F to 221°F<br>-10°C to 105°C |

1) Temperature ranges below +32°F (0°C) are based on absence of freezing moisture or water.

2) For temperature rating of specific switch, refer to page 13/70, Operating Heads.

3) For CW only or CCW only operation, upper temperature limit increases to 250°F (121°C) without cable, and 221°F (105°C) with pre-wired cable.

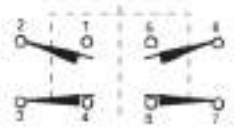
4) Roller direction can be converted in the field.

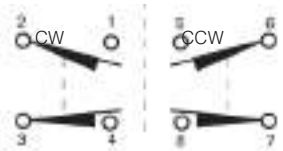
# 3SE03 Heavy Duty Limit Switches

## Modular, plug-in metal housing



### Complete switches without lever - threaded cable entry:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Plug-In module type** | | Standard single pole<br>1 NO + 1 NC<br>(3SE03-SA) | | | Standard double pole<br>2 NO + 2 NC<br>(3SE03-SB) | | |
| | **Receptacle type surface mount** | | Single pole<br>(3SE03-RA)<br> | | | Double pole<br>(3SE03-RB)<br>  | | |
| **Operating head type** | | | **Composite catalog number consisting of head, module and receptacle** | | | | | |
| | | | **DT** | **Catalog Number** | **List Price $ 1 unit** | **DT** | **Catalog Number** | **List Price $ 1 unit** |
| **Side rotary** CW and CCW operation convertible to CW only or CCW only | | Standard momentary (3SE03-DR1) | ► | **3SE03-AR1**① | | ► | **3SE03-BR1**① | |
| | | Standard maintained (3SE03-DM1) | ► | **3SE03-AM1** | | ► | **3SE03-BM1** | |
| | | Low torqued momentary (3SE03-DL1) | ► | **3SE03-AL1**② | | | **3SE03-BL1**② | |
| **Plain side plunger** | | Momentary (3SE03-DS1) | ► | **3SE03-AS1** | | ► | **3SE03-BS1** | |
| **Roller side plunger** | | Momentary (3SE03-DS3) | ► | **3SE03-AS3** | | | **3SE03-BS3** | |
| **Two-sided plunger** | | Maintained (3SE03-DH1) | | **3SE03-AH1** | | | **3SE03-BH1** | |
| **Plain top plunger** | | Momentary (3SE03-DT1) | ► | **3SE03-AT1** | | | **3SE03-BT1** | |
| **Roller top plunger** | | Momentary (3SE03-DT3) | | **3SE03-AT3** | | ► | **3SE03-BT3** | |
| **Wobble head (without lever)** | | Momentary (3SE03-DW1) | ► | **3SE03-AW1** | | ► | **3SE03-BW1** | |

| | | | | | |
|---|---|---|---|---|---|
| **Plug-In module type** | | | Center neutral<br>Double pole<br>2 NO + 2 NC<br>(3SE03-SN) | | |
| **Receptacle type surface mount** | | | Center neutral<br>(3SE03-RB)<br>  | | |
| **Operating head type** | | | **Composite catalog number consisting of head, module and receptacle** | | |
| | | | **DT** | **Catalog Number** | **List Price $ 1 unit** |
| **Side rotary (momentary)** | Center<br>Neutral | (3SE03-DN1)<br>(3SE03-DN2) | ►<br>► | **3SE03-NN1**①<br>**3SE03-NN2**② | |

① 5° pretravel to operate contacts.

② 15° pretravel to operate contacts.

# 3SE03 Heavy Duty Limit Switches

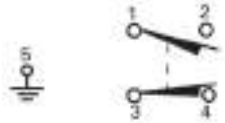
## NEMA type 6P submersible, prewired cable

### Complete switches without lever - prewired cable:

Switch body type—prewired cable with 8 foot cable

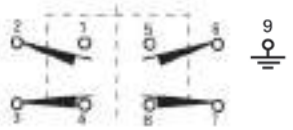
Single pole
1 NO + 1 NC
(3SE03-SA6P)

Cable color code
1 - White
2 - Black
3 - Red
4 - Orange
5 - Green



Double pole
2 NO + 2 NC
(3SE03-SB6P)

Cable color code
1 - White
2 - Black
3 - Red
4 - Orange
5 - Brown
6 - Pink
7 - Yellow
8 - Blue
9 - Green



| Operating head type | | | Composite catalog number consisting of head and switch body | | | | |
|---|---|---|---|---|---|---|---|
| | | | DT | Catalog Number | List Price $ 1 unit | Catalog Number | List Price $ 1 unit |
| | **Side rotary** CW and CCW operation convertible to CW only or CCW only | Standard momentary (3SE03-DR1) | ► | **3SE03-AR16P** | | **3SE03-BR16P** | |
| | | Standard maintained (3SE03-DM1) | | **3SE03-AM16P** | | **3SE03-BM16P** | |
| | | Low torqued momentary (3SE03-DL1) | | **3SE03-AL16P** | | **3SE03-BL16P** | |
| | **Plain side plunger** | Momentary (3SE03-DS1) | | **3SE03-AS16P** | | **3SE03-BS16P** | |
| | **Roller side plunger** | Momentary (3SE03-DS3) | | **3SE03-AS36P** | | **3SE03-BS36P** | |
| | **Two-sided plunger** | Maintained (3SE03-DH1) | | **3SE03-AH16P** | | **Not available** | |
| | **Plain top plunger** | Momentary (3SE03-DT1) | | **3SE03-AT16P** | | **3SE03-BT16P** | |
| | **Roller top plunger** | Momentary (3SE03-DT3) | | **3SE03-AT36P** | | **3SE03-BT36P** | |
| | **Wobble head (without lever)** | Momentary (3SE03-DW1) | | **3SE03-AW16P** | | **3SE03-BW16P** | |

# 3SE03 Heavy Duty Limit Switches

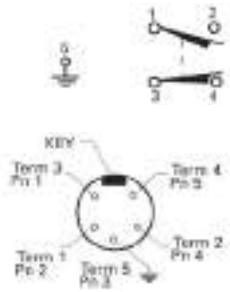
## NEMA type 6P submersible, prewired receptacle



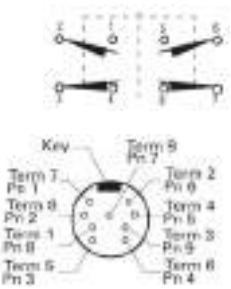
**Complete switches without lever - prewired receptacle with pin connector:**

Switch Body Type—prewired receptacle with pin connector

Single pole
1 NO + 1 NC
(3SE03-SA6PC)




Double pole
2 NO + 2 NC
(3SE03-SB6PC)




| Operating head type | | | Composite catalog number consisting of head and switch body | | | | |
|---|---|---|---|---|---|---|---|
| | | | DT | Catalog Number | List Price $ 1 unit | Catalog Number | List Price $ 1 unit |
| | **Side rotary** CW and CCW operation convertible to CW only or CCW only | Standard momentary (3SE03-DR1) | ► | **3SE03-AR16PC** | | **3SE03-BR16PC** | |
| | | Standard maintained (3SE03-DM1) | | **3SE03-AM16PC** | | **3SE03-BM16PC** | |
| | | Low torqued momentary (3SE03-DL1) | | **3SE03-AL16PC** | | **3SE03-BL16PC** | |
| | **Plain side plunger** | Momentary (3SE03-DS1) | | **3SE03-AS16PC** | | **3SE03-BS16PC** | |
| | **Roller side plunger** | Momentary (3SE03-DS3) | | **Not available** | | **3SE03-BS36PC** | |
| | **Two-sided plunger** | Maintained (3SE03-DH1) | | **3SE03-AH16PC** | | **3SE03-BH16PC** | |
| | **Plain top plunger** | Momentary (3SE03-DT1) | | **3SE03-AT16PC** | | **3SE03-BT16PC** | |
| | **Roller top plunger** | Momentary (3SE03-DT3) | | **3SE03-AT36PC** | | **3SE03-BT36PC** | |
| | **Wobble head (without lever)** | Momentary (3SE03-DW1) | | **3SE03-AW16PC** | | **3SE03-BW16PC** | |

# 3SE03 Heavy Duty Limit Switches

## Modular, plug-in and NEMA type 6P submersible

### Components:

Plug-in module

| Plug-in module | DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|
| Standard single pole 1 NO + 1 NC | ► | 3SE03-SA | |
| Standard double pole 2 NO + 2 NC | ► | 3SE03-SB | |
| Center neutral 2 NO + 2 NC① | ► | 3SE03-SN | |

Receptacle

| Receptacle for plug-in module | | Catalog Number | List Price $ 1 unit |
|---|---|---|---|
| Single pole 1 NO + 1 NC (5 terminals) | ► | 3SE03-RA | |
| Single pole 2 NO + 2 NC (9 terminals) | | 3SE03-RB | |

### Switch body–NEMA type 6P submersible:

Prewired cable

Prewired receptacle

| Switch body | Prewired cable 8 foot length DT | Catalog Number | List Price $ 1 unit | Prewired receptacle with pin connector DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|---|---|---|
| Single pole 1 NO + 1 NC | ► | 3SE03-SA6P | | | – | – |
| Single pole 2 NO + 2 NC | ► | 3SE03-SB6P | | | – | – |
| Single pole 1 NO + 1 NC | | – | – | ► | 3SE03-SA6PC | |
| Single pole 2 NO + 2 NC | | – | – | ► | 3SE03-SB6PC | |

### Operating heads②:

| Operating head type | | Nominal operating data: Total travel | Pretravel | Operating force | Release position | Minimum return force | Operating temp range④ | DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|---|---|---|---|---|---|---|
| Side rotary⑤ | Standard momentary⑥ | 90° | 5° | 3 lb-in. | 2° | 4.5 oz-in. | 1 | ► | 3SE03-DR1 | |
| | Low torqued momentary⑥ | 90° | 15° | 1.5 lb-in. | 6° | 2.5 oz-in. | 1 | ► | 3SE03-DL1 | |
| | Standard maintained | 90° | 50° | 3 lb-in. | 50° | – | 2 | ► | 3SE03-DM1 | |
| Plain side plunger | Momentary | 0.25 in. | 0.065 in. | 4 lbs | 0.03 in. | 8 oz. | 2 | ► | 3SE03-DS1 | |
| Roller side plunger | Momentary⑦ | 0.25 in. | 0.065 in. | 4 lbs | 0.03 in. | 8 oz. | 2 | ► | 3SE03-DS3 | |
| Two-sided plunger | Maintained | 0.32 in. | 0.2 in. | 5 lbs | 0.13 in. | 5 lbs | 2 | ► | 3SE03-DH1 | |
| Plain top plunger | Momentary | 0.28 in. | 0.04 in. | 4 lbs | 0.02 in. | 8 oz. | 3 | ► | 3SE03-DT1 | |
| Roller top plunger | Momentary | 0.28 in. | 0.04 in. | 4 lbs | 0.02 in. | 8 oz. | 3 | ► | 3SE03-DT3 | |
| Wobble head ⑤⑧ | Momentary | 15° | 10° | 2 lb-in. | 6° | 2.4 oz-in. | 3 | ► | 3SE03-DW1 | |
| Center neutral ⑤⑨ | Momentary | 90°<br>90° | 5°<br>15° | 1.8 lb-in.<br>1.8 lb-in. | 2°<br>2° | 2.5 oz-in.<br>2.5 oz-in. | 2<br>2 | ►<br>► | 3SE03-DN1<br>3SE03-DN2 | |

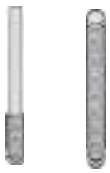
① For use with **3SE03-DN1**, -DN2 operating heads and **3SE03-RB** receptacle only.
② For use with modular, Plug-in and NEMA Type 6P.
③
④ Refer to "Operating Temperature", Catalog page 13/118 for Temperature Ranges.
⑤ Without Operating Levers.
⑥ CW and CCW operation. Convertible to CW or CCW operation only.
⑦ Convertible—Horizontal to Vertical.
⑧ Requires Lever.
⑨ For use with **3SE03-SN** plug-in module only.

# 3SE03 Heavy Duty Limit Switches

## Modular, plug-in metal housing



### Levers for plug-in and non-plug-in versions—most widely used

| Description | | Length① | Roller mounted on side of lever | Roller material | Roller diameter | Roller face width | Max required② return torque (oz-in.) | DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | Roller crank lever③ | 1.5 (38) | Front | Nylatron | 0.75 (19) | 0.31 (8) | 0.53 | ► | 3SX03-KL200 | |
| | | 1.5 (38) | Front | Cast aluminum | 0.75 (19) | 0.31 (8) | 1.10 | ► | 3SX03-KL355 | |
| | | 1.5 (38) | Back | Cast aluminum | 0.75 (19) | 0.31 (8) | 1.10 | ► | 3SX03-KL579 | |
| | Fork lever | 1.5 (38) | Back / back | Nylatron | 0.75 (19) | 0.31 | – | ► | 3SX03-KL204 | |
| | Adjustable radius lever④ | 1–3.5 (25–89) | Front | Nylatron | 0.75 (19) | 0.31 (8) | 1.90⑤ | ► | 3SX03-KL201 | |
| | | 1–3.5 (25–89) | Front | Metal | 0.75 (19) | 0.31 (8) | 3.40⑤ | ► | 3SX03-KL538 | |
| | Rod lever | 9 (229) | – | Stainless steel | – | – | 7.00⑤ | ► | 3SX03-KL220 | |
| | Adjustable spring rod | 12.125 (308) | – | Nylon | – | – | 3.50⑤ | ► | 3SX03-KL556 | |
| | Flexible loop lever | 6 (152) | – | Nylatron | – | – | 0.40 | ► | 3SX03-KL142 | |
|  | **Levers** | | | | | | | | | |
| | Rod | – | – | Nylon | – | – | – | ► | 3SX03-KW2 | |
| | Coil spring | – | – | Coil spring | – | – | – | ► | 3SX03-KW4 | |
| | For plunger actuated switches wobble actuators | ⑥ | | | | | | | | |

### Levers for plug-in and non-plug-in versions:

| Operator | Length① | Roller Type | Roller Diameter | Roller Face (width) | Max required② return torque (oz-in.) | Catalog Number Stainless steel | Catalog Number DT | Catalog Number Cast aluminum | List Price $ 1 unit |
|---|---|---|---|---|---|---|---|---|---|
| Standard lever<br> <br>Cast aluminum | 1.37 (35) | Metal | 0.75 (19) | 0.31 (8) | 0.95 | – | ► | 3SX03-KL40 | |
| | 1.50 (38) | Nylatron | 0.75 (19) | 1.00 (25) | 0.92 | – | ► | 3SX03-KL337 | |
| | | Ball bearing | 0.69 (17) | 0.25 (6) | 0.77 | – | | 3SX03-KL531 | |
| | | Without roller | – | – | 0.32 | – | | 3SX03-KL32 | |
| | 2.00 (51) | Nylatron | 0.75 (19) | 0.31 (8) | 0.71 | – | ► | 3SX03-KL546 | |
| | | Nylatron | 0.75 (19) | 1.00 (25) | 1.45 | – | | 3SX03-KL572 | |
| | | Metal | 0.75 (19) | 0.31 (8) | 1.5 | – | ► | 3SX03-KL549 | |
| | | Ball bearing | 0.69 (17) | 0.25 (6) | 1.1 | – | | 3SX03-KL552 | |
| | 250 (64) | Nylatron | 0.75 (19) | 0.31 (8) | 1.0 | – | | 3SX03-KL547 | |
| | | Nylatron | 0.75 (19) | 1.00 (25) | 1.8 | – | | 3SX03-KL573 | |
| | | Nylatron | 1.5 (38) | 0.28 (7) | 1.4 | – | | 3SX03-KL575 | |
| | | Metal | 0.75 (19) | 0.31 (8) | 2.0 | – | | 3SX03-KL550 | |
| | | Ball bearing | 0.69 (17) | 0.25 (6) | 1.5 | – | ► | 3SX03-KL553 | |
| | 3.00 (76) | Nylatron | 0.75 (19) | 0.31 (8) | 1.3 | – | ► | 3SX03-KL548 | |
| | | Nylatron | 0.75 (19) | 1.00 (25) | 2.3 | – | ► | 3SX03-KL574 | |
| | | Nylatron | 1.5 (38) | 0.28 (7) | 1.8 | – | ► | 3SX03-KL576 | |
| | | Metal | 0.75 (19) | 0.31 (8) | 2.5 | – | ► | 3SX03-KL551 | |
| | | Ball bearing | 0.69 (17) | 0.25 (6) | 1.8 | – | | 3SX03-KL554 | |

**All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.**

① Roller lever: Length from the operating shaft axis to the roller axis.
All other: Length from the operating shaft axis to the tip.

② Caution—When selecting lever, required return torque should not exceed minimum return torque in operating head.

③ Cap screw accommodates 3/64 inch Allen wrench.

④ By re-assembling lever minimum can be reduced another 0.50 (13).

⑤ Applies when lever extended to maximum dimension.

⑥ See dimensions page 13/76.

# 3SE03 Heavy Duty Limit Switches

## Modular, plug-in and NEMA type 6P submersible

### Levers for plug-in and non-plug-in versions—most widely used

| Operator | | Length① Inches (mm) | Roller Type | Roller Diameter In. (mm) | Roller Face width in. (mm) | Min. required return torque oz-in ⑤ | Catalog Number DT | Catalog Number Stainless steel | Catalog Number Cast aluminum | List Price $ 1 unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Roller levers** | | | | | | | | | | |
| Cast aluminum | Roller on reverse side | 1.50 (38) | Nylatron | 0.75 (19) | 0.31 (8) | 0.53 | ► | _ | 3SX03-KL310 | |
| | | | Nylatron | 1.5 (38) | 0.28 (7) | 0.96 | | _ | 3SX03-KL536 | |
| | | | Ball bearing | 0.69 (17) | 0.25 (6) | 0.77 | | _ | 3SX03-KL580 | |
| Stainless steel | Offset lever (Inboard roller shown) | 1.50 (38) | Nylatron | 0.75 (19) | 0.31 (8) | 0.65 | ► | 3SX03-KL24 | _ | |
| | | Inboard roller | Metal | 0.75 (19) | 0.31 (8) | 1.20 | ► | 3SX03-KL25 | _ | |
| | | 1.50 (38) | Nylatron | 0.75 (19) | 0.31 (8) | 0.65 | | 3SX03-KL27 | _ | |
| | | outboard roller | Metal | 0.75 (19) | 0.31 (8) | 1.20 | ► | 3SX03-KL28 | _ | |
| | | | Ball bearing | 0.69 (17) | 0.25 (6) | 0.90 | | 3SX03-KL29 | _ | |
| | | | Nylatron | 0.75 (19) | 1 (25) | 1.10 | | 3SX03-KL30 | _ | |
| | Bantam lever | 0.69 (18) | Metal | 0.88 (22) | 0.19 (5) | 0.45 | ► | 3SX03-KL532 | | |
| | Precision adjustment | 1.50 (38)② | Nylatron | 0.75 (19) | 0.31 (8) | 0.65 | | 3SX03-KL340 | | |
| | | | Metal | 0.75 (19) | 0.31 (8) | 1.20 | | 3SX03-KL465 | | |
| | | | Ball bearing | 0.69 (17) | 0.25 (6) | 0.90 | ► | 3SX03-KL535 | | |
| | Adjustable roller | 1–3.75 (25–95)③ | Nylatron | 0.75 (19) | 0.5 (13) | 1.90④ | ► | 3SX03-KL599 | | |
| | | 1–3.75 (25–95)③ | Nylatron | 0.75 (19) | 1 (25) | 3.10④ | | 3SX03-KL537 | | |
| | | 1.62–3.75 (41–95)③ | Nylatron | 1.5 (38) | 0.28 (7) | 2.50④ | ► | 3SX03-KL443 | | |
| | | 0.50–3.75 (13–95) | Large nylatron | 4 (102) | 0.11 (3) | 4.50④ | ► | 3SX03-KL598 | | |
| | | 1–3.75 (25–95)③ | Ball bearing | 0.69 (17) | 0.25 (6) | 2.50④ | | 3SX03-KL539 | | |
| | | 0.50–3.75 (13–95) | Without roller | _ | _ | 1.20④ | | 3SX03-KL31 | | |
| | Fork lever _ both rollers one side | 1.50 (38) | Nylatron | 0.75 (19) | 1 (25) | _ | ► | 3SX03-KL543 | | |
| | | | Metal | 0.75 (19) | 0.31 (8) | _ | | 3SX03-KL544 | | |
| | | | Ball bearing | 0.69 (17) | 0.25 (6) | _ | ► | 3SX03-KL545 | | |
| | Fork lever _ both rollers outside, one side | 1.50 (38) | Nylatron | 0.75 (19) | 0.31 (8) | _ | ► | 3SX03-KL203 | | |
| | | | Metal | 0.75 (19) | 0.31 (8) | _ | | 3SX03-KL541 | | |
| | | | Ball bearing | 0.69 (17) | 0.25 (6) | _ | | 3SX03-KL542 | | |

### Levers for plug-in and non-plug-in versions:

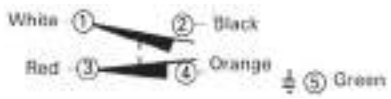
| Operator | | Length① Inches (mm) | Description Inches (mm) | Min. required return force oz-in.⑤ | DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|---|---|---|---|
| | Adjustable rod | 5.50 (140) Max. | Nylon Rod—0.19 (5) Dia. | 0.40④ | ► | 3SX03-KL399 | |
| | | 5.50 (140) Max. | Metal Rod—0.12 (3) Dia. | 0.92④ | ► | 3SX03-KL202 | |
| | | 8.75 (222) Max | Metal Rod (Square)—0.12 (3) Max. | 2.20④ | ► | 3SX03-KL581 | |
| | | 12 (305) Max. | Steel (Formable) Rod—0.12 (3) Dia. | 5.00④ | ► | 3SX03-KL226 | |
| | | _ | Clamp Only—0.19 (5) Hole | _ | ► | 3SX03-KL35 | |
| | | _ | Clamp Only—0.12 (3) Hole | _ | | 3SX03-KL36 | |
| | Spring rod | 11.62 (295) | Metal rod | 2.80 | | 3SX03-KL421 | |
| | Adjustable wire | 12.12 (308) max. | Nylon covered wire | 1.50④ | ► | 3SX03-KL533 | |
| | Adjustable wide roller lever | 3.9 (99) | 0.75 (19) Dia. Nylatron Roller<br>0.19 (30) Dia. Rod | 4.50④ | ► | 3SX03-KL37 | |
| **Wobble head operators** | | | | | | | |
| See dimensions page 13/76 | Stainless steel rod | _ | Rod diameter - 0.06 (2) | _ | ► | 3SX03-KW3 | |

① Length from operating shaft axis to the roller axis.
② Maximum dimensions, precision adjustable to lesser dimensions.
③ By re-assembling lever minimum can be reduced by 1/2 in.
④ Applies when lever extended to maximum dimension.
⑤ Caution—When selecting lever, required return torque should not exceed minimum return force in operating head.

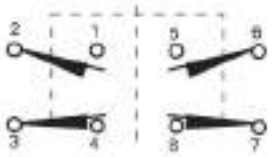
All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

## Wiring diagrams

Single Pole
1 NO - 1 NC




Double Pole
1 NO - 1 NC

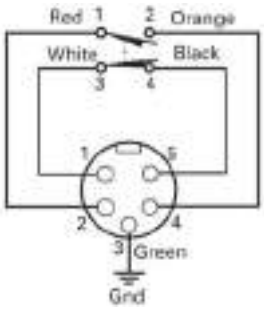


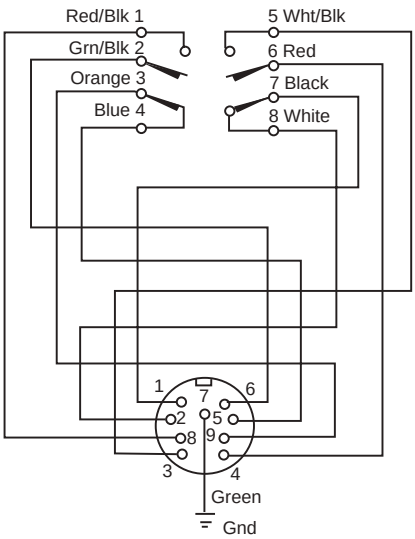

Cable color code

| | |
|---|---|
| 1 - White | 6 - Pink |
| 2 - Black | 7 - Yellow |
| 3 - Red | 8 - Blue |
| 4 - Orange | 9 - Green |
| 5 - Brown | |

Pre-wired cable

**Modular, plug-in and prewired cable**




**Prewired receptacle with pin connector**

## Typical connector cable (supplied by user)

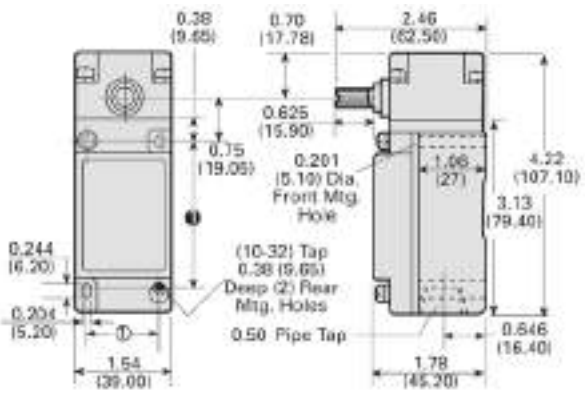
| Cable length ft. | Manufacturers part number | | | |
|---|---|---|---|---|
| | Daniel Woodhead Brad Harrison | Cooper Crouse-Hinds | Molex (Industrial Interface) | Lumberg USA |
| **5 Pin connector cable** | | | | |
| 3 | 105000A01F030 | 5000111-3_ | 14541 | RK50-77/1M |
| 6 | 105000A01F060 | 5000111-4_ | 14542 | RK50-77/2M |
| 12 | 105000A01F120 | 5000111-5_ | 14544 | RK50-77/4M |
| **9 Pin connector cable** | | | | |
| 3 | 309000A01F030 | X8990-3 | _ | _ |
| 6 | 309000A01F060 | X8990-4 | _ | _ |
| 12 | 309000A01F120 | X8990-5 | _ | _ |

# 3SE03 Heavy Duty Limit Switches

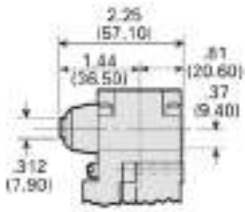
## Modular, plug-in and NEMA type 6P submersible



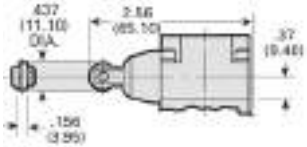
### Dimension drawings



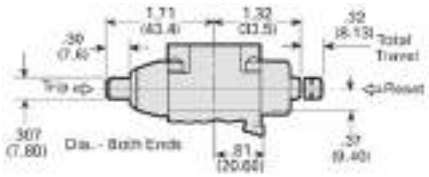

Plain side plunger



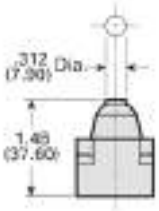

Roller side plunger



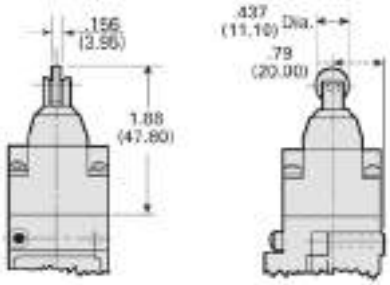

Two side plungers



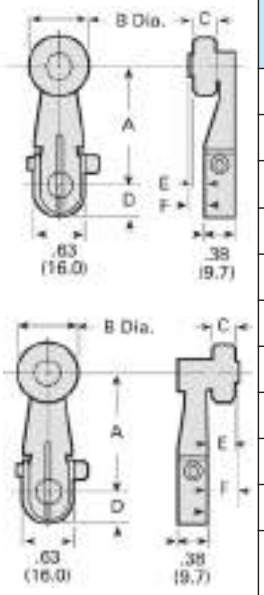

Plain top plunger




Roller top plunger




### Rotary lever operators

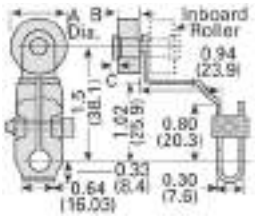


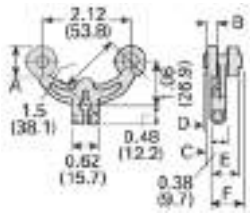

| Catalog Number | Dimensions | | | | | | Catalog Number | Dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | | A | B | C | D | E | F |
| 3SX03-KL200 | 1.50 (38.1) | 0.75 (19.0) | 0.32 (8.1) | 0.44 (11.2) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL554 | 3.00 (76.2) | 0.688 (17.5 | 0.25 (6.4) | 0.42 (10.7) | 0.12 (3.0) | 0.18 (4.6) |
| 3SX03-KL355 | 1.50 (38.1) | 0.75 (19.0) | 0.32 (8.1) | 0.44 (11.2) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL572 | 2.00 (50.8) | 0.75 (19.0) | 1.00 (25.4) | 0.42 (10.7) | 0.90 (22.9 | 0.90 (22.9 |
| 3SX03-KL531 | 1.50 (38.1) | 0.688 (17.5) | 0.25 (6.4) | 0.44 (11.2) | 0.12 (3.0) | 0.18 (4.6) | 3SX03-KL573 | 2.50 (63.5) | 0.75 (19.0) | 1.00 (25.4) | 0.42 (10.7) | 0.90 (22.9 | 0.90 (22.9 |
| 3SX03-KL546 | 2.00 (50.8) | 0.75 (19.0) | 0.32 (8.1) | 0.42 (10.7) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL574 | 3.00 (76.2) | 0.75 (19.0) | 1.00 (25.4) | 0.42 (10.7) | 0.90 (22.9 | 0.90 (22.9 |
| 3SX03-KL547 | 2.50 (63.5) | 0.75 (19.0) | 0.32 (8.1) | 0.42 (10.7) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL575 | 2.50 (63.5) | 1.50 (38.1) | 0.29 (7.4) | 0.42 (10.7) | 0.18 (4.6) | 0.24 (6.1) |
| 3SX03-KL548 | 3.00 (76.2) | 0.75 (19.0) | 0.32 (8.1) | 0.42 (10.7) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL576 | 3.00 (76.2) | 1.50 (38.1) | 0.29 (7.4) | 0.42 (10.7) | 0.18 (4.6) | 0.24 (6.1) |
| 3SX03-KL549 | 2.00 (50.8) | 0.75 (19.0) | 0.32 (8.1) | 0.42 (10.7) | 0.20 (5.1) | 0.24 (6.1) | **With rollers on reverse side** | | | | | | |
| 3SX03-KL550 | 2.50 (63.5) | 0.75 (19.0) | 0.32 (8.1) | 0.42 (10.7) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL310 | 1.50 (38.1) | 0.75 (19.0) | 0.32 (8.1) | 0.44 (11.2) | 0.34 (8.6) | 0.38 ((9.7) |
| 3SX03-KL551 | 3.00 (76.2) | 0.75 (19.0) | 0.32 (8.1) | 0.42 (10.7) | 0.20 (5.1) | 0.24 (6.1) | 3SX03-KL536 | 1.50 (38.1) | 1.50 (38.1) | 0.28 (7.1) | 0.44 (11.2) | 0.30 (7.6) | 0.38 ((9.7) |
| 3SX03-KL552 | 2.00 (50.8) | 0.688 (17.5) | 0.25 (6.4) | 0.42 (10.7) | 0.12 (3.0) | 0.18 (4.6) | 3SX03-KL579 | 1.50 (38.1) | 0.75 (19.0) | 0.32 (8.1) | 0.44 (11.2) | 0.34 (8.6) | 0.38 ((9.7) |
| 3SX03-KL553 | 2.50 (63.5) | 0.688 (17.5) | 0.25 (6.4) | 0.42 (10.7) | 0.12 (3.0) | 0.18 (4.6) | 3SX03-KL580 | 1.50 (38.1) | 0.688 (17.5 | 0.25 (6.4) | 0.44 (11.2) | 0.25 (6.4) | 0.31 (7.9) |

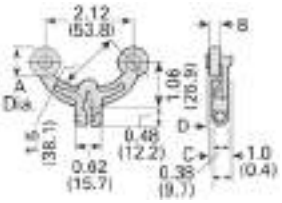
All dimensions shown in inches and (millimeters). For reference purpose only. Not to be used for design or construction purposes.

① Can accommodate both U.S. 1.16 (29.4) x 2.34 (59.5) and DIN 1.18 (30.0) x 2.36 (60.0) mounting dimensions.

## Dimension drawings




### Offset roller levers

| Catalog Number | Dimensions | | |
|---|---|---|---|
| | A | B | C |
| **Outboard roller** | | | |
| **3SX03-KL27** | 0.75 (19) | 0.32 (8) | 0.03 (1) |
| **3SX03-KL28** | 0.75 (19) | 0.32 (8) | 0.03 (1) |
| **3SX03-KL29** | 0.69 (18) | 0.25 (6) | 0.04 (1) |
| **3SX03-KL30** | 0.75 (19) | 1.0 (25) | _ |
| **Inboard roller** | | | |
| **3SX03-KL24** | 0.75 (19) | 0.32 (8) | 0.03 (1) |
| **3SX03-KL25** | 0.75 (19) | 0.32 (8) | 0.03 (1) |

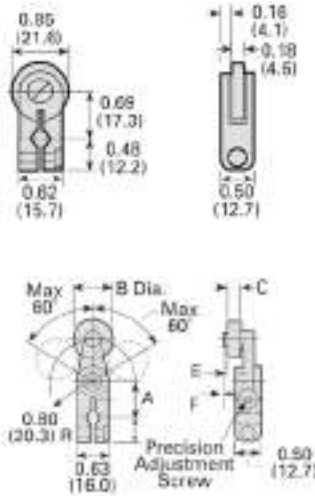
### Fork lever, one roller inside, one roller outside

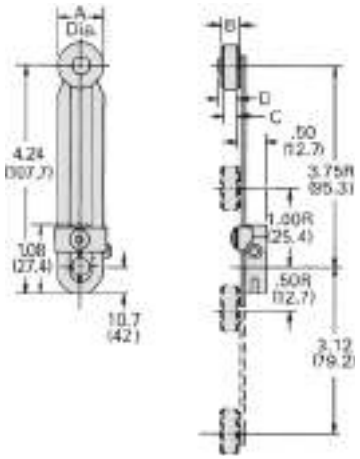
| Catalog Number | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| **3SX03-KL203** | 0.75 (19) | 0.32 (8) | 0.16 (4) | 0.20 (5) | 0.73 (19) | 0.77 (20) |
| **3SX03-KL541** | 0.75 (19) | 0.32 (8) | 0.16 (4) | 0.20 (5) | 0.73 (19) | 0.77 (20) |
| **3SX03-KL542** | 0.69 (18) | 0.25 (6) | 0.08 (2) | 0.14 (4) | 0.64 (16) | 0.70 (18) |

### Fork lever - Both rollers on one side

| Catalog Number | Dimensions | | | |
|---|---|---|---|---|
| | A | B | C | D |
| **3SX03-KL204** | 0.75 (19) | 0.32 (8) | 0.16 (4) | 0.20 (5) |
| **3SX03-KL543** | 0.75 (19) | 1.0 (25) | 0.86 (22) | 0.86 (22) |
| **3SX03-KL544** | 0.75 (19) | 0.32 (8) | 0.16 (4) | 0.20 (5) |
| **3SX03-KL545** | 0.69 (18) | 0.25 (6) | 0.08 (2) | 0.1 (3) |

### Bantam roller lever




### Precision adjustment roller lever

| Catalog Number | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| **3SX03-KL340** | 0.69 (18) | 0.75 (19) | 0.32 (8) | 0.48 (12) | 0.24 (6) | 0.28 (7) |
| **3SX03-KL465** | 0.69 (18) | 0.75 (19) | 0.32 (8) | 0.48 (12) | 0.24 (6) | 0.28 (7) |
| **3SX03-KL535** | 0.69 (18) | 0.69 (18) | 0.25 (6) | 0.48 (12) | 0.16 (4) | 0.22 (6) |

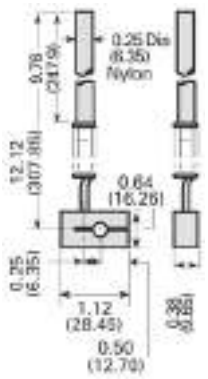
### Adjustable roller lever

| Catalog Number | Dimensions | | | |
|---|---|---|---|---|
| | A | B | C | D |
| **3SX03-KL201** | 0.75 (19) | 0.32 (8) | 0.29 (7) | 0.33 (8) |
| **3SX03-KL443** | 1.5 (38) | 0.29 (7) | 0.26 (7) | 0.32 (8) |
| **3SX03-KL537** | 0.75 (19) | 0.32 (8) | 0.29 (7) | 0.33 (8) |
| **3SX03-KL538** | 0.69 (18) | 0.25 (6) | 0.21 (5) | 0.27 (7) |
| **3SX03-KL539** | 0.69 (18) | 0.25 (6) | 0.21 (5) | 0.27 (7) |
| **3SX03-KL598** | 0.39 (10) | 0.11 (3) | 0.11 (3) | 0.19 (5) |
| **3SX03-KL599** | 0.75 (19) | 0.5 (13) | 0.46 (12) | 0.47 (12) |

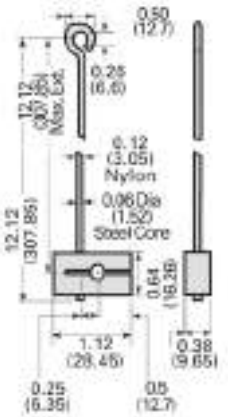
All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

## Dimension drawings

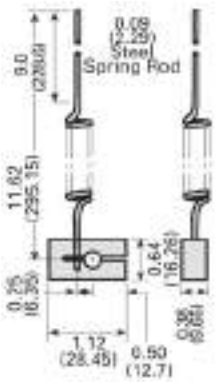
Nylon Spring Rod Actuator
**3SX03-KL556**



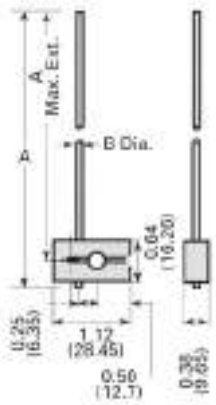

Nylon Covered Wire Actuator
**3SX03-KL533**




Stainless Steel Spring Actuator
**3SX03-KL421**



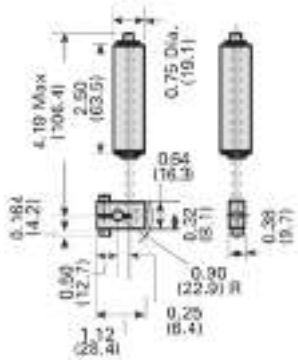

Adjustable Rod Actuator



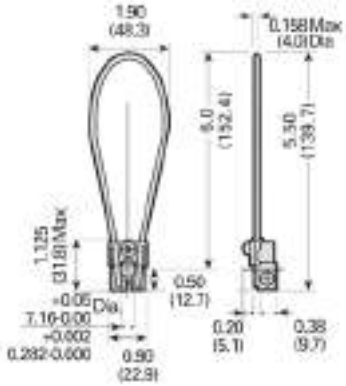

**Adjustable rod actuators**

| Catalog Number | Material | Dimensions | |
|---|---|---|---|
| | | A | B |
| **3SX03-KL202** | Steel-Round | 5.50 (140) | 0.120 (3) |
| **3SX03-KL581** | Steel-Square | 8.75 (222) | 0.125 (3) |
| **3SX03-KL399** | Nylon | 5.50 (140) | 0.190 (5) |
| **3SX03-KL220** | Stainless Steel | 9.00 (229) | 0.190 (5) |
| **3SX03-KL226** | Plated Steel | 12.0 (305) | )0.120 (3) |

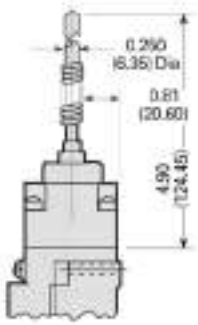
Adjustable Wire Roller Actuator
**3SX03-KL37**



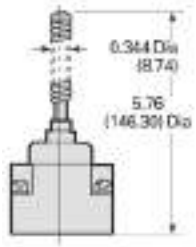

Nylatron Loop Actuator
**3SX03-KL142**



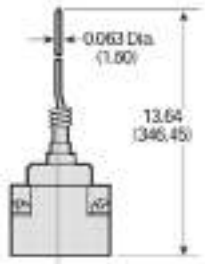

Wobble head
with nylon head
**3SE03-DW1**
**3SX03-KW2**




Wobble head
with coil spring
**3SE03-DW1**
**3SX03-KW4**




Wobble head
with stainless steel rod
**3SE03-DW1**
**3SX03-KW3**




All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

# 3SE03 Precision Limit Switches

## 3SE03 Metal enclosure



### Description

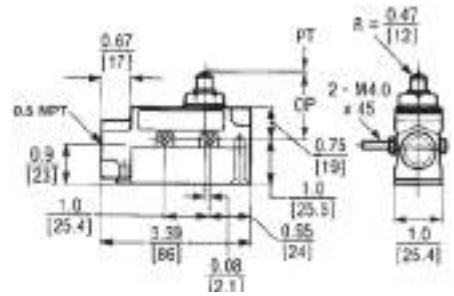
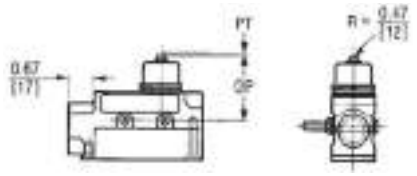
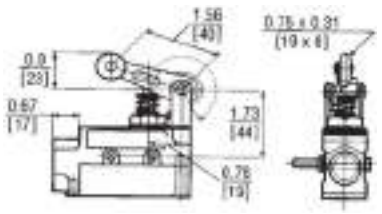
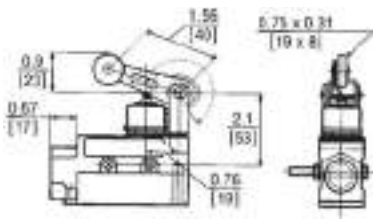
**Features**

- NEMA 1 Enclosed Aluminum Die Cast Housing
- Screw Terminals
- Booted versions for added protection
- 1/2" Conduit Entrance
- NEMA A600, R300 Contacts
- UL Recognized
- CSA Certified
- INO/INC Snap-action contacts (form c)

**Application**

These switches are designed for accurate repeatability. Their compact size makes them ideal for use in space-restricted areas.

Typical applications include overhead, folding and elevator doors, sliding gates and other automated equipment.

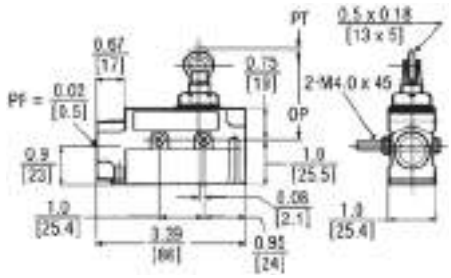
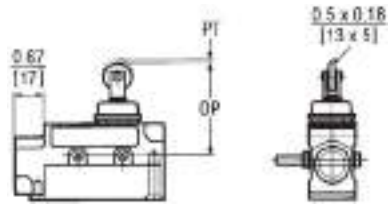
| Overall dimensions | Specifications ① | DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|---|
| **Plunger actuator**  | OF Max. - 8.82 - 12.3 oz. (250 - 350 g)<br>RF Min. 4.02 oz. (114 g)<br>PT Max. - 0.016 in. (0.4 mm)<br>OT Min. - 0.217 in. (5.5 mm)<br>MD Max. - 0.002 in. (0.05 mm)<br>OP - 1.504 in. (38.2 mm) | ► | **3SE03 - EB05** | |
| **Booted plunger**  | OF Max. - 28.22 oz. (800 g)<br>RF Min. 8.46 oz. (240 g)<br>PT Max. - 0.079 in. (2.0 mm)<br>OT Min. - 0.197 in. (5.0 mm)<br>MD Max. - 0.004 in. (0.1 mm)<br>OP - 1.803 in. (45.8 mm) | ► | **3SE03 - EB06** | |
| **Roller lever**  | OF Max. - 20.1 oz. (570 g)<br>RF Min. 6.0 oz. (170 g)<br>PT Max. - 0.157 in. (4.0 mm)<br>OT Min. - 0.236 in. (6.0 mm)<br>MD Max. - 0.016 in. (0.4 mm) | ► | **3SE03 - EB32** | |
| **Booted roller lever**  | OF Max. - 22.57 oz. (640 g)<br>RF Min. 8.11 oz. (230 g)<br>PT Max. - 0.197 in. (5.0 mm)<br>OT Min. - 0.236 in. (6.0 mm)<br>MD Max. - 0.016 in. (0.4 mm) | ► | **3SE03 - EB33** | |

① OF = Operating Force
RF = Return Force
PT = Pretravel
OT = Operating Travel
MD = Movement Differential
OP = Operating Position

# 3SE03 Precision Limit Switches

## 3SE03 Metal enclosure

### Dimension drawings

| Overall dimensions | Specifications | DT | Catalog Number | List Price $ 1 unit |
|---|---|---|---|---|
| **Roller plunger**<br>  | OF Max. - 9.92 - 12.3 oz. (250 - 350 g)<br>RF Min. 4.02 oz. (114 g)<br>PT Max. - 0.02 in. (0.5 mm)<br>OT Min. - 0.142 in. (3.6 mm)<br>MD Max. - 0.002 in. (0.05 mm)<br>OP - 1.957 in. (49.7 mm) | ► | **3SE03 - EB07** | |
| **Booted roller plunger**<br>  | OF Max. - 17.64 oz. (500 g)<br>RF Min. 3.53 oz. (100 g)<br>PT Max. - 0.039 in. (1.0 mm)<br>OT Min. - 0.138 in. (3.5 mm)<br>MD Max. - 0.006 in. (0.12 mm)<br>OP - 1.957 in. (49.7 mm) | ► | **3SE03 - EB08** | |

| **Technical data** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Mechanical Life** | 3,000,000 operations maximum | | | | | | | |
| **Electrical Life** | 500,000 operations minimum | | | | | | | |
| **Operating Speed** | 0.01 m/second to 1m/second | | | | | | | |
| **Cable Entry** | 1/2" NPT | | | | | | | |
| **Temperature Range** | -15° to 80° (5° to 176°F) | | | | | | | |
| **Degree of Protection** | NEMA 1 | | | | | | | |
| **Mounting** | Any Position | | | | | | | |
| **NEMA Rating** | A600, R300 | | | | | | | |
| **Rated Voltage (V)**[1)2)] | Non-Inductive Load (A) | | | Inductive load (A) | | | Inrush current (A) | |
| | Resistive load | Lamp load | | Inductive load | Motor load | | | |
| | NC-NO | NO | NC | NC-NO | NO | NC | NO | NC |
| **125 VAC** | 15 | 3 | 1.5 | 15 | 5 | 2.5 | 30 maximum | 15 maximum |
| **250 VAC** | 15 | 2.5 | 1.25 | 15 | 3 | 1.5 | | |
| **500 VAC** | 3 | 1.5 | 0.75 | 2.5 | 1.5 | 0.75 | | |
| **8 VDC** | 15 | 3 | 1.5 | 15 | 5 | 2.5 | | |
| **14 VDC** | 15 | 3 | 1.5 | 10 | 5 | 2.5 | | |
| **30 VDC** | 6 (2) | 3 | 1.5 | 5 | 5 | 2.5 | | |
| **125 VDC** | 0.4 | 0.4 | 0.4 | 0.05 | 0.05 | 0.05 | | |
| **250 VDC** | 0.2 | 0.2 | 0.2 | 0.03 | 0.03 | 0.03 | | |

1) Inductive load has power factor of 0.04 minimum (AC) and a time of 7m/second (DC)

2) Lamp load has an inrush current of 6 times steady-state current.

## Overview

3SE7 cable-operated switches

**More information**

Industry Mall, see www.siemens.com/product?3SE7
For Manual, see
https://support.industry.siemens.com/cs/ww/en/view/107194954

The cable-operated switches are used for monitoring or as EMERGENCY STOP devices on particularly endangered system components.

As the effective range of a cable-operated switch is only limited by the length of the trip-wire, large systems can also be protected. Cable-operated switches (requiring pulling at both ends) and conveyor belt unbalance trackers are used primarily for monitoring very long belt systems.

### *Contact blocks*

The switches for wire lengths up to 50 m are supplied with 1 NO + 1 NC or 2 NC contacts and those up to 75 m with 1 NO + 3 NC contacts. The switches for wire lengths of 2 x 75 m and the conveyor belt unbalance tracker are supplied with 2 NO + 2 NC contacts.

The NC contacts of the cable-break or cable-pull signaling are positive opening. The NO contact can be used, for example, for signaling purposes.

### *Free position and display*

Cable-operated switches with one-side operation are held in free position by the pre-tension on the turnbuckle.

On switches with interlocking, with a pre-tensioned cable, the locking must be deactivated beforehand in order to return the cable-operated switch to its original position.

The cable-operated switch and the conveyor belt unbalance tracker can be supplied optionally with a factory-fitted LED (red, 24 V DC). This light in innovative chip-on-board technology allows the operating state of the switch to be visible at a distance of at least 50 m.

## Application

### *Standards*

The switches are equipped with latching mechanism and positive NC contacts and are thus suitable for operation in EMERGENCY STOP devices according to EN ISO 13850.

## Technical specifications

| Type | | 3SE7120 | 3SE7150 | 3SE7140 | 3SE7141 | 3SE7160 | 3SE7310 |
|---|---|---|---|---|---|---|---|
| **General data** | | | | | | | |
| **Standards** | | IEC/EN 60947-5-1<br>IEC/EN 60204-1, EN ISO 13850 | | | | | |
| **Approvals** | | UL/CSA | | | | | |
| **Electrical design** | | Contacts electrically isolated from each other | | | | | |
| **Electrical load** | | | | | | | |
| • 2-pole, at AC-15 | | 400 V AC, 6 A | | 400 V AC, 6 A | 240 V AC, 2 A | 400 V AC, 6 A | -- |
| • 3-pole, at AC-15 | | 240 V AC, 2 A | | -- | -- | -- | -- |
| • 4-pole, at AC-15 | | -- | | -- | -- | 400 V AC, 6 A | 400 V AC, 6 A |
| • Minimum | | 24 V AC/DC, 10 mA | | | | | |
| **Short-circuit protection** | A | 6 (slow) | | | | | |
| **Mechanical endurance** | | > 100 000 operating cycles | | | | | |
| **Contact material** | | Fine silver | | | | | |
| **Operation** | | By pulling or breaking of wire | | | | | |
| **Wire length, maximum** | m | 10 | 25 | 50 | 75 | 2 x 100 | – |
| **Distance between wire supports, max.** | m | 3 | | 5 | | 4 | – |
| **Enclosures** | | | | | | | |
| **Enclosure material** | | GD Al alloy, coated (color), dark black RAL 9005 | | | | | |
| **Cover** | | Shock-resistant thermoplast | | | | | |
| **Degree of protection** acc. to IEC 60529[1)] | | IP65 | | | IP67 | IP65 | |
| **Ambient temperature** | °C | –25 ... +70 | | | | | |
| **Mounting** | | Designed for M5 | | | | | |
| **Fixing spacing** | mm | 30 and 40 | | | | | |
| **Cable entry** | | 2 x (M20 x 1.5) | | 1 x (M20 x 1.5) | 3 x (M20 x 1.5) | 2 x (M25 x 1.5) | |
| **Connection type** | | Screw terminals M3.5, self-lifting clamp terminal | | | | | |

1) IP54 for versions with key-operated release

## Selection and ordering data

| | Version | Wire length | Contacts | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| | | m | | | d | | | | |
| **Cable-operated switches** | | | | | | | | | |
| 3SE7120-1BH00 | **Metal enclosures, IP65** (cover made of molded plastic) | 10 | | | | | | | |
| | • Without latching, only cable pull monitoring | | 1 NO + 1 NC | ⊕ | 2 | **3SE7120-2DD01** | | 1 | 1 unit |
| | • With latching and button reset | | 2 NC | ⊕ | 2 | **3SE7120-1BF00** | | 1 | 1 unit |
| | - With yellow cover | | 1 NO + 2 NC | ⊕ | 2 | **3SE7120-1BH00** | | 1 | 1 unit |
| 3SE7150-1BD00 | **Metal enclosures, IP65** (cover made of molded plastic), with alignment window | 25 | | | | | | | |
| | • Without latching | | 1 NO + 1 NC | ⊕ | 2 | **3SE7150-2DD00** | | 1 | 1 unit |
| | • With latching and button reset | | 1 NO + 1 NC | ⊕ | 2 | **3SE7150-1BD00** | | 1 | 1 unit |
| | | | 2 NC | ⊕ | 2 | **3SE7150-1BF00** | | 1 | 1 unit |
| | - With yellow cover | | 1 NO + 2 NC | ⊕ | 5 | **3SE7150-1BH00** | | 1 | 1 unit |
| | • With latching and key unlatching | | 1 NO + 1 NC | ⊕ | 5 | **3SE7150-1CD00** | | 1 | 1 unit |
| 3SE7150-1BD04 3SE7150-1BH04 | **Metal enclosures, IP65** (cover made of molded plastic), with alignment window, with LED, red, 24 V DC | 25 | | | | | | | |
| | • Without latching | | 1 NO + 1 NC | ⊕ | 5 | **3SE7150-2DD04** | | 1 | 1 unit |
| | • With latching and button reset | | 1 NO + 1 NC | ⊕ | 5 | **3SE7150-1BD04** | | 1 | 1 unit |
| | • With yellow cover | | 1 NO + 2 NC | ⊕ | 5 | **3SE7150-1BH04** | | 1 | 1 unit |
| 3SE7140-1B.00 | **Metal enclosures, IP65** (cover made of molded plastic) | 50 | | | | | | | |
| | • With latching and button reset | | 1 NO + 1 NC | ⊕ | 2 | **3SE7140-1BD00** | | 1 | 1 unit |
| | | | 2 NC | ⊕ | 5 | **3SE7140-1BF00** | | 1 | 1 unit |
| | • In addition with LED, red, 24 V DC | | 1 NO + 1 NC | ⊕ | 5 | **3SE7140-1BD04** | | 1 | 1 unit |
| | • With latching and key unlatching | | 1 NO + 1 NC | ⊕ | 5 | **3SE7140-1CD00** | | 1 | 1 unit |
| 3SE7141-1EG10 | **Metal enclosures, IP67** (cover made of molded plastic), with EMERGENCY STOP mushroom, with rotate-to-unlatch mechanism | 75 | 1 NO + 3 NC | ⊕ | 2 | **3SE7141-1EG10** | | 1 | 1 unit |
| 3SE7160-1AE00 | **Metal enclosures, IP65** With actuation on both sides | 2 x 100 | | | | | | | |
| | • With latching and button reset | | 2 NO + 2 NC | ⊕ | 2 | **3SE7160-1AE00** | | 1 | 1 unit |
| | | | 1 NO + 1 NC | ⊕ | 5 | **3SE7160-1BD00** | | 1 | 1 unit |
| | • In addition with LED, red, 24 V DC | | 2 NO + 2 NC | ⊕ | 5 | **3SE7160-1AE04** | | 1 | 1 unit |

⊕ Positive opening according to IEC 60947-5-1, Annex K.

## 3SE7 metal enclosures

| Version | Contacts | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | d | | | | |
| **Conveyor belt unbalance trackers** | | | | | | |
| **Metal enclosures, IP65** | | | | | | |
| • With latching and button reset | 2 NO + 2 NC | 5 | **3SE7310-1AE00** | | 1 | 1 unit |
| • In addition with LED, red, 24 V DC | 2 NO + 2 NC | 5 | **3SE7310-1AE04** | | 1 | 1 unit |

3SE7310-1AE00

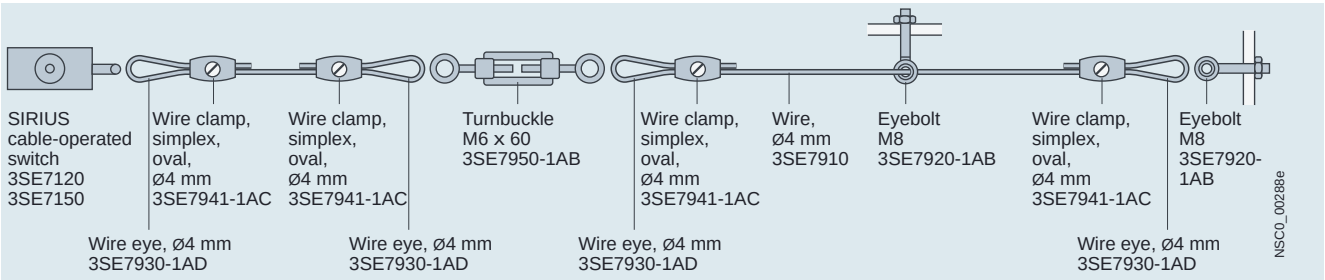
Positive opening according to IEC 60947-5-1, Annex K.



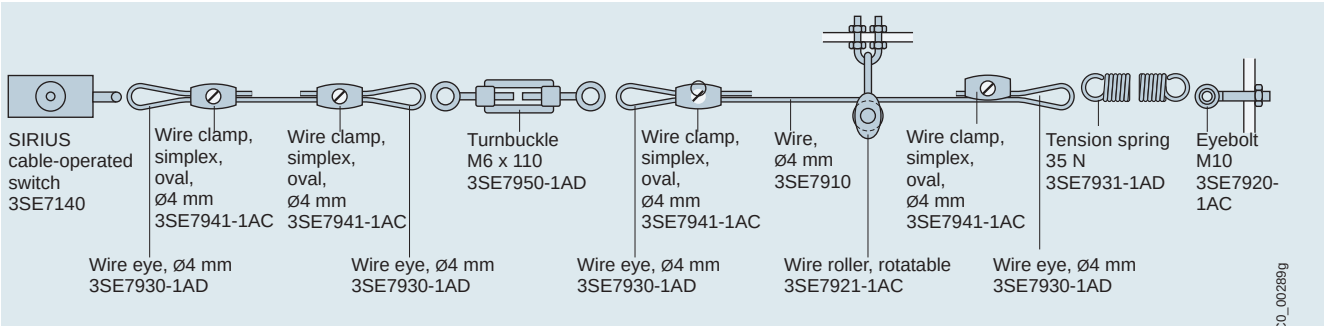
## Accessories

### *Configuration of the cable-operated switches*

**Short lengths of wire up to 25 m**

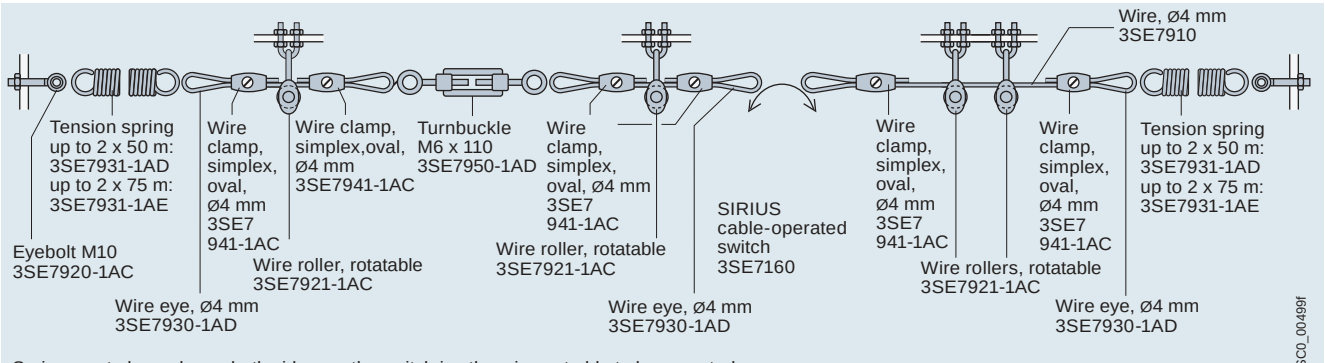



**Long lengths of wire up to 50 m**




Use of a tension spring is essential for lengths of wire ≥ 25 m.

**Pulling from both sides up to 2 x 100 m**




Spring must always be on both sides, as the switch is otherwise not able to be operated.

Note:

Large temperature fluctuations require corresponding compensation springs. For reliable connection the PVC sheath must be removed from the clamping area of the steel bowden wire. Bowden wire supports must be used at the recommended intervals.

| | Version | Length/ diameter | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Trip-wire with fixing** | | | | | | | |
| 3SE7910-3AA | **Steel wires**, with red plastic sheath, diameter 4 mm[1] | 10 m | 2 | **3SE7910-3AA** | | 1 | 1 unit |
| | | 15 m | 2 | **3SE7910-3AB** | | 1 | 1 unit |
| | | 20 m | 2 | **3SE7910-3AC** | | 1 | 1 unit |
| | | 50 m | 2 | **3SE7910-3AH** | | 1 | 1 unit |
| 3SE7941-1AC | **Wire clamps**, galvanized white, zinc-plated | | | | | | |
| | • Oval | 2 x Ø 4 mm | 2 | **3SE7941-1AC** | | 1 | 1 unit |
| 3SE7942-1AA | • Single (1 set = 4 units) | 2 x Ø 4 mm | 2 | **3SE7942-1AA** | | 1 | 4 units |
| 3SE7943-1AC | • Simplex (1 set = 4 units) | 2 x Ø 4 mm | 2 | **3SE7943-1AC** | | 1 | 4 units |
| 3SE7944-1AC | • Duplex (1 set = 4 units) | 2 x Ø 4 mm | 2 | **3SE7944-1AC** | | 1 | 4 units |
| 3SE7931-1AB | **Tension springs** (zinc-plated) to maintain the counter tension | | | | | | |
| | • 13 N | | 2 | **3SE7931-1AB** | | 1 | 1 unit |
| | • 35 N, for cable-operated switches up to 50 m | | 2 | **3SE7931-1AD** | | 1 | 1 unit |
| | • > 35 N, for cable-operated switches up to 2 x 75 m | | 5 | **3SE7931-1AE** | | 1 | 1 unit |
| 3SE7921-1AC | **Wire rollers** for changing the direction of the wire, rotatable | Ø 4 mm | 2 | **3SE7921-1AC** | | 1 | 1 unit |
| 3SE7921-1AA | **Fixtures for the wire rollers** (incl. fixing nuts) | | 2 | **3SE7921-1AA** | | 1 | 1 unit |
| 3SE7930-1AD | **Wire eyes** for changes in wire direction and improved power transmission at the fixing points (1 set = 4 units) | Ø 4 mm | 2 | **3SE7930-1AD** | | 1 | 4 units |
| 3SE7920-1AB | **Eyebolts** for fixing the wire | | | | | | |
| | • Including M8 nut | | 2 | **3SE7920-1AB** | | 1 | 1 unit |
| | • Including M10 nut | | 2 | **3SE7920-1AC** | | 1 | 1 unit |
| 3SE7950-1AB | **Turnbuckles** for precise adjustment of the pre-tension | | | | | | |
| | • M6 x 60 | | 2 | **3SE7950-1AB** | | 1 | 1 unit |
| | • M6 x 110 | | 2 | **3SE7950-1AD** | | 1 | 1 unit |
| **Spare parts** | | | | | | | |
| 3SX3235 | **LED lamps,** red<br>24 V DC<br>diameter 25 mm;<br>for M20 x 1.5 connection | | 10 | **3SX3235** | | 1 | 1 unit |

[1] Diameter including casing; the diameter of the steel wire is 3.2 mm.

## Two-hand operation consoles



### Overview

***Equipment***

The two-hand operation consoles are pre-equipped with commanding devices. In the case of plastic enclosures the command points are equipped as standard with actuators and indicators made of plastic and in the case of metal enclosures they are equipped with actuators and indicators made of metal.

The standard equipment comprises:

- 2 black mushroom pushbuttons, diameter 40 mm, 1 NO + 1 NC
- 1 red EMERGENCY STOP mushroom pushbutton according to ISO 13850, diameter 40 mm, with positive latching, 2 NC

The plastic version can be retrofitted with up to 8 customized command points. The surface of the console has premachined breaking points for this purpose.

### Application

The two-hand operation consoles are required for use with machines and systems that have hazardous areas, in order to direct both hands of the operator to one position.

The operation consoles are primarily used on presses, stamping machines, printing presses and paper converting machines, in the chemical industry and in the rubber and plastics industries.

The control command is given by pressing the two mushroom pushbuttons on the sides simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

For the further processing of control commands, evaluation units are used, e.g. 3SK11 safety relays or the 3RK3, 3SK2 Modular Safety System.

***Standards***

The two-hand operation consoles comply with the requirements of EN 574.

### Selection and ordering data

| Version of actuating element/ unlatching method/ operating principle | Color of actuating element | Number of NO contacts | Number of NC contacts | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Two-hand operation consoles** | | | | | | | | |
| ***Plastic*** | | | | | | | | |
| None | -- | 0 | 0 | 5 | **3SU1803-3AA00-0AA1** | | 1 | 1 unit |
| 3SU1803-3NB00-1AE1 | | | | | | | | |
| A = Mushroom pushbutton/ momentary contact<br>B = EMERGENCY STOP mushroom pushbutton/ rotate to unlatch<br>C = Mushroom pushbutton/ momentary contact | A = Black/ B = Red/ C = Black | 2 | 4 | 5 | **3SU1803-3NB00-1AE1** | | 1 | 1 unit |
| ***Metal*** | | | | | | | | |
| None | -- | 0 | 0 | 5 | **3SU1853-3AA00-0AA1** | | 1 | 1 unit |
| 3SU1853-3AA00-0AA1 | | | | | | | | |
| A = Mushroom pushbutton/ momentary contact<br>B = EMERGENCY STOP mushroom pushbutton/ rotate to unlatch<br>C = Mushroom pushbutton/ momentary contact | A = Black/ B = Red/ C = Black | 2 | 4 | 5 | **3SU1853-3NB00-1AA1** | | 1 | 1 unit |
| 3SU1853-3NB00-1AA1 | | | | | | | | |
| | | 2 | 4 | 5 | **3SU1853-3NB00-1AD1** | | 1 | 1 unit |
| 3SU1853-3NB00-1AD1 | | | | | | | | |

| Version | Material | Color | SD d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| **Accessories** | | | | | | | |
| ***Stands for two-hand operation consoles*** | | | | | | | |
| 3SU1950-0HN10-0AA0 | Metal | Black | 5 | **3SU1950-0HN10-0AA0** | | 1 | 1 unit |

## Overview

SIRIUS 3SK safety relays

**More information**

Homepage, see www.usa.siemens.com/safety-relays
Industry Mall, see www.siemens.com/product?3SK
Conversion tool, e.g. from 3TK28 to 3SK, see www.siemens.com/sirius/conversion-tool

SIRIUS 3SK safety relays are the key elements of a consistent, cost-effective safety chain. Whether you need EMERGENCY STOP functionality, protective door monitoring, light arrays, laser scanners or the protection of presses or punches – slimline SIRIUS safety relays enable all safety applications to be implemented in the best possible way in terms of engineering and price.

The following safety-related functions are available:

- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring the correct device function of the safety relay
- Monitoring the actuators in the shutdown circuit
- Safety-related disconnection when dangers arise

SIRIUS 3SK safety relays are approved for applications up to SIL 3 (IEC 61508/IEC 62061) or PL e (EN ISO 13849-1).

### *Device series*

SIRIUS 3SK safety relays stand out due to their flexibility for both parameterization and system designs with several evaluation units. This reduces device variance, thus bringing advantages in terms of device selection and spare parts management. Optimized solutions when selecting components and reduced spare part inventory requirements are facilitated by a clearly structured component range:

The following device series are available:

- 3SK1 Standard basic units
- 3SK1 Advanced basic units
- 3SK2 basic units
- 3SK1 output expansions
- 3SK1 input expansions
- Accessories

3SK1 Standard basic units

The 3SK1 Standard basic units are characterized by the following features:

- Compact design
- Simple operation
- Relay and semiconductor outputs
- Economical solution

3SK1 Advanced basic units

The 3SK1 Advanced basic units also offer:

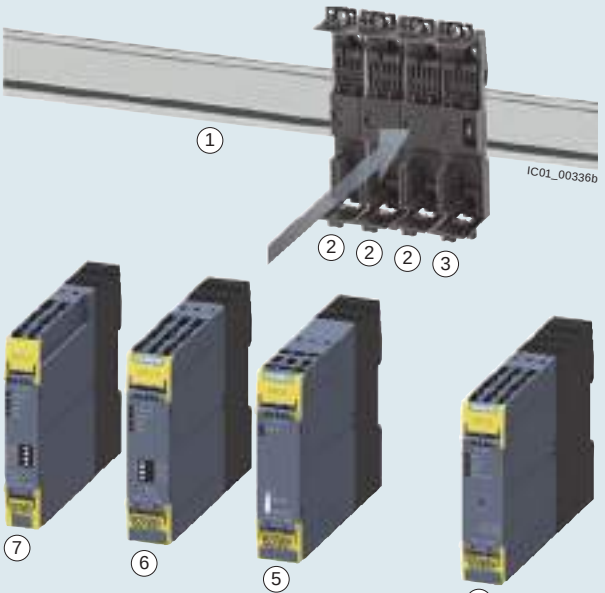
- Universal application possibilities thanks to multifunctionality
- Time-delayed outputs
- Expansion of inputs and outputs

3SK2 basic units

The 3SK2 basic units also offer:

- Up to six fail-safe, independent shutdown functions
- Flexible in use thanks to software parameterization
- Powerful semiconductor outputs
- Convenient diagnostics using diagnostics display and configuration software

In the case of 3SK1 Advanced basic units or 3SK2 basic units, the 3ZY12 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.




1 Standard mounting rail
2 Device connector
3 Device termination connector
4 SIRIUS 3RM1 motor starter
5 SIRIUS 3SK1211 output expansion
6 SIRIUS 3SK1121 Advanced basic unit
7 SIRIUS 3SK1220 sensor expansion

System configuration example

## General data

The 3SK1 Standard and Advanced and 3SK2 series are a high-quality replacement for the 3TK28 safety relays. In their narrower design, and equipped with greater functionality, they can replace every 3TK28 device. The only exception to this are the 3TK2810 devices.

***Overview of functions of the 3SK series***

| Type | 3SK1 Standard basic units | | 3SK1 Advanced basic units | | 3SK2 basic units | |
|---|---|---|---|---|---|---|
| | | | | | 22.5 mm | 45 mm |
| | Safe relay outputs | Safe semiconductor outputs | Safe relay outputs | Safe semiconductor outputs | Safe semiconductor outputs | Safe semiconductor outputs |
| **Sensors** | | | | | | |
| • Mechanical | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| • Non-floating | ✓[1] | ✓ | ✓ | ✓ | ✓ | ✓ |
| • Antivalent | -- | -- | ✓ | ✓ | ✓ | ✓ |
| • Expandable | -- | ✓ by means of cascading | ✓ | ✓ | -- | -- |
| **Inputs** | 2 x single-channel, 1 x two-channel | 2 x single-channel, 1 x two-channel | 2 x single-channel, 1 x two-channel | 2 x single-channel, 1 x two-channel | Freely configurable: 10 x single-channel, 5 x two-channel | Freely configurable: 20 x single-channel, 10 x two-channel |
| **Parameters** | | | | | | |
| • Start (auto/monitored) | ✓ | ✓ | ✓ | ✓ | A variety of functions can be set for each input/output by means of software parameterization. | |
| • Sensor connection 2 x single-channel/ 1 x two-channel | ✓ by means of wiring | ✓ | ✓ | ✓ | | |
| • Cross-circuit detection | ✓ by means of wiring | ✓ | ✓ | ✓ | | |
| • Start test ON/OFF | -- | ✓ | ✓ | ✓ | | |
| • Monitoring of two-hand operation consoles according to EN 574 | -- | -- | ✓ | ✓ | | |
| • Pressure-sensitive mat | -- | -- | ✓ | ✓ | | |
| **Safe outputs** | | | | | | |
| • Instantaneous | ✓ | ✓ | ✓ | ✓ | Configurable | Configurable |
| • Time-delayed | -- | -- | ✓ | ✓ | Configurable | Configurable |
| • Expandable with safe relay outputs | ✓ by means of wiring | ✓ by means of wiring | ✓ | ✓ | ✓ | ✓ |
| • Independent | -- | -- | -- | -- | ✓[4] | ✓[5] |
| • Device connectors | -- | -- | ✓ | ✓ | ✓ | ✓ |
| **Options** | | | | | | |
| • External memory module | -- | -- | -- | -- | -- | ✓ |
| • Display on the device | -- | -- | -- | -- | -- | ✓ |
| • External diagnostics module can be connected | -- | -- | -- | -- | ✓ | ✓ |
| **Control supply voltage** | | | | | | |
| • 24 V DC | ✓[2] | ✓ | ✓ | ✓ | ✓ | ✓ |
| • 110 ... 240 V AC/DC | ✓ | ✓[6] | ✓[3] | ✓[3] | -- | -- |

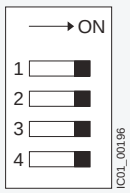
✓ Available
-- Not available

1) 24 V basic units only.
2) 24 V AC/DC.
3) Possible using 3SK1230 power supply via device connector.
4) Up to four independent safe outputs, two of which via device connectors.
5) Up to six independent safe outputs, two of which via device connectors.
6) Possible using 3SK1230 power supply by means of wiring.

### *Parameter assignment*

3SK112 and 3SK1112 with DIP switch

The 3SK112 and 3SK1112 safety relays are configurable safety relays. They are used as evaluation units for typical safety chains (detect, evaluate, react). A number of functions can be set using the DIP switches on the front. 3SK112 and 3SK1112 are therefore universally applicable.

| DIP switch No. | OFF | ON | Schematic |
|---|---|---|---|
| 1 | Sensor input Autostart | Sensor input Monitored start |  |
| 2 | Without crossover monitoring | With crossover monitoring | |
| 3 | 2 x single-channel sensor connection | 1 x two-channel sensor connection | |
| 4 | With start test | Without start test | |



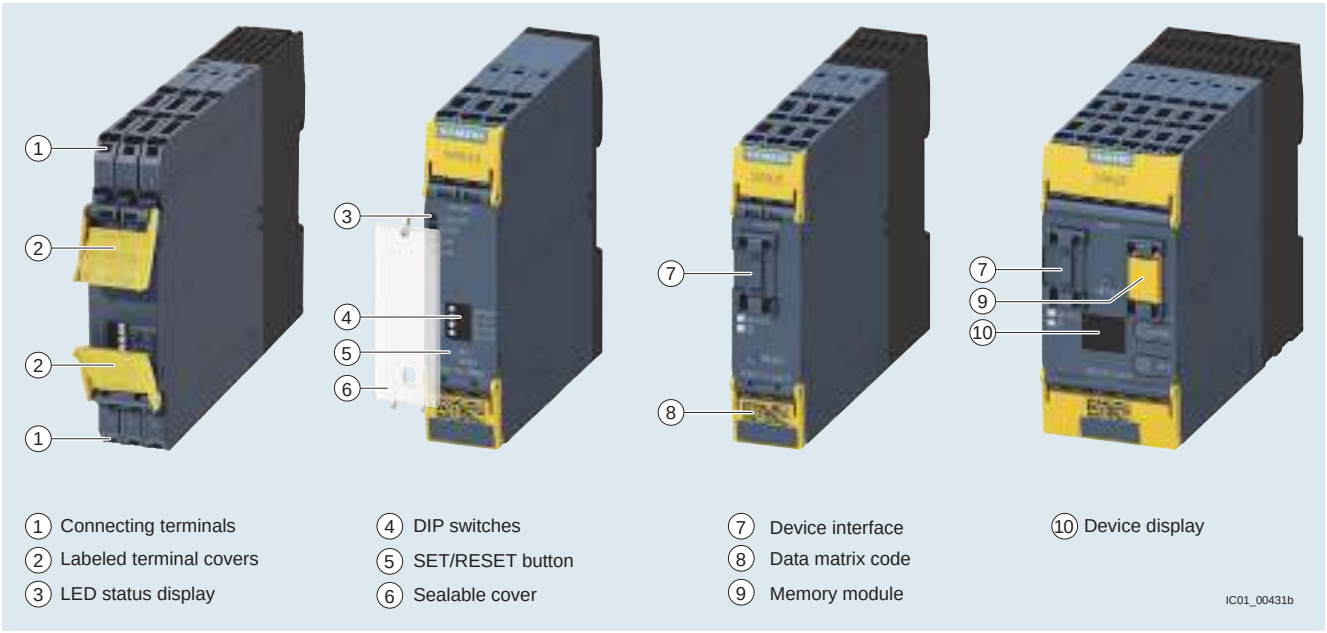
3SK2 with software

The 3SK2 safety relays are configured with the SIRIUS Safety ES software. The behavior of a 3SK2 device as well as the functioning of the individual safe outputs can thus be parameterized simply and conveniently in the logic diagram. In addition, the configuration can be printed out for documentation purposes. The software also supports users in commissioning and troubleshooting by means of online diagnostics and the option of "forcing" signals in the logic diagram. The 3SK2 safety relays thus offer maximum flexibility and universal application options.

Note:

SIRIUS Safety ES, see page 13/162.

### *Enclosure concept*




Innovative enclosure concept for SIRIUS 3SK safety relays

### *Connection methods*

The 3SK safety relays are available with screw or spring-type terminals (push-in).

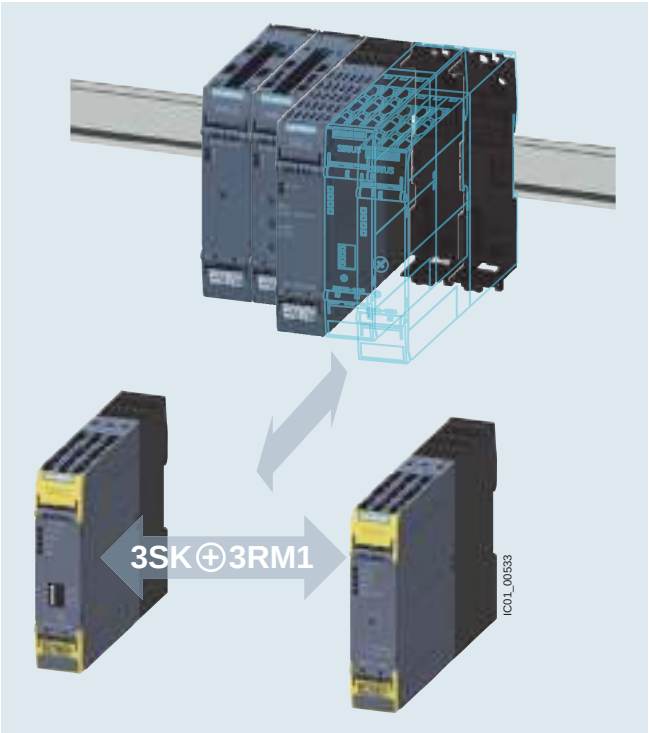
Spring-type terminals (push-in)

Push-in connections are a form of spring-type terminals allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

As with other spring-type terminals, a screwdriver (with 3.0 x 0.5 mm blade) is required to disconnect the conductor. The same tool can also be used to wire finely stranded or stranded conductors with no end finishing.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

***Seamlessly integrated safety right through to the main circuit***




Problem-free integration of functional safety into the main circuit through the simple combination of 3RM1 and 3SK1 devices

Functional safety in the main circuit needs to be both simple and flexible

The unique compatibility of hybrid 3RM1 fail-safe motor starters and 3SK safety relays means that integrated functional safety right through to the main circuit is no longer a problem.

Their compact design allows the motor starters to be installed to the right of the safety relay in a simple manner, just like an output expansion. The wiring of the safety-related signals to the relay can be performed simply, quickly and in an error-free manner using the device connector.

The ergonomically designed enclosure with removable terminals and terminal labeling in the hinged cover allows for the cables to be conveniently diagonally mounted from the front. Either screw or spring-type terminals with push-in technology are available.

Highlights

- Fail-safe disconnection of motors up to 3 kW
- Problem-free combination of fail-safe motor starters and safety relays
- End-to-end system, simple setup using device connectors
- Ergonomic enclosure

Note:

SIRIUS 3RM1 motor starters, see Section 6.

***Article No. scheme***

| Product versions | | Article number | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3SK1 safety relays** | | **3SK1** | □ | □ | □ | – | □ | □ | □ | □ | □ |
| Device version | Basic unit | | **1** | | | | | | | | |
| | Expansion unit | | **2** | | | | | | | | |
| Device variants | 3SK11: Standard; 3SK12: Output expansion | | | **1** | | | | | | | |
| | 3SK11: Advanced; 3SK12: Input expansion | | | **2** | | | | | | | |
| Type of outputs | Relay outputs | | | | **1** | | | | | | |
| | Semiconductor outputs | | | | **2** | | | | | | |
| | Power outputs | | | | **3** | | | | | | |
| Connection type | Screw terminals | | | | | | **1** | | | | |
| | Spring-type terminals (push-in) | | | | | | **2** | | | | |
| Control circuit/actuation | 3SK11: 3 enabling circuits | | | | | | | **A** | | | |
| | 3SK11: 2 enabling circuits | | | | | | | **B** | | | |
| | 3SK11: 4 enabling circuits | | | | | | | **C** | | | |
| Type of control supply voltage | 3SK1213: 24 V AC, 50/60 Hz | | | | | | | | **B** | **0** | |
| | 3SK1: 24 V AC/DC, 50/60 Hz | | | | | | | | **B** | **3** | |
| | 3SK1: 24 V DC | | | | | | | | **B** | **4** | |
| | 3SK1213: 115 V AC, 50/60 Hz | | | | | | | | **J** | **2** | |
| | 3SK1213: 230 V AC, 50/60 Hz | | | | | | | | **L** | **2** | |
| | 3SK1: 110 ... 240 V AC/DC; 50/60 Hz | | | | | | | | **W** | **2** | |
| Time delay | None | | | | | | | | | | **0** |
| | 0.05 ... 3 s | | | | | | | | | | **1** |
| | 0.5 ... 30 s | | | | | | | | | | **2** |
| | 5 ... 300 s | | | | | | | | | | **4** |
| Example | | **3SK1** | **1** | **1** | **1** | – | **1** | **A** | **B** | **3** | **0** |

| Product versions | | Article number |
|---|---|---|
| **3SK2 safety relays** | | **3SK2 1 □ 2 – □ A A 1 0** |
| Device variants | 10 F-DI, 2 F-DQ, width 22.5 mm | **1** |
| | 20 F-DI, 4 F-DQ, width 45 mm | **2** |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals (push-in) | **2** |
| Example | | **3SK2 1 1 2 – 1 A A 1 0** |

Note:

The Article No. schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

### *General*

- Approved for all safety applications because of its compliance with the highest safety requirements (SIL 3 and PL e)
- Universally usable thanks to adjustable parameters
- Usable worldwide thanks to globally valid certificates
- Compact SIRIUS design
- Device connectors with standard rail mounting for flexible connectability and expandability
- Removable terminals for greater plant availability
- Yellow terminal covers clearly identify the device as a safety component
- Sensor cable up to 2 000 m long allows it to be used in extensive plants

### *Relay outputs*

- Different voltages can be switched through the floating contacts
- The relay contacts allow currents of up to 5 A at AC-15/DC-13 to be connected

### *Semiconductor outputs*

- Wear-free
- Suitable for operation in frequently switching applications
- Insensitive to vibrations and dirt
- Good electrical endurance

### *Power outputs (3SK1213 output expansion)*

- Different voltages can be switched through the floating contacts
- With the power relay contacts currents up to 10 A AC-15/6 A DC-13 can be switched
- High mechanical and electrical endurance
- Protective separation between safe outputs and electronics

### *Expansion option by adding the 3RM1 motor starter*

SIRIUS 3SK safety relays are ideal for combining with the SIRIUS 3RM1 motor starters.

Combinations are made by means of

- SIRIUS 3ZY12 device connectors (in combination with 3SK1 Advanced/3SK2) or
- Conventional wiring (for all 3SK1 and 3SK2 basic units)

This makes collective shutdown very easy in assemblies. The wiring, and ultimately the shutting down of the control supply voltage for the expansion components in EMERGENCY STOP situations, is performed via the device connector. There is no further need for complex looping of the connecting cables between the safety relay and the motor starters.

The 3RM1 motor starter combines the benefits of semiconductor technology and relay technology. This combination is also known as hybrid technology.

The hybrid technology in the motor starter is characterized by the following features:

- The inrush current in the case of motorized loads is conducted briefly via the semiconductors. Advantages include protection of the relay contacts and a long service life due to low wear.
- The uninterrupted current is conducted via relay contacts. Advantages include lower heat losses compared with the semiconductor.
- Shutdown is implemented again via the semiconductor. The contacts are only slightly exposed to arcs, and this results in a longer service life.
- Integrated overload protection

Note:

SIRIUS 3RM1 motor starters, see Section 6.

### *3ZY12 device connectors*

Using 3ZY12 device connectors to combine devices reduces the time required to configure and wire the components. At the same time errors are avoided during wiring, and this considerably reduces the testing required for the fully-assembled application.

### *Configuration and stock keeping*

Variable setting options by means of DIP switches or software, a wide voltage range (3SK1111) and a special power supply unit (3SK1 only) reduce the cost of keeping stocks and the considerations involved in configuration where the evaluation units to be selected are concerned.

## Application

### *3SK1 safety relays*

SIRIUS 3SK1 safety relays are used mainly in autonomous safety applications which are not connected to a safety-related bus system. Their function here is to evaluate the sensors and the safety-related shutdown of hazards. Also they check and monitor the sensors, actuators and safety-related functions of the safety relay.

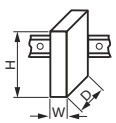
### *3SK2 safety relays*

SIRIUS 3SK2 safety relays are used primarily in autonomous, more complex safety applications for which the functional scope of the 3SK1 devices is no longer sufficient, such as in the implementation of independent shutdown functions or integration into higher-level control systems for diagnostics via fieldbus. Their function here is to evaluate the sensors and the safety-related shutdown of hazards. Also they check and monitor the sensors, actuators and safety-related functions of the safety relay.

## Technical specifications

| More information | |
|---|---|
| Manual 3SK1, see https://support.industry.siemens.com/cs/ww/en/view/67585885 | Manual 3SK2, see https://support.industry.siemens.com/cs/ww/en/view/109444336 |
| Technical specifications 3SK1230, see https://support.industry.siemens.com/cs/ww/en/ps/16388/td | FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16382/faq |

### *SIRIUS 3SK1 safety relays*

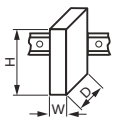
| Article number | | 3SK1111-.AB30, 3SK1211-.BB00, 3SK1211-.BB40 | 3SK1111-.AW20, 3SK1121, 3SK1211-.BW20 | 3SK1112 | 3SK1120 | 3SK1122 | 3SK1213 | 3SK1220 |
|---|---|---|---|---|---|---|---|---|
| **General data:** | | | | | | | | |
| **Width x height x depth**  | mm | 22.5 x 100 x 121.6 | | 22.5 x 100 x 91.6 | 17.5 x 100 x 121.6 | 22.5 x 100 x 121.6 | 90 x 100 x 121.6 | 17.5 x 100 x 121.6 |
| **Ambient temperature** | | | | | | | | |
| • During operation | °C | -25 … +60 | | | | | | |
| • During storage | °C | -40 … +80 | | | | | | |
| **Installation altitude at height above sea level, maximum** | m | 2 000 | | | | | | |
| **Air pressure acc. to SN 31205** | kPa | 90 … 106 | | | | | | |
| **Shock resistance** | | 10 *g* /11 ms | | | | | 5 *g* /10 ms | 10 *g* /11 ms |
| **Vibration resistance according to IEC 60068-2-6** | | 5 ... 500 Hz: 0.75 mm | | | | | | |
| **Degree of protection of the enclosure** | | IP20 | | | | | | |
| **Touch protection against electric shock** | | Finger-safe | | | | | | |
| **Insulation voltage, rated value** | V | 300 | | 50 | | | 300 | 50 |
| **Impulse withstand voltage, rated value** | V | 4 000 | | 800 | | | 4 000 | 800 |
| **Safety integrity level (SIL) according to IEC 61508** | | 3 | | | | | | |
| **Performance level (PL) according to EN ISO 13849-1** | | e | | | | | | |
| **T1 value for proof test interval or service duration according to IEC 61508** | y | 20 | | | | | | |
| **EMC emitted interference** | | IEC 60947-5-1, class B | IEC 60947-5-1, class A | | | | IEC 60947-5-1, class B | IEC 60947-5-1, class A |
| **Certificate of suitability** | | | | | | | | |
| • UL certification | | Yes | | | | | | |
| • TÜV approval | | Yes | | | | | | |

## General data

| Article number | | 3SK1111, 3SK1121-.AB40, 3SK1211 | 3SK1112, 3SK1122 | 3SK1120 | 3SK1121-.CB4. | 3SK1213 |
|---|---|---|---|---|---|---|
| **Switching capacity current of the NO contacts of the relay outputs** | | | | | | |
| • At AC-15 at 230 V | A | 5 | -- | | 3 | 10 |
| • At DC-13 at 24 V | A | 5 | -- | | 3 | 6 |
| **Switching capacity current of the semiconductor outputs at DC-13 at 24 V** | A | -- | 2 | 0.5 | -- | |

| Article number | | 3SK1111-.AB30, 3SK1211 | 3SK1111-.AW20 | 3SK1112, 3SK1220 | 3SK1120, 3SK1122-.AB40 | 3SK1121-.AB40 | 3SK1121-.CB4. | 3SK1122-.CB4. | 3SK1213 |
|---|---|---|---|---|---|---|---|---|---|
| **PFHD at high demand rate according to EN 62061** | 1/h | $1.7 \times 10^{-9}$ | $1.5 \times 10^{-9}$ | $1.0 \times 10^{-9}$ | $1.3 \times 10^{-9}$ | $2.5 \times 10^{-9}$ | $3.7 \times 10^{-9}$ | $1.5 \times 10^{-9}$ | $1.0 \times 10^{-9}$ |
| **PFDavg at low demand rate according to IEC 61508** | | $1.0 \times 10^{-6}$ | | $7.0 \times 10^{-6}$ | | | | | $1.0 \times 10^{-6}$ |

### *SIRIUS 3SK2 safety relays*

| Article number | | 3SK2112-.AA10 | 3SK2122-.AA10 |
|---|---|---|---|
| **General data:** | | | |
| **Width x height x depth**   | mm | 22.5 x 100 x 124.5 | 45 x 100 x 124.5 |
| **Ambient temperature** | | | |
| • During operation | °C | -25 ... +60 | |
| • During storage | °C | -40 ... +80 | |
| **Installation altitude at height above sea level, maximum** | m | 2 000 | |
| **Air pressure acc. to SN 31205** | kPa | 90 ... 106 | |
| **Shock resistance** | | 15 *g* /11 ms | |
| **Vibration resistance acc. to IEC 60068-2-6** | | 5 ... 500 Hz: 0.75 mm | |
| **Degree of protection of the enclosure** | | IP20 | |
| **Touch protection against electric shock** | | Finger-safe | |
| **Insulation voltage, rated value** | V | 50 | |
| **Impulse withstand voltage, rated value** | V | 800 | |
| **Safety integrity level (SIL) according to IEC 61508** | | 3 | |
| **Performance level (PL) according to EN ISO 13849-1** | | e | |
| **T1 value for proof test interval or service duration according to IEC 61508** | y | 20 | |
| **EMC emitted interference according to IEC 60947-1** | | Class A | |
| **Certificate of suitability** | | | |
| • UL certification | | Yes | |
| • TÜV approval | | Yes | |
| **Switching capacity current of the semiconductor outputs at DC-13 at 24 V** | A | 4 | |
| **PFHD at high demand rate according to EN 62061** | 1/h | $1.0 \times 10^{-8}$ | $1.2 \times 10^{-8}$ |
| **PFDavg at low demand rate according to IEC 61508** | | $1.5 \times 10^{-5}$ | $1.8 \times 10^{-5}$ |

## Overview

3SK111 Standard basic units

The 3SK111 Standard basic units are characterized by simple, variable functionality. These devices are recommended for safety functions requiring only a few sensors and a small number of outputs on the safety relay.

Note:

Use of device connectors not possible.

## Selection and ordering data

3SK1111-1AB30

3SK1111-1AW20

3SK1112-1BB40

| Control supply voltage | | Number of outputs | | | | | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| at AC at 50 Hz | at DC | as contacting contact block | | | as contactless semiconductor contact block | | | | | | | |
| | | as NO contact, instantaneous switching | as NO contact, delayed switching | for signaling function, instantaneous switching | instantaneous switching | delayed switching | for signaling function, instantaneous switching | | | | | |
| V | V | | | | | | | d | | | | |
| **Standard basic units** | | | | | | | | | | | | |
| 24 | 24 | 3 | 0 | 1 | 0 | 0 | 0 | ▶ | **3SK1111-☐AB30** | | 1 | 1 unit |
| 110 … 240 | 110 … 240 | 3 | 0 | 1 | 0 | 0 | 0 | 1 | **3SK1111-☐AW20** | | 1 | 1 unit |
| -- | 24 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | **3SK1112-☐BB40** | | 1 | 1 unit |

**Type of electrical connection**

- Screw terminals
- Spring-type terminals (push-in)

1
2

## Overview

3SK112 Advanced basic units

The 3SK112 Advanced basic units form an innovative system landscape that allows even complex safety functions with large numbers of sensors and outputs to be built up using the device connectors. It is possible to increase both the number of inputs for sensors and the number of safe outputs of the basic unit without the need for wiring outlay between the devices.

Note:

Use of device connectors possible.



## Selection and ordering data

3SK1121-1AB40

3SK1120-1AB40

3SK1122-1AB40

3SK1122-1CB41

| Control supply voltage at DC | Number of outputs as contacting contact block: as NO contact, instantaneous switching | as NO contact, delayed switching | as NC contact for signaling function, instantaneous switching | as contactless semiconductor contact block: instantaneous switching | delayed switching | for signaling function, instantaneous switching | Adjustable OFF-delay time | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | | | | | | | s | d | | | | |
| **Advanced basic units** | | | | | | | | | | | | |
| 24 | 3 | 0 | 1 | 0 | 0 | 0 | -- | ▶ | **3SK1121-□AB40** | | 1 | 1 unit |
| | 2 | 2 | 0 | 0 | 0 | 0 | 0.05 ... 3 | 2 | **3SK1121-□CB41** | | 1 | 1 unit |
| | | | | | | | 0.5 ... 30 | 1 | **3SK1121-□CB42** | | 1 | 1 unit |
| | | | | | | | 5 ... 300 | 5 | **3SK1121-□CB44** | | 1 | 1 unit |
| 24 | 0 | 0 | 0 | 1 | 0 | 0 | -- | 2 | **3SK1120-□AB40** | | 1 | 1 unit |
| | | | | 3 | 0 | 1 | -- | 2 | **3SK1122-□AB40** | | 1 | 1 unit |
| | | | | 2 | 2 | 0 | 0.05 ... 3 | 5 | **3SK1122-□CB41** | | 1 | 1 unit |
| | | | | | | | 0.5 ... 30 | 2 | **3SK1122-□CB42** | | 1 | 1 unit |
| | | | | | | | 5 ... 300 | 5 | **3SK1122-□CB44** | | 1 | 1 unit |

**Type of electrical connection**

- Screw terminals
- Spring-type terminals (push-in)

**1**
**2**

## Overview

3SK2 basic units

Starter Kit

The 3SK2 basic units have a large number of inputs and outputs within a narrow width. In addition, demanding safety applications can be implemented simply with several independent safety functions. Flexible application options are enabled by powerful semiconductor outputs, as well as by expandability with additional 3SK output expansions and 3RM1 Failsafe motor starters. Flexible time functions and diagnostics options are available. The 22.5-mm-wide version of the 3SK2 basic units has 10 x single-channel (5 x two-channel) inputs, while the 45-mm-wide 3SK2 version comes with 20 x single-channel (10 x two-channel) inputs.

***Starter Kit***

The Starter Kit is a favorably-priced complete package for the simple creation of complex safety applications and comprises:

- 3SK2112-2AA10 basic unit, 22.5 mm wide, with spring-type terminals (push-in)
- SIRIUS Safety ES Standard software for configuring, commissioning, operating and diagnosing
- USB PC cable for easy transmission of the configuration to the device by means of USB

## Selection and ordering data

3SK2112

3SK2122

| Control supply voltage at DC | Number of outputs as contactless semiconductor contact block, safety-related, two-channel | Number of outputs as contactless semiconductor contact block, non-safety-related, two-channel | Number of outputs to the device connector, safety-related | Width | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| V | | | | mm | d | | | | |
| **3SK2 basic units** | | | | | | | | | |
| 24 | 2 | 1 | 2 | 22.5 | 2 | **3SK2112-☐AA10** | | 1 | 1 unit |
| | 4 | 2 | 2 | 45 | 2 | **3SK2122-☐AA10** | | 1 | 1 unit |

**Type of electrical connection**

- Screw terminals
- Spring-type terminals (push-in)

**1**
**2**

| Control supply voltage at DC | Number of outputs as contactless semiconductor contact block, safety-related, two-channel | Number of outputs as contactless semiconductor contact block, non-safety-related, two-channel | Number of outputs to the device connector, safety-related | Width | SD | **Spring-type terminals (push-in)** Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| V | | | | mm | d | | | | |
| **Starter Kit** | | | | | | | | | |
| Contains 3SK2112-2AA10 basic unit, SIRIUS Safety ES Standard and 3UF7941-0AA00-0 USB PC cable | | | | | | | | | |
| 24 | 2 | 1 | 2 | 22.5 | 2 | **3SK2941-2AA10** | | 1 | 1 unit |

## Overview

3SK121 output expansion

The 3SK121 output expansions can be used to expand all 3SK basic units.

***3SK1211 output expansion***

The 3SK1211 output expansion is used to expand the safe outputs of a basic unit by adding another four safe outputs. These outputs have a switching capacity of AC-15 5 A at a switching voltage of 230 V. The devices can be connected to any 3SK basic unit by means of wiring. In addition, the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced basic units and 3SK2 basic units by means of the 3ZY12 device connectors.

***3SK1213 output expansion***

The 3SK1213 output expansion is used to expand the safe outputs of a basic unit by adding three safe outputs with high switching capacity. These outputs have a switching capacity of AC-15 10 A at a switching voltage of 230 V. The devices can be connected to any 3SK basic unit by means of wiring. As with the 3SK1211, the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced and 3SK2 basic units by means of the 3ZY12 device connectors.

Note:

It is only possible to expand the Standard basic units by means of wiring. Advanced basic units and 3SK2 basic units can be expanded using the 3ZY12 device connector.

## Benefits

- Perfect adaptation of the number of outputs
- Simple expansion of instantaneous and time-delayed safe outputs of the Advanced basic units using device connectors
- When using the device connector the outputs on the terminals of the basic device can still be used
- Another two freely configurable shutdown functions on 3SK2 basic units when using device connectors
- Expansion with power contacts for high AC-15/DC-13 currents in the control circuit
- No wiring of the feedback circuit to the basic units is required when using device connectors
- Shorter installation times
- Less configuring and testing required

## Selection and ordering data

3SK1211-1BB40

3SK1213-1AB40

| Control supply voltage | | Number of outputs as contacting contact block | | | 3ZY12 device connectors | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|---|
| at AC at 50 Hz | at DC | as NO contact, instantaneous switching | as NO contact, delayed switching | as NC contact instantaneous switching for feedback circuit | | | | | | |
| V | V | | | | | d | | | | |
| **Output expansions** | | | | | | | | | | |
| 24 | -- | 4 | 0 | 1 | No | 5 | **3SK1211-☐BB00** | | 1 | 1 unit |
| -- | 24 | 4 | 0 | 1 | Yes | 1 | **3SK1211-☐BB40** | | 1 | 1 unit |
| 110 ... 240 | 110 ... 240 | 4 | 0 | 1 | No | 2 | **3SK1211-☐BW20** | | 1 | 1 unit |
| -- | 24 | 3 | 0 | 1 | Yes | 5 | **3SK1213-☐AB40** | | 1 | 1 unit |
| 115 | -- | 3 | 0 | 1 | No | 5 | **3SK1213-☐AJ20** | | 1 | 1 unit |
| 230 | -- | 3 | 0 | 1 | No | 5 | **3SK1213-☐AL20** | | 1 | 1 unit |

**Type of electrical connection**

- Screw terminals
- Spring-type terminals (push-in)

1
2

## Overview

3SK1220 sensor expansion

With the input expansions

- 3SK1220 sensor expansion
- 3SK1230 power supply

the 3SK1 Advanced basic units can be made more flexible.

***3SK1220 sensor expansion***

The 3SK1220 input expansion allows additional sensors to be integrated easily and flexibly. The device monitors two single-channel sensors or one two-channel sensor, whatever their output technology (floating/single-ended).

Note:

The 3SK1220 sensor expansion can only be connected to the 3SK1 Advanced basic units by means of the 3ZY12 device connector, see page 13/145.

***3SK1230 power supply***

The 3SK1230 power supply makes the 3SK1 devices universally usable, whatever control supply voltage is to be used.

Note:

Alongside the 3ZY12 device connector, the 3SK1230 power supply can also be wired to act as a power supply for 3SK1 devices.

## Benefits

- A wide voltage range of 110 ... 240 V AC/DC allows the devices to be used worldwide
- Low stock keeping due to little variance
- Flexible expansion of the number of sensors without the need for additional wiring between the devices
- Perfect adaptation of the number of inputs to suit the application
- Universal use thanks to the wide range of adjustable parameters for sensor expansion (parameters as for 3SK1 Advanced basic units)

## Selection and ordering data

3SK1220-1AB40

3SK1230-1AW20

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Sensor expansions** | | | | | |
| For safety-related expansion of the 3SK1 Advanced basic units by adding a further two-channel sensor or two single-channel sensors | 2 | **3SK1220-☐AB40** | | 1 | 1 unit |
| **Power supply** | | | | | |
| For supplying 3SK1 Advanced basic units via 3ZY12 device connectors at voltages of 110 ... 240 V AC/DC | 2 | **3SK1230-☐AW20** | | 1 | 1 unit |
| **Type of electrical connection** | | | | | |
| • Screw terminals | | 1 | | | |
| • Spring-type terminals (push-in) | | 2 | | | |

## Overview

Numerous accessories are available for 3SK, such as device connectors, terminals, cables, adapters, covers, memory and diagnostics modules or software.

### *Device connectors for 3SK112., 3SK12.. and 3SK2*

The device connector can be used to connect devices of the 3SK/3RM1 system together, with the last device in a system configuration being placed on a device termination connector. Use of device connectors not possible with 3SK1 standard.

Device connectors are available in various versions specifically for the 3SK safety relays:

| For type | Device connectors | | | | Device termination connectors | |
|---|---|---|---|---|---|---|
| | **3ZY1212-1BA00** (for 3SK1, width 17.5 mm) | **3ZY1212-2BA00** (for 3SK1, width 22.5 mm) | **3ZY1212-2GA00** (for 3SK2, width 22.5 mm) | **3ZY1212-4GA01** (for 3SK2, width 45 mm) | **3ZY1212-2DA00** (for 3SK1, width 22.5 mm) | **3ZY1212-0FA01** (for 3SK1, set for enclosures ≥ 45 mm) |
| **3SK1 Advanced basic units** | | | | | | |
| 3SK1120 | ✓ | -- | -- | -- | -- | -- |
| 3SK1121 | -- | ✓ | -- | -- | ✓ | -- |
| 3SK1122 | -- | ✓ | -- | -- | ✓ | -- |
| **3SK2 basic units** | | | | | | |
| 3SK2112 | -- | -- | ✓ | -- | -- | -- |
| 3SK2122 | -- | -- | -- | ✓ | -- | -- |
| **Output expansions** | | | | | | |
| 3SK1211 | -- | ✓ | -- | -- | ✓ | -- |
| 3SK1213 | -- | -- | -- | -- | -- | ✓ |
| **Input expansions** | | | | | | |
| 3SK1220 | ✓ | -- | -- | -- | -- | -- |
| 3SK1230 | -- | ✓ | -- | -- | -- | -- |

✓ Available
-- Not available

### *Removable terminals for 3SK*

The following removable terminals are available for the 3SK safety relays for pre-wiring of the terminals in the control cabinet, or for replacing terminals:

| For type | Removable terminals | | | |
|---|---|---|---|---|
| | Screw terminals | | Spring-type terminals (push-in) | |
| | **2-pole 3ZY1121-1BA00** | **3-pole 3ZY1131-1BA00** | **2-pole 3ZY1121-2BA00** | **3-pole 3ZY1131-2BA00** |
| **3SK1 basic units** | | | | |
| 3SK1111 | -- | ✓ | -- | ✓ |
| 3SK1112 | ✓ | -- | ✓ | -- |
| 3SK1120 | -- | ✓ | -- | ✓ |
| 3SK1121 | -- | ✓ | -- | ✓ |
| 3SK1122 | ✓ bottom | ✓ top | ✓ bottom | ✓ top |
| **3SK2 basic units** | | | | |
| 3SK2112 | -- | ✓ | -- | ✓ |
| 3SK2122 | -- | ✓[1)] | -- | ✓[1)] |
| **Output expansions** | | | | |
| 3SK1211 | ✓ | -- | ✓ | -- |
| 3SK1213 | -- | -- | -- | -- |
| **Input expansions** | | | | |
| 3SK1220 | -- | ✓ top | -- | ✓ top |
| 3SK1230 | ✓ bottom | -- | ✓ bottom | -- |

✓ Available
-- Not available
1) Two sets of terminals are required for 3SK2122.

## Selection and ordering data

| Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) |
|---|---|---|---|---|
| **Device connectors for the electrical connection of SIRIUS devices in the industrial standard mounting rail enclosure** | | | | |
| 3ZY1212 -1BA00 3ZY1212 -2DA00 | | | | |
| **Device connector for 3SK1** | | | | |
| • Width 17.5 mm | 2 | **3ZY1212-1BA00** | | 1 |
| • Width 22.5 mm | 2 | **3ZY1212-2BA00** | | 1 |
| **Device connector for 3SK2** | | | | |
| • Width 22.5 mm | 2 | **3ZY1212-2GA00** | | 1 |
| • Width 45 mm | 2 | **3ZY1212-4GA01** | | 1 |
| **Device termination connectors**<br>For 3SK1, width 22.5 mm<br>Note:<br>Observe positions of the slide switch, see Manual "3SK1". | 2 | **3ZY1212-2DA00** | | 1 |
| **Device daisy chain connectors**<br>For 3RM1 and 3SK, 24 V DC, 22.5 mm, for implementation of distances between devices according to the installation guidelines | 2 | **3ZY1212-2AB00** | | 1 |
| **Device connectors**<br>For height adjustment for devices without electrical connection via device connector, with a width of 22.5 mm or greater | 2 | **3ZY1210-2AA00** | | 1 |
| **Device termination connector set**<br>For 3SK1213, width > 45 mm, comprising 3ZY1212-2FA00 and 3ZY1210-2AA00 | 2 | **3ZY1212-0FA01** | | 1 |

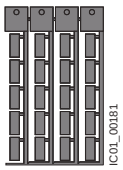
## Accessories



| | Version | SD d | Article No. | Price per PU | PU (UNIT, SET, M) |
|---|---|---|---|---|---|
| **Terminals for SIRIUS devices in the industrial standard mounting rail enclosure** | | | | | |
| 3ZY1121-1BA00 | **Removable terminals** | | **Screw terminals** | | |
| | • 2-pole, up to 2 x 1.5 mm² or 1 x 2.5 mm² | 2 | **3ZY1121-1BA00** | | 1 |
| | • 3-pole, up to 2 x 1.5 mm² or 1 x 2.5 mm² [1] | 2 | **3ZY1131-1BA00** | | 1 |
| | | | **Spring-type terminals (push-in)** | | |
| | • 2-pole, up to 2 x 1.5 mm² | 2 | **3ZY1121-2BA00** | | 1 |
| | • 3-pole, up to 2 x 1.5 mm² [1] | 2 | **3ZY1131-2BA00** | | 1 |
| **PC cables and adapters for 3SK2 (essential accessories)** | | | | | |
| 3UF7941-0AA00-0 | **USB PC cables**<br>For connecting to the USB interface of a PC/PG, for communication with 3SK2 through the system interface, recommended for use in connection with 3SK2 | ► | **3UF7941-0AA00-0** | | 1 |
| **Connecting cables for 3SK2 (essential accessory for diagnostics module)** | | | | | |
| 3UF7932-0AA00-0 | For connecting diagnostics module to 3SK2 basic unit | | | | |
| | Central units with expansion modules: ✓ / Diagnostics modules with central unit: ✓ / • 0.025 m (flat) | ► | **3UF7930-0AA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 0.1 m (flat) | ► | **3UF7931-0AA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 0.15 m (flat) NEW | ► | **3UF7934-0AA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 0.3 m (flat) | ► | **3UF7935-0AA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 0.5 m (flat) | ► | **3UF7932-0AA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 0.5 m (round) | ► | **3UF7932-0BA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 1.0 m (round) | ► | **3UF7937-0BA00-0** | | 1 |
| | Central units with expansion modules: -- / Diagnostics modules with central unit: ✓ / • 2.5 m (round) | ► | **3UF7933-0BA00-0** | | 1 |
| **Operating and monitoring modules for 3SK2** | | | | | |
| 3SK2611-3AA00 | **Diagnostics modules**<br>For direct display of errors, e.g. of cross-circuits<br>Note:<br>The 3RK3611-3AA00 MSS diagnostics module cannot be operated on the 3SK2 devices. | 2 | **3SK2611-3AA00** | | 1 |
| **Door adapters for 3SK2** | | | | | |
| 3UF7920-0AA00-0 | For external connection of the system interface, e.g. outside a control cabinet | ► | **3UF7920-0AA00-0** | | 1 |
| **Interface covers for 3SK2** | | | | | |
| 3RA6936-0B | For system interface<br>• Titanium gray | 10 | **3RA6936-0B** | | 1 |
| 3UF7950-0AA00-0 | • Light gray | ► | **3UF7950-0AA00-0** | | 1 |
| **Memory modules for 3SK2** | | | | | |
| 3RK3931-0AA00 | For backing up the complete parameterization of the 3SK2 safety system without a PC/PG through the system interface | 2 | **3RK3931-0AA00** | | 1 |
| **Software for 3SK2** | | | | | |
| 3ZS1316-.C.10-0Y.5 | **SIRIUS Safety ES**<br>Software for configuring, commissioning, operating and diagnosing of 3SK2 and 3RK3, see page 13/162. | | | | |

[1] For 3SK2122 two terminal sets are required.

## Accessories

| | Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) |
|---|---|---|---|---|---|
| **Accessories for enclosures** | | | | | |
| <br>3ZY1321-2AA00 | **Sealing covers**<br>• 17.5 mm<br>(for 3SK1120 and 3SK1220) | 2 | **3ZY1321-1AA00** | | 1 |
| | • 22.5 mm<br>(for all 3SK1 devices except 3SK1120 and 3SK1220) | 2 | **3ZY1321-2AA00** | | 1 |
| <br>3ZY1311-0AA00 | **Push-in lugs**<br>For wall mounting | 2 | **3ZY1311-0AA00** | | 1 |
| <br>3ZY1440-1AA00 | **Coding pins**<br>For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; they enable the mechanical coding of terminals,<br>see Manual "3SK1" | 2 | **3ZY1440-1AA00** | | 1 |
| <br> <br>3ZY1450-1AB00 | **Hinged cover** NEW<br>Replacement cover, without terminal labeling<br>• Titanium gray<br>- 22.5 mm wide<br>(for 3SK1230) | 2 | **3ZY1450-1AB00** | | 1 |
| | • Yellow<br>- 17.5 mm wide<br>(for 3SK1220, 3SK1120) | 2 | **3ZY1450-1BA00** | | 1 |
| <br> <br>3ZY1450-1BB00 | - 22.5 mm wide<br>(for 3SK11 except 3SK1120, 3SK1211, 3SK2112) | 2 | **3ZY1450-1BB00** | | 1 |
| | - 45 mm wide<br>(for 3SK2122) | 2 | **3ZY1450-1BC00** | | 1 |
| **Blank labels** | | | | | |
|  <br>3RT2900-1SB20 | **Unit labeling plates**<br>For SIRIUS devices<br>20 mm x 7 mm, titanium gray[1)] | 20 | **3RT2900-1SB20** | | 100 |
| **Tools for opening spring-type terminals** | | | | | |
| <br>3RA2908-1A | **Screwdrivers**<br>For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated | 2 | **Spring-type terminals (push-in)**<br>**3RA2908-1A** | | 1 |

## Overview

SIRIUS 3TK2810 safety relays

**More information**

Homepage, see www.usa.siemens.com/safety-relays
Industry Mall, see https://mall.industry.siemens.com/mall/en/us/Catalog/Products/8260001

### *3TK2810-0 standstill monitors*

The standstill monitor increases safety in hazardous areas. Without a sensor, it detects motor stoppage from the residual magnetization of the rotating motor. When an adjustable threshold value is undershot, it uses its outputs to allow access to hazardous areas, for example by unlocking a protective door.

### *3TK2810-1 speed monitors*

The speed monitor combines two safety functions in one unit by continuously monitoring machines and plants for standstill and speed.

Through simple parameterization and permanent diagnosis on the display, faults can be quickly remedied at any time – often before they cause plant downtimes.

In addition to standstill and speed monitoring, the unit also features an integrated monitoring function of a protective door with spring-type interlocking. Therefore, an additional evaluation unit is not needed.

### *Article No. scheme*

| Product versions | | Article number | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Safety relays with special functions** | | **3TK2810** | **–** | ☐ | ☐ | **A** | ☐ | ☐ | | | | | | | |
| Device version | Standstill monitor | | | **0** | | | | | | | | | | | |
| | Speed monitor for NPN/PNP proximity switches and encoders | | | **1** | | | | | | | | | | | |
| Type of control supply voltage | 24 V DC | | | | **B** | | | | | | | | | | |
| | 230 V AC, 50/60 Hz | | | | **G** | | | | | | | | | | |
| | 400 V AC, 50/60 Hz | | | | **J** | | | | | | | | | | |
| | 120 ... 240 V AC/DC; 50/60 Hz | | | | **K** | | | | | | | | | | |
| Time delay | 0.2 ... 6 s (standstill) | | | | | | **0** | | | | | | | | |
| | 0 … 999 s (release delay) | | | | | | **4** | | | | | | | | |
| Connection type | Screw terminals | | | | | | | **1** | | | | | | | |
| | Spring-type terminals (push-in) | | | | | | | **2** | | | | | | | |
| Version | Speed monitor for NAMUR proximity switches and encoders | | | | | | | | **–** | **0** | **A** | **A** | **0** | | |
| Example | | **3TK2810** | **–** | **0** | **B** | **A** | **0** | **1** | | | | | | | |

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

### *3TK2810-0 standstill monitors*

- No additional sensors required
- Signaling of faults with diagnostics display
- Standstill time can be set
- Unit can be used with frequency converters

### *3TK2810-1 speed monitors*

- Menu-prompted, easy parameterization
- Direct diagnosis on the display means shorter downtimes thanks to early fault detection
- Integrated protective door monitoring means greater safety because access to the plant is allowed only in the safe state
- Suitable for all standard sensors, i.e. high flexibility

## Technical specifications

**More information**

Operating instructions 3TK2810-0, see
https://support.industry.siemens.com/cs/ww/en/view/25437254
Manual 3TK2810-1, see
https://support.industry.siemens.com/cs/ww/en/view/43707376
Technical specifications, see
https://support.industry.siemens.com/cs/ww/en/ps/16391/td
FAQs, see
https://support.industry.siemens.com/cs/ww/en/ps/16391/faq

| Type | 3TK2810-0 standstill monitors | 3TK2810-1 speed monitors |
|---|---|---|
| **Sensors** | | |
| • Inputs | 3 | 4 |
| • Electronic | -- | 3 |
| • With contacts | -- | 1 |
| • Without sensors (measuring inputs) | 3 | -- |
| • Magnetically operated switch (Reed contacts) | -- | -- |
| **Safety mats** | -- | -- |
| **Start** | | |
| • Auto | ✓ | ✓ |
| • Monitored | -- | ✓ |
| **Cascading input 24 V DC** | -- | -- |
| **Key-operated switch** | -- | -- |
| **Enabling circuit, floating** | | |
| • Stop category 0 | 3 NO + 1 NC | 2 |
| • Stop category 1 | -- | -- |
| **Enabling circuit, electronic** | | |
| • Stop category 0 | -- | -- |
| • Stop category 1 | -- | -- |

| Type | 3TK2810-0 standstill monitors | 3TK2810-1 speed monitors |
|---|---|---|
| **Signaling outputs** | | |
| • Floating | 1 CO | -- |
| • Electronic | 2 | 2 |
| **Standards** | IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508 | IEC 60947-5-1, EN ISO 13849-1, IEC 60204-1, IEC 61508 |
| **Test certificates** | TÜV, UL, CSA | TÜV, UL, CSA |
| **SIL level max. acc. to IEC 61508** | 3 | 3 |
| **Performance level PL acc. to EN ISO 13849-1** | e | e |
| **Probability of a dangerous failure per hour ($PFH_d$)** | 1.5 x $10^{-8}$ 1/h | 3.38 x $10^{-9}$ 1/h |
| **Rated control supply voltage** | | |
| • 24 V DC | ✓ | ✓ |
| • 230 V AC | ✓ | -- |
| • 400 V AC | ✓ | -- |
| • 120 ... 240 V AC/DC | -- | ✓ |

✓ Available
-- Not available

## Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit

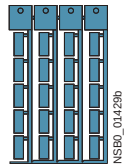
3TK2810-0BA01

3TK2810-0GA02

3TK2810-1BA41

| Rated control supply voltage $U_s$ | Times | SD | Screw terminals | | SD | Spring-type terminals | |
|---|---|---|---|---|---|---|---|
| | | | Article No. | Price per PU | | Article No. | Price per PU |
| V | s | d | | | d | | |
| **Standstill monitors** | | | | | | | |
| **3TK2810-0** | | | | | | | |
| • 24 DC | 0.2 ... 6 (standstill) | 5 | **3TK2810-0BA01** | | 15 | **3TK2810-0BA02** | |
| • 230 AC | 0.2 ... 6 (standstill) | 15 | **3TK2810-0GA01** | | 15 | **3TK2810-0GA02** | |
| • 400 AC | 0.2 ... 6 (standstill) | 15 | **3TK2810-0JA01** | | 15 | **3TK2810-0JA02** | |
| **Speed monitors** | | | | | | | |
| **3TK2810-1 for NPN/PNP proximity switches and encoders** | | | | | | | |
| • 24 DC | 0 ... 999 (release delay) | 2 | **3TK2810-1BA41** | | 2 | **3TK2810-1BA42** | |
| • 120 ... 240 AC/DC | 0 ... 999 (release delay) | 5 | **3TK2810-1KA41** | | 5 | **3TK2810-1KA42** | |
| **3TK2810-1 for NAMUR proximity switches and encoders** | | | | | | | |
| • 24 DC | 0 ... 999 (release delay) | 5 | **3TK2810-1BA41-0AA0** | | 5 | **3TK2810-1BA42-0AA0** | |
| • 120 ... 240 AC/DC | 0 ... 999 (release delay) | 5 | **3TK2810-1KA41-0AA0** | | 5 | **3TK2810-1KA42-0AA0** | |

## Selection and ordering data

| | Use | Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Blank labels** | | | | | | | |
|  3RT1900-1SB20 | For 3TK28 | **Unit labeling plates** For SIRIUS devices | | | | | |
| | | 20 mm x 7 mm, pastel turquoise | 20 | **3RT1900-1SB20** | | 100 | 340 units |
| | For 3TK28 | **Adhesive labels** For SIRIUS devices | | | | | |
| | | • 19 mm x 6 mm, pastel turquoise | 15 | **3RT1900-1SB60** | | 100 | 3 060 units |
| | | • 19 mm x 6 mm, zinc yellow | 15 | **3RT1900-1SD60** | | 100 | 3 060 units |
| **Push-in lugs and covers** | | | | | | | |
| 3RP1903 | For 3TK28 | **Push-in lugs** For screw fixing, 2 units required per device | 5 | **3RP1903** | | 1 | 10 units |
| **Adapters and connection cables for speed monitors** | | | | | | | |
| | For 3TK2810-1 | **Adapters** For connecting encoders of type Siemens/Heidenhain | | | | | |
| 3TK2810-1A | | • 15-pole | 2 | **3TK2810-1A** | | 1 | 1 unit |
| 3TK2810-1B | | • 25-pole | 2 | **3TK2810-1B** | | 1 | 1 unit |
| 3TK2810-0A | For 3TK2810-1 | **Connection cables** For connecting the speed monitor to the 3TK2810-1A or 3TK2810-1B adapter | 15 | **3TK2810-0A** | | 1 | 1 unit |
| **Tools for opening spring-type terminals** | | | | | | | |
| | | | | **Spring-type terminals** | | | |
| 3RA2908-1A | For auxiliary circuit connections | **Screwdrivers** For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | | 1 | 1 unit |

## Overview

SIRIUS 3RK3 Modular Safety System

**More information**

Industry Mall, see
https://mall.industry.siemens.com/mall/en/us/Catalog/Products/10041776

The 3RK3 Modular Safety System (MSS) is a freely configurable modular safety relay. Depending on the external circuit version, safety-related applications up to performance level e according to EN ISO 13849-1 or SIL 3 according to IEC 62061 can be realized.

The modular safety relay enables the interconnection of several safety applications.

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

The MSS comprises the following system components:

- Central units
- Expansion modules
- Interface modules
- Diagnostics modules
- Parameterization software
- Accessories

### *Central units*

MSS Basic

The 3RK3 Basic central unit is used wherever several safety functions need to be evaluated and the wiring parameterization of safety relays would involve significant cost and effort. It reads in inputs, controls outputs and communicates through an interface module with higher-level control systems. An application's entire safety program is processed in the central unit. The 3RK3 Basic central unit is the lowest expansion level and fully functional on its own, without the optional expansion modules.

MSS Advanced

The 3RK3 Advanced central unit is the logical expansion of the Basic central unit with the functionality of an AS-i safety monitor. In addition to having a larger volume of project data and scope of functionality it can be integrated in AS-Interface and therefore make use of the many different possibilities offered by this bus system. The function can be optionally activated in the central unit.

The service-proven insulation piercing method of AS-Interface enables not only the distributed expansion of the project data volume using safe AS-i outputs, safe AS-i sensors and other MSS Advanced or safety monitors (F cross traffic) but also a highly flexible adaptation of the application, e.g. very fast connection of AS-i outputs, EMERGENCY STOP command devices, position switches with and without tumbler, or light curtains.

Safety-related disconnection using MSS or by distributed means using safe AS-i outputs and the formation of switch-off groups can be realized very easily. The same applies for any subsequent modifications. They are now possible by simply readdressing, meaning that rewiring is no longer necessary.

The AS-i bus is connected directly to the central unit.

MSS ASIsafe

The MSS ASIsafe basic and MSS ASIsafe extended central units are a logical development of the AS-i safety monitors based on the 3RK3 Modular Safety System.

Like MSS Advanced, MSS ASIsafe detects – in a comparable way to the safety monitors – safe sensor technology on the AS-i bus and switches actuators off in a safety-related manner via a configurable safety logic. It stands out by virtue of its greater project data volume, wider range of functions and the possibility of increasing the integrated I/O project data volume by means of expansion modules from the MSS system family. In this case the range of functions, such as the number and type of the logic elements that can be interconnected, is equivalent to that of MSS Advanced.

### *Expansion modules*

With the optional expansion modules, both safety-related and standard, the system is flexibly adapted to the required safety applications.

### *Interface modules*

The DP interface module is used for transferring diagnostics data and device status data to a higher-level PROFIBUS network, e.g. for purposes of visualization using HMI. When using the Basic central unit, 32-bit cyclic data can be exchanged with the control system. If an Advanced/ASIsafe central unit is used, the number is doubled to 64-bit cycle data. In acyclic mode, both central units can call up diagnostic data.

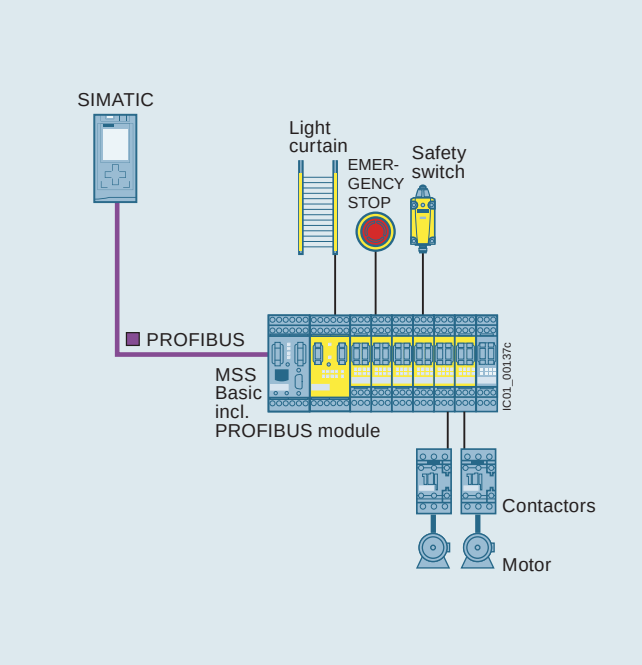
### *Diagnostics modules*

Actuated sensors or faults, e.g. cross-circuit, are indicated directly on the diagnostics display. The fault is diagnosed directly in plain text by the detailed alarm message. The device is fully functional upon delivery. No programming is required.

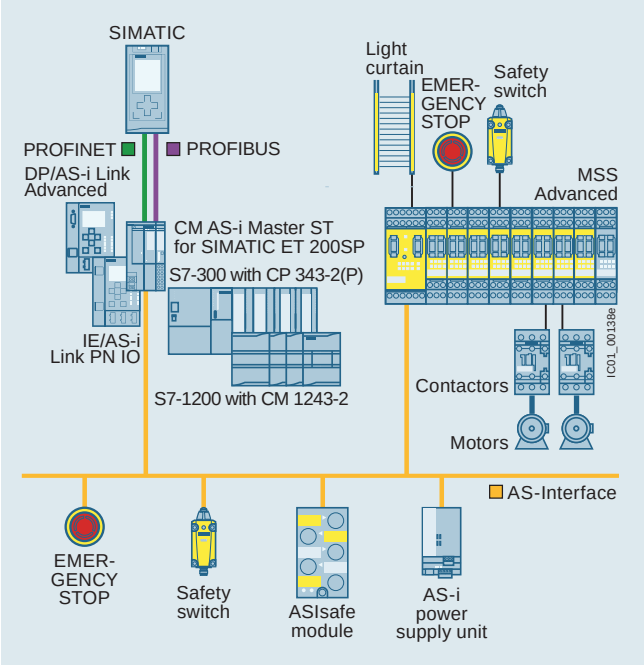
### *Parameterization software*

Using the SIRIUS Safety ES graphical parameterization tool, it is very easy to create the safety functions as well as their logical links on the PC. You can define disconnection ranges, ON-delays, OFF-delays and other dependencies for example.

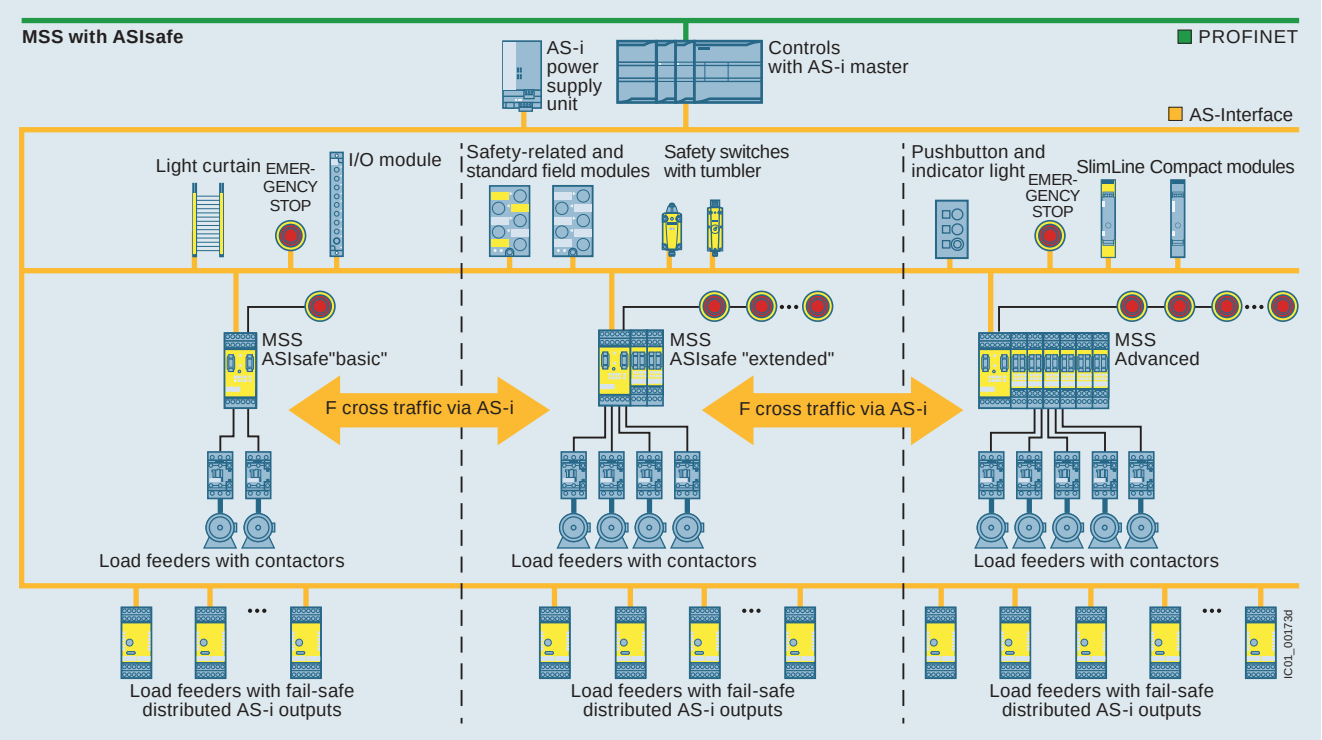
SIRIUS Safety ES also offers comprehensive functions for diagnostics and commissioning. Documentation of the MSS hardware configuration and the parameterized logic is created automatically.




System design of MSS with Basic central unit




System design of MSS with Advanced central unit




System design of MSS as a combination of various central units with AS-Interface

***Article No. scheme***

| Product versions | | Article number |
|---|---|---|
| **Basic units** | | **3RK3 1 □ □ – □ A □ □ 0** |
| Device variants | 3RK3 Basic | **1 1** |
| | 3RK3 ASIsafe "basic" variant | **2 1** |
| | 3RK3 ASIsafe "extended" variant | **2 2** |
| | 3RK3 Advanced | **3 1** |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals | **2** |
| Communication 1 | None | **A** |
| | AS-Interface without master | **C** |
| Communication 2 | 3RK3122: max. 2 expansion modules can be connected | **0** |
| | 3RK3131: max. 9 expansion modules can be connected | **1** |
| Example | | **3RK3 1 1 1 – 1 A A 1 0** |

| Product versions | | Article number |
|---|---|---|
| **Expansion modules with safe inputs/outputs** | | **3RK3 2 □ □ – □ A A 1 0** |
| Device variants | 4/8 F-DI | **1 1** |
| | 2/4 F-DI 1/2 F-RO | **2 1** |
| | 2/4 F-DI 2 F-DO | **3 1** |
| | 4 F-DO | **4 2** |
| | 4/8 F-RO | **5 1** |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals | **2** |
| Example | | **3RK3 2 1 1 – 1 A A 1 0** |

| Product versions | | Article number |
|---|---|---|
| **Expansion modules with standard inputs/outputs** | | **3RK3 3 □ □ – □ A A 1 0** |
| Device variants | 8 DO | **1 1** |
| | 8 DI | **2 1** |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals | **2** |
| Example | | **3RK3 3 1 1 – 1 A A 1 0** |

| Product versions | | Article number |
|---|---|---|
| **DP interface modules** | | **3RK3 5 1 1 – □ B A 1 0** |
| Connection type | Screw terminals | **1** |
| | Spring-type terminals | **2** |
| Example | | **3RK3 5 1 1 – 1 B A 1 0** |

Note:

The Article No. schemes show an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Benefits

- More functionality and flexibility through freely configurable safety logic
- Suitable for all safety applications thanks to compliance with the highest safety standards in production automation
- For use all over the world through compliance with all product-relevant, globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- Removable terminals for greater plant availability
- Distributed detection of sensors and disconnection of actuators through AS-Interface
- All logic functions can also be used for AS-Interface, e.g. muting, protective door with tumbler
- Up to 12 independent safe switch-off groups on the AS-i bus
- Volume of project data can be greatly increased by means of AS-Interface
- Up to 50 two-channel enabling circuits per system

### *Communication via PROFIBUS*

The 3RK3 Modular Safety System can be connected to PROFIBUS through the DP interface and exchange data with higher-level control systems.

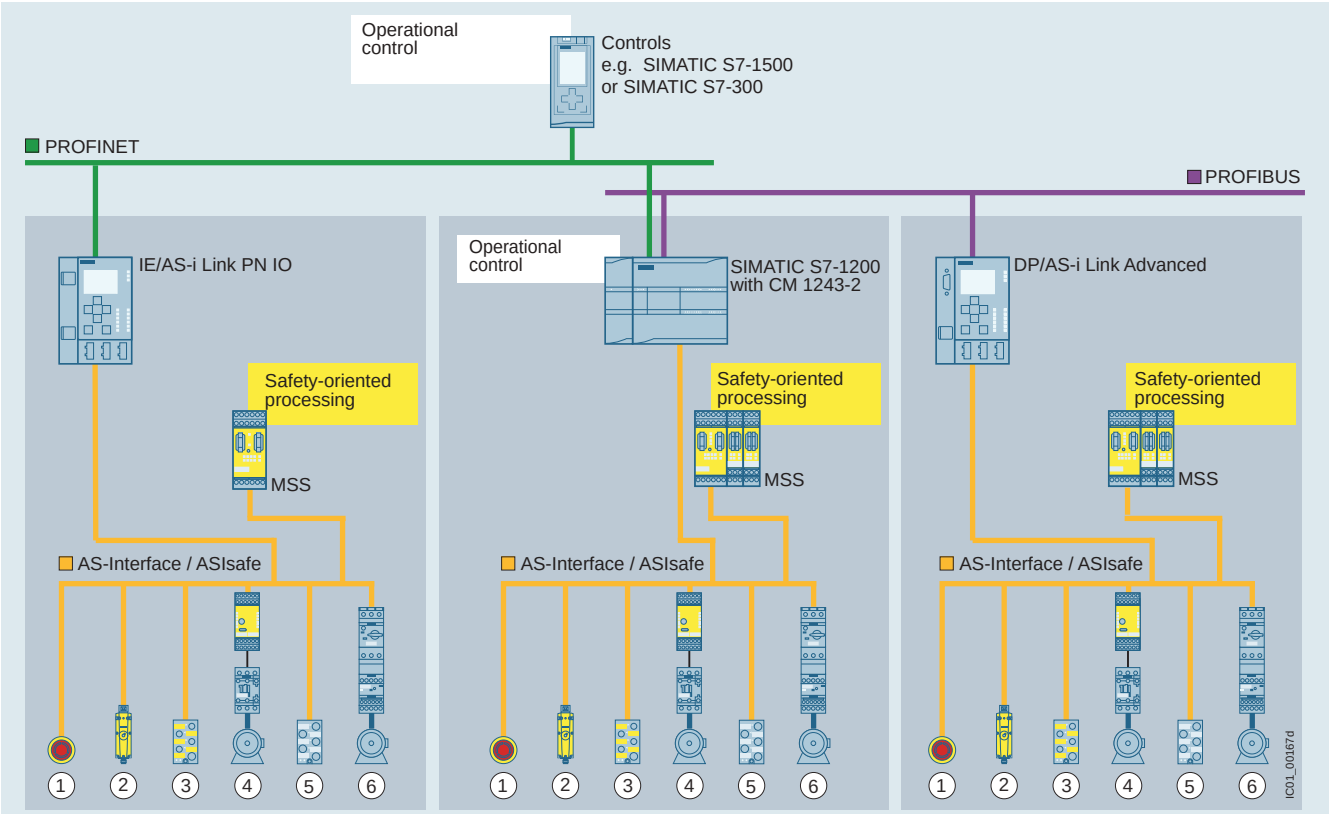
The MSS supports among other things:

- Baud rates up to 12 Mbps
- Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data with MSS Basic or 64-bit cyclic data with MSS Advanced/MSS ASIsafe
- Diagnostics using data record invocations

### *AS-Interface communication*

Using the Advanced and ASIsafe "basic" and "extended" central units, the 3RK3 Modular Safety System can be integrated in AS-Interface.

- MSS can read and evaluate the I/O data of up to 31 AS-i modules
- Up to 12 safe output signals per MSS can be placed on the AS-i bus for switching safe AS-i output modules or for fail-safe cross traffic between multiple MSS stations
- Safe cross traffic between multiple MSS stations or between one MSS and AS-i safety monitors
- Standard signals, e.g. for acknowledgment, can also be output on the AS-i bus




1 Safe EMERGENCY STOP
2 Safe position switch with tumbler
3 Field module
4 Load feeder with safe AS-i outputs
5 Digital K45 field module
6 3RA2 load feeder

Integration of the MSS into AS-Interface

Notes:

MSS with communication function, see page 13/159 onwards.
Accessories, see page 13/161 onwards.
SIRIUS Safety ES, see page 13/162.

## Application

The 3RK3 Modular Safety System can be used for all safety-related requirements in the manufacturing industry and offers the following safety functions:

| | Symbol | MSS Basic | MSS Advanced, MSS ASIsafe |
|---|---|---|---|
| ***Monitoring functions*** | | | |
| **Universal monitoring**<br>Evaluation of any binary signals from single-channel and two-channel sensors | | -- | ✓ |
| **EMERGENCY STOP**<br>Evaluation of EMERGENCY STOP devices with positive-opening contacts | | ✓ | ✓ |
| **Safety shutdown mat**<br>Evaluation of switching mats with NC contacts and/or crossover detection | | ✓ | ✓ |
| **Protective door monitoring**<br>Evaluation of protective door signals and/or protective flap signals | | ✓ | ✓ |
| **Protective door tumbler mechanism**<br>Evaluation of protective doors with tumbler and of the actuation/release of this tumbler | | -- | ✓ |
| **Approval switches**<br>Evaluation of OK buttons with NO contact | | ✓ | ✓ |
| **Two-hand operator controls**<br>Evaluation of two-hand operator controls | | ✓ | ✓ |
| **ESPE monitoring**<br>Evaluation of non-contact protective devices, e.g. light curtains and laser scanners | | ✓ | ✓ |
| **Muting**<br>Temporary bridging of non-contact protective devices, 2/4 sensors in parallel, 4 sensors in sequence | | -- | ✓ |
| **Mode selector switches**<br>Evaluation of operating mode selector switches with NO contacts | | ✓ | ✓ |
| **Monitoring AS-i (AS-i 2F-DI)**<br>Logic element for monitoring of AS-i input slaves | | -- | ✓ |

| | Symbol | MSS Basic | MSS Advanced, MSS ASIsafe |
|---|---|---|---|
| ***Logic operation functions*** | | | |
| **AND** | | ✓ | ✓ |
| **OR** | | ✓ | ✓ |
| **XOR** | | ✓ | ✓ |
| **NAND** | | ✓ | ✓ |
| **NOR** | | ✓ | ✓ |
| **Negation** | | ✓ | ✓ |
| **Flip-flop** | | ✓ | ✓ |
| ***Counting functions*** | | | |
| **Counter 0 -> 1** | | ✓ | ✓ |
| **Counter 1 -> 0** | | ✓ | ✓ |
| **Counter 0 -> 1/1-> 0** | | ✓ | ✓ |
| ***Timer functions*** | | | |
| **With ON-delay** | | ✓ | ✓ |
| **Passing make contact** | | ✓ | ✓ |
| **With OFF-delay** | | ✓ | ✓ |
| **Clock-pulsing** | | ✓ | ✓ |
| ***Start functions*** | | | |
| **Monitored start** | | ✓ | ✓ |
| **Manual start** | | ✓ | ✓ |
| ***Output functions*** | | | |
| **Standard output** | | ✓ | ✓ |
| **F output** | | ✓ | ✓ |
| **AS-i output function** | | -- | ✓ |
| ***Status functions*** | | | |
| **Element status** | | -- | ✓ |

✓ Available
-- Not available

## Technical specifications

**More information**

Manual, see
https://support.industry.siemens.com/cs/ww/en/view/26493228
Technical specifications, see
https://support.industry.siemens.com/cs/ww/en/ps/16392/td

FAQs, see
https://support.industry.siemens.com/cs/ww/en/ps/16392/faq

### *Central units and expansion modules*

| Type | | Central units | | | | Expansion modules | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Basic | Advanced | ASIsafe basic | ASIsafe extended | 4/8F-DI | 2/4 F-DI 1/2 F-RO | 2/4 F-DI 2F-DO | 4/8 F-RO | 4 F-DO | 8 DI | 8 DO |
| Dimensions (W x H x D) | | | | | | | | | | | | |
| • Screw terminals | mm | 45 x 111 x 124 | | | | 22.5 x 111 x 124 | | | 45 x 111 x 124 | 22.5 x 111 x 124 | | |
| • Spring-type terminals | mm | 45 x 113 x 124 | | | | 22.5 x 113 x 124 | | | 45 x 113 x 124 | 22.5 x 113 x 124 | | |
| **Device data** | | | | | | | | | | | | |
| **Shock resistance (sine pulse)** | *g*/ms | 15/11 | | | | | | | | | | |
| **Touch protection** acc. to IEC 60529 | | IP20 | | | | | | | | | | |
| **Permissible mounting position** | | Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature | | | | | | | | | | |
| **Minimum distances** | | For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom) | | | | | | | | | | |
| **Permissible ambient temperature** | | | | | | | | | | | | |
| • During operation | °C | -20 ... +60 | | | | | | | | | | |
| • During storage and transport | °C | -40 ... +85 | | | | | | | | | | |
| **Number of sensor inputs (single-channel)** | | | | | | | | | | | | |
| • Fail-safe | | 8 | 8 | 2 | 4 | 8 | 4 | 4 | -- | -- | -- | -- |
| • Not fail-safe | | -- | -- | 6 | 4 | -- | -- | -- | -- | -- | 8 | -- |
| **Number of test outputs** | | 2 | | | | | | | -- | | | |
| **Number of outputs** | | | | | | | | | | | | |
| • Relay outputs | | | | | | | | | | | | |
| - Single-channel | | -- | -- | -- | -- | -- | 2 | -- | 8 | -- | -- | -- |
| - Two-channel | | 1 | 1 | 1 | 1 | -- | -- | -- | -- | -- | -- | -- |
| • Electronic outputs | | | | | | | | | | | | |
| - Single-channel | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8 |
| - Two-channel | | 1 | 1 | 1 | 1 | -- | -- | 2 | -- | 4 | -- | -- |
| **Weight** | g | 300 | | | | 160 | | | 400 | 135 | 125 | 160 |
| **Installation altitude above sea level** | m | 2 000 | | | | | | | | | | |
| **Environmental data** | | | | | | | | | | | | |
| **EMC interference immunity** | | IEC 60947-5-1 | | | | | | | | | | |
| **Vibrations** | | | | | | | | | | | | |
| • Frequency | Hz | 5 ... 500 | | | | | | | | | | |
| • Amplitude | mm | 0.75 | | | | | | | | | | |
| **Climatic withstand capability** | | IEC 60068-2-78 | | | | | | | | | | |

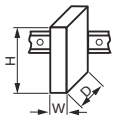
## General data

| Type | | Central units | | | | Expansion modules | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Basic | Advanced | ASIsafe basic | ASIsafe extended | 4/8 F-DI | 2/4 F-DI 1/2 F-RO | 2/4 F-DI 2 F-DO | 4/8 F-RO | 4 F-DO | 8 DI | 8 DO |
| **Electrical specifications** | | | | | | | | | | | | |
| **Rated control supply voltage $U_S$** acc. to IEC 61131-2 | V | 24 DC ± 15%[1] | | | | | | | | | | |
| **Operating range** | | 0.85 ... 1.15 x $U_S$ | | | | | | | | | | |
| **Rated insulation voltage $U_i$** | V | 300 | | | | 50 | 300 | 50 | 300 | 50 | | |
| **Rated impulse voltage $U_{imp}$** | kV | 4 | | | | 0.5 | 4 | 0.5 | 4 | 0.5 | | |
| **Total current input** | mA | 185 | | | | 60 | 85 | | 140 | 8 | 78 | 60 |
| **Rated power at $U_S$** | W | 4.5 | | | | 1.5 | 2 | | 3 | 4.8 | 1.9 | 1.5 |
| **Utilization category** acc. to IEC 60947-5-1 Relay outputs | | | | | | | | | | | | |
| • AC-15 at 230 V | A | 2 | | | | -- | 2 | -- | 2 | -- | -- | -- |
| • DC-13 at 24 V | A | 1 | | | | -- | 1 | -- | 1 | -- | -- | -- |
| Semiconductor outputs | | | | | | | | | | | | |
| • DC-13 at 24 V | A | 1.5 | | | | -- | -- | 1.2 | -- | 2 | -- | 0.5 |
| **Mechanical endurance** During rated operation | Operating cycles (relay) | $10 \times 10^6$ | | | | -- | $10 \times 10^6$ | -- | $10 \times 10^6$ | -- | | |
| **Switching frequency z** At rated operational current | 1/h | 1 000 | | | | -- | 1 000 | | 360 | 1 000 | -- | 1 000 |
| **Conventional thermal current $I_{th}$** | A | 2/1.5 | | | | -- | 1 | 1.2 | 3 | 2 | -- | 0.5 |
| **Protection for output contacts** Fuse links LV HRC type 3NA, DIAZED type 5SB, NEOZED type 5SE | | | | | | | | | | | | |
| • Operational class gG | A | 4 | | | | -- | 4 | -- | 4 | -- | | |
| • Operational class quick | A | 6 | | | | -- | 6 | -- | 6 | -- | | |
| **Safety specifications** | | | | | | | | | | | | |
| **Probability of a dangerous failure** | | | | | | | | | | | | |
| • per hour ($PFH_d$) | 1/h | $5.14 \times 10^{-9}$ | $3.8 \times 10^{-9}$ with AS-i, $2.8 \times 10^{-9}$ without AS-i | | | $1.89 \times 10^{-9}$ | $3.79 \times 10^{-9}$ | $2.7 \times 10^{-9}$ | $7.15 \times 10^{-9}$ | $3.18 \times 10^{-9}$ | -- | |
| • On demand (PFD) | | $1.28 \times 10^{-5}$ | $1.7 \times 10^{-4}$ | | | $4.29 \times 10^{-6}$ | $5.85 \times 10^{-6}$ | $8.34 \times 10^{-6}$ | $4.36 \times 10^{-5}$ | $2.2 \times 10^{-5}$ | -- | |
| **Parameters for cables** | | | | | | | | | | | | |
| **Line resistance** | Ω | 100 | | | | | | | -- | | 100 | -- |
| **Cable length from terminal to terminal** With Cu 1.5 $mm^2$ and 150 nF/km | m | 1 000 | | | | | | | -- | | 1 000 | -- |
| **Conductor capacity** | nF | 330 | | | | | | | -- | | 330 | -- |

[1] Device current supply through a power supply unit according to IEC 60536 protection class III (SELV or PELV).

## General data

### *Interface and diagnostics modules*

| Type | | Interface modules | Diagnostics modules |
|---|---|---|---|
| Dimensions (W x H x D)   | | | |
| • Screw terminals | mm | 45 x 111 x 124 | 96 x 60 x 44 |
| • Spring-type terminals | mm | 45 x 113 x 124 | -- |
| **Device data** | | | |
| **Shock resistance (sine pulse)** | *g*/ms | 15/11 | |
| **Touch protection** acc. to IEC 60529 | | IP20 | |
| **Permissible mounting position** | | Vertical mounting surface (+10°/-10°),<br>deviating mounting positions are permitted for reduced ambient temperature | |
| **Minimum distances** | | For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom) | |
| **Permissible ambient temperature** | | | |
| • During operation | °C | -20 ... +60 | |
| • During storage and transport | °C | -40 ... +85 | |
| **Weight** | g | 270 | 90 |
| **Installation altitude above sea level** | m | 2 000 | |
| **Environmental data** | | | |
| **EMC interference immunity** | | IEC 60947-5-1 | |
| **Vibrations** | | | |
| • Frequency | Hz | 5 ... 500 | |
| • Amplitude | mm | 0.75 | |
| **Climatic withstand capability** | | IEC 60068-2-78 | |
| **Electrical specifications** | | | |
| **Rated control supply voltage $U_s$** acc. to IEC 61131-2 | V | 24 DC ± 15% | 24 DC ± 15% via connecting cable to the central unit |
| **Operating range** | | 0.85 ... 1.15 x $U_s$ | |
| **Rated insulation voltage $U_i$** | V | 50 | |
| **Rated impulse voltage $U_{imp}$** | kV | 0.5 | |
| **Total current input** | mA | -- | 24 |
| **Rated power at $U_s$** | W | -- | 0.6 |

## Selection and ordering data

3RK3111-1AA10

3RK3121-1AC00
3RK3122-1AC00
3RK3131-1AC10

| Version | SD<br>d | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| **3RK31 central units** | | | | | |
| ***3RK3 Basic***<br>Central units with safety-related inputs and outputs<br>• 8 fail-safe inputs<br>• 1 two-channel relay output<br>• 1 two-channel electronic output<br>Max. 7 expansion modules can be connected<br>Note:<br>Memory module 3RK3931-0AA00 is included in the scope of supply. | 2 | **3RK3111-☐AA10** | | 1 | 1 unit |
| ***3RK3 Advanced***<br>Central units for connecting to AS-Interface with safety-related inputs and outputs and extended functional scope<br>• 8 fail-safe inputs<br>• 1 two-channel relay output<br>• 1 two-channel electronic output<br>Max. 9 expansion modules can be connected<br>Note:<br>Memory module 3RK3931-0AA00 is included in the scope of supply. | 2 | **3RK3131-☐AC10** | | 1 | 1 unit |
| ***3RK3 ASIsafe***<br>Central units for connecting to AS-Interface with safety-related inputs and outputs and extended functional scope<br>• 1 two-channel relay output<br>• 1 two-channel electronic output | | | | | |
| **"Basic" version**<br>• 2 fail-safe inputs<br>• 6 non-fail-safe inputs<br>No expansion modules can be connected | 2 | **3RK3121-☐AC00** | | 1 | 1 unit |
| **"Extended" version**<br>• 4 fail-safe inputs<br>• 4 non-fail-safe inputs<br>Max. 2 expansion modules can be connected<br>Note:<br>Memory module 3RK3931-0AA00 is included in the scope of supply. | 2 | **3RK3122-☐AC00** | | 1 | 1 unit |
| **Type of electrical connection**<br>• Screw terminals<br>• Spring-type terminals (push-in) | | **1**<br>**2** | | | |

## Selection and ordering data

3RK3211-1AA10
3RK3221-1AA10
3RK3231-1AA10
3RK3242-1AA10

3RK3251-1AA10

3RK3311-1AA10
3RK3321-1AA10

3RK3511-1BA10

3RK2511-1FA10

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **3RK32, 3RK33 expansion modules** | | | | | |
| **4/8 F-DI**<br>Safety-related input module<br>• 8 inputs | 2 | **3RK3211-☐AA10** | | 1 | 1 unit |
| **2/4 F-DI 1/2 F-RO**<br>Safety-related input/output module<br>• 4 inputs<br>• 2 single-channel relay outputs | 2 | **3RK3221-☐AA10** | | 1 | 1 unit |
| **2/4 F-DI 2F-DO**<br>Safety-related input/output module<br>• 4 inputs<br>• 2 two-channel electronic outputs | 2 | **3RK3231-☐AA10** | | 1 | 1 unit |
| **4/8 F-RO**<br>Safety-related output module<br>• 8 single-channel relay outputs | 2 | **3RK3251-☐AA10** | | 1 | 1 unit |
| **4 F-DO**<br>Safety-related output module<br>• 4 two-channel electronic outputs | 2 | **3RK3242-☐AA10** | | 1 | 1 unit |
| **8 DI**<br>Standard input module<br>• 8 inputs | 2 | **3RK3321-☐AA10** | | 1 | 1 unit |
| **8 DO**<br>Standard output module<br>• 8 electronic outputs | 2 | **3RK3311-☐AA10** | | 1 | 1 unit |
| **3SK25 and 3RK35 interface modules** | | | | | |
| **PROFINET interface**<br>PROFINET interface for safety relay 3SK2 from E05 and 3RK312/3RK313 from E04 PROFINET IO interface 100 Mbps, RJ45 22.5 mm width parameter assignment via Safety ES without connection cable | 2 | **3SK2511-☐FA10** | | 1 | 1 unit |
| **DP interface**<br>PROFIBUS DP interface, 12 Mbps, RS 485, 32-bit cyclic data exchange with Basic central unit or 64-bit with Advanced and ASIsafe central unit, acyclic exchange of diagnostics data | 2 | **3RK3511-☐BA10** | | 1 | 1 unit |
| **Type of electrical connection**<br>• Screw terminals<br>• Spring-type terminals (push-in) | | **1**<br>**2** | | | |

Notes:

For the required connection cable, see page 13/161.

## Selection and ordering data

| Version | | | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | d | | | | |
| **Connection cables (essential accessory)** | | | | | | | |
| For connection of | | | | | | | |
| Central units with expansion modules or interface module | Diagnostics modules with central unit or interface module | Length | | | | | |
| 3UF7932-0AA00-0 | | | | | | | |
| ✓ | ✓ | • 0.025 m (flat) | ► | **3UF7930-0AA00-0** | | 1 | 1 unit |
| -- | ✓ | • 0.1 m (flat) | ► | **3UF7931-0AA00-0** | | 1 | 1 unit |
| -- | ✓ | • 0.15 m (flat) NEW | ► | **3UF7934-0AA00-0** | | 1 | 1 unit |
| -- | ✓ | • 0.3 m (flat) | ► | **3UF7935-0AA00-0** | | 1 | 1 unit |
| -- | ✓ | • 0.5 m (flat) | ► | **3UF7932-0AA00-0** | | 1 | 1 unit |
| -- | ✓ | • 0.5 m (round) | ► | **3UF7932-0BA00-0** | | 1 | 1 unit |
| -- | ✓ | • 1.0 m (round) | ► | **3UF7937-0BA00-0** | | 1 | 1 unit |
| -- | ✓ | • 2.5 m (round) | ► | **3UF7933-0BA00-0** | | 1 | 1 unit |
| **Operating and monitoring modules for 3RK3** | | | | | | | |
| 3SK2611-3AA00 | | **Diagnostics modules** For direct display of errors, e.g. of cross-circuits | 2 | **3SK2611-3AA00** | | 1 | 1 unit |
| **PC cables and adapters** | | | | | | | |
| 3UF7941-0AA00-0 | | **USB PC cables** For connecting to the USB interface of a PC/PG, for communication with 3RK3 through the system interface, recommended for use in connection with 3RK3 | ► | **3UF7941-0AA00-0** | | 1 | 1 unit |
| **Door adapter** | | | | | | | |
| 3UF7920-0AA00-0 | | For external connection of the system interface, e.g. outside a control cabinet | ► | **3UF7920-0AA00-0** | | 1 | 1 unit |
| **Interface covers** | | | | | | | |
| 3UF7950-0AA00-0 | | For system interface | ► | **3UF7950-0AA00-0** | | 1 | 5 units |
| **Memory modules** | | | | | | | |
| 3RK3931-0AA00 | | For backing up the complete parameterization of the 3RK3 Modular Safety System without a PC/PG through the system interface | 2 | **3RK3931-0AA00** | | 1 | 1 unit |
| **Push-in lugs** | | | | | | | |
| 3RP1903 | | For screw fixing, e.g. on mounting plate, 2 units required per device Can be used for 3RK3 | 5 | **3RP1903** | | 1 | 10 units |
| **Software for 3RK3** | | | | | | | |
| 3ZS1316-.C.10-0Y.5 | | **SIRIUS Safety ES** Software for configuring, commissioning, operating and diagnosing of 3SK2 and 3RK3, see page 13/162. | | | | | |

✓ Available
-- Not available

## Overview

**More information**

Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/21192/td

Programming and Operating Manual, see https://support.industry.siemens.com/cs/ww/en/view/109444445.

SIRIUS Safety ES is the engineering software for the configuration, startup and diagnostics of the 3RK3 Modular Safety System and 3SK2 safety relays. The software combines the configuring of the hardware, the parameterization of the safety functions, and the testing and diagnostics of the safety system.

### *Efficient engineering with three program versions*

The SIRIUS Safety ES software program is available in three versions which differ in their user-friendliness, scope of functions and price.

| SIRIUS Safety ES | Basic | Standard | Premium |
|---|---|---|---|
| Access via the local interface on the device | ✓ | ✓ | ✓ |
| Parameter assignment | ✓ | ✓ | ✓ |
| Operating | ✓ | ✓ | ✓ |
| Diagnostics | ✓ | ✓ | ✓ |
| Test | -- | ✓ | ✓ |
| Integrated graphics editor | ✓ | ✓ | ✓ |
| Importing/exporting parameters | -- | ✓ | ✓ |
| Comparison functions | -- | ✓ | ✓ |
| Comfort functions | -- | ✓ | ✓ |
| Terminal designator | -- | ✓ | ✓ |
| Work on sub-diagrams | -- | ✓ | ✓ |
| Standard-compliant printout according to EN ISO 7200 | ✓ | ✓ | ✓ |
| Downloading parameterization via PROFIBUS | -- | -- | ✓ |
| Online diagnostics using PROFIBUS | -- | -- | ✓ |
| Creating, importing and exporting macros | -- | -- | ✓ |

✓ Function available

-- Function not available

### *Additional functions*

Language selection

The program interface language can be switched during use between German, English and French

Help function

A context-sensitive help function provides useful assistance with questions concerning the use of the program

Consistency check

A consistency check provides clear information about function assignment errors and users are taken directly to errors when the corresponding message is clicked on. Checks are carried out automatically when a project is saved and during the configuration test, but they can also be initiated manually.

Lists

Lists of symbols and cross-references can be issued for effective processing of the project file

Standard-compliant printouts

The programs of the SIRIUS ES software family make machine documentation far easier. They enable parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.

### *Hardware configuration*

The device configuration of the 3RK3 or 3SK2 systems is defined in the configuration dialog. The available modules are simply selected from the clearly laid out hardware catalog and positioned in the workspace. Depending on the device system used (3RK3 or 3SK2), only the permitted devices are shown in the hardware catalog in each case. In addition, in the case of the 3RK3, the quantity framework on the AS-i bus can be determined online or configured manually from the AS-i library. For each module, it is optionally possible to issue an equipment ID which is shown in the logic diagram for identification of the inputs and outputs.

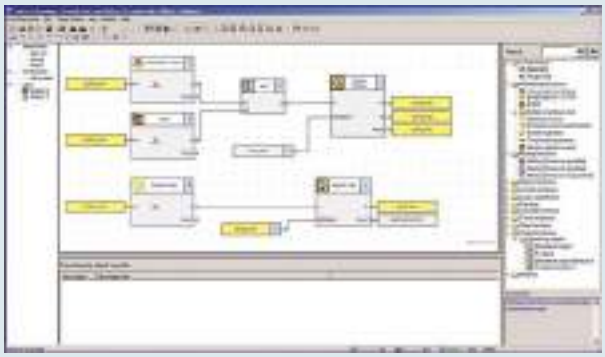
Definition of the hardware layout

### *Graphic parameterizing of the safety logic via drag & drop*

The functionality of the safety logic is laid down with a graphics editor designed for intuitive operation. Safe monitoring functions (EMERGENCY STOP, non-contact protective devices/light arrays, protective doors, etc.), output functions and logic functions (AND/OR operations, counting function, time functions, etc.), non-safety-related input/output functions, device status functions and control functions can be dragged from the extensive functions catalog onto the work interface by drag & drop. Depending on the version, each function has several input and output connecting points through which the functions can be interconnected by simple mouse clicks. Double-clicking on a function symbol opens the related features dialog window in which all the parameters can be displayed and configured: Scope of the function's inputs and outputs, configuring the channel type (single-/two-channel, NC contact/NO contact), activating crossover detection, defining start options, assigning the hardware inputs and outputs, etc. Of course each function can be issued with an individual name so that e.g. the position of a safety switch in the plant can be documented.

The safety logic can be divided into several diagrams in order to enable structured processing of the entire plant. The user can freely position the functions on a quasi infinitely large drawing board, whereby the connecting lines are drawn automatically. If there is not enough space, more pages are automatically added to the diagram in horizontal or vertical direction. Connecting lines extending over several pages are automatically issued with cross-references during print-out. If required in the interest of clarity, the user can divide a connecting line manually into two segments, whereby the mutual reference is marked by reference arrows. For further documentation, freely compilable comment texts can be placed at any point in the diagram. Every point in the logic diagram can be processed with ease by dragging and zooming.

Every project can be saved as a file and be password-protected from unauthorized access.



Processing the safety functions in the graphics editor

***AS-Interface***

Evaluation of the AS-i slaves connected to the AS-i bus is also parameterized using the tried and tested method described above.

In order to be able to use the AS-i functionalities, a 3RK3 Advanced central unit or 3RK3 ASIsafe central unit (basic/extended) must be used.

***User prompting during startup and maintenance***

To start up the relevant safety system, the created project file is uploaded to the device. There are two ways of doing this:

- Connect the USB interface of the PC to the device using an appropriate connection cable.
- Use the DP interface to download the parameterization via any PROFIBUS node.

Access to the device can be restricted using a password concept that includes different protection levels.

After the project is loaded, the user switches the device by means of the software from configuring mode to test mode in which the safety functions can be tested.

Activating the diagnostics shows the status of the individual functions in the graphic logic diagram by means of different colors and symbols. In addition, more detailed information about each function element can be displayed in the logic diagram. For the purpose of testing the logic diagram, it is also possible to manually overwrite the signal state of each function element ("forcing").

If the test is completed successfully, the user releases the configuration and switches the device to protection mode, in which case "forcing" is automatically deactivated.

Service personnel can activate the graphic diagnostics in protection mode as well. The I&M (Identification & Maintenance) data saved in the device facilitate maintenance.

## Benefits

- Convenient parameterization, operation, monitoring and testing by means of a user-friendly and clear-cut user interface
- Reliable diagnostic tool
- All functions, such as safety and logic functions, are available as modules, and are easy to link to one another
- Automatic creation of comprehensive documentation of safety functions

## Selection and ordering data

***SIRIUS Safety ES parameterization, start-up and diagnostics software***

- Delivered without PC cable

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **SIRIUS Safety ES Basic** | | | | | |
| 3ZS1316-4CC10-0YA5 | | | | | |
| **Floating license for one user** | | | | | |
| Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication via system interface | | | | | |
| • License key on USB flash drive, Class A | 2 | **3ZS1316-4CC10-0YA5** | | 1 | 1 unit |
| • License key download, Class A | ▶ | **3ZS1316-4CE10-0YB5** | | 1 | 1 unit |
| **SIRIUS Safety ES Standard** | | | | | |
| 3ZS1316-5CC10-0YA5 | | | | | |
| **Floating license for one user** | | | | | |
| Engineering software, software and documentation on CD, 3 languages (German/English/French), communication via system interface | | | | | |
| • License key on USB flash drive, Class A | 5 | **3ZS1316-5CC10-0YA5** | | 1 | 1 unit |
| • License key download, Class A | ▶ | **3ZS1316-5CE10-0YB5** | | 1 | 1 unit |
| **SIRIUS Safety ES Premium** | | | | | |
| 3ZS1316-6CC10-0YA5 | | | | | |
| **Floating license for one user** | | | | | |
| Engineering software, software and documentation on CD, 3 languages (German/English/French), communication via PROFIBUS or system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros | | | | | |
| • License key on USB flash drive, Class A | 5 | **3ZS1316-6CC10-0YA5** | | 1 | 1 unit |
| • License key download, Class A | ▶ | **3ZS1316-6CE10-0YB5** | | 1 | 1 unit |

Notes:

Please order PC cable separately, see Accessories.

For a description of the software versions, see page 14/22.

## Accessories

| Version | SD | Article No. | Price per PU | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | d | | | | |
| **Optional accessories** | | | | | |
| 3UF7941-0AA00-0 | | | | | |
| **USB PC cables** | ▶ | **3UF7941-0AA00-0** | | 1 | 1 unit |
| For connecting to the USB interface of a PC/PG, for communication with 3RK3 and 3SK2 via the system interface, recommended for use in connection with 3RK3 and 3SK2 | | | | | |

AS-interface Family

AS-i Safety at Work

AS-i Slaves

## contents

**Introduction**
AS-Interface 14/3 – 14/12
IO-Link 14/13 – 14/17

**AS-Interface**

***Introduction***
Communication overview 14/18
System components 14/19
AS-Interface specification
– Specification V3.0 14/20
– AS-i Power24V 14/21

***ASIsafe***
Introduction 14/22 – 14/23
AS-Interface safety monitors 14/24
AS-Interface safety modules 14/25 – 14/27

***Masters***
Masters for SIMATIC S7
– CM 1243-2 14/28 – 14/29
– CP 343-2P/CP 343-2 14/30 – 14/31
Masters for SIMATIC ET 200
– CM AS-i Master ST for SIMATIC ET 200SP 14/32 – 14/35
– F-CM AS-i Safety ST for SIMATIC ET 200SP 14/36 – 14/38

***Routers***
DP/AS-i Link Advanced 14/39 – 14/42
DP/AS-Interface Link 20E 14/43 – 14/45
IE/AS-i Link PN IO 14/46 – 14/49

***Slaves***
I/O modules for use in the field, high degree of protection
– Digital I/O modules, IP67 – Introduction 14/50
– Digital I/O modules, IP67 – K60 14/51 – 14/52
– Digital I/O modules, IP68/IP69K – K60R 14/53 – 14/55
– Digital I/O modules, IP67 – K45 14/56 – 14/57
– Digital I/O modules, IP67 – K20 14/58 – 14/59
– Analog I/O modules, IP67 – K60 14/60 – 14/62
I/O modules for use in the control cabinet
– Introduction 14/63
– SlimLine Compact 14/64 – 14/67
– F90 module 14/68
– Flat module 14/69
Modules with special functions
– Counter modules 14/70
– Ground-fault detection modules 14/71
– Overvoltage protection modules 14/72

*continued on next page*

## contents (cont.)


***Power supply units and data decoupling modules***

AS-Interface power supply units 14/73 – 14/74
30 V power supply units 14/75 – 14/76
S22.5 data decoupling modules 14/77 – 14/78
Data decoupling modules for S7-1200
– DCM 1271 data decoupling module 14/79 – 14/81

***Transmission media***

AS-Interface shaped cable 14/82

***System components and accessories***

Repeaters 14/83
Extension plugs 14/84
Addressing units 14/85 – 14/86
Analyzer 14/87 – 14/90
Miscellaneous accessories 14/91 – 14/92

**IO-Link**

Introduction
Communication overview 14/93
System components 14/94 – 14/99
IO-Link specification 14/100

***Masters***

IO-Link master module for S7-1500
– CM 8xIO-Link 14/101
IO-Link master module for S7-1200
– SM 1278 4xIO-Link master 14/102
IO-Link master module for ET 200SP
– CM 4xIO-Link 14/103
IO-Link master module for ET 200pro
– IO-Link master modules 14/104
IO-Link master module for
ET 200eco PN 14/105
– ET 200eco PN IO-Link master
IO-Link master module for ET 200AL
– CM IO-Link 14/106

***Input Modules***

General data 14/107
K20 IO-Link modules 14/108

## Overview

**More information**

Homepage, see www.siemens.com/as-interface

Industry Mall, see www.siemens.com/product?as-interface

AS-Interface

| AS-i = simple! | AS-i = flexible! | AS-i = efficient! |
|---|---|---|
| • Only one cable for data and energy | • Flexible topologies | • User-friendly addressing |
| • Time-saving assembly/installation | • Open standard | • Fast device replacement |
| • Engineering in the TIA Portal | • Expandability | • Ruggedness and stability |
| • User-friendly maintenance | • Safety engineering | • Device and network diagnostics |

IC01_00210

***AS-Interface – the smart communication standard for universal connection of the field level to the control system***

The AS-Interface (AS-i) – the Actuator-Sensor-Interface, to be more precise – is a smart bus system for the field level that connects all the sensors and actuators in the field to the higher-level control system more simply, flexibly and efficiently than any other.

The structure of a complex automation system is not always clear at first glance. The field level in particular, with its large numbers of devices with real-time requirements, needs a clear structure.

That is exactly what the AS-i fieldbus delivers: Via a simple two-wire cable – the yellow AS-i cable – in an AS-i network up to 62 bus nodes can be connected to the AS-i master and simultaneously supplied with power. The standard here is robust data transmission in a rugged environment with a high degree of protection for the AS-Interface.

AS-i from Siemens has everything in its favor

- Complete AS-i product range for bus-based standard and safety technology from a single source
- System-wide integration of the AS-i devices into SIMATIC, SINUMERIK and the TIA Portal engineering framework
- Integration of ASIsafe applications into SIMATIC F controller safety programming
- Central configuration of standard and safety technology in the TIA Portal and in STEP7 Classic – just one engineering framework for controller, AS-i master and safety
- Quick diagnostics of master and slave components via web browser, HMI or TIA Portal
- Planning, calculation and verification of the whole safety chain based on AS-i Safety in the Safety Evaluation Tool (TÜV-approved)
- Integration of lower-level AS-i networks into the PCS 7 process control system
- Global spare parts logistics, consulting and service

| | | Article No. | Page |
|---|---|---|---|
| **ASIsafe** | | | |
| | ASIsafe enables integration of safety-related components in an AS-Interface network, for example:<br>• EMERGENCY STOP pushbuttons<br>• Protective door switches<br>• Cable-operated switches<br>• Other AS-i safety sensors<br>Your advantage: The simple wiring of AS-Interface is maintained. | | |
| <br>AS-i Master and AS-i Safety module | **AS-i Master and AS-i Safety module for ET 200SP**<br>The CM AS-i Master ST and F-CM AS-i Safety ST modules are plugged into an ET 200SP configuration and connect an AS-i network, including safety-related inputs and outputs, with the controller.<br>• Single, double and multiple masters possible<br>• Per CM AS-i Master ST module up to 496 DI / 496 DQ / 124 AI / 124 AQ possible<br>• Per F-CM AS-i Safety ST module up to 31 safe input signals (two-channel) / 16 safe output channels possible<br>• Configuring with TIA Portal or STEP 7 Classic<br>• Plant-wide safety programming of the F-CPU via SIMATIC Distributed Safety/ Safety Advanced/F systems<br>• Integrated diagnostics<br>• No other programming tools required<br>Your advantage: Modular connection of fail-safe AS-i networks with system-wide programming in SIMATIC and SINUMERIK controllers. | 6ES7 | From 14/32 |

| | | Article No. | Page |
|---|---|---|---|
| **ASIsafe (continued)** | | | |
| 3RK3 Modular Safety System | **SIRIUS 3RK3 Modular Safety System**<br>Supplementing the service-proven concept of safety monitors, the 3RK3 Modular Safety System (MSS) offers, for example, the following functions for ASIsafe:<br>• Up to 50 enabling circuits including muting function<br>• Expandable fail-safe and non-fail-safe inputs/outputs<br>• Control of up to 12 ASIsafe outputs or 12 fail-safe independent switch-off groups<br>• Memory module for parameters, e.g. for device replacement<br>• Optional PROFIBUS interface for diagnostics and parameterization<br>• SIRIUS Safety ES, the intuitive graphic parameterization and diagnostics software<br>• AS-i Power24V capability<br>Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3. | **3RK3** | See Catalog Section 13 |
| Safety monitor | **AS-Interface safety monitors**<br>• For monitoring safe stations and for linking AS-Interface inputs and outputs<br>• Ensures safe disconnection<br>• Available with one or two release circuits with two-channel configuration<br>• All versions with removable screw terminals or spring-loaded terminals<br>• All safety monitors in revised Version 3 with additional options<br>• Filtering out of brief single-channel interruptions in the sensor circuit with the expanded safety monitor Version 3<br>• Expanded safety monitor with integrated safe slave for controlling a distributed safe AS-i output or for safe coupling a safe signal from one AS-i network to another AS-i network<br>• ASIMON V3 Configuration software with graphic function diagram presentation<br>Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3. | **3RK1** | 14/24 |
| K45F<br> SC17.5F<br> S45F SlimLine module, safe AS-i output | **AS-Interface safety modules**<br>• Complete portfolio of ASIsafe modules<br>• For connection of safety switches with contacts (e.g. position switches)<br>• Degree of protection IP65/IP67 or IP20<br>• Especially compact dimensions, with widths from 17.5 mm<br>• Up to four safe inputs per module<br>• Up to one safe output per module<br>• Standard outputs are available on the module in addition<br>• Up to Category 4, PL e, SIL 3<br>Your advantage: Easy integration of safe signals both in the switching cabinet and in the field. | **3RK1** | From 14/25 |
| Safety switch | **SIRIUS 3SF1 mechanical safety switches for AS-Interface**<br>• Plastic with degree of protection IP65 and metal with degree of protection IP66/IP67<br>• ASIsafe electronics integrated into the enclosure<br>• Available with separate actuator, with or without tumbler<br>Your advantage: Conventional wiring of safety functions no longer required. | **3SF1** | See Catalog Section 13 |
| EMERGENCY STOP mushroom pushbutton in enclosure | **SIRIUS ACT EMERGENCY STOP mushroom pushbuttons for AS-Interface**<br>• Degree of protection IP66/IP67/IP69K<br>• Metal or plastic version<br>• Connection of an EMERGENCY STOP device according to EN ISO 13850 to AS-Interface<br>• Safety-related AS-Interface module is snapped onto the commanding device from behind<br>• Can be used up to PL e, SIL 3<br>Your advantage: Easy direct connection of control elements to ASIsafe. | **3SU14 modules**<br>**3SU18 enclosure** | See Catalog Section 10 |

## Masters

The AS-Interface master connects SIMATIC control systems to AS-Interface. It automatically organizes the data traffic on the AS-Interface cable and handles not only signal processing, but also parameter setting, monitoring and diagnostics functions.

CM 1243-2 for SIMATIC S7-1200

CP 343-2, CP 343-2P for SIMATIC S7-300

### Masters for SIMATIC S7

AS-Interface master connections:

| | Article No. | Page |
|---|---|---|
| • CM 1243-2 for SIMATIC S7-1200 | 3RK7 | From 14/28 |
| • CP 343-2P, CP 343-2 for SIMATIC S7-300 and ET 200M | 6GK7 | From 14/30 |

Features:

- Connection of up to 62 AS-Interface slaves
- Connection of up to 496 inputs and 496 outputs per master or AS-Interface network
- Integrated analog value transmission
- Simple configuration by adopting the actual configuration on the AS-Interface network
- Easy operation in the input/output address area of the SIMATIC S7 comparable to standard I/O modules
- Monitoring of the control supply voltage on the AS-Interface shaped cable

Your advantage: Easy connection to SIMATIC controllers.

CM AS-i Master ST for SIMATIC ET 200SP

### Masters for SIMATIC ET 200

| | Article No. | Page |
|---|---|---|
| CM AS-i Master ST for SIMATIC ET 200SP | 3RK7 | From 14/32 |

- Connection of up to 62 AS-Interface slaves per master
- Connection of up to 496 inputs and 496 outputs per AS-Interface network
- Integrated analog value transmission
- Simple configuration by adopting the ACTUAL configuration on the AS-Interface network
- Easy operation in the input/output address range of the SIMATIC (or other controller) comparable to standard I/O modules
- Monitoring of the control supply voltage on the AS-Interface shaped cable
- Integrated ground-fault monitoring

Your advantage: Easy connection of AS-i networks to distributed I/Os.

F-CM AS-i Safety ST for SIMATIC ET 200SP

| | Article No. | Page |
|---|---|---|
| F-CM AS-i Safety ST for SIMATIC ET 200SP | 3RK7 | From 14/36 |

- Monitoring of up to
  - 31 fail-safe AS-i input slaves per F-CM
  - 16 fail-safe AS-i outputs per F-CM
- Transmission via PROFIsafe into the F-CPU for safety-related applications up to SIL 3 (IEC 61508/EN 62061)/PL e (EN ISO 13849-1)
- As a result, these sensors become part of the "unlimited programming and data archiving" options of SIMATIC and of Safety Integrated.

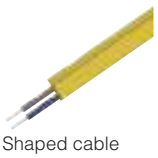
Your advantage: Easy connection of fail-safe AS-i networks to the distributed I/Os.

| | | Article No. | Page |
|---|---|---|---|
| **Routers** | | | |
| DP/AS-i Link Advanced | • Degree of protection IP20<br>• PROFIBUS slave or PROFINET IO device and AS-Interface master (single or double master in case of DP/AS-i Link Advanced and IE/AS-i Link PN IO)<br>• Connection of up to 62 AS-Interface slaves per AS-Interface network<br>• Connection of up to 496 digital inputs and 496 outputs per AS-i network, with doubling of the project data volume for double master versions<br>• Integrated ground-fault monitoring (in case of DP/AS-i Link Advanced and IE/AS-i Link PN IO)<br>• User-friendly local diagnostics and local startup by means of a full graphic display and control keys or through a web interface with a standard browser (in case of DP/AS-i Link Advanced and IE/AS-i Link PN IO)<br>• Integrated analog value transmission<br>• Configuring and uploading of AS-Interface configuration in STEP 7 possible<br>• User-friendly selection of AS-Interface slaves<br>Your advantage: Compact transition to PROFIBUS or PROFINET.<br>As an alternative to the IE/AS-i Link PN IO, a high-performance router can be set up between PROFINET and AS-Interface by combining the CM AS-i Master ST and F-CM AS-i Safety ST modules in an ET 200SP station (for safety-related applications), see pages 14/34 and 14/38. | **3RK3, 6GK1** | From 14/39 |
| DP/AS-Interface Link 20E | | | |
| IE/AS-i Link PN IO | | | |
| **Slaves** | | | |
| | Slaves contain the AS-Interface electronics and connection options for sensors and actuators in the field and in the control cabinet. A total of up to 62 slaves can be connected to one bus. The slaves then exchange their data in cyclic mode with a control module (master). | | |
| | **I/O modules for use in the field, high degree of protection** | | |
| K20 digital module | Digital I/O modules, IP67 – K60, K60R, K45 and K20<br>• Degree of protection IP65/IP67 or IP68/IP69K<br>• Modules available with up to degree of protection IP68/IP69K<br>• Connection sockets in M8/M12<br>• Up to eight inputs and four outputs<br>• A/B technology available<br>• Contacting protected against polarity reversal<br>• Standard rail mounting and wall mounting possible<br>• Mounting of the module on the base plate using just one screw<br>• Diagnostics LEDs<br>Your advantage: Reduction of mounting and startup times by up to 40%. | **3RK1, 3RK2** | From 14/50 |
| K45 digital module | | | |
| K60 digital module | | | |
| K60 analog module | Analog I/O modules, IP67 – K60<br>• Degree of protection IP65/IP67<br>• Detects or transmits analog signals locally<br>• two-/four-channel<br>• Input modules for up to four sensors with current signal, with voltage signal or with thermal resistor<br>• Output modules for current or voltage<br>• Fast analog modules available for higher access speeds<br>Your advantage: Easy integration of analog values. | **3RK1** | From 14/60 |

| | Article No. | Page |
|---|---|---|
| **Slaves (continued)** | | |
| **I/O modules for use in the control cabinet**<br>• Degree of protection IP20<br>• No M12 plugs required for connection<br>• Especially narrow design for SlimLine Compact modules with widths of 17.5 mm and 22.5 mm<br>• Analog modules are also available<br>• Removable, finger-safe terminal blocks that cannot be inadvertently interchanged with the SlimLine Compact modules<br>• Flat design of the flat modules for small control cabinets and confined conditions<br>• Connection with screw terminals or spring-loaded terminals<br>• Standard rail mounting and wall mounting possible<br>• Diagnostics LEDs<br>Your advantage: Modules enable space-saving use in control cabinets and small local control boxes.<br> SlimLine Compact SC17.5<br> SlimLine Compact SC22.5<br> F90 module<br> Flat module | **3RG9, 3RK1, 3RK2** | From 14/63 |
| **Modules with special functions** | | |
| Counter modules<br>• Degree of protection IP20<br>• For evaluation of pulses<br>• Connection with screw terminals or spring-loaded terminals<br>Your advantage: Evaluation of pulses which exceed even the clock frequency of AS-Interface.<br> Counter module | **3RK1** | 14/70 |
| Ground-fault detection modules<br>• Degree of protection IP20<br>• Display using LEDs<br>• Two signaling outputs<br>Your advantage: Automatic diagnostics of ground faults on AS-Interface<br> Ground-fault detection module | **3RK1** | 14/71 |
| Overvoltage protection modules<br>• Degree of protection IP67<br>• Discharge through ground cable with oil-proof outer sheath<br>• Protection at transition of lightning protection zones<br>Your advantage: The AS-Interface overvoltage protection module protects downstream AS-Interface devices or individual sections in AS-Interface networks from conducted overvoltages.<br> Overvoltage protection module | **3RK1** | 14/72 |

| | | Article No. | Page |
|---|---|---|---|
| **Slaves (continued)** | | | |
| SIRIUS contactor 3RT203.-1NB30-0CC0 | **Contactors and contactor assemblies**<br>SIRIUS 3RT contactors, 3-pole up to 250 kW<br>SIRIUS 3RA23 reversing contactor assemblies, up to 55 kW<br>SIRIUS 3RA24 contactor assemblies for star-delta (wye-delta) starting, up to 90 kW<br>• Notable reduction of wiring in the control circuit<br>• Integrated mechanical interlocking<br>• Prevention of wiring errors in the main circuit | **3RT20**<br>**3RA23**<br>**3RA24** | See Catalog Section 2 |
| SIRIUS 3RA2712 function module for AS-Interface | SIRIUS 3RA27 function modules for AS-Interface<br>• Connection of 3RT20 power contactors with communication capability, 3RA23 reversing contactor assemblies, and 3RA24 contactor assemblies for star-delta (wye-delta) starting to AS-Interface<br>• Reduction of control current wiring through plug-in design and integrated monitoring of circuit breaker/motor starter protector and contactor<br>• Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system<br>• Easy configuration through operation of feeders instead of individual contactors<br>• Enhanced operational reliability and quick wiring thanks to spring-loaded terminals<br>• Small number of variants through use of identical modules for size S00 to S3 contactors<br>Your advantage: Shortening of mounting and startup times. | **3RA2712** | See Catalog Section 2 |
| 3RA61 compact starter | **Motor starters for use in the control cabinet**<br>SIRIUS 3RA6 compact starters<br>3RA61 direct-on-line starters, 3RA62 reversing starters<br>• Degree of protection IP20<br>• Very compact load feeders with the integrated functionality of an electronic overload relay<br>• As direct-on line or reversing starters for motors up to 15 kW/400 V<br>• Easy expansion into a communication-capable load feeder using AS-i add-on modules<br>• On-site safe disconnection also possible using AS-i add-on modules<br>• Standardized integration of the loads in higher-level control systems using AS-i<br>Your advantage: Compact solution with minimum wiring outlay for actuating direct-on-line and reversing starters in the control cabinet. | **3RA6**<br>**3RA61**<br>**3RA62** | See Catalog Section 4 |
| SIRIUS M200D motor starter | **Motor starters for use in the field, high degree of protection**<br>SIRIUS M200D motor starters for AS-Interface<br>• High degree of protection IP65 for cabinet-free design<br>• As direct-on-line or reversing starters for motors up to 5.5 kW/400 V<br>• Mechanical or electronic switching for high switching frequencies<br>• Optional with manual operation and brake control<br>• Expanded diagnostics and parameterization possible through AS-Interface<br>• Easy and consistent integration in STEP 7 through AS-Interface<br>Your advantage: The correct solution for all simple applications in conveyor systems with spatially distributed drives. | **3RK1** | See Catalog Section 6 |

| | | Article No. | Page |
|---|---|---|---|
| **Slaves (continued)** | | | |
| SINAMICS G110M frequency inverter | **SINAMICS G110M distributed inverters**<br>**Wide power range from 0.37 to 4 kW**<br>• Preconfigured with SIMOGEAR<br>• Rugged, with IP65/IP66 degree of protection, up to 55 °C ambient temperature<br>• Local commissioning via DIP switch, standard USB interface and potentiometer or Intelligent Operator Panel (IOP)<br>• Integrated safety functions (STO locally via F-DI or via PROFIsafe)<br>• Integrated, specific software functionality for conveyor systems<br>- Quick stop function for fast reaction times to sensors<br>- Limit switch functionality, e.g. for rotary table, corner transfer unit<br>Your advantage: The simple solution for compact drives with safety requirements in conveyor technology | **6SL3517 power modules, 6SL3544 control units** | See SINAMICS G110 Catalog |
| SINAMICS G110D frequency inverter | **SINAMICS G110D distributed inverters**<br>**High degree of protection IP65 for cabinet-free installation**<br>• Wide power range from 0.75 to 7.5 kW<br>• Easy commissioning and maintenance thanks to standardized plug-in connections for bus, energy and I/Os<br>• Expanded diagnostics and parameterization through AS-Interface<br>• Optional maintenance switch<br>• Optional manual local operation<br>• Same plugs used as for the M200D motor starter<br>Your advantage: Easy, consistent implementation of distributed system concepts thanks to scaling of SINAMICS G110D, SINAMICS G120D and SIRIUS M200D products. | **6SL3511** | See SINAMICS G110 Catalog |
| | **Commanding and signaling devices** | | |
| AS-Interface module | SIRIUS ACT pushbuttons and indicator lights for AS-Interface<br>• Modular configuration based on individual specifications, or as enclosure with standard components<br>• AS-Interface modules for base mounting or mounting in enclosure<br>• Up to six command points for standard signals or EMERGENCY STOP<br>• Degree of protection IP66/IP67/IP69K<br>• Metal or plastic version<br>• Indicator lights with integrated LED<br>• Any change of equipment possible even after installation<br>Your advantage: Complete operating system with simple AS-Interface connection for your plant. | **3SU14 modules**<br>**3SU18 enclosure** | See Catalog Section 10 |
| Signaling column<br> AS-Interface adapter element | SIRIUS 8WD4 signaling columns<br>• Many optical and acoustic elements can be combined<br>• Up to four signaling elements can be connected using an AS-Interface adapter element<br>• with integrated LEDs or with BA 15d base for LEDs/incandescent lamps<br>• for fastening to connection elements (screw or spring-loaded terminals)<br>• 24 V DC, diameters 50 mm and 70 mm<br>• Connection with bayonet mechanism<br>Your advantage: Signaling columns for monitoring production sequences and for visual or acoustic warnings in emergency situations, with easy AS-Interface connection. | **8WD4** | See Catalog Section 10 |

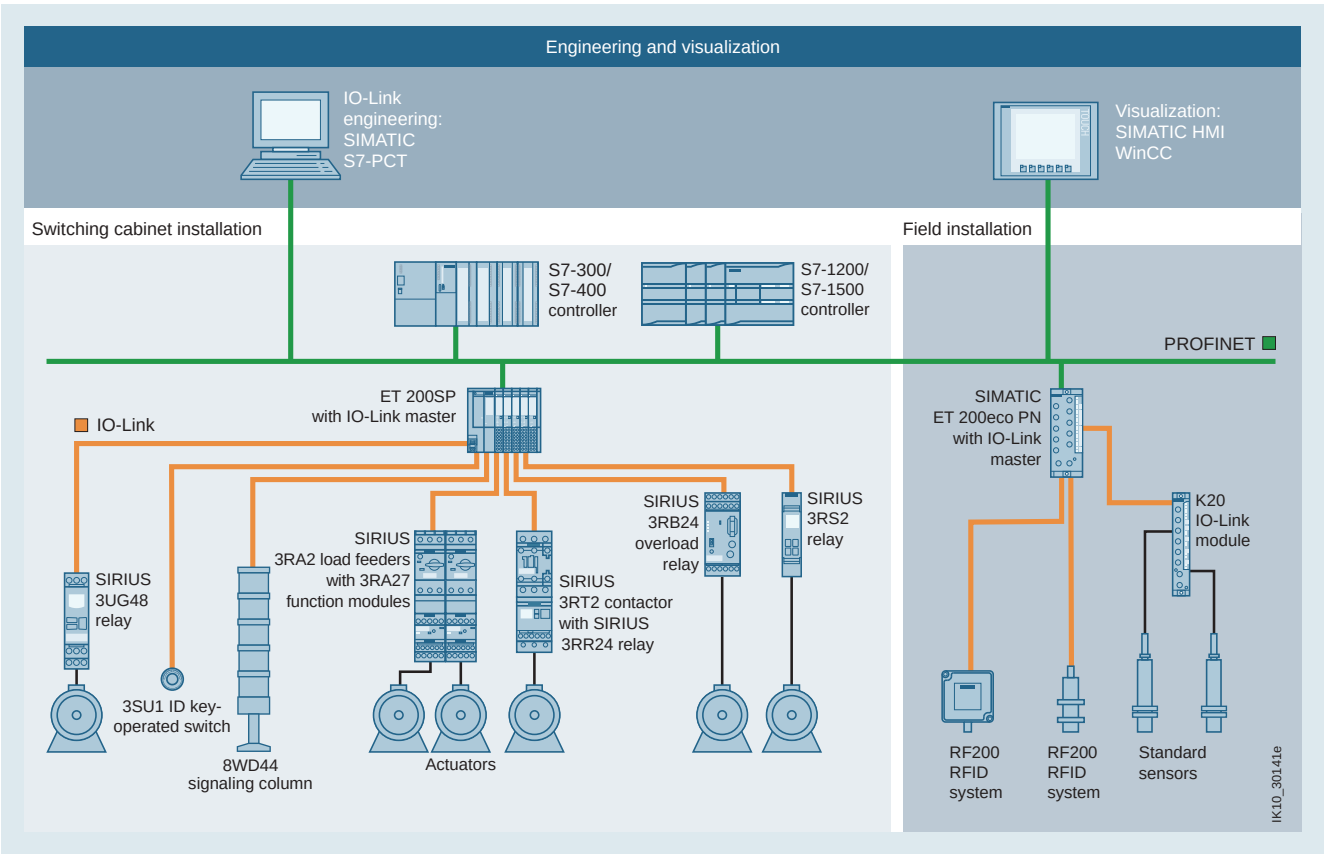
| | | Article No. | Page |
|---|---|---|---|
| **Power supply units and data decoupling modules** | | | |
| | AS-Interface power supply units generate a controlled direct voltage of 30 V DC with high stability and low residual ripple in conjunction with data decoupling. They are an integral component of the AS-Interface network and enable the simultaneous transmission of data and energy on one cable.<br>In conjunction with data decoupling modules, AS-Interface can also be operated with standard power supply units. | | |
| <br>IP20, 3 A | **AS-Interface power supply units**<br>• With wide performance spectrum from 2.6 to 8 A<br>• Degree of protection IP20<br>• Separation of data and energy by means of the integrated data decoupling<br>• UL/CSA approval means the power supplies can be used worldwide, 2.6 A version with output power restricted to max. 100 W (for Class 2 circuits in accordance with NEC)<br>• Certified for global use<br>• Integrated ground-fault and overload detection save the need for additional components and make applications reliable<br>• Diagnostics memory, remote signaling and remote RESET allow fast detection of faults in the system<br>• Ultra-wide input range enables single- and two-phase applications (8 A version)<br>Your advantage: Optimum performance for each application. | **3RX9** | 14/73 |
| <br>IP20, 8 A | | | |
| <br>PSN130S<br>30 V DC, 8 A | **30 V power supply units**<br>Standard 30 V power supply units without data decoupling<br>• Power spectrum 3 A, 4 A and 8 A<br>• Overload and short-circuit proof in every performance class<br>• Diagnostics: With output voltage > 26.5 V DC LED and signaling contact for output voltage 30 V O.K.<br>• Primary-side connection to 120/230 V AC (single-phase) with automatic range selection<br>Your advantage: Economical alternatives in conjunction with data decoupling modules while making full use of the maximum AS-Interface cable length. | **3RX9** | From 14/75 |
| <br>SITOP PSU100M,<br>24 V DC, 20 A | **24 V power supply units**<br>Standard 24 V power supply units (SITOP), without data decoupling<br>• Power spectrum 2.5 to 40 A<br>• Overload and short-circuit proof in every performance class<br>• Add-on modules for signaling, redundancy, buffering and UPS<br>• Single-phase, two-phase and three-phase versions<br>Your advantage: Economical alternatives in conjunction with data decoupling modules. | **6EP** | See Catalog Section 15 |
| <br>S22.5 data decoupling module | **S22.5 data decoupling modules**<br>• Degree of protection IP20, narrow design 22.5 mm<br>• Supply of several AS-i networks with a single power supply unit<br>• Single and double data decoupling<br>• Operation with 24 V DC or 30 V DC<br>Your advantage: Cost-effective installation of AS-i networks in conjunction with standard power supply units. | **3RK1** | From 14/77 |
| <br>DCM 1271 data decoupling module | **DCM 1271 data decoupling module for SIMATIC S7-1200**<br>• Simple data decoupling in IP20 design<br>• Supply of several AS-i networks with a single power supply unit<br>• Operation with 24 V DC or 30 V DC<br>Your advantage: Cost-effective installation of AS-i networks in conjunction with standard power supply units in the design of a SIMATIC S7-1200 module. | **3RK7** | From 14/79 |
| **Transmission media** | | | |
| | AS-Interface shaped cable for connection of network stations | | |
|  <br>Shaped cable | **AS-Interface shaped cable**<br>• No polarity reversal thanks to trapezoidal shape<br>• Cables made of optimized material for different operating conditions<br>• Special version according to UL CLASS 2 available<br>Your advantage: Fast replacement and connection to AS-Interface by piercing method. | **3RX9** | 14/82 |

| | | Article No. | Page |
|---|---|---|---|
| **System components and accessories** | | | |
| | Accessories comprise tools for mounting, installation and operating as well as individual components. | | |
| Repeater Compact extension plug | **Repeaters and extension plugs**<br>• Repeaters for extending the AS-Interface cable by 100 m per repeater<br>• Extension plug for extending the AS-Interface segment to max. 200 m<br>• Parallel switching of several repeaters possible (star configuration option)<br>• Maximum size increases (when combined) to more than 600 m<br>• Easy mounting<br>• IP67 module enclosure<br>Your advantage: Lower infrastructure costs, more possibilities of use and greater freedom for plant planning. | **6GK1 repeater**<br>**3RK1 extension plug** | 14/83<br>14/84 |
| Addressing unit for AS-Interface V 3.0 | **Addressing units**<br>• Reading out and adjusting the slave address 0 to 31 or 1A to 31A, 1B to 31B, with automatic addressing aid and prevention of double addresses<br>• Reading out the slave profile (IO, ID, ID2) and reading out and setting the ID1 code<br>• Input/output test when commissioning the slaves, on all digital and analog slaves according to AS-Interface specification V3.0, including safe input slaves and complex CTT2 slaves<br>• Display of the operational current in case of direct connection of an AS-i slave (measuring range from 0 to 150 mA)<br>• Storage of complete network configurations (profiles of all slaves) to simplify the addressing<br>Your advantage: Easiest way to address and test the slaves. | **3RK1** | From 14/85 |
| Analyzer | **AS-Interface analyzer**<br>• Diagnostics units for completely checking the quality and function of an AS-Interface installation<br>• Transmission of collected data through an RS 232 interface to a PC, evaluation by software<br>• Easy and user-friendly operation<br>• Automatically generated test logs<br>• Advanced trigger functions enable exact analysis<br>• Process data can be monitored online<br>• In addition to digital I/O data it is possible to view analog values and safety slaves in data mode.<br>Your advantage: Preventative testing of an AS-Interface network is possible, recorded logs facilitate remote diagnostics. | **3RK1** | From 14/87 |
| M12 sealing cap Cable terminating piece | **Miscellaneous accessories**<br>Individual components such as sealing caps, cable adapters, distributors, M12 plugs and cables, AS-Interface System Manual, etc. | **3RK1, 3RT1, 3RX9, 6ES7** | From 14/91 |

| | | Article No. | Page |
|---|---|---|---|
| **Diagnostics** | | | |
| Diagnostics for AS-Interface via HMI panels | The following diagnostics block with visualization via HMI or web browser for AS-Interface can be downloaded free of charge in the Industry Online Support Portal:<br>Diagnostics blocks<br>• For CM AS-i Master ST and F-CM AS-i Safety ST in ET 200SP, see https://support.industry.siemens.com/cs/ww/en/view/109479103<br>• For other Siemens AS-i master and links, see https://support.industry.siemens.com/cs/ww/en/view/50897766<br>Your advantage: Detailed diagnostic display for fast fault analysis and short downtimes – for easy integration into STEP 7 projects. | -- | |
| **Software** | | | |
| AS-Interface block library for PCS 7 | **AS-Interface block library for SIMATIC PCS 7**<br>• Engineering and runtime software<br>• Easy connection of AS-Interface to PCS 7<br>• Engineering work reduced to positioning and connecting the blocks in the CFC<br>• No additional configuring steps required for connection to the PCS 7 Maintenance Station, diagnostics for the AS-i system optimally guaranteed<br>• See Support Site for more information https://support.industry.siemens.com/cs/document/109759605<br>Your advantage: Easy connection of AS-Interface to PCS 7, little engineering and configuration. | | |

## Overview

| More information | |
|---|---|
| Homepage, see www.usa.siemens.com/io-link | For important topics at a glance, see https://support.industry.siemens.com/cs/ww/en/view/109737170 |




Engineering and visualization

***IO-Link – more than just another interface***

IO-Link is an open communication standard for sensors and actuators – defined by the IO-Link Consortium.

IO-Link is a smart concept for the uniform connection of actuators and sensors to the control level by means of a low-cost point-to-point connection.

As an open interface, IO-Link can be integrated into all standard fieldbus and automation systems.

The IO-Link communication standard below fieldbus level enables central error diagnostics and localization down to actuator/sensor level, and facilitates both startup and maintenance by allowing parameter data to be dynamically changed directly from the application.

The increasing intelligence of field devices and their integration into automation as a whole now allows data to be accessed right down to the lowest field level. The result: greater plant availability and less engineering work.

Transparency in the process through IO-Link

High system availability and data transparency are market requirements that must also be met by the connecting of innovative control technology to a control system. A systematic diagnostics concept and efficient handling of parameter data are required for this purpose in automation.

With the aid of the IO-Link communication standard, a communication link is established between switchgear and controller, and this allows data to be exchanged efficiently. Based on a standard cable, it is therefore possible to integrate parameter, process and diagnostic data and measured values into the plant automation with ease. For example, the available diagnostic data allow potential errors to be detected quickly, thus avoiding lengthy plant downtimes.

As a consequence of their basic function, such as overload protection (SIRIUS 3RB24 electronic overload relays for IO-Link), many controls have measured values. The availability of these via IO-Link now allows conclusions to be drawn at an early stage concerning wear and tear in the application.

At the same time the option of parameterizing via IO-Link supports the device not just when parameters concerning operating time are changed, but also when the device is replaced. In the case of a spare part, for example, the parameters can be quickly transmitted to a new device via the communication system.

## Introduction



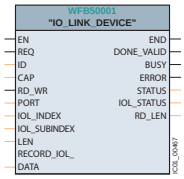
| | | Article No. | Page |
|---|---|---|---|
| **Masters** | | | |
| | The IO-Link master modules form the heart of the IO-Link system. | | Catalog ST 70 |
| CM 8xIO-Link for SIMATIC S7-1500 | **IO-Link master module for SIMATIC S7-1500**<br>CM 8xIO-Link communication module<br>• Communication module for connecting up to 8 IO-Link devices (three-wire connections) or 8 standard sensors according to IO-Link specification V1.1<br>• Can be used directly downstream of an S7-1500 CPU or distributed in ET 200MP via PROFINET or PROFIBUS<br>• Simple replacement of sensors/actuators without time-consuming parameterization<br>• Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd)<br>Your advantage: Easy connection of IO-Link connections to the SIMATIC S7-1500. | **6ES7** | 14/101 |
| SM 1278 4xIO-Link for SIMATIC S7-1200 | **IO-Link master module for SIMATIC S7-1200**<br>SM 1278 4xIO-Link master<br>• IO-Link master as serial communication module with four ports (channels) according to IO-Link specification V1.1<br>• Easy device exchange with automatic data recovery without engineering for IO-Link device<br>• Up to four IO-Link devices (3-wire connections) can be connected to each IO-Link master module<br>• Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd), automatic adjustment to the data transmission rate supported by the device<br>Your advantage: Easy connection of IO-Link connections to the SIMATIC S7-1200. | **6ES7** | 14/102 |
| CM 4xIO-Link for ET 200SP | **IO-Link master modules for ET 200SP**<br>CM 4xIO-Link communication module<br>• IO-Link master as serial communication module with four ports (channels) according to IO-Link specification V1.1<br>• Module replacement with automatic data recovery without engineering for IO-Link master and device<br>• Up to four IO-Link devices (3-wire connections) can be connected to each IO-Link master module.<br>• Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd), automatic adjustment to the data transmission rate supported by the device<br>Your advantage: Easy connection of IO-Link connections to distributed I/Os. | **6ES7** | From 14/103 |
| IO-Link master module for ET 200pro | **IO-Link master module for ET 200pro**<br>4 IO-Link HF electronic module<br>• IO-Link master as serial communication module with four ports (channels) according to IO-Link specification V1.1<br>• Easy device exchange with automatic data recovery without engineering for IO-Link device<br>• Up to four IO-Link devices can be connected to each IO-Link master module<br>• Support of IO-Link port class B<br>• Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd), automatic adjustment to the data transmission rate supported by the device<br>Your advantage: Easy connection of sensors and actuators to the I/Os directly in the machine's field area. | **6ES7** | 14/104 |
| 6ES7148-6JA00-0AB0 6ES7148-6JD00-0AB0 | **IO-Link master module for ET 200eco PN**<br>ET 200eco PN IO-Link master<br>• 4 IO-L + 8 DI + 4 DO 24 V DC/1.3 A<br>- Up to four IO-Link devices (IO-Link port class A) can be connected<br>- Up to eight standard sensors (8 DI) and up to four standard actuators (4 DO) can be additionally connected<br>- Enclosure width 60 mm<br>• 4 IO-L<br>- Up to four IO-Link devices (IO-Link port class B) can be connected<br>- Enclosure width 30 mm<br>Your advantage: Easy connection of sensors and actuators to the I/Os directly in the machine's field area. | **6ES7** | From 14/105 |
| CM IO-Link for ET 200AL | **IO-Link master module for ET 200AL**<br>CM IO-Link communication module<br>• IO-Link master as serial communication module with four ports (channels) according to IO-Link specification V1.1<br>• Easy device exchange with automatic data recovery without engineering for IO-Link device<br>• Up to four IO-Link devices can be connected to each IO-Link master module<br>• Support of IO-Link port class B<br>• Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd), automatic adjustment to the data transmission rate supported by the device<br>Your advantage: Easy connection of sensors and actuators to the I/Os directly in the machine's field area. | **6ES7** | From 14/106 |

## Introduction

| | | Article No. | Page |
|---|---|---|---|
| **Input modules** | | | |
| | IO-Link input modules make full use of the potential of IO-Link and are a more attractive solution economically than a direct sensor connection. | | |
| IO-Link module K20 with eight digital inputs | **K20 IO-Link modules**<br>• Four or eight digital inputs<br>• Degree of protection IP65/IP67<br>• Connection sockets in M8/M12<br>• Contacting protected against polarity reversal<br>Your advantage: Reduction of mounting and startup times by up to 40%. | **3RK5** | 14/107 |
| **Industrial controls** | | | |
| | Starters and contactor assemblies for direct-on-line, reversing and star-delta (wye-delta) starting can be connected to IO-Link through function modules without any additional, complicated wiring. | | |
| SIRIUS contactor 3RT201.-1B...-0CC0 | **Contactors and contactor assemblies**<br>SIRIUS 3RT contactors, 3-pole up to 250 kW<br>SIRIUS 3RA23 reversing contactor assemblies, up to 55 kW<br>SIRIUS 3RA24 contactor assemblies for star-delta (wye-delta) starting, up to 90 kW<br>• Notable reduction of wiring in the control circuit<br>• Integrated mechanical interlocking<br>• Prevention of wiring errors in the main circuit | **3RT20**<br>**3RA23**<br>**3RA24** | See Catalog Section 2 |
| SIRIUS 3RA2711 function module for IO-Link | SIRIUS 3RA27 function modules<br>• Connection of 3RT20 power contactors with communication capability, 3RA23 reversing contactor assemblies, and 3RA24 contactor assemblies for star-delta (wye-delta) starting to IO-Link<br>• Reduction of control current wiring through plug-in technology, feeder groups and integrated monitoring of circuit breaker/motor starter protector and contactor<br>• Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system<br>• Simple user program through operation of feeders instead of individual contactors<br>• Enhanced operational reliability and quick wiring thanks to spring-loaded terminals<br>• Can be flexibly combined with many automation solutions using the open, standardized IO-Link wiring system<br>• Small number of variants through use of identical modules for size S00 to S3 contactors<br>Your advantage: Shortening of mounting and startup times | **3RA2711** | See Catalog Section 2 |
| SIRIUS 3RB24 overload relay | **Overload relays**<br>SIRIUS 3RB24 electronic overload relays for IO-Link for high-feature applications<br>• Diagnostics and current value transmission via IO-Link<br>• Current measuring modules (3RB29) for current values from 0.3 to 630 A<br>• Controlling direct-on-line, reversing and wye-delta starters via IO-Link in conjunction with contactors<br>• Full motor protection through PTC connection<br>Your advantage: Communication-capable overload relay enables remote diagnostics and preventative maintenance. | **3RB24** | See Catalog Section 3 |
| SIRIUS 3RA64 compact starter | **Motor starters for use in the control cabinet**<br>SIRIUS 3RA64, 3RA65 compact starters for IO-Link<br>• Integrated functionality of a circuit breaker, contactor and electronic overload relay and various functions of optional mountable accessories<br>• Can be used for direct starting of standard induction motors up to 32 A (approx. 15 kW/400 V)<br>• Compact design offers enormous savings in space and wiring in the control cabinet<br>• Low variance of devices thanks to wide setting ranges for the rated current and wide voltage ranges<br>Your advantage: The diagnostics data of the process collected by the 3RA6 compact starter, e.g. short circuit, end of service life, limit position, etc., are not only indicated on the compact starter itself but also transmitted to the higher-level control system through IO-Link. | **3RA6**<br>**3RA64**<br>**3RA65** | See Catalog Section 4 |

| | | Article No. | Page |
|---|---|---|---|
| **Industrial controls (continued)** | | | |
| | **Monitoring relays** | | |
| SIRIUS 3RR24 monitoring relay | SIRIUS 3RR24 monitoring relays for mounting onto 3RT2 contactors for IO-Link<br>• Monitoring relays for mounting onto 3RT2 contactors<br>• Parameterization and diagnostics via the display on the device or via IO-Link<br>• Adjustable warning and switch-off limit values and on/tripping delay times<br>• All current measured values available in the control system<br>Your advantage: Communication-capable monitoring relay enables remote diagnostics and preventative maintenance. | **3RR24** | See Catalog Section 2 |
| SIRIUS 3UG48 monitoring relay | SIRIUS 3UG48 monitoring relays for stand-alone installation for IO-Link<br>• Monitoring of<br>- Network (3UG481)<br>- Voltage (3UG483)<br>- Current (3UG4822)<br>- Power factor and active current (3UG484)<br>- Fault current (3UG4825)<br>- Speed (3UG485)<br>• Parameterization and diagnostics via the display on the device or via IO-Link<br>• Adjustable warning and switch-off limit values and on/tripping delay times<br>• All current measured values available in the control system<br>Your advantage: Communication-capable monitoring relay enables remote diagnostics and preventative maintenance. | **3UG48** | See Catalog Section 11 |
| SIRIUS 3RS14, 3RS15 temperature monitoring relay | SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link<br>• Measuring the temperature of solids, liquids and gases<br>• Use of resistance sensors (3RS14) or thermocouples (3RS15)<br>• Parameterization and diagnostics via the display on the device or via IO-Link<br>• Adjustable warning and switch-off limit values and on/tripping delay times<br>• All current measured values available in the control system<br>Your advantage: Independent monitoring easily linked to the control system. | **3RS14, 3RS15** | See Catalog Section 11 |
| | **SIRIUS ACT pushbuttons and indicator lights** | | |
| SIRIUS ACT 3SU1 ID key-operated switch | SIRIUS ACT 3SU1 ID key-operated switches for IO-Link<br>• Access system and selection system for four authorization levels<br>• Authentication of groups and persons<br>• Five ID keys with different coding<br>• Option for individual coding via IO-Link<br>• For installation in enclosures or fastening on front plate<br>• Electronic module for ID key-operated switches must be ordered separately.<br>Your advantage: Only authorized personnel can work on plants and machines. | **3SU1** | See Catalog Section 10 |
| SIRIUS ACT 3SU1 electronic module | SIRIUS ACT 3SU1 electronic modules for IO-Link<br>• Eight digital inputs and outputs possible<br>• DI and DQ freely selectable (programmable)<br>• Input and output functions parameterizable<br>• Connection method (push-in)<br>• For installation in enclosures or fastening on front plate<br>Your advantage: No wiring required if ordered in a 3SU1 enclosure via configurator. | **3SU1400** | See Catalog Section 10 |
| | **SIRIUS 8WD4 signaling columns** | | |
| Signaling column 8WD44 IO-Link adapter element | 8WD44 IO-Link adapter element<br>• Up to five signaling elements can be connected using an IO-Link adapter element<br>• 24 V DC, diameter 70 mm<br>• Connection with bayonet mechanism<br>• For fastening on feet, 8WD44<br>• Connection elements with screw or spring-loaded terminals or connection element with 5-pole M12 plug<br>Your advantage: Signaling columns for monitoring production sequences and for visual or acoustic warnings in emergency situations, with easy IO-Link connection. | **8WD44** | See Catalog Section 10 |

## Introduction

| | Article No. | Page |
|---|---|---|
| **RFID system** | | |
| RFID system for IO-Link<br>**SIMATIC RF200 RFID system in the HF range**<br>Products SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF240R, SIMATIC RF250R, SIMATIC RF260R<br>• Simple identification tasks such as reading an ID number (UID)<br>• Reading of user data<br>• Writing of user data<br>• No RFID-specific programming, ideal for those new to RFID<br>• Simple connection via master modules for IO-Link, such as SIMATIC S7-1200, ET 200SP, ET 200pro, ET 200eco PN and ET 200AL<br>• Use with the tried and tested ISO 15693 transponders (MDS Dxxx) | **6GT2** | Catalog ID 10 - Industrial Identification Systems |
| **Device Description (IODD)** | | |
| IODD files for IO-Link<br>**IODD files**<br>These files provide the device description for IO-Link devices.<br>• Comprehensive IODD catalog of SIEMENS IO-Link devices<br>• Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/ps/15851 | -- | 14/99 |
| IODDfinder for IO-Link<br>**IODDfinder**<br>The entire world of IO-Link under one roof<br>The IODDfinder is a service provided by the IO-Link community. It is a central cross-vendor database for descriptive files (IODDs). In addition, the platform provides an overview of the available IO-Link devices.<br>For more information, see https://ioddfinder.io-link.com/#/. | -- | 14/99 |
| **Software** | | |
| STEP 7 PCT<br>**STEP 7 PCT (Port Configuration Tool)**<br>Engineering software for configuring the IO-Link master modules for SIMATIC S7-1200, ET 200SP, ET 200pro, ET 200eco PN and ET 200AL<br>• Available as a stand-alone version or integrated into STEP 7 (V5.5 SP1 or higher) and TIA (V12 or higher)<br>• Engineering of the IO-Link devices connected to the master<br>• Monitoring of the process image of the IO-Link devices<br>• Open interface for importing further IODDs<br>• Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/view/32469496 | -- | 14/99 |
|  IO-Link device function block for TIA Portal<br>**IO-Link function blocks (IO-Link master and IO-Link device)**<br>STEP 7 function block for easy acyclical data exchange in the user program<br>• Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/view/82981502 | -- | 14/99 |
| "Siemens IO-Link Devices" block library<br>**"Siemens IO-Link Devices" block library**<br>This library provides function blocks and user-defined data types (UDTs) for all IO-Link devices from the Siemens portfolio. These blocks and UDTs standardize and simplify communication with IO-Link devices.<br>• Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/ps/90529409 | -- | 14/99 |

# AS-Interface Introduction

## Communication overview



### Overview

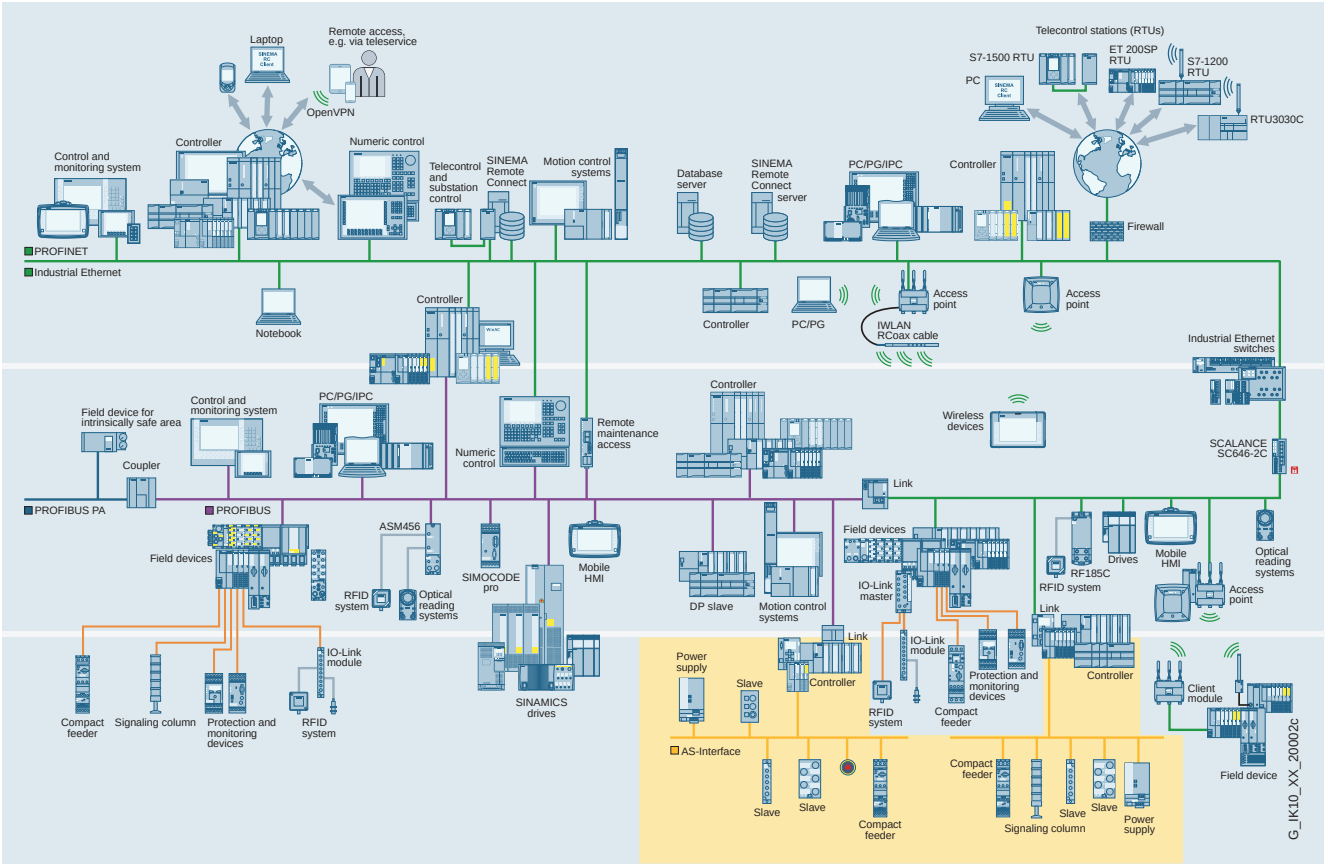
AS-Interface is an open, international standard according to IEC/EN 62026-2 for process and field communication. Leading manufacturers of actuators and sensors all over the world support the AS-Interface. Interested companies are provided with the electrical and mechanical specifications by the AS-Interface Association.

AS-Interface is a single master system. For automation systems from Siemens, there are communications processors (CPs), communication modules (CMs) and routers (links) that control the process or field communication as masters, and actuators and sensors that are activated as AS-Interface slaves.

**More information**

Homepage, see www.siemens.com/as-interface

Industry Mall, see www.siemens.com/product?as-interface




AS-Interface in the SIMATIC NET communications landscape

### Benefits

An important characteristic of the AS-Interface technology is the use of a shared two-wire cable for data transmission and distribution of auxiliary power to the sensors and actuators. An AS-i power supply unit or alternatively a standard power supply unit that meets the requirements of the AS-Interface transmission method and has an external AS-i data decoupling module is used for the distribution of auxiliary power.
The AS-Interface cable used for the wiring is mechanically coded and hence protected against polarity reversal and can be easily contacted by the insulation piercing method.

Elaborately wired control cables in the control cabinet and marshaling racks can be replaced by AS-Interface.

The AS-Interface cable can be connected to any points thanks to a specially developed cable and connection by the insulation piercing method.

With this concept you become extremely flexible and achieve high savings.

### Application

#### *I/O data exchange*

The AS-i master automatically transfers the inputs and outputs between the controller and the digital and analog AS-Interface slaves. Slave diagnostics information is forwarded to the control system when required.

The latest AS-Interface masters according to the AS-Interface specification V3.0 support integrated analog value processing. This means that data exchange with analog AS-Interface slaves is just as easy as with digital slaves.

#### *Command interface*

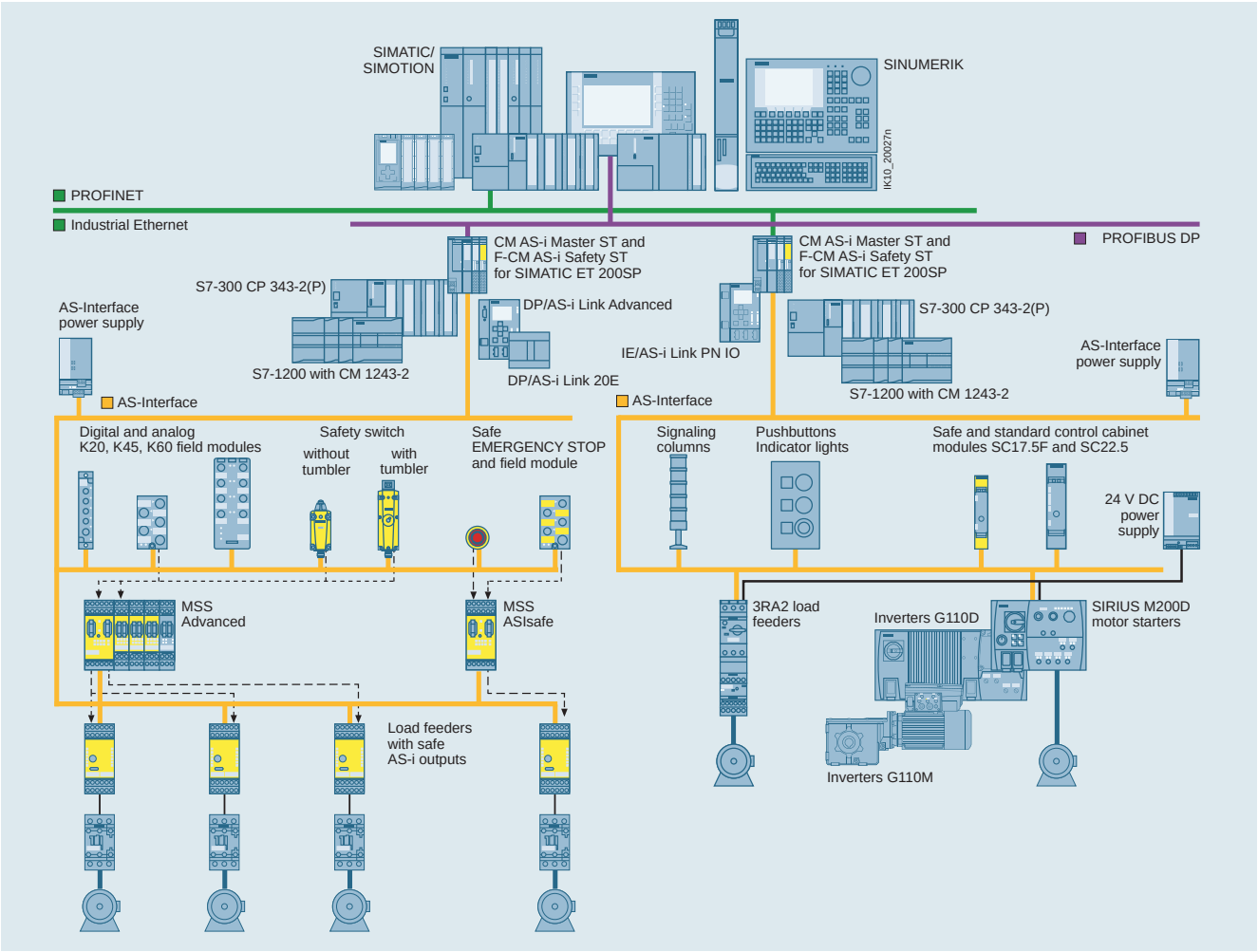
In addition to I/O data exchange with binary and analog AS-Interface slaves, the AS-Interface masters can provide a number of other functions through the command interface.

Hence it is possible, for example, for slave addresses to be issued, parameter values transferred or configuration information read out from user programs.

## Overview

To implement communication, the following components of a system installation are available:

- AS-i modules for central control units such as SIMATIC S7, ET 200M/ET 200SP distributed I/Os, or network transitions from PROFIBUS or PROFINET to AS-Interface
- AS-i power supply unit or alternatively a standard power supply unit in combination with an AS-i data decoupling module for the power supply to the slaves and sensors
- AS-Interface shaped cables
- Network components such as repeaters and extension plugs (cannot be used for AS-i Power24V)
- I/O modules (AS-i slaves) for connection of standard sensors/actuators
- Actuators and sensors with integrated AS-i slave
- Safe I/O modules (ASIsafe slaves) for transmitting safety-related data through AS-Interface
- Addressing device for setting slave addresses during commissioning




Example of a configuration with the system components

### *Features*

| | |
|---|---|
| Standard | IEC/EN 62026-2 |
| Topology | Line, star or tree structure (same as electrical wiring) |
| Transmission medium | Unshielded twisted pair (2 x 1.5 $mm^2$) for data and auxiliary power |
| Connection methods | Contacting of the AS-Interface cable by insulation piercing method |
| Maximum cable length | • 100 m without repeater<br>• 200 m with extension plug<br>• 300 m with two repeaters in series connection<br>• 600 m with extension plugs and two repeaters parallel switched<br>Longer cable lengths also possible through parallel switching of more repeaters. |

| | |
|---|---|
| Maximum cycle time | • 5 ms in maximum configuration with 31 standard addresses<br>• 10 ms in maximum configuration with 62 A/B addresses<br>• Profile-specific for slaves with extended data, e.g. analog slaves |
| Number of stations per AS-Interface line | • Up to 62 slaves (A/B addressing)<br>• Integrated analog value transmission |
| Number of binary sensors and actuators | max. 496 DI / 496 DQ |
| Access control | • Cyclic polling master/slave procedure<br>• Cyclic data acceptance from host (PLC, PC) |
| Error safeguard | Identification and repetition of faulty message frames |

## Overview

### *Scope of AS-Interface specification V3.0*

| Maximum number of slaves | | | Number of digital inputs | Number of digital outputs |
|---|---|---|---|---|
| Digital | Analog | ASIsafe | DI | DQ |
| 62 | 62 | 31 | 62 × 8 = 496 | 62 × 8 = 496 |

### *Basic data*

- AS-Interface specification 3.0 describes a fieldbus system with an AS-i master and up to 62 AS-i slaves.
- Every AS-i slave with standard addressing occupies one AS-i address (1...31).
- Slaves with extended addressing divide an AS-i address into an A address (1A...31A) and a B address (1B...31B). Up to 62 A/B slaves can be connected accordingly to one AS-Interface network.
- Mixed operation of slaves with standard addressing and extended addressing (A/B slaves) is possible without difficulty. The AS-i master identifies automatically which type of slave is connected, so no special adjustments are required of the user.
- One digital AS-i slave typically has up to four digital inputs and four digital outputs.
- Transmission of the digital input/output data requires max. 5 ms cycle time for 31 slaves; for further values, see "Communication cycle".
- Integrated analog value transmission permits access to both analog values and digital values without the need for any special function blocks.

### *Communication cycle*

| Maximum cycle time (digital signals) |
|---|
| • 5 ms with 31 slaves<br>• 10 ms with 62 slaves<br>• Up to 20 ms for slaves with A/B address 4 DI / 4 DQ<br>• Up to 40 ms for slaves with A/B address 8 DI / 8 DQ |

Each address is queried in max. 5 ms cycle time. If two A/B slaves are operated on one basic address (e.g. 12A and 12B), a maximum of 10 ms will be required to update the data of both slaves.

Slaves with A/B addressing transmit max. 4 DI / 3 DQ in one cycle.

Slaves with A/B addressing and 4 DQ or 4 DI / 4 DQ transmit the output data in two consecutive cycles. The double transmission time of these outputs has no effect in typical applications. The transmission procedure is performed automatically by the AS-i master in accordance with AS-i specification V3.0. These slaves are identified in the selection data with addressing type A/B (spec. V3.0).

Slaves with a single A/B address and 8 DI / 8 DQ transmit the input and output data in four consecutive cycles. The transmission time of the inputs/outputs of these slaves increases accordingly. The transmission procedure is performed automatically by the AS-i master in accordance with AS-i specification V3.0.

The slaves offered by Siemens with 8 DI or 8 DI / 2 DQ use two AS-i addresses so that the time-consuming procedure is not needed and a fast data update is ensured.

All slave types can be mixed and used on a single AS-Interface network.

For more information, such as the addressing type used by the AS-interface slave (standard or A/B address), see the "Selection and ordering data" for the relevant slave.

**More information**

System Manual "AS-Interface", see https://support.industry.siemens.com/cs/ww/en/view/26250840

### *AS-Interface product range*

AS-Interface products from Siemens use the current AS-Interface specification V3.0, which is standardized internationally as IEC/EN 62026-2.

The alternating pulse modulation developed more than 20 years ago for AS-Interface has proven to be a reliable transmission method with which the direct voltage supply for the bus modules and the connected sensors is provided on the standard two-wire line.

Multiple development stages were implemented to produce the proven-in-use system components with optimum EMC properties available today. The extensive product range with AS-Interface specification V3.0 undergoes constant innovation and is extremely cost-efficient, both to install and operate.

The bus cable can be retrofitted with repeaters of AS-Interface specification V3.0, and the modules function without any reciprocal interference. Master modules from Siemens enable ideal integration into the SIMATIC environment, in particular for the AS-Interface master of the ET 200SP distributed I/O system.

The underlying industrial requirements for the system concept are still applicable today: Numerous individual digital input and output signals are spatially distributed in the machine. Rather than having to install thick cable harnesses from the control cabinet to the sensors and actuators, smaller, more manageable AS-i modules are simply inserted in situ onto the bus cable in the IP67 enclosure, and the sensors and actuators connected with short M12 cables.

An additional AS-i module is installed in proximity to the next sensor to ensure that the length of the M12 cables is kept as short as possible. As analog signals are likewise transmitted without any problems, the AS-Interface also replaces the long, shielded analog cables.

Depending on requirements, the switching devices can also be connected to AS-i modules with terminal connection or conveniently used with the integrated AS-i connection. Motor controllers with digital and analog inputs and outputs are also offered with the current AS-Interface specification V3.0.

Safety signals are also transmitted simply and flexibly by the AS-Interface. The safety-related sensors for protective doors and EMERGENCY STOP buttons can be installed and retrofitted in any position.

The AS-i Safety functionality from Siemens has been continuously optimized and complies with the proven AS-Interface specification V3.0.

For industrial components which require greater transmission capacities, Siemens provide respective solutions with the suitable communication systems.

The AS-Interface system from Siemens continues to provide an ideal and consistent solution for a multitude of simple sensors and actuators, including safety technology and special applications.

Available masters with the latest AS-Interface specification V3.0

- CM AS-i Master ST, F-CM AS-i Safety ST (ET 200SP)
- CM 1243-2 (S7-1200)
- CP 343-2P / CP 343-2 (S7-300 / ET 200M)
- DP/AS-i Link Advanced, DP/AS-Interface Link 20E
- IE/AS-i Link PN IO

## Overview

**More information**

For a complete overview of AS-i Power24V-capable devices currently available from Siemens, see https://support.industry.siemens.com/cs/ww/en/view/42806066

For details of AS-i Power24V, see "AS-Interface" System Manual, https://support.industry.siemens.com/cs/ww/en/view/26250840

AS-Interface data decoupling modules for AS-i Power24V
Left: S22.5 data decoupling module,
Right: DCM 1271 data decoupling module for SIMATIC S7-1200

Parallel wiring frequently dominates, above all, in applications with very few I/Os. AS-Interface can, however, also replace extensive parallel wiring in small applications at a favorable price.

AS-i Power24V enables an already existing standard 24 V DC power supply unit to be used for the AS-i network.

### *Data and power in the standard AS-Interface network*

One of the great advantages of AS-Interface is the ability to convey not only data, but also the power needed for the connected slaves and sensors over the same unshielded two-conductor cable. This is owed to the service-proven AS-Interface power supply units which provide integrated data decoupling as well as overload and short-circuit protection and integrated ground-fault monitoring.

### *AS-i Power24V*

Instead of the AS-Interface power supply unit (with 30 V output voltage and integrated data decoupling) the AS-i cable is supplied via a data decoupling module from a 24 V standard power supply unit. The communication technology of AS-Interface works at the same high level of quality with an operating voltage of both 30 V DC and 24 V DC.

| | Key data of AS-i Power24V |
|---|---|
| **Number of slaves** | Up to 62 slaves and up to 31 safe slaves |
| **Topology** | Any |
| **Range** | Up to 50 m |
| **Components** | • 24 V power supply unit with low residual ripple and limitation to max. 40 V<br>• AS-i Power24V-capable data decoupling with integrated ground-fault detection<br>• AS-i Power24V-capable masters, slaves and components |

### *Requirements for operation of an AS-i Power24V network*

- When 24 V power supply units are used, the maximum network range of 50 m must be observed to reach slaves and sensors with a sufficient level of voltage (at least 18 V).
- The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standard, have a residual ripple of < 250 mVpp, and must limit the output voltage to a maximum of 40 V in the event of a fault. We recommend SITOP power supplies, see Catalog Section 15 or KT10.1, https://support.industry.siemens.com/cs/ww/en/view/109745655.
- When used in conjunction with standard 24 V power supply units, each AS-Interface network requires AS-i Power24V-capable data decoupling, see page 14/77 onwards.
- For reliable operation of an AS-i network with 24 V voltage, it is important that the masters, slaves and other components are approved for AS-i Power24V. AS-i Power24V-capable AS-i components can also be used without restriction in standard 30 V AS-i networks.
- Use of repeaters or extension plugs in AS-i Power24V networks is not permitted.

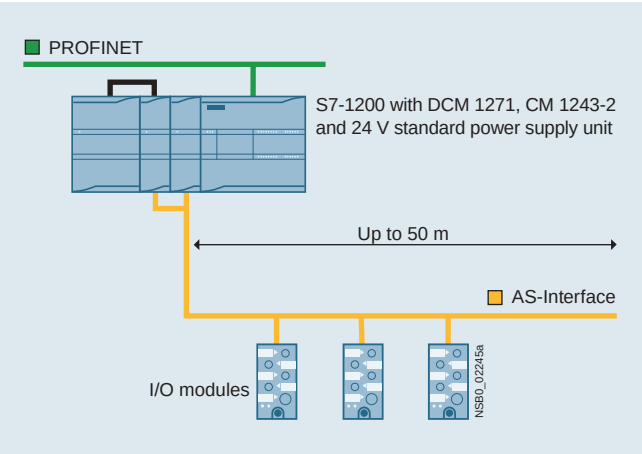
## Benefits

In small control cabinets the AS-i power supply unit can be replaced by an AS-i data decoupling module that is connected to an existing 24 V power supply unit.

- The advantages of the AS-i communication system in terms of commissioning, maintenance and diagnostics can be fully exploited.
- If a double data decoupling module is used, two AS-i networks can be supplied.

## Application

### *Configuration of an AS-i Power24V network*




Configuration of an AS-i Power24V network with an AS-Interface DCM 1271 data decoupling module and S7-1200 (simple network)

# AS-Interface: ASIsafe

## Introduction

### Overview

**More information**

For further information and typical circuit diagrams on safety engineering, see https://support.industry.siemens.com/cs/ww/en/view/83150405

#### *ASIsafe – Safety is included*

ASIsafe enables the integration of safety-related components such as EMERGENCY STOP pushbuttons, protective door switches, cable-operated switches or other AS-i safety sensors in an AS-Interface network. These are fully compatible with the familiar AS-Interface components (masters, slaves, power supplies, repeaters, etc.) in accordance with IEC/EN 62026-2 and are operated in conjunction with them on the yellow AS-Interface cable.

#### *Tested safety*

- Protective door switches
- Cable-operated switches
- Other AS-i safety sensors

The transmission method for safety-related signals is released for applications up to PL e according to EN ISO 13849-1 and up to SIL 3 (IEC 61508/EN 62061).

#### *Higher-level control*

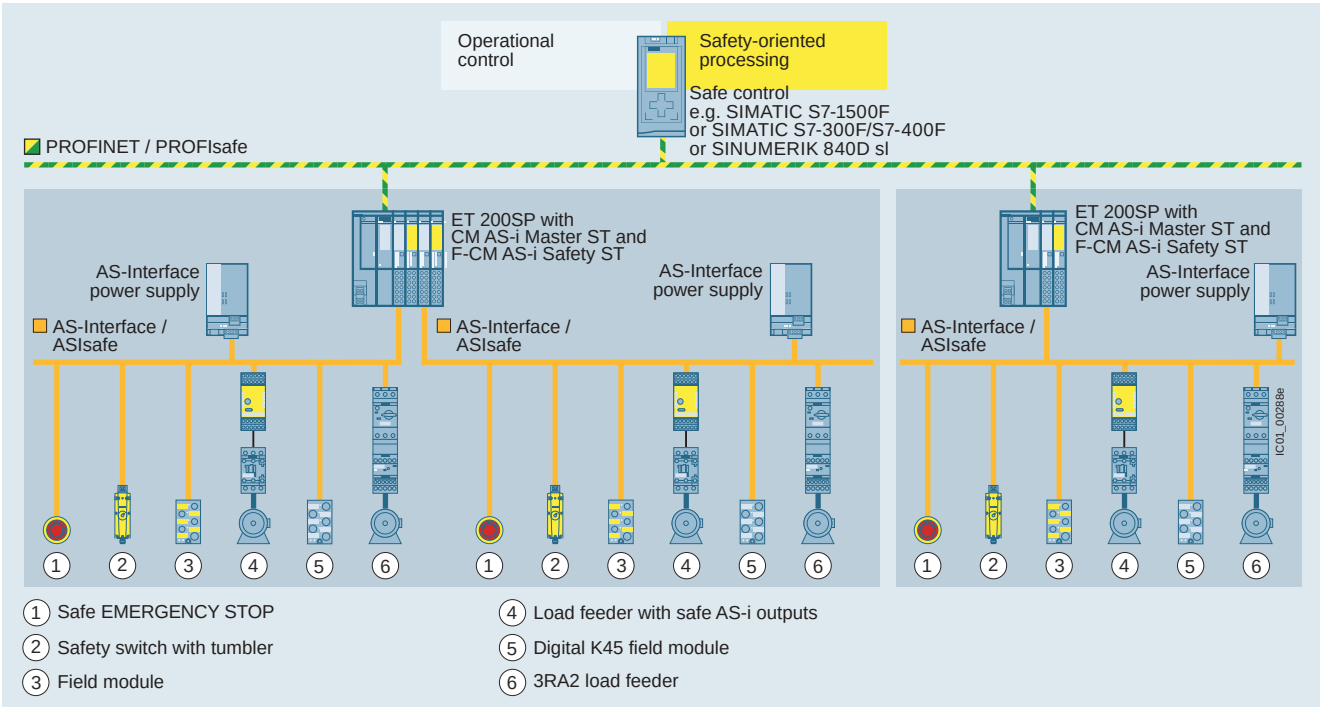
As usual, nodes on the AS-Interface bus are controlled in operation by the standard program of the higher-level SIMATIC (F) CPU or by a SINUMERIK control.

#### *Configuring safety functions*

In order to implement safe functions, the information from the safe and standard nodes must be combined logically and further parameters set. The configuration of the safety functions depends on which safety solution is being used:

- AS-i safety solution with F-CPU: In conjunction with the modular safety AS-i master, which is formed by combining the CM AS-i Master ST and F-CM AS-i Safety ST modules in an ET 200SP station, all safety functions and combinations are configured via STEP 7 and processed in the controller (F-CPU) by the fail-safe program.
- In the case of the AS-i safety solution with local evaluation by MSS: In conjunction with the Modular Safety System all safety functions and combinations are configured using the SIRIUS Safety ES software and processed in the MSS central unit.

#### *AS-i safety solution with F-CPU*




AS-Interface configuration with AS-i master modules in the ET 200SP

The AS-i communication modules in the ET 200SP facilitate the use of AS-Interface under fail-safe SIMATIC or SINUMERIK controllers.

The allocation of tasks is as follows:

- Acquisition of safety-related signals via safe input slaves on the AS-Interface bus.
  Further signals can be detected through other F-DI modules of the SIMATIC.
- Evaluation and processing of signals via the fail-safe SIMATIC or SINUMERIK control
- Reacting by means of safety output modules on the AS-Interface bus or other SIMATIC F-DQ modules

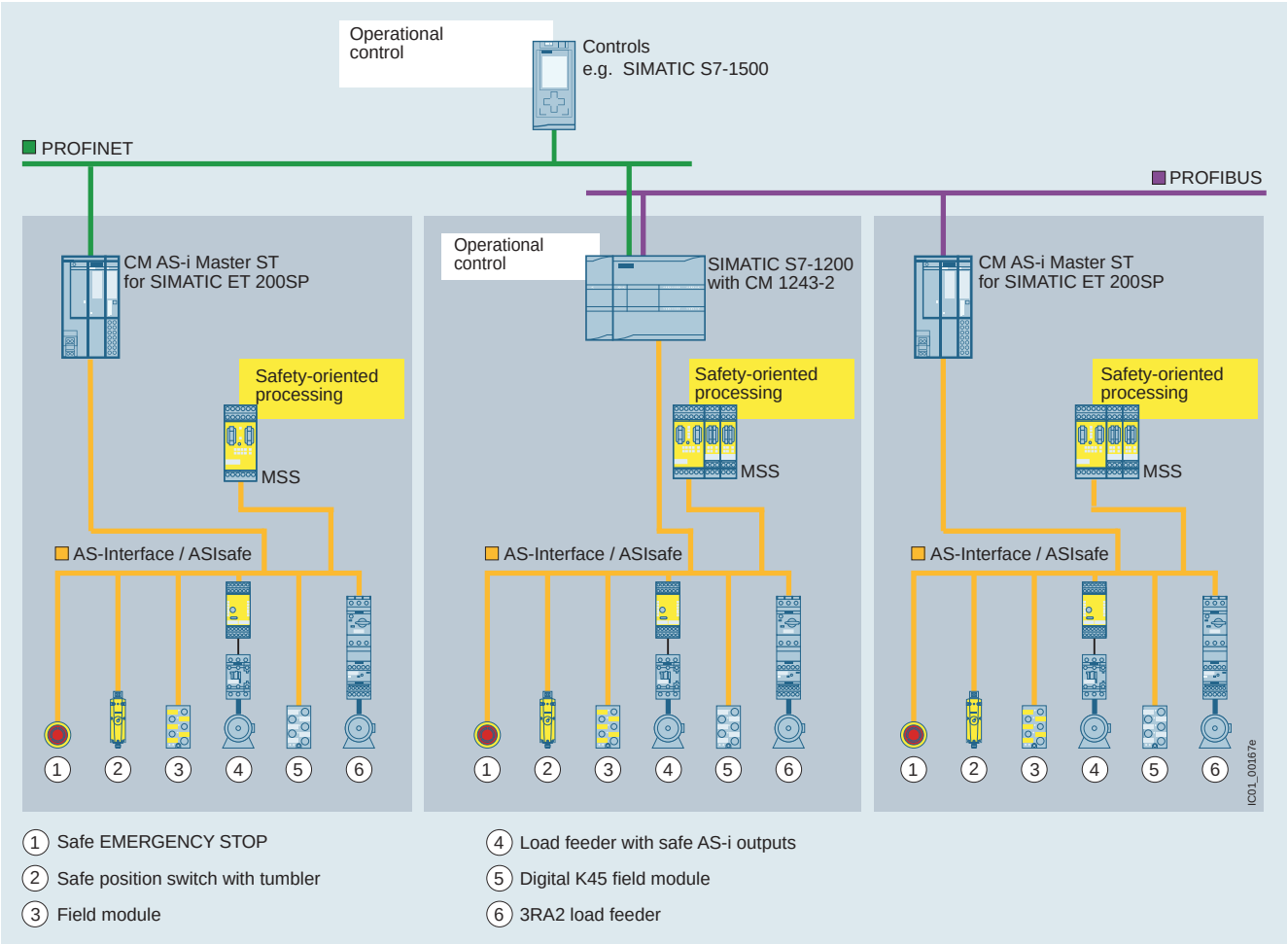
Simple combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules in one ET 200SP station results in a powerful, safety-oriented network transition between PROFINET (or PROFIBUS) and AS-Interface, which can be expanded further in a modular fashion with further I/O modules of the ET 200SP.

Using these design methods, it is possible to create configurations for virtually any application. Besides the single AS-i master, double, triple or generally multiple masters can be realized with or without fail-safe functionality.

# AS-Interface: ASIsafe

## Introduction

***AS-i safety solution with local evaluation by MSS***




AS-Interface design with 3RK3 Modular Safety System (MSS)

The local AS-i safety solution uses the 3RK3 Modular Safety System (MSS) for safety-related processing. In this case, one standard controller (i.e. no F-CPU) and one standard AS-i master are sufficient.

The allocation of tasks is as follows:

- Acquisition of safety-related signals via safe input slaves on the AS-Interface bus.
  Further signals can be acquired via F-DI inputs of the central unit or the expansion modules of the MSS.
- Evaluation and processing of signals via the central unit of the MSS
- Reaction via safe output modules on the AS-Interface bus or via F-DQ outputs of the central unit or expansion modules of the MSS

SIRIUS 3RK3 Modular Safety System, see Catalog Section 13

### Benefits

- Simple system structure thanks to standardized AS-Interface technique
- Safety-related and standard data on the same bus
- Existing systems can be expanded quickly and easily
- Optimum integration in TIA (Safety Diagnostics) and Safety Integrated
- Inclusion of the safety signals in the plant diagnostics, also on existing HMI panels
- Approved to PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508
- ASIsafe is certified by TÜV (Germany), NRTL (USA) and INRS (France)

### Application

Integrated safety technology in the AS-Interface system can be used wherever EMERGENCY STOP buttons, safety gate interlocks, safety switches, light grids and two-hand operation are installed.

## Selection and ordering data

3RK1105-1BE04-0CA0

| Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| **Basic safety monitors**<br>Version 3<br>With screw terminals, removable terminals, width 45 mm | | **Screw terminals** | | |
| • 1 enabling circuit (monitor type 1) | 2 | **3RK1105-1AE04-0CA0** | 1 | 1 unit |
| • 2 enabling circuits (monitor type 2) | 2 | **3RK1105-1BE04-0CA0** | 1 | 1 unit |
| **Expanded safety monitors**<br>Version 3<br>With screw terminals, removable terminals, width 45 mm | | | | |
| • 1 enabling circuit (monitor type 3) | 2 | **3RK1105-1AE04-2CA0** | 1 | 1 unit |
| • 2 enabling circuits (monitor type 4) | 2 | **3RK1105-1BE04-2CA0** | 1 | 1 unit |
| **Expanded safety monitor with integrated safe slave**<br>Version 3<br>With screw terminals, removable terminals, width 45 mm | | | | |
| • 2 enabling circuits including control of a safe AS-i output/safe coupling (monitor type 6) | 2 | **3RK1105-1BE04-4CA0** | 1 | 1 unit |
| **Basic safety monitors**<br>Version 3<br>With spring-loaded terminals, removable terminals, width 45 mm | | **Spring-loaded terminals** | | |
| • 1 enabling circuit (monitor type 1) | 2 | **3RK1105-1AG04-0CA0** | 1 | 1 unit |
| • 2 enabling circuits (monitor type 2) | 2 | **3RK1105-1BG04-0CA0** | 1 | 1 unit |
| **Expanded safety monitors**<br>Version 3<br>With spring-loaded terminals, removable terminals, width 45 mm | | | | |
| • 1 enabling circuit (monitor type 3) | 2 | **3RK1105-1AG04-2CA0** | 1 | 1 unit |
| • 2 enabling circuits (monitor type 4) | 2 | **3RK1105-1BG04-2CA0** | 1 | 1 unit |
| **Expanded safety monitor with integrated safe slave**<br>Version 3<br>With spring-loaded terminals, removable terminals, width 45 mm | | | | |
| • 2 enabling circuits including control of a safe AS-i output/safe coupling (monitor type 6) | 2 | **3RK1105-1BG04-4CA0** | 1 | 1 unit |

## Accessories

3RK1901-5AA00

| Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| **ASIsafe CD**<br>Included in the scope of supply:<br>• ASIMON V3 configuration software on CD ROM, for PC with Windows operating system | 2 | **3RK1802-2FB06-0GA1** | 1 | 1 unit |
| **Cable sets**<br>Included in the scope of supply:<br>• PC configuration cable for communication between PC (serial interface) and safety monitor, length approx. 1.50 m<br>• Transfer cable between two safety monitors, length approx. 0.25 m | ▶ | **3RK1901-5AA00** | 1 | 1 unit |
| **Sealable covers**<br>For securing against unauthorized configuration of the safety monitor | 5 | **3RP1902** | 1 | 5 units |
| **Push-in lugs**<br>For screw fixing | 5 | **3RP1903** | 1 | 10 units |

## Overview

AS-Interface safety modules: K45F (left), K20F (center) and SC17.5F (right)

S45F SlimLine module, safe AS-i output

Safety modules for AS-Interface (ASIsafe modules) are available for field use in degree of protection IP67 (K20F and K45F compact modules) and for the control cabinet (SC17.5F SlimLine Compact modules) in degree of protection IP20.

A very compact module with an optimum price/performance ratio is thus available for every application.

All modules for the connection of (mechanical) switches and safety sensors with contacts feature crossover monitoring of the connected sensor line.

### *AS-Interface safety modules*

The following modules are available for selection:

K20F compact safety modules for operation in the field

Being only 20 mm wide, the K20F module is particularly well suited for applications where modules need to be arranged in the most confined of spaces. The K20F modules are connected to the AS-Interface with a round cable with M12 cable box instead of with the AS-Interface flat cable. This enables extremely compact installation. The flexibility of the round cable means that it can also be used on moving machine parts without any problems. The K20 modules are also ideal for such applications as their non-encapsulated design makes them particularly light in weight.

K45F compact safety modules for use in the field

The platform of the K45F modules covers the connection of ("mechanical") switches/safety sensors with contacts:

- K45F 2 F-DI: Two safety-related inputs in operation up to Category 2 according to EN ISO 13849-1. If Category 4 is required, a two-channel input is available on the module.
- K45F 2 F-DI / 2 DQ: There are also two standard outputs in addition to the safe inputs. Supplied from the yellow AS-i cable
- K45F 2 F-DI / 2 DQ $U_{aux}$: same as K45F 2 F-DI/2 DQ, but supplied from the black 24 V DC cable
- K45F 4 F-DI: Four safety-related inputs in operation up to Category 2, two for Category 4. Extremely compact double slave (uses two standard AS-i addresses)

SC17.5F SlimLine Compact safety modules with a width of just 17.5 mm for use in control cabinets and local control boxes

With a width of only 17.5 mm, the safe SC17.5F SlimLine Compact modules are ideal for space-saving use in a control cabinet. The modules have more than two safety inputs for connecting signals to ASIsafe networks in the control cabinet. For operation up to Category 2, both inputs can be separately assigned; if Category 4 is required, a two-channel input is available on the module.

There are also two module variants which have two standard outputs in addition to the two safety inputs. The outputs are supplied either from the yellow AS-Interface cable alone, or via auxiliary voltage from the black 24 V DC cable. The supply voltage is set via a slide switch on the rear of the device.

When using several modules, they can be connected simply via the optional device connector. This simplifies the wiring. The yellow AS-i bus cable and the 24 V DC auxiliary voltage $U_{aux}$ then only need to be connected to one module.

S45F SlimLine safety modules with safety outputs for the safe distributed disconnection of actuators

With the S45F SlimLine safety module, a safe output signal of the ET 200SP module F-CM AS-i Safety ST can be used for distributed safety-related disconnection via ASIsafe.

To this end, the S45F module has a safety-related two-channel relay output. As an additional possibility the module offers normal switching of the output using an AS-i standard output bit.

The module has three digital inputs and two digital outputs for the additional connection of sensors and actuators. These can be used, among other things, for the required monitoring of downstream contactors of the feedback circuit.

The S45F module can also be controlled in a safety-related manner, for example by the modular 3RK3 ASIsafe/Advanced safety system. The module contains an AS-i slave for the non-safety-related inputs/outputs.

## Selection and ordering data

| | Version | | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | d | | | |
| 3RK1205-0BQ30-0AA3 | **K20F compact safety modules**<br>Slave addressing type: Standard address | | | | | |
| | I/O type | $U_{aux}$ 24 V | | | | |
| | 2 F-DI | -- | 2 | **3RK1205-0BQ30-0AA3** | 1 | 1 unit |
| 3RK1205-0BQ00-0AA3 | **K45F compact safety modules**<br>Slave addressing type: Standard address<br>(modules supplied without mounting plate) | | | | | |
| | I/O type | $U_{aux}$ 24 V | | | | |
| | 2 F-DI | -- | ▶ | **3RK1205-0BQ00-0AA3** | 1 | 1 unit |
| | 4 F-DI[1)] | -- | 2 | **3RK1205-0CQ00-0AA3** | 1 | 1 unit |
| | 2 F-DI / 2 DQ | -- | 5 | **3RK1405-0BQ20-0AA3** | 1 | 1 unit |
| | 2 F-DI / 2 DQ | -- | 5 | **3RK1405-1BQ20-0AA3** | 1 | 1 unit |
| 3RK1405-0BE00-2AA2 | **SC17.5F SlimLine Compact safety modules**<br>Slave addressing type: Standard address | | | | | |
| | I/O type | Outputs | | | | |
| | | | | **Screw terminals** | | |
| | 2 F-DI | -- | 2 | **3RK1205-0BE00-2AA2** | 1 | 1 unit |
| | | | | **Spring-loaded terminals (push-in)** | | |
| | 2 F-DI | -- | 2 | **3RK1205-0BG00-2AA2** | 1 | 1 unit |
| | | | | **Screw terminals** | | |
| | 2 F-DI / 2 DQ | $U_{ASI}/U_{aux}$ supply selectable | 2 | **3RK1405-2BE00-2AA2** | 1 | 1 unit |
| | | | | **Spring-loaded terminals (push-in)** | | |
| | 2 F-DI / 2 DQ | $U_{ASI}/U_{aux}$ supply selectable | 2 | **3RK1405-2BG00-2AA2** | 1 | 1 unit |
| 3RK1405-1SE15-0AA2 | **S45F SlimLine safety module**<br>(with safe AS-i output) | | | | | |
| | I/O type | $U_{aux}$ 24 V | | | | |
| | | | | **Screw terminals** | | |
| | 1 F-RQ / 3 DI / 2 DQ | ✓ | 2 | **3RK1405-1SE15-0AA2** | 1 | 1 unit |
| | | | | **Spring-loaded terminals (push-in)** | | |
| | 1 F-RQ / 3 DI / 2 DQ | ✓ | 2 | **3RK1405-1SG15-0AA2** | 1 | 1 unit |

✓ Available or possible
-- Not available or not possible
1) Module occupies two AS-Interface addresses

Standard I/O modules for AS-Interface

- For degree of protection IP67, see page 14/50 onwards
- For degree of protection IP20, see page 14/65 onwards

The existing SlimLine series of I/O modules for use in the control cabinet and local control boxes is being replaced by the new SlimLine Compact series. We recommend that these new devices are used in future.

For the conversion table, see page 14/67.

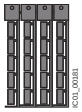
Note:

The previous SlimLine devices are still available for use as replacements in existing systems. As a result of the innovation, the new SlimLine Compact devices are not fully compatible in terms of either mechanical dimensions or electrical properties.

## Accessories

**More information**

For the Equipment Manual "SlimLine Compact Modules", see https://support.industry.siemens.com/cs/ww/en/view/109481489

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| **Accessories for compact safety modules** | | | | | |
| 3RK1901-2EA00 | **K45 mounting plates**<br>For mounting K45F | | | | |
| | • For wall mounting | ▶ | **3RK1901-2EA00** | 1 | 1 unit |
| | • For standard rail mounting | ▶ | **3RK1901-2DA00** | 1 | 1 unit |
| 3RK1901-1AA00 | **Input bridges for K45F** | | | | |
| | • Black version | 2 | **3RK1901-1AA00** | 1 | 1 unit |
| | • Red version | 30 | **3RK1901-1AA01** | 1 | 1 unit |
| 3RK1901-1KA00 3RK1901-1KA01 | **AS-Interface sealing caps M12**<br>For free M12 sockets | ▶ | **3RK1901-1KA00** | 100 | 10 units |
| | • Tamper proof | 2 | **3RK1901-1KA01** | 100 | 10 units |
| **Accessories for SlimLine Compact safety modules** | | | | | |
| 3RK1901-1YA00 3RK1901-1YA01 | **Device connectors**<br>For the electrical connection of SlimLine Compact modules (connects AS-i bus cable and 24 V DC auxiliary power supply $U_{aux}$ when using several SlimLine Compact modules) | | | | |
| | • Width 17.5 mm | 2 | **3RK1901-1YA00** | 1 | 1 unit |
| | • Width 22.5 mm | 2 | **3RK1901-1YA10** | 1 | 1 unit |
| | **Device termination connectors**<br>Required for the last module in the network | | | | |
| | • Width 17.5 mm | 2 | **3RK1901-1YA01** | 1 | 1 unit |
| | • Width 22.5 mm | 2 | **3RK1901-1YA11** | 1 | 1 unit |
| 3ZY1121-2BA00 | **Removable terminals** | | **Screw terminals** ⊕ | | |
| | • Screw terminals up to 2 x 1.5 mm² or 1 x 2.5 mm² | | | | |
| | - 2-pole | 2 | **3ZY1121-1BA00** | 1 | 6 units |
| | - 4-pole | 2 | **3ZY1141-1BA00** | 1 | 6 units |
| | | | **Spring-loaded terminals (push-in)** | | |
| | • Push-in terminals up to 2 x 1.5 mm² | | | | |
| | - 2-pole | 2 | **3ZY1121-2BA00** | 1 | 6 units |
| | - 4-pole | 2 | **3ZY1141-2BA00** | 1 | 6 units |
| | **Hinged cover**<br>Replacement for SlimLine Compact module, without terminal labeling, width 17.5 mm, yellow | 2 | **3ZY1450-1BA00** | 1 | 5 units |
| | **Push-in lugs for wall mounting**<br>Two lugs are required per device | 2 | **3ZY1311-0AA00** | 1 | 10 units |
| 3ZY1450-1BA00 | **Coding pins for removable terminals**<br>For mechanical coding of the terminals | 2 | **3ZY1440-1AA00** | 1 | 12 units |
|  3RT2900-1SB20 | **Blank labels**<br>Unit labeling plates | | | | |
| | • 10 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB10** | 100 | 816 units |
| | • 20 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB20** | 100 | 340 units |
| 3RA2908-1A | **Tools for opening spring-loaded terminals** | | **Spring-loaded terminals (push-in)** | | |
| | Screwdriver for SIRIUS devices with spring-loaded terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated | 2 | **3RA2908-1A** | 1 | 1 unit |

## Overview

CM 1243-2 communication module for S7-1200

**More information**

Manuals, see https://support.industry.siemens.com/cs/ww/en/ps/15750/man
For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/61892138

The CM 1243-2 communication module is the AS-Interface master for the SIMATIC S7-1200 and has the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission
- Supports all AS-Interface master functions in accordance with the AS-Interface specification V3.0
- Indication of the operating state on the front of the device displayed via LED
- Display of operating mode, AS-Interface voltage faults, configuration faults and peripheral faults via LED behind the front panel
- Compact enclosure in the design of the SIMATIC S7-1200
- Suitable for AS-i Power24V and for AS-Interface with 30 V voltage: A standard 24 V power supply unit can be used in combination with the optional DCM 1271 data decoupling module.
- Configuration and diagnostics via the TIA portal

### *Design*

The CM 1243-2 communication module is positioned to the left of the S7-1200 CPU and linked to the S7-1200 via lateral contacts.

It has:

- Terminals for two AS-i cables (internally jumpered) via two screw terminals each respectively
- One terminal for connection to the functional ground
- LEDs for indication of the operating state and fault statuses of the connected slaves

The screw terminals (included in scope of supply) can be removed to facilitate installation.

### *Function*

The CM 1243-2 supports all specified functions of the AS-Interface specification V3.0.

The values of the digital AS-i slaves can be activated via the process image of the S7-1200. During configuration of the slaves in the TIA Portal, the values of the analog AS-i slaves can also be accessed directly in the process image.

It is also possible to exchange all data of the AS-i master and the connected AS-i slaves with the S7-1200 via the data record interface.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the control panel of the CM 1243-2 in the TIA Portal.

The optional DCM 1271 data decoupling module (see "Accessories", page 14/29) has an integrated detection unit for detecting ground faults on the AS-Interface cable. The integrated overload protection also disconnects the AS-Interface cable if the drive current required exceeds 4 A. For more information on DCM 1271, see page 14/79.

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.siemens.com/industrialsecurity.

### *Configuration*

To configure CM 1243-2, you require STEP 7 V11 + SP2 or higher.

For STEP 7 V11 + SP2 or higher, the additional Hardware Support Package for CM 1243-2 is required. This is available via the Industry Online Support Portal, see https://support.industry.siemens.com/cs/ww/en/view/72341852.

The software enables user-friendly configuration and diagnostics of the AS-Interface master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration at the "touch of a button" via the control panel integrated in the TIA Portal/STEP 7.

When operated on an S7-1200 CPU with firmware version V4.0 or higher, the firmware version V1.1 (or higher) is required for the CM 1243-2.

## Benefits

- More flexibility and versatility in the use of SIMATIC S7-1200 as the result of a significant increase in the number of digital and analog inputs/outputs available
- Very easy configuration and diagnostics of the AS-Interface via the TIA Portal (STEP 7 V11+SP2 or higher)
- Simple operation with AS-Interface power supply (see page 14/73) possible without restrictions.
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. For decoupling, the AS-i DCM 1271 data decoupling module is required, see "Accessories" and page 14/79.
- LEDs for indication of fault statuses for fast diagnostics
- Monitoring of AS-Interface voltage facilitates diagnostics

## Application

The CM 1243-2 is the AS-Interface master connection for the 12xx CPUs of the SIMATIC S7-1200. Through connection to AS-Interface, the number of digital inputs and outputs available for the S7-1200 is greatly increased (max. 496 DI/496 DQ on the AS-Interface per CM).

The integrated analog value processing also makes the analog values available at the AS-Interface for the S7-1200.
Up to 31 analog slaves with a standard address (each with up to four channels) or up to 62 analog slaves with an A/B address (each with up to two channels) are possible per CM.

Operating conditions

- The CM 1243-2 communication module exchanges data with the S7-1200 CPU with a cycle time of 10 ms.
- The AS-i cycle time depends on the AS-i bus capacity and is up to 5 ms in the case of 31 slaves addresses; for more information, see Equipment Manual "AS-i Master CM 1243-2 and AS-i DCM 1271 data decoupling module", https://support.industry.siemens.com/cs/ww/en/view/57358958.
- For calculation of the maximum switching frequency at inputs/outputs of AS-i slaves, these cycle times and the runtime of the user program must be added up.

## Selection and ordering data

| | Version | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | Article No. | | |
| 3RK7243-2AA30-0XB0 | **CM 1243-2 communication module**<br>• AS-Interface masters for SIMATIC S7-1200<br>• Corresponds to AS-Interface specification V3.0<br>• With screw terminals, removable terminals (included in the scope of supply)<br>• Dimensions (W × H × D/mm): 30 × 100 × 75 | 2 | **3RK7243-2AA30-0XB0** | 1 | 1 unit |

Note:

The CM 1243-2 communication module is available as a SIPLUS version under Article No. 6AG1243-2AA30-7XB0 in the extended temperature range (from -25 to 70 °C) and for use in harsh environmental conditions (coated according to environment standard IEC 60721).

For more information, see www.siemens.com/siplus-extreme.

## Accessories

| | Version | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | Article No. | | |
| 3RK7271-1AA30-0AA0 | **DCM 1271 data decoupling module**<br>• With screw terminals, removable terminals (included in the scope of supply)<br>• Dimensions (W × H × D/mm): 30 × 100 × 75 | 2 | **3RK7271-1AA30-0AA0** | 1 | 1 unit |
| | **Screw terminals (replacement)** | | | | |
| | • 5-pole<br>For AS-i master CM 1243-2 and AS-i DCM 1271 data decoupling module | 5 | **3RK1901-3MA00** | 1 | 1 unit |
| | • 3-pole<br>For AS-i DCM 1271 data decoupling module for connecting the power supply unit | 5 | **3RK1901-3MB00** | 1 | 1 unit |

## Overview

CP 343-2P/CP 343-2

**More information**

Manuals, see https://support.industry.siemens.com/cs/ww/en/ps/15754/man
For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/61892138
AS-Interface block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7, see Catalog KT10.1 - SITOP Power Supply

The CP 343-2P communications processor is the AS-Interface master for the SIMATIC S7-300 and the ET 200M distributed I/O station, with user-friendly parameterizing options.

The CP 343-2 is the basic version of the module.

The CP 343-2P/CP 343-2 has the following characteristics:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission
- Support of all AS-Interface master functions in accordance with the AS-Interface specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (including AS-Interface voltage errors, configuration errors) by means of LEDs on the front plate.
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-i Power24V (from product version 2 / firmware version 3.1) and for AS-Interface with 30 V voltage
- Additionally for CP 343-2P: Supports the configuration of the AS-Interface network with STEP 7 V5.2 and higher

### *Design*

The CP 343-2P/CP 343-2 is connected like an I/O module to the S7-300. It has:

- Two terminal connections for connecting the AS-Interface cable directly.
- LEDs in the front panel for indicating the operating state and the readiness for operation of all connected and activated slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the TARGET configuration

### *Function*

The CP 343-2P/CP 343-2 support all specified functions of the AS-Interface specification V3.0.

The CP 343-2P/CP 343-2 each occupy 16 bytes in the I/O address area of the SIMATIC S7-300. The digital I/O data of the standard slaves and A slaves is saved in this area. The digital I/O data of the B slaves and the analog I/O data can be accessed with the S7 system functions for read/write data records.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

For more information, see https://support.industry.siemens.com/cs/ww/en/view/51678777.

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.siemens.com/industrialsecurity.

### *Configuration*

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

Additionally for CP 343-2P

The CP 343-2P also supports configuring of the AS-Interface network with STEP 7 V5.2 and higher. Specifying the AS-i configuration in HW-Config facilitates the setting of slave parameters and documentation of the plant. Uploading the ACTUAL configuration of an already configured AS-Interface network is also supported. The saved configuration cannot be overwritten at the press of a button and is therefore tamper-proof.

## Benefits

- Shorter startup times through simple configuration at the press of a button
- Design of flexible machine-related structures using the ET 200M distributed I/O system
- Provides diagnostics of the AS-Interface network
- Well suited also for complex applications thanks to connection options for 62 slaves and integral analog value processing
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators:
  - Status of the AS-Interface network
  - Slaves connected and their readiness for operation
  - Monitoring of the AS-Interface voltage
- Lower costs for stock keeping and spare parts inventory because the CP can be used for the SIMATIC S7-300 and also for the ET 200M
- Additionally for CP 343-2P: Improved plant documentation and support for service assignments thanks to a description of the AS-Interface configuration in the STEP 7 project
- Simple operation with AS-Interface power supply (see page 14/73) possible without restrictions.
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. An S22.5 AS-i data decoupling module (e.g. 3RK1901-1DE12-1AA0) is required for the decoupling, see page 14/77.

## Application

The CP 343-2P/CP 343-2 is the AS-Interface master connection for the SIMATIC S7-300 and the ET 200M.

Through connection to AS-Interface it is possible to access max. 248 DI/248 DQ per CP, using 62 A/B slaves with 4 DI/4 DQ each.

With the integrated analog value processing, it is easy to transmit analog signals. Up to 62 analog slaves with an A/B address (each with up to two channels) or up to 31 analog slaves with a standard address (each with up to four channels) are possible per CP.

The CP 343-2P is the further development of the CP 343-2 and contains its entire functionality. An existing STEP 7 user program for a CP 343-2 can thus be used without restrictions with a CP 343-2P. It is only in STEP 7 HW-Config that the two modules are configured differently, with the CP 343-2P offering additional options. This is why the CP 343-2P is recommended.

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 6GK7343-2AH11-0XA0 | **CP 343-2P communications processors**<br>• Device version with expanded configuration options for connection of SIMATIC S7-300 and ET 200M to AS-Interface<br>• Configuration of the AS-i network using the SET key or STEP 7 (V5.2 and higher)<br>• Without front connector<br>• Corresponds to AS-Interface specification V3.0<br>• Dimensions (W x H x D/mm): 40 x 125 x 120 | ► | **6GK7343-2AH11-0XA0** | 1 | 1 unit |
| 6GK7343-2AH01-0XA0 | **CP 343-2 communications processors**<br>• Basic version for connection of SIMATIC S7-300 and ET 200M to AS-Interface<br>• Configuration of the AS-i network using the SET key<br>• Without front connector<br>• Corresponds to AS-Interface specification V3.0<br>• Dimensions (W x H x D/mm): 40 x 125 x 120 | ► | **6GK7343-2AH01-0XA0** | 1 | 1 unit |

## Accessories

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **Front connector, 20-pole** | | | | |
| • With screw terminals | 1 | **6ES7392-1AJ00-0AA0** | 1 | 1 unit |
| • With spring-loaded terminals | 1 | **6ES7392-1BJ00-0AA0** | 1 | 1 unit |

## Overview

CM AS-i Master ST for SIMATIC ET 200SP

**More information**

SIMATIC ET 200SP Manual Collection, see https://support.industry.siemens.com/cs/ww/en/view/84133942

Diagnostics blocks with visualization, see https://support.industry.siemens.com/cs/ww/en/view/109479103

AS-Interface block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7, see Catalog KT10.1 - SITOP Power Supply

Released combinations of the AS-i modules for ET 200SP, see https://support.industry.siemens.com/cs/ww/en/view/103624653

The CM AS-i Master ST communication module is designed for use in the SIMATIC ET 200SP distributed I/O system and has the following features:

- Connection of up to 62 AS-Interface slaves
- Supports all AS-Interface master functions according to the AS-Interface specification V3.0
- User-friendly configuration with graphic display of the AS-i line in TIA Portal V12 or higher, or via GSD in other systems
- Supply via AS-Interface cable
- Suitable for AS-i Power24V and for AS-Interface with 30 V voltage
- Integrated ground-fault monitoring for the AS-Interface cable
- Through connection to AS-Interface, the number of digital inputs and outputs available for the control system is greatly increased (max. 496 DI/496 DQ on the AS-Interface per CM AS-i Master ST).
- Integrated analog value processing

### *ET 200SP distributed I/O system*

The SIMATIC ET 200SP is a scalable and highly flexible distributed I/O system for connecting the process signals to a central control system via PROFIBUS or PROFINET.

Up to eight CM AS-i Master STs can be plugged into a SIMATIC ET 200SP with the IM 155-6 PN standard interface module.

More information, see the SIMATIC ET 200SP Manual Collection.

### *Design*

The CM AS-i Master ST module has an ET 200SP module enclosure with a width of 20 mm. A C0 type BaseUnit (BU) is required for use in the ET 200SP.

The communication module has LED indicators for diagnostics, operation, AS-i voltage and AS-i slave status and offers informative front-side module inscription for

- Plain-text marking of the module type and function class
- 2D matrix code (Article No. and serial number)
- Circuit diagram
- Color coding of the CM module type: Light gray
- Hardware and firmware version
- Complete article number

### *Function*

The CM AS-i Master ST communication module supports all specified functions of the AS-Interface specification V3.0.

The input/output values of the digital AS-i slaves can be activated via the cyclic process image. The values of the analog AS-i slaves are accessible via the cyclic process image (firmware V1.1 or higher) or via data record transfer.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the control panel of the CM AS-i Master ST in STEP 7.

Expansions as from firmware version V1.1

For the implementation of modular machine concepts, the AS-i slaves can be activated or deactivated via the PLC program (option handling). The configuration of AS-i slaves can be modified while being executed, thus enabling variable machine set-ups and tool changing with integrated input/output modules during ongoing operation. AS-i input/output modules can be added to the system without deactivating the controller.

An existing AS-i installation can be read into the STEP 7 hardware configuration and adapted and documented in the project. Analog values are transmitted via the cyclic process image, the length of which is adjustable and extendable up to 288 bytes (depending on the interface module (IM) used).

Diagnostic information is accessed via automatic alarm indications, via the process image or data record reading in the user program or in the STEP 7 engineering system in a graphical overview matrix. The transmission quality of the AS-i network can also be read out. To avoid configuration errors, duplicate addresses can be detected on the AS-i network.

The new functions are available with TIA Portal STEP 7 V13 SP1 or with STEP 7 V5.5 with HSP 2092 V3.0[1]. Configuration is possible with SIMATIC CPUs S7-300 up to S7-1500 and with a SINUMERIK 840D sl or other controller.

In the network view, the AS-i slaves' online diagnostics status can be displayed directly on the slaves (for S7-1500 CPUs with firmware version V2.0 or higher, with TIA Portal STEP 7 V14 or higher).

[1] For HSP 2092, see https://support.industry.siemens.com/cs/ww/en/view/23183356.

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.siemens.com/industrialsecurity.

### *Configuration*

The following software is required for configuration of the CM AS-i Master ST module:

- STEP 7 (TIA Portal) V12 or higher or V13 SP1 or higher (for firmware V1.1) or
- STEP 7 (classic) V5.5 SP3 HF4 or higher with HSP 2092 or HSP 2092 V3.0 (for firmware V1.1) or
- the GSD file of the ET 200SP with STEP 7 or another engineering tool

STEP 7 enables user-friendly configuration and diagnostics of the AS-i master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration as the TARGET configuration at the "touch of a button" via the control panel integrated in the TIA Portal or an optional expansion button. Configuration with the GSD file is possible only with the button.

The CM AS-i Master ST module occupies up to 288 input bytes and up to 288 output bytes in the I/O data of the ET 200SP station. The I/O assignment depends on the configuration in STEP 7.

Together with an ET 200SP CPU 1510SP/1512SP (firmware V1.8 or higher) or 1515SP PC, preprocessing of safe AS-i signals directly in the ET 200SP station and setting up of an independent AS-i Safety station without a higher-level CPU are possible (TIA Portal V13 SP1 Update 4 and higher).

Configuration of an AS-Interface network with CM AS-i Master ST via the TIA Portal

## Benefits

The CM AS-i Master ST for ET 200SP communication module enables modular, simple and high-performance expansion of AS-interface networks via engineering in the TIA Portal.

Up to eight CM AS-i Master ST units can be plugged into one ET 200SP station with IM 155-6 PN Standard. The maximum configuration depends on the interface module used.

Multiple masters as well as single masters can thus be implemented in the ET 200SP depending on the number of modules.

Together with the interface module, a scalable PROFINET/AS-i Link or PROFIBUS/AS-i Link can be assembled.

Using STEP 7, the AS-i network is consistently configured and programmed with only one configuration tool.

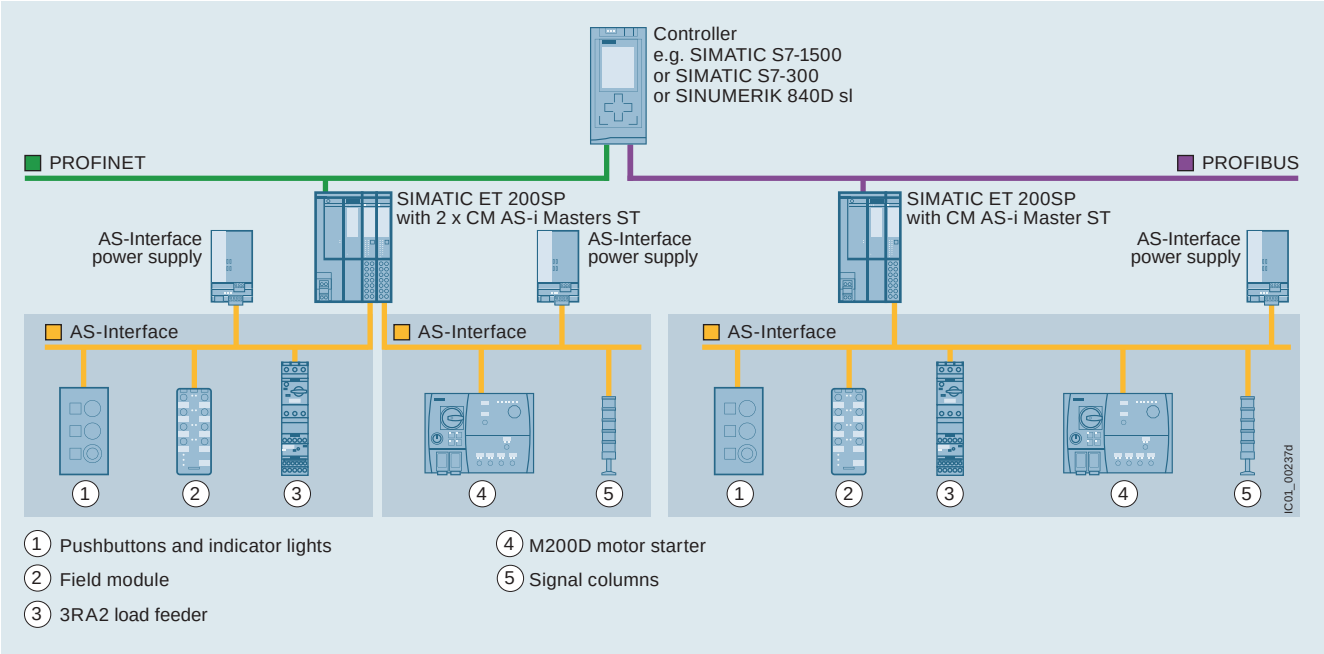
The PRONETA PC program (for ET 200SP with PROFINET interface module) is available for convenient input/output testing during the commissioning of an AS-i network without a CPU; see www.siemens.com/proneta.

For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/109479103.

CM AS-i Master ST diagnostics block

## Application

***Configuration examples of AS-Interface networks with CM AS-i Master ST for SIMATIC ET 200SP***




Configuration of AS-Interface networks under a SIMATIC ET 200SP

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK7137-6SA00-0BC1 | **CM AS-i Master ST communication module**<br>• AS-Interface master for SIMATIC ET 200SP, can be plugged onto BaseUnit type C0<br>• Corresponds to AS-Interface specification V3.0<br>• Dimensions (W × H × D/mm): 20 x 73 x 58 | 2 | **3RK7137-6SA00-0BC1** | 1 | 1 unit |

## Accessories

| Version | SD | Spring-loaded terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | Article No. | | |
| **BaseUnit BU20-P6+A2+4D**<br>• BaseUnit (light), BU type C0<br>• Suitable for the CM AS-i Master ST module<br>• For connection of the AS-Interface cable to the CM AS-i Master ST<br>• Start of an AS-i network, isolation of the AS-i voltage from the left-hand module | 15 | **6ES7193-6BP20-0DC0** | 1 | 1 unit |

6ES7193-6BP20-0DC0

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **PROFINET interface module IM 155-6 PN Basic**<br>Max. 12 I/O modules,<br>max. 32 bytes of I/O data per station | | | | |
| • Including server module and 2 x RJ45 ports (supplied without RJ45 plug) | 1 | **6ES7155-6AR00-0AN0** | 1 | 1 unit |
| **PROFINET interface modules IM 155-6 PN Standard**<br>Max. 32 I/O modules,<br>max. 256 bytes I/O data per station | | | | |
| • Including server module and bus adapter 2 x RJ45 (supplied without RJ45 plug) | 1 | **6ES7155-6AA01-0BN0** | 1 | 1 unit |
| • Including server module (bus adapter must be ordered separately, see below) | 1 | **6ES7155-6AU01-0BN0** | 1 | 1 unit |
| **PROFINET interface modules IM 155-6 PN High Feature**<br>Max. 64 I/O modules,<br>max. 1 440 bytes I/O data per station | | | | |
| • **IM 155-6 PN/2 High Feature**<br>IM with a bus adapter slot<br>including server module and optional strain relief<br>(bus adapter must be ordered separately, see below) | 15 | **6ES7155-6AU01-0CN0** | 1 | 1 unit |
| • **IM 155-6 PN/3 High Feature**<br>3-port IM with two bus adapter slots<br>including server module and optional strain relief<br>(bus adapter must be ordered separately, see below) | 5 | **6ES7155-6AU30-0CN0** | 1 | 1 unit |
| **PROFINET interface module IM 155-6 PN High Speed**<br>Max. 30 I/O modules,<br>max. 1 440 bytes I/O data per station | | | | |
| • Including server module (bus adapter must be ordered separately, see below) | 1 | **6ES7155-6AU00-0DN0** | 1 | 1 unit |
| **PROFIBUS interface module IM 155-6 DP High Feature**<br>Max. 32 I/O modules,<br>max. 244 bytes I/O data per station | | | | |
| • Including server module and PROFIBUS plug | 15 | **6ES7155-6BA01-0CN0** | 1 | 1 unit |
| **Bus adapters for PROFINET**<br>For connection of the Ethernet cable to the PROFINET IM 155-6 PN interface module | | | | |
| • Connection 2 x RJ45 (supplied without RJ45 plug) | 1 | **6ES7193-6AR00-0AA0** | 1 | 1 unit |
| • Connection 2 x FC (FastConnect) | 1 | **6ES7193-6AF00-0AA0** | 1 | 1 unit |
| For more bus adapters with fiber optic cable connection, see Catalog IK PI or the Industry Mall. | | | | |

6ES7155-6AR00-0AN0

6ES7155-6AA01-0BN0

6ES7155-6AU01-0CN0

6ES7155-6AU00-0DN0

6ES7193-6AR00-0AA0

6ES7193-6AF00-0AA0

## Overview

F-CM AS-i Safety ST for SIMATIC ET 200SP

**More information**

SIMATIC ET 200SP Manual Collection, see
https://support.industry.siemens.com/cs/ww/en/view/84133942
Diagnostics blocks with visualization, see
https://support.industry.siemens.com/cs/ww/en/view/109479103
Released combinations of the AS-i modules for ET 200SP, see
https://support.industry.siemens.com/cs/ww/en/view/103624653

The F-CM AS-i Safety ST fail-safe communication module supplements an AS-Interface network without additional wiring to produce a safety-related AS-i network.

Important features:

- Fail-safe communication module for the ET 200SP
  - 31 fail-safe input channels in the process image
  - 16 fail-safe output channels in the process image
  - Certified up to SIL 3 (IEC 61508/EN 62061), PL e (EN ISO 13849-1)
  - Parameterization conforms with other fail-safe I/O modules of the ET 200SP
- The communication module supports PROFIsafe in PROFINET and PROFIBUS configurations. Can be used with fail-safe SIMATIC S7-300F/S7-400F CPUs and S7-1500F CPUs and also the fail-safe versions of the ET 200SP station with ET 200SP F-CPU 1510SP F/1512SP F (firmware V1.8 or higher) or 1515SP PC F.
- For reading up to 31 fail-safe AS-i input slaves
  - Two sensor inputs/signals for each fail-safe AS-i input slave
  - Adjustable evaluation of sensor signals: two-channel or 2 x single-channel
  - Integrated discrepancy evaluation in the case of two-channel signals
  - Integrated AND operation in the case of 2 x single-channel signals
  - Input delay can be parameterized
  - Start-up test can be set
  - Sequence monitoring can be activated
- For control of up to 16 fail-safe AS-i output circuit groups
  - The output circuit groups are controlled independently of one another.
  - One output circuit group can act on one or more actuators (e.g. to switch drives simultaneously).
  - An actuator (e.g. a contactor) is interfaced via a fail-safe AS-i output module (e.g. safe SlimLine module S45F, Article No. 3RK1405-1SE15-0AA2, see page 14/36).
  - Simple fault acknowledgment via the process image
- Simple module replacement thanks to automatic importing of the safety parameters from the coding element
- Comprehensive diagnostic options
- Can be plugged onto type C1 or type C0 BaseUnits (BU)
- Informative automatic alarm indications (firmware V1.0.1 or higher)
- Supply via AS-Interface voltage
- Eight LED indicators for diagnostics, operating state, fault indication and supply voltage
- Informative front-side module inscription
  - Plain-text marking of the module type and function class
  - 2D matrix code (Article No. and serial number)
  - Circuit diagram
  - Color coding of the CM module type: Light gray
  - Hardware and firmware version
  - Complete article number
- Optional labeling accessories
  - Labeling strips
  - Reference identification label

### *Design*

The fail-safe F-CM AS-i Safety ST module has an ET 200SP module enclosure with a width of 20 mm.

One AS-i master according to the AS-i specification V3.0 and safe AS-i input slaves and/or safe AS-i output modules are needed for operation. The CM AS-i Master ST communication module (Article No. 3RK7137-6SA00-0BC1) is recommended as the AS-i master for the ET 200SP, see from page 14/32 onwards.

Simple combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules in one ET 200SP station results in a powerful, safety-oriented network transition between PROFINET (or PROFIBUS) and AS-Interface, which can be expanded further in a modular fashion.

Combination of an ET 200SP interface module, CM AS-i Master ST and F-CM AS-i Safety ST

With the digital and analog I/O modules of the ET 200SP, additional local inputs and outputs can be realized so as to ensure that the modular AS-i router complies precisely with customer requirements. Expansion variants for almost every application are possible thanks to the selection of standard and fail-safe I/O modules.

Besides the single AS-i master, double, triple or generally multiple masters can be realized with or without fail-safe functionality.

Supported BaseUnits

With the combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules, the CM module is plugged onto a light type C0 BaseUnit and, immediately to the right of it, the F-CM module is plugged onto a dark type C1 BaseUnit. The AS-i cable is connected only on the light BaseUnit of the CM module.

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.siemens.com/industrialsecurity.

### *Configuration*

The following software is required for configuration of the F-CM AS-i Safety ST module:

- STEP 7 (TIA Portal) V13 and higher with HSP 0070[1] and Safety Advanced.
  STEP 7 V13 SP1 is required for connection to the S7-1500F.
  When configuring with STEP 7 V13 SP1, the latest version of HSP 0070 V2.0 (or higher) is an essential prerequisite.
  STEP 7 Safety V13 SP1 Update 4 and HSP 0070 V3.0 (or higher) are needed for configuration of the F-CM AS-i Safety ST module in an ET 200SP station with ET 200SP F-CPU 1510SP F/1512SP F (firmware V1.8 or higher) or 1515SP PC F.

or

- STEP 7 (classic) V5.5 SP3 HF4 or higher with HSP 2093[2] and Distributed Safety V5.4 SP5 or F-Configuration Pack SP11 or SIMATIC S7 F/FH Systems

Configuration and programming are done entirely in the STEP 7 user interface. No additional configuration software is needed for commissioning.

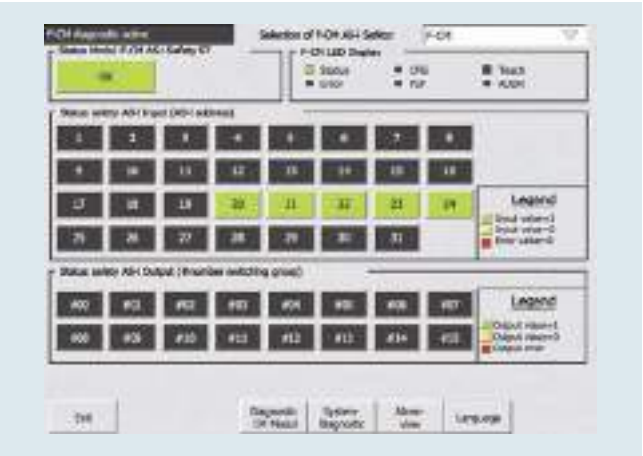
Data management – together with all other configuration data of the SIMATIC – is realized completely in the S7 project.

The input and output channels are assigned to the process image automatically and manual linking via configuration blocks is not necessary.

If the F-CM AS-i Safety ST module is replaced, all necessary settings are automatically imported into the new module.

The F-CM AS-i Safety ST module occupies 16 input bytes and 8 output bytes in the I/O data of the ET 200SP station.

For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/109479103.



Diagnostics block for F-CM AS-i Safety ST

[1] For HSP 0070, see https://support.industry.siemens.com/cs/ww/en/view/72341852.

[2] For HSP 2092, see https://support.industry.siemens.com/cs/ww/en/view/23183356.

## Application

Thanks to use of the fail-safe module in the ET 200SP, it is possible to fulfill the safety-related application requirements in a manner that is integrated in the overall automation solution.

The safety functions required for fail-safe operation are integrated in the modules. Communication with the fail-safe SIMATIC S7 CPUs is realized via PROFIsafe.

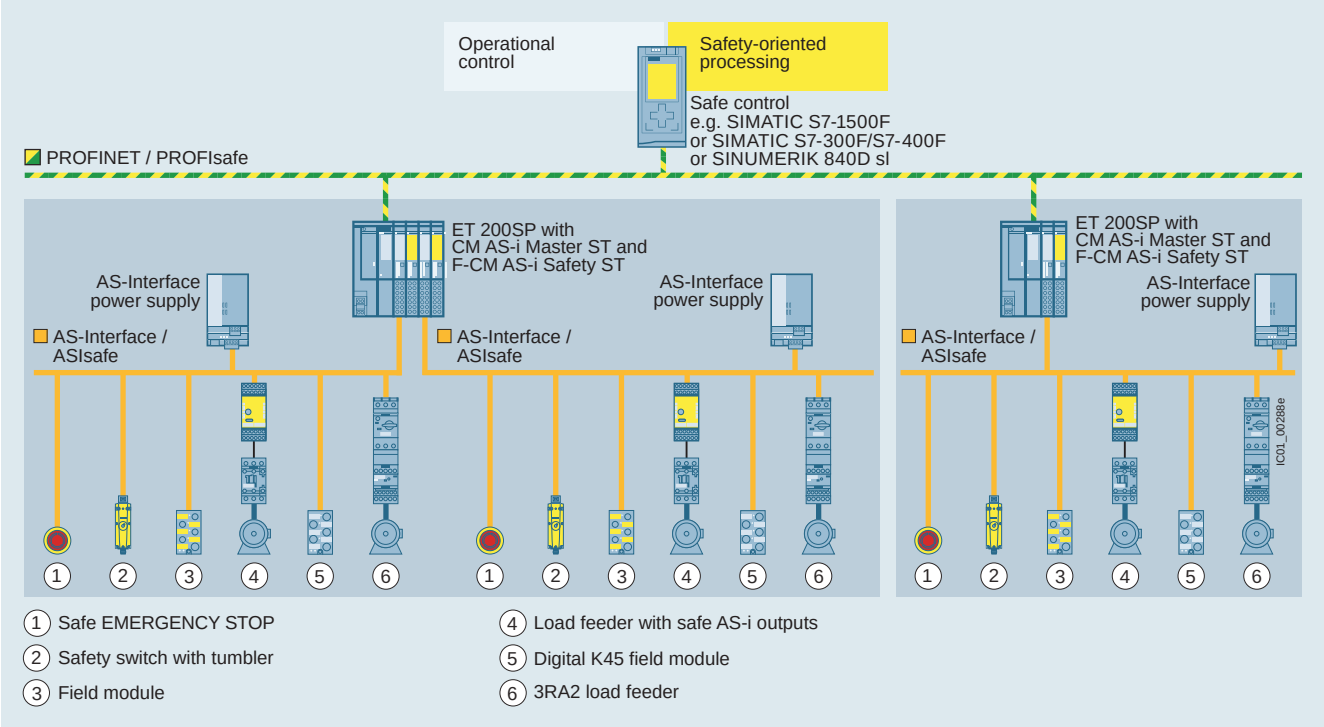
The safety application is programmed in the SIMATIC S7 F-CPU with Distributed Safety/S7 F/FH Systems/Safety Advanced. The fail-safe input signals of the ASIsafe slave modules are read via the AS-i bus line and are combined with any chosen further signals in the fail-safe program.

The fail-safe output signals can be output via safe SIMATIC output modules or also directly via AS-i – with the help of safe AS-i output modules, e.g. safe SlimLine S45F modules, Article No. 3RK1405-1SE15-0AA2 (see page 14/26). No special functions are required for this in the program.

Operation with SINUMERIK 840D sl is possible with SINUMERIK software version V4.7 SP2 HF1 or higher.

Together with an ET 200SP station with ET 200SP F-CPU 1510SP F/1512SP F (firmware V1.8 and higher) or 1515SP PC F, pre-processing of safe AS-i signals directly in the ET 200SP station is possible, as well as the configuration of an autonomous AS-i Safety station without a higher-level CPU.

***Configuration examples of AS-Interface networks with CM AS-i Master ST and F-CM AS-i Safety ST for SIMATIC ET 200SP***




AS-Interface configuration comprising an ET 200SP station with CM AS-i Master ST and F-CM AS-i Safety ST modules

## Selection and ordering data

| | Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 3RK7136-6SC00-0BC1 | **F-CM AS-i Safety ST communication module**<br>• Fail-safe module for SIMATIC ET 200SP, can be plugged onto BaseUnit type C1 (alternatively type C0)<br>• Operation requires an AS-i master, e.g. CM AS-i Master ST (see page 14/34)<br>• Can be used up to SIL 3 (IEC 62061/IEC 61508), PL e (EN ISO 13849-1)<br>• Coding element type H (included in scope of supply)<br>• Dimensions (W x H x D/mm): 20 x 73 x 58 | 2 | **3RK7136-6SC00-0BC1** | 1 | 1 unit |

## Accessories

| | Version | SD d | Spring-loaded terminals<br>Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 6ES7193-6BP20-0BC1 | **BaseUnit BU20-P6+A2+4B**<br>• BaseUnit (dark), BU type C1<br>• Suitable for the F-CM AS-i Safety ST fail-safe communication module<br>• Continuation of an AS-i network, connection with the AS-i voltage of the left-hand module | 1 | **6ES7193-6BP20-0BC1** | 1 | 1 unit |
| | **Coding element type H (spare part)**<br>• For the ET 200SP modules F-CM AS-i Safety ST and CM 4xIO-Link<br>• Packing unit 5 items | 1 | **6ES7193-6EH00-1AA0** | 1 | 5 units |

More accessories, see page 14/35.

## Overview

DP/AS-i Link Advanced

**More information**

AS-Interface block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7, see Catalog KT10.1 - SITOP Power Supply
Manual, see https://support.industry.siemens.com/cs/ww/en/ps/24507/man

| PN | DP-M | DP-S | AS-i M | | |
|---|---|---|---|---|---|
| | | ● | ● | | |

The DP/AS-i Link Advanced is a compact router between PROFIBUS (DP slave) and AS-Interface, with the following features:

- Single and double AS-Interface master (according to AS-Interface specification V3.0) for connection of 62 AS-Interface slaves or 124 AS-Interface slaves (with a double master)
- Integrated analog value transmission
- Integrated ground-fault monitoring for the AS-Interface cable
- User-friendly local diagnostics and startup by means of a full graphic display and control keys or through a web interface with a standard browser on the PC screen
- Vertical integration (standard web interface) through Industrial Ethernet
- Supply voltage from the AS-Interface cable or alternatively with 24 V DC (optional)
- Suitable for AS-i Power24V (from product version 4 / firmware version 2.2) and for AS-Interface with 30 V voltage
- Module exchange without entering the connection parameters (e.g. PROFIBUS address) using C-PLUG (optional)

### *Design*

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- COMBICON plug-in screw terminals
- Compact design:
  - Pixel graphics display in the front panel for detailed display of the operating state and readiness for operation of all connected AS-Interface slaves
  - 6 pushbuttons for starting up and testing the AS-Interface line directly on the DP/AS-i Link Advanced
  - LED indication of the operating state of PROFIBUS DP and AS-Interface
  - Integrated Ethernet port (RJ45 socket) for user-friendly startup, diagnostics and testing of DP/AS-i Link Advanced through a web interface using a standard browser
- Small mounting depth thanks to recessed plug mounting
- Operation without fans and batteries

### *Functionality*

Communications

The DP/AS-i Link Advanced enables a PROFIBUS DP master to cyclically access the I/O data of all the slaves of a lower-level AS-Interface segment.

The DP/AS-i Link Advanced occupies the following address space:

- As a single master: 32 bytes of input data and 32 bytes of output data in which the I/O data of the connected AS-Interface slaves (standard and A/B addressing) of an AS-i line is stored.
- As double master, double the number of bytes
- Optional additional I/O bytes for data from analog slaves

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the DP master. The integrated evaluation of analog signals is just as easy as access to digital values because the analog process data also lie directly in the I/O address area of the CPU.

PROFIBUS DP-V1 Masters also provide the option of triggering AS-Interface master calls over the acyclic PROFIBUS services (e.g. write parameters, amend addresses, read diagnostic values). Using an operating display in AS-i Link it is possible to fully commission the lower-level AS-Interface line even without a CPU.

DP/AS-i Link Advanced is equipped with an additional Ethernet port, which enables use of the integrated web server. The web server can be called up with any standard web browser (e.g. Internet Explorer) without additional software. It allows all diagnostics information, the set bus configuration and parameters and, if applicable, any adjustments to be displayed on the PC. Firmware updates are also possible using this port.

The optional C-PLUG supports module exchange without entering the connection parameters (PROFIBUS address etc.), keeping downtimes to a minimum in the event of a fault.

Diagnostics

The following diagnostics is possible using LEDs, the display and control keys, web interface or STEP 7:

- Operating state of the DP/AS-i Link Advanced
- Status of the link as a PROFIBUS DP slave
- Diagnostics of the AS-Interface network
- Message frame statistics
- Standard diagnostics pages in the web interface for fast diagnostics access through Ethernet using a standard browser
- For the use of the web interfaces no network settings are necessary on the PC (Zeroconf procedure)
- The reporting of diagnostic events is optionally possible via email or SNMP Trap. The integrated diagnostic buffer saves the events including time stamp

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.siemens.com/industrialsecurity.

***Configuration***

The DP/AS-i Link Advanced can be configured as follows:

- With STEP 7 (TIA Portal) V12 or higher or STEP 7 (classic) V5.4 or higher: In the case of STEP 7 configuration, the AS-Interface configuration can be uploaded in STEP 7. Furthermore, AS-Interface slaves can also be conveniently configured in HW-Config (slave selection dialog)
- By adopting the ACTUAL configuration of the AS-Interface on the display
- Alternatively DP/AS-i Link Advanced can be integrated into the engineering tool using the PROFIBUS GSD file (e.g. STEP 7 versions earlier than V5.4 or engineering tools from non-Siemens suppliers)

## Benefits

- Short startup times through simple configuration at the press of a button and testing of the AS-Interface line using the display or web interface
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display or web interface and through simple module exchange with the help of the C-PLUG exchange medium
- Reduced amount of engineering work thanks to user-friendly configuration of Siemens slaves using the slave catalog in HW-Config (STEP 7)
- Costs saved by the double AS-Interface master when large volumes of project data are involved
- Simple operation with AS-Interface power supply unit (see page 14/73) possible without restrictions, no additional operating voltage is required.
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. An S22.5 AS-i data decoupling module (e.g. 3RK1901-1DE12-1AA0) is required for the decoupling, see page 14/77.
- For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/618921

## Application

The DP/AS-i Link Advanced is a PROFIBUS DP-V1 slave (according to IEC 61158/IEC 61784) and an AS-Interface master (based on AS-Interface specification V3.0 according to IEC/EN 62026-2). It enables transparent data access to AS-Interface from PROFIBUS DP.

### *Exchanging data with the PROFIBUS DP master*

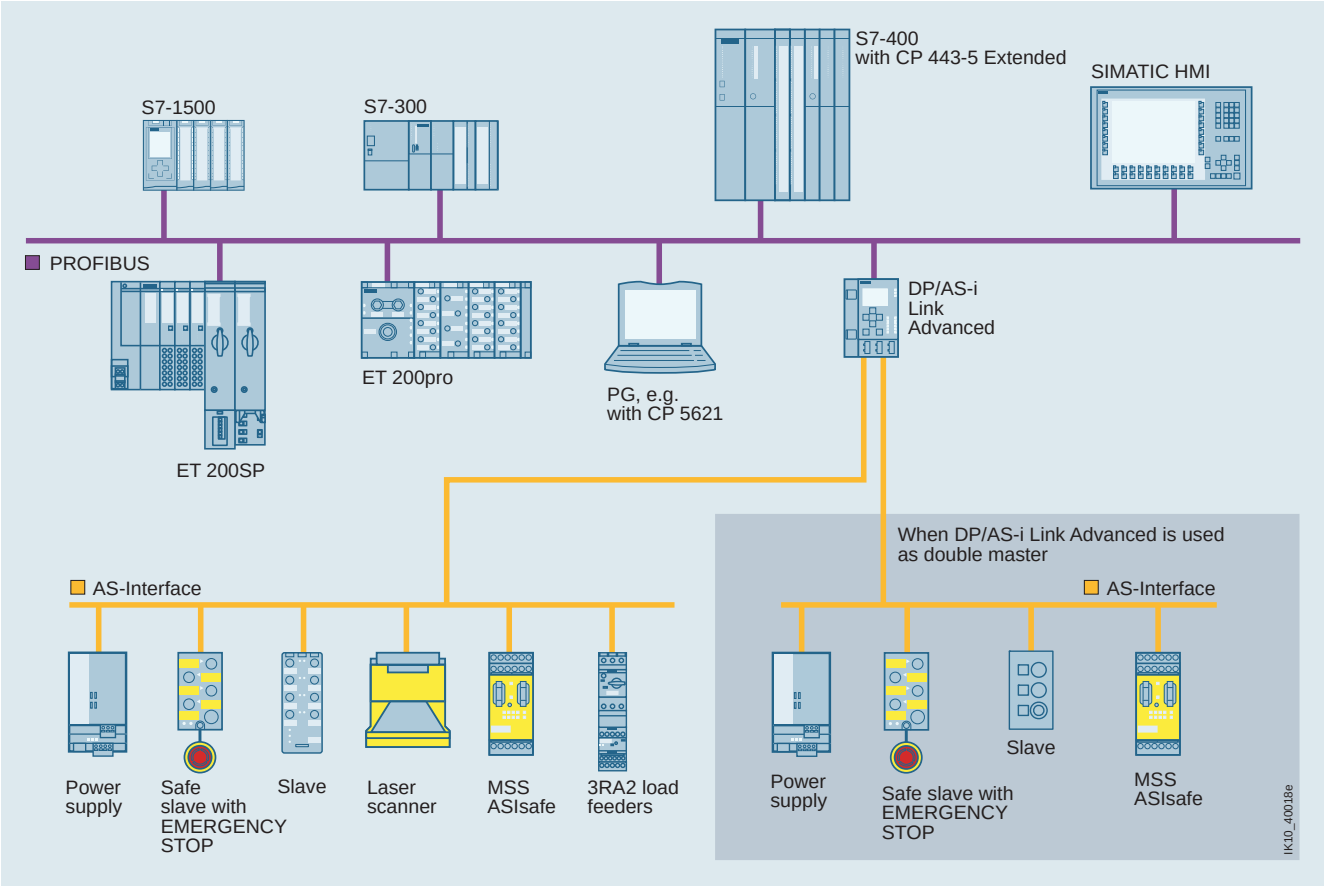
PROFIBUS DP masters (DP-V0) can exchange I/O data cyclically with the AS-Interface. DP masters with acyclic services (DP-V1) are additionally able to initiate AS-Interface master calls (e.g. reading/writing the AS-i configuration during normal operation). As such, the DP/AS-i Link Advanced is particularly well-suited for a distributed construction and for connection of a lower-level AS-Interface network.

### *Single master*

For applications with typical volumes of project data, it is sufficient to use the DP/AS-i Link Advanced in its version as an AS-Interface single master. The single master can operate up to 248 DI / 248 DQ, using 62 A/B slaves with 4 DI / 4 DQ each.

### *Double master*

The AS-Interface double master version of DP/AS-i Link Advanced is suitable for applications with large volumes of data. In this case, twice the volume of project data can be used on two AS-Interface lines running independently of each other. The double master can operate up to 496 DI / 496 DQ, using two AS-i networks each with 62 A/B slaves with 4 DI / 4 DQ each.




Integration of AS-Interface on PROFIBUS through DP/AS-i Link Advanced as single/double master

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| **DP/AS-i Link Advanced** | | | | | |
| DP/AS-i Link Advanced | Router between PROFIBUS DP and AS-Interface; degree of protection IP20; including COMBICON plug-in screw terminals for connection of an AS-Interface cable (two AS-Interface cables for double masters) and the optional 24 V supply; corresponds to AS-Interface specification V3.0; Dimensions (W x H x D/mm): 90 x 132 x 88.5 | | **COMBICON connection** | | |
| | • Single master with display | ► | **6GK1415-2BA10** | 1 | 1 unit |
| | • Double master with display | ► | **6GK1415-2BA20** | 1 | 1 unit |

## Accessories

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **C-PLUG**<br>Exchange medium for the simple exchange of devices in the event of a fault; for accommodating configuration and application data; can be used in SIMATIC NET products with a C-PLUG slot | 1 | **6GK1900-0AB00** | 1 | 1 unit |
| **PROFIBUS FastConnect standard cable GP**<br>FastConnect standard type with special design for fast installation, 2-core, shielded | 1 | **6XV1830-0EH10** | 1 | 1 M |
| **PROFIBUS FastConnect RS 485 bus connector with diagonal cable outlet (35°)**<br>With insulation displacement connection, the max. transmission rate is 12 Mbps, activatable terminating resistor is integrated | | | | |
| • Without PG connection socket | 1 | **6ES7972-0BA61-0XA0** | 1 | 1 unit |
| • With PG connection socket | 1 | **6ES7972-0BB61-0XA0** | 1 | 1 unit |
| **PROFIBUS FastConnect stripping tool**<br>Preset stripping tool for speedy stripping of PROFIBUS FastConnect bus cables | 1 | **6GK1905-6AA00** | 1 | 1 unit |
| **IE FC RJ45 Plug 90**<br>RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder | | | | |
| • 1 pack = 1 unit | 1 | **6GK1901-1BB20-2AA0** | 1 | 1 unit |
| • 1 pack = 10 units | 1 | **6GK1901-1BB20-2AB0** | 1 | 10 units |
| • 1 pack = 50 units | 1 | **6GK1901-1BB20-2AE0** | 1 | 50 units |

## Overview

DP/AS-Interface Link 20E manual

**More information**

Manual “DP/AS-Interface Link 20E”, see https://support.industry.siemens.com/cs/ww/en/view/5281638

| PN | DP-M | DP-S | AS-i M | | |
|---|---|---|---|---|---|
| | | ● | ● | | |

DP/AS-Interface Link 20E connects PROFIBUS DP to AS-Interface and has the following features:

- PROFIBUS DP slave and AS-Interface master
- Up to 62 AS-Interface slaves, each with four digital inputs and four digital outputs as well as analog slaves can be connected
- Integrated analog value transmission
- Supports all AS-Interface master functions according to the AS-Interface specification V3.0
- Supply from AS-Interface cable; hence no additional power supply required
- Suitable for AS-i Power24V (from product version 2 / firmware version 3.1) and for AS-Interface with 30 V voltage
- Supports uploading of the AS-Interface configuration in STEP 7 V5.2 and higher

### *Design*

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- LEDs in the front panel for indicating the operating state and functional readiness of all connected slaves
- Setting of PROFIBUS DP address is possible by pressing a button
- LED indication of the PROFIBUS DP slave address, PROFIBUS DP bus faults and diagnostics
- Two pushbuttons for switching over the operating state and for adopting the existing ACTUAL configuration as the TARGET configuration

### *Functionality*

Communications

The DP/AS-Interface Link 20E enables a DP master to access all the slaves of an AS-Interface network.

The DP/AS-Interface Link 20E occupies a standard 32 bytes of input data and 32 bytes of output data in which the digital I/O data of the connected AS-Interface slaves (standard and A/B addressing) of an AS-i line is stored.

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the PROFIBUS DP master.

The analog I/O data can be accessed with the S7 system functions for read/write data records.

Configuration

The DP/AS-Interface Link 20E is configured as follows:

- With STEP 7 (TIA Portal) from V12 or STEP 7 (classic) from V5.1 SP2:
  In the case of STEP 7 configuration, the AS-Interface configuration can be uploaded from STEP 7 V5.2. Furthermore, AS-Interface slaves from Siemens can also be conveniently configured in HW Config (slave selection dialog).
- By adopting the ACTUAL configuration of the AS-Interface by using the SET pushbutton on the front panel.
- Alternatively, DP/AS-Interface Link 20E can be integrated by means of the PROFIBUS GSD file in the engineering tool (e.g. for STEP 7 V5.1 and lower or for non-Siemens engineering tools).

## Benefits

- Reduction of installation costs because the power is supplied entirely via the AS-Interface cable, which means that no additional power supply is required
- Short startup times thanks to easy configuration at the touch of a button
- The LED indicators help reduce downtime and service times if a slave fails
- Quick and easy commissioning by reading the AS-Interface configuration
- For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/61892138.

# AS-Interface: Routers

## DP/AS-Interface Link 20E



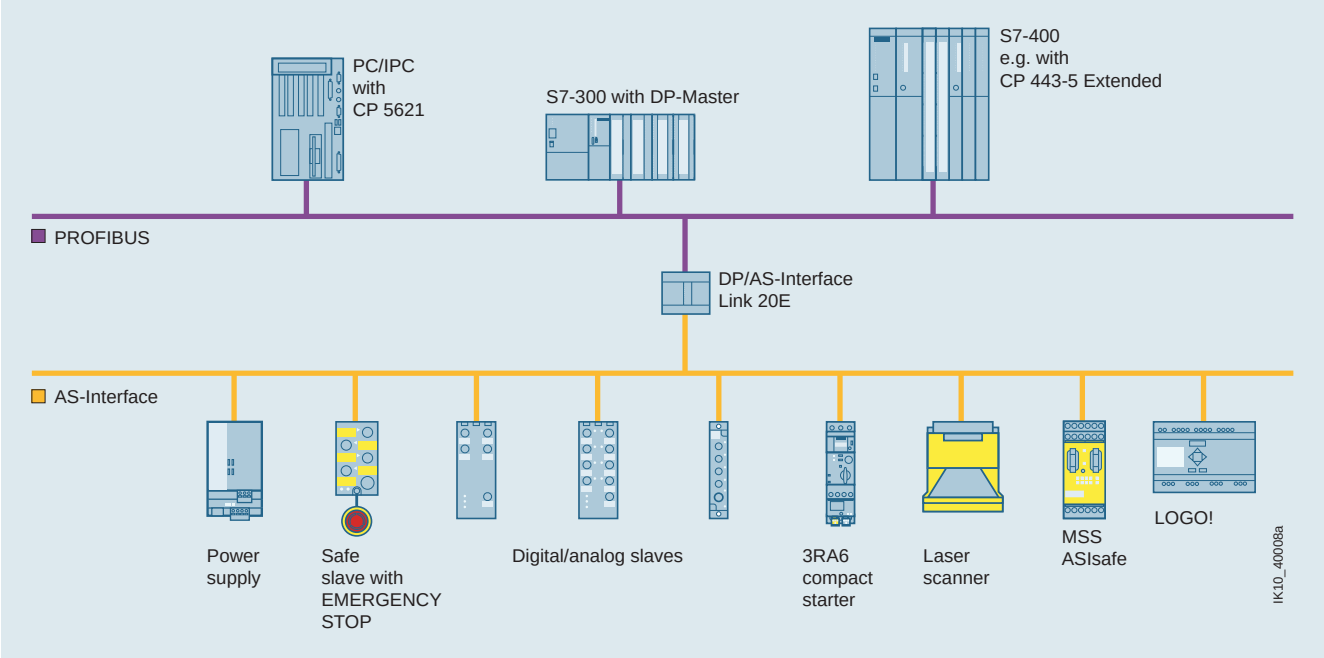
### Application

The DP/AS-Interface Link 20E is a PROFIBUS DP slave (according to IEC 61158/IEC 61784) and an AS-Interface master (according to IEC/EN 62026-2). It enables the AS-Interface to be operated on PROFIBUS DP.

Up to 248 DI / 248 DQ can be operated via the DP/AS-Interface Link 20E using 62 A/B slaves with 4 DI / 4 DQ each.

PROFIBUS DP masters (DP-V0) can exchange digital I/O data cyclically with the AS-Interface.

PROFIBUS DP masters with acyclic services (DP-V1) are additionally able to exchange analog I/O data and initiate AS-Interface master calls (e.g. reading/writing the AS-i configuration during normal operation).




Transition from PROFIBUS DP to AS-Interface using DP/AS-Interface Link 20E

### Selection and ordering data

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **DP/AS-Interface Link 20E** | | | | |
| Router between PROFIBUS DP and AS-Interface in degree of protection IP20; including screw terminals for connection of the AS-Interface cable; corresponds to AS-Interface specification V3.0; dimensions (W x H x D/mm): 90 x 80 x 60 (dimensions without fixing lugs) | ► | **Screw terminals** **6GK1415-2AA10** | 1 | 1 unit |

6GK1415-2AA10

## Accessories

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **PROFIBUS FC standard cable GP**<br>FastConnect standard type with special design for fast installation, 2-core, shielded | 1 | **6XV1830-0EH10** | 1 | 1 M |
| **PROFIBUS FastConnect bus connector**<br>With insulation displacement connection, max. transmission rate 12 Mbps, activatable terminating resistor integrated | | | | |
| • RS 485 bus connector with 90° cable feeder | | | | |
| - Without PG connection socket | 1 | **6ES7972-0BA52-0XA0** | 1 | 1 unit |
| - With PG connection socket | 1 | **6ES7972-0BB52-0XA0** | 1 | 1 unit |
| • RS 485 bus connector with diagonal cable outlet (35°) | | | | |
| - Without PG connection socket | 1 | **6ES7972-0BA61-0XA0** | 1 | 1 unit |
| - With PG connection socket | 1 | **6ES7972-0BB61-0XA0** | 1 | 1 unit |
| **PROFIBUS FastConnect stripping tool**<br>Preset stripping tool for speedy stripping of PROFIBUS FastConnect bus cables | 1 | **6GK1905-6AA00** | 1 | 1 unit |

## Overview

IE/AS-i Link PN IO
Single master (picture on left) and double master (picture on right)

**More information**

Manual, see https://support.industry.siemens.com/cs/ww/en/view/22712154
AS-Interface block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7, see Catalog KT10.1 - SITOP Power Supply

| PN | DP-M | DP-S | AS-i M | | |
|---|---|---|---|---|---|
| ● | | | ● | | |

The IE/AS-i Link PN IO is a compact router between PROFINET and AS-Interface, with the following features:

- Single and double AS-Interface master (according to AS-Interface specification V3.0) for connection of 62 or 124 AS-Interface slaves (with a double master)
- Integrated analog value transmission
- Integrated ground-fault monitoring for the AS-Interface cable
- User-friendly local diagnostics and startup by means of a full graphic display and control keys or through a web interface with a standard browser on the PC screen
- Vertical integration (standard web interface) through Industrial Ethernet
- Supply via AS-Interface cable or with 24 V DC
- Suitable for AS-i Power24V and for AS-Interface with 30 V voltage
- Module exchange without entering the PROFINET connection parameters when using the C-PLUG (optional)
- Costs saved by the double AS-Interface master when large volumes of project data are involved

Note:

As an alternative to the IE/AS-i Link PN IO, a high-performance router can be set up between PROFINET and AS-Interface by combining the CM AS-i Master ST and F-CM AS-i Safety ST modules in an ET 200SP station (for safety-related applications), see pages 14/34 and 14/38.

### *Design*

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- COMBICON plug-in screw terminals
- Compact design
- Pixel graphics display in the front panel for detailed display of the operating state and readiness for operation of all connected AS-Interface slaves
- Six pushbuttons for starting up and testing the AS-Interface line directly on the IE/AS-i Link PN IO
- LED display of the operating state of PROFINET IO and AS-Interface
- Integrated 2-port switch (RJ45 socket) for connection to Industrial Ethernet
- Small mounting depth thanks to recessed plug mounting
- Operation without fans and batteries

### *Functionality*

Communications

The IE/AS-i Link PN IO enables a PROFINET IO controller to cyclically access the I/O data of all the slaves of a lower-level AS-Interface segment. Also supported are the expanded slave types with higher I/O data volume according to AS-i specification V3.0.

The IE/AS-i Link PN IO occupies the following address space:

- As a single master with full expansion: 62 bytes of input data and 62 bytes of output data in which the I/O data of the connected AS-Interface slaves (standard and A/B addressing) of an AS-i line is stored.
- As double master, double the number of bytes
- Optional additional I/O bytes for data from analog slaves

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the IO controller.

The integrated evaluation of analog signals is just as easy as access to digital values because the analog process data also lie directly in the I/O address area of the CPU.

PROFINET IO controllers are additionally able to initiate AS-Interface master calls (e.g. to write parameters, change addresses, read diagnostic values) through the acyclic PROFINET services.

Using an operating display in AS-Interface Link it is possible to fully commission the lower-level AS-i line.

The IE/AS-i Link PN IO is equipped with two Ethernet ports, which are connected by an internal switch. With the Ethernet it is possible in addition to use the integrated web server.
The web server can be called up with any standard web browser (e.g. Internet Explorer) without additional software. It enables the PC to present all diagnostics information and to display the set bus configuration and parameters as well as their adaptation where applicable. Firmware updates are also possible using this port.

The optional C-PLUG supports module replacement without manually entering the connection parameters (PROFINET device name), keeping downtimes to a minimum in the event of a fault.

Diagnostics

The following diagnostics is possible using the display and control keys, web interface or STEP 7:

- Operating state of the IE/AS-i Link PN IO
- State of the link as a PROFINET IO device
- Diagnostics of the AS-Interface network
- Message frame statistics
- Standard diagnostics pages in the web interface for fast diagnostics access through Ethernet using a standard browser
- Reporting of diagnostic events is optionally possible via e-mail or SNMP trap. The integrated diagnostic buffer saves the events including time stamp

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.siemens.com/industrialsecurity.

***Configuration***

The IE/AS-i Link PN IO is configured as follows:

- With STEP 7 (TIA Portal) from V15 or STEP 7 (classic) from V5.4: In the case of STEP 7 configuration, the AS-Interface configuration can be uploaded from STEP 7 V5.4 SP2. Furthermore, AS-Interface slaves from Siemens can also be conveniently configured in HW-Config (slave selection dialog)
- Alternatively, IE/AS-i Link PN IO can be integrated by means of the PROFINET GSD file in the engineering tool (e.g. for TIA Portal versions earlier than V15 or for STEP 7 versions earlier than V5.4 SP2, or for non-Siemens engineering tools).

## Benefits

- Short startup times through simple configuration at the press of a button and testing of the AS-Interface line using the display or web interface
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display or web interface
- Costs saved by the double AS-Interface master when large volumes of project data are involved
- Simple operation with AS-Interface power supply unit (see page 14/73) possible without restrictions, no additional operating voltage is required.
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. An S22.5 AS-i data decoupling module (e.g. 3RK1901-1DE12-1AA0) is required for the decoupling, see page 14/77.
- For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see https://support.industry.siemens.com/cs/ww/en/view/618921

## Application

The IE/AS-i Link PN IO is a PROFINET IO device (according to IEC 61158/IEC 61784) and an AS-Interface master (based on AS-Interface specification V3.0 according to IEC/EN 62026-2). It enables transparent data access to AS-Interface from PROFINET.

### *Exchanging data with PROFINET IO controllers*

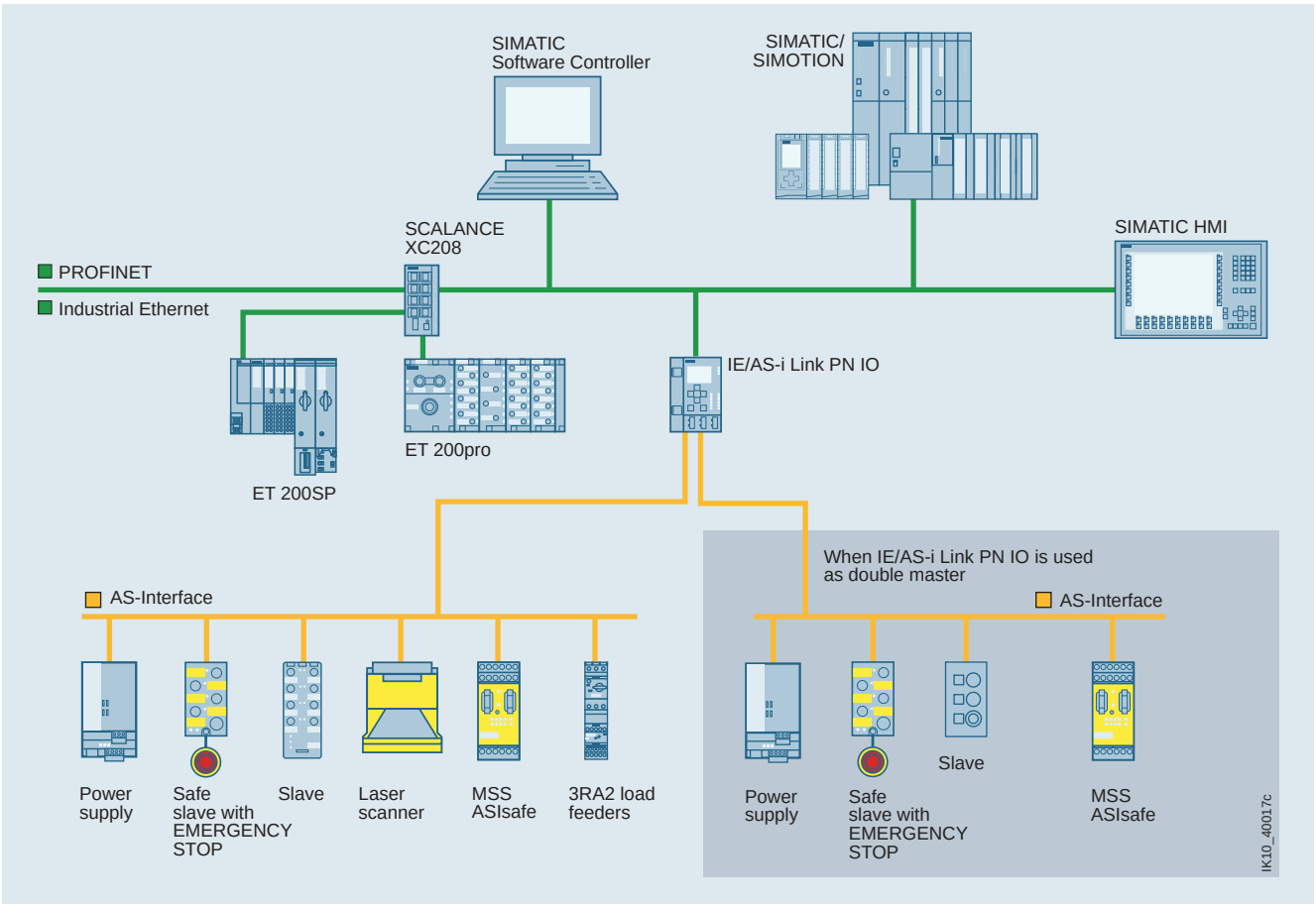
PROFINET IO controllers can exchange I/O data with AS-Interface in cyclic mode and can perform AS-i master calls in addition with acyclic services (e.g. reading/writing the AS-i configuration during normal operation). The IE/AS-i Link PN IO is therefore suitable for distributed configurations and for integrating a lower-level AS-Interface network.

### *Single master*

The AS-i single master version of IE/AS-i i Link PN IO is suitable for applications with typical volumes of data. The single master can operate up to 248 DI / 248 DQ, using 62 A/B slaves with 4 DI / 4 DQ each.

### *Double master*

The AS-i double master version of IE/AS-i Link PN IO is suitable for applications with large volumes of data. In this case, twice the volume of project data can be used on two AS-i lines running independently of each other. The double master can operate up to 496 DI / 496 DQ, using two AS-i networks each with 62 A/B slaves with 4 DI / 4 DQ each.

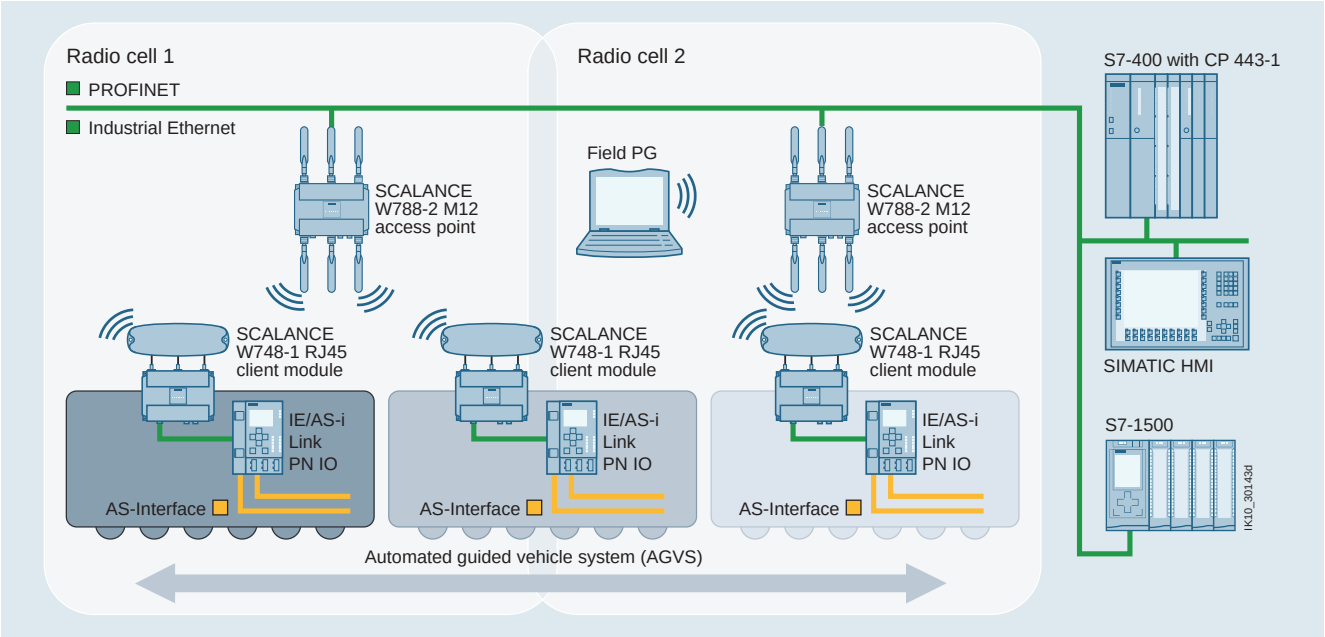



Integration of AS-Interface on PROFINET through IE/AS-i Link PN IO as single/double master

### *Wireless communication*

Using an upstream IWLAN client module, e.g. SCALANCE W748-1 RJ45, an AS-Interface line can be integrated in the PROFINET world by wireless means.

Sample uses are applications which up to now have been performed with fault-prone tow chain or collector wire technology. Maintenance costs are thus reduced.




Wireless communication between Industrial Ethernet and AS-Interface components

## Selection and ordering data

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **IE/AS-i Link PN IO** | | | | |
| IE/AS-i Link PN IO | | **COMBICON connection** | | |
| Router between PROFINET and AS-Interface in degree of protection IP20; including COMBICON plug-in screw terminals for connecting an AS-Interface cable (two AS-Interface cables for a double master) and the optional 24 V supply; complies with AS-Interface specification V3.0; dimensions (W x H x D / mm): 90 x 132 x 88.5 | | | | |
| • Single master with display | ▶ | **6GK1411-2AB10** | 1 | 1 unit |
| • Double master with display | ▶ | **6GK1411-2AB20** | 1 | 1 unit |

## Accessories

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **C-PLUG** | 1 | **6GK1900-0AB00** | 1 | 1 unit |
| Exchange medium for simple exchange of devices in the event of a fault; for accommodating configuration and application data; can be used in SIMATIC NET products with a C-PLUG slot | | | | |
| **IE FC RJ45 Plug 90** | | | | |
| RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder | | | | |
| • 1 pack = 1 unit | 1 | **6GK1901-1BB20-2AA0** | 1 | 1 unit |
| • 1 pack = 10 units | 1 | **6GK1901-1BB20-2AB0** | 1 | 10 units |
| • 1 pack = 50 units | 1 | **6GK1901-1BB20-2AE0** | 1 | 50 units |

## Overview

K60

K45

K20

Three coordinated series of AS-Interface compact modules with digital and analog compact modules and a high degree of protection are available for use in the field:

- Digital modules with a high degree of protection
  - Series K60, see pages 14/52 and 14/54
  - Series K45, see page 14/57
  - Series K20, see page 14/58
- Analog modules with a high degree of protection
  - Series K60, see page 14/61

All compact modules are characterized by particularly simple handling. The K60 and K45 modules are mounted with a mounting plate. The mounting plate is used to mount the AS-Interface flat cables and enables mounting on a wall or standard mounting rail.

The particularly narrow K20 modules are directly mounted without a mounting plate and connected to the AS-Interface using a round cable.

### *Connection types*

For flexible connection of different sensors and actuators, the following PIN assignments are available on the I/O modules with M12 sockets:

Standard assignment

With the standard assignment, one sensor/actuator is connected per M12 socket. In this case the signal for the outputs is acquired at PIN4 while the signal for the inputs is acquired at PIN4 and PIN2. As the result, sensors can be connected directly to PIN2 and PIN4.

Y-assignment

With the Y-assignment, two sensors or two actuators can be connected to one M12 socket. In this case, both PIN4 and PIN2 are provided for one sensor signal and one actuator signal on each M12 socket.

Y-II assignment

The Y-II assignment offers the following options:

- Individual connection of a sensor/actuator to one M12 socket
- Connection of two sensors/actuators to one M12 socket as follows:
  - The signal of the first sensor/actuator is connected to PIN4 of the first socket.
  - The signal of the second sensor/actuator is connected to PIN2 of the first socket and to PIN4 of the second socket.

  In this case, the second socket is not required and is closed with a sealing cap.

### *Overview of digital compact modules*

The following table provides an overview of the important features of the digital compact modules.

| Version | K60 | K45 | K20 |
|---|---|---|---|
| 8 inputs/2 outputs | ✓ | -- | -- |
| 8 inputs | ✓ | ✓ | -- |
| 4 inputs/4 outputs | ✓ | ✓ | ✓ |
| 4 inputs/3 outputs | ✓ | -- | -- |
| 4 inputs/2 outputs | ✓ | -- | -- |
| 4 inputs | ✓ | ✓ | ✓ |
| 2 inputs/2 outputs | -- | ✓ | ✓ |
| 4 outputs | ✓ | ✓ | ✓ |
| 3 outputs | -- | ✓ | -- |
| AS-Interface connection | Flat cable / round cable | Flat cable | Round cable |
| I/O connection method | M12 | M12/M8 | M12/M8 |
| Pin assignment | Standard/Y-II/Y | Standard/Y | Standard/Y |
| Degree of protection | IP65/IP67/IP68/IP69K | IP65/IP67 | IP65/IP67 |
| Addressing type A/B address | ✓ | ✓ | ✓ |

✓ Available

-- Not available

Safety modules for AS-Interface, see page 14/26.

## Overview

K60

The K60 digital AS-Interface compact modules are characterized by optimized handling characteristics and user-friendliness. They permit the mounting times and startup times of AS-Interface to be reduced by up to 40%.

### *Mounting and connection of the AS-Interface shaped cables*

Assembly of the K60 modules is performed with a mounting plate which accommodates the AS-Interface shaped cables. Two different mounting plates are offered for

- Wall mounting
- Standard rail mounting

The mounting plate and the compact module are joined together by means of a screw, with simultaneous contacting of the AS-Interface cable by the service-proven insulation piercing method.

### *Addressing and connection of the sensors/actuators*

Addressing of the K60 modules is performed using an addressing socket integrated in the compact module. The addresses can also be assigned after installation.

K60 modules with a maximum of four digital inputs and outputs

These compact modules contain the M12 standard connections for inputs and outputs. Using M12 standard plugs, a maximum of four sensors and four actuators can be connected to the compact module.

K60 compact modules with a maximum of eight digital inputs

These modules have eight digital inputs for connection through M12 plugs.

The module requires two AS-Interface addresses for processing all eight inputs. The addressing can thus be performed through a double addressing socket integrated in the module.

### *K60 data couplers*

An AS-Interface data coupler has been added to the K60 compact module range. Integrated in this module are two AS-i slaves which are connected to two different AS-i networks. Each of the two integrated slaves has four virtual inputs and four virtual outputs. The bidirectional data transmission of four data bits between two AS-i networks is thus possible in a simple and cost-effective manner. The data coupler needs its own address in each AS-i network. The data coupler is supplied with power directly from the AS-i cable.

Each AS-i network works with a different cycle time depending on the number of stations. Hence two AS-i networks are not necessarily synchronous. For this reason, the AS-i data coupler can be used to transmit only standard data and no safety data.

## Selection and ordering data

3RK1400-1DQ00-0AA3

| Version | | | | | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| **Digital I/O modules, IP67 – K60**<br>• PNP transistor<br>• Width 60 mm<br>• Connection method: M12<br>• Modules supplied without mounting plate | | | | | | | | |
| Type | Current carrying capacity of outputs | Slave addressing type | Pin assignment | Sensor power supply via | | | | |
| 8 inputs/ 2 outputs[1] | 2 A | A/B | Special | AS-i | 2 | **3RK2400-1HQ00-0AA3** | 1 | 1 unit |
| 8 inputs[1] | -- | Standard | Y-II | AS-i | ▶ | **3RK1200-0DQ00-0AA3** | 1 | 1 unit |
| | -- | A/B | Y-II | AS-i | ▶ | **3RK2200-0DQ00-0AA3** | 1 | 1 unit |
| | -- | A/B | Y-II | $U_{aux}$ | 5 | **3RK2200-1DQ00-1AA3** | 1 | 1 unit |
| 4 inputs/ 4 outputs | 2 A | Standard | Y-II | AS-i | ▶ | **3RK1400-1DQ00-0AA3** | 1 | 1 unit |
| | 2 A | Standard | Standard | AS-i | ▶ | **3RK1400-1CQ00-0AA3** | 1 | 1 unit |
| | 1 A | Standard | Y-II | AS-i | 2 | **3RK1400-1DQ01-0AA3** | 1 | 1 unit |
| | 1 A | Standard | Standard | AS-i | ▶ | **3RK1400-1DQ03-0AA3** | 1 | 1 unit |
| | 2 A | A/B (spec. V3.0) | Y-II | AS-i | 2 | **3RK2400-1DQ00-0AA3** | 1 | 1 unit |
| | 2 A | A/B (spec. V3.0) | Y-II | $U_{aux}$ | 2 | **3RK2400-1DQ00-1AA3** | 1 | 1 unit |
| 4 inputs/ 3 outputs | 2 A | A/B | Y-II | AS-i | ▶ | **3RK2400-1FQ03-0AA3** | 1 | 1 unit |
| 4 inputs/ 2 outputs | 2 A | Standard | Y-II | AS-i | ▶ | **3RK1400-1MQ00-0AA3** | 1 | 1 unit |
| 4 inputs | -- | Standard | Y-II | AS-i | ▶ | **3RK1200-0CQ00-0AA3** | 1 | 1 unit |
| | -- | A/B | Y-II | AS-i | 2 | **3RK2200-0CQ00-0AA3** | 1 | 1 unit |
| 2 x 2 inputs/ 2 x 2 outputs | 1 A | Standard | Y | AS-i | 15 | **3RK1400-1DQ02-0AA3** | 1 | 1 unit |
| 4 outputs | 2 A | Standard | Y-II | -- | ▶ | **3RK1100-1CQ00-0AA3** | 1 | 1 unit |
| | 2 A | A/B (spec. V3.0) | Y-II | -- | 2 | **3RK2100-1CQ00-0AA3** | 1 | 1 unit |
| **Digital I/O modules, IP67 – K60 data couplers**<br>Modules supplied without mounting plate | | | | | | | | |
| Type | Current carrying capacity of outputs | Slave addressing type | Pin assignment | Sensor power supply via | | | | |
| Data coupler 4 inputs/4 outputs (virtual) | -- | Standard | -- | -- | 10 | **3RK1408-8SQ00-0AA3** | 1 | 1 unit |

[1] Module occupies two AS-Interface addresses

Safety modules for AS-Interface, see page 14/26 onwards.

## Accessories

3RK1901-0CA00

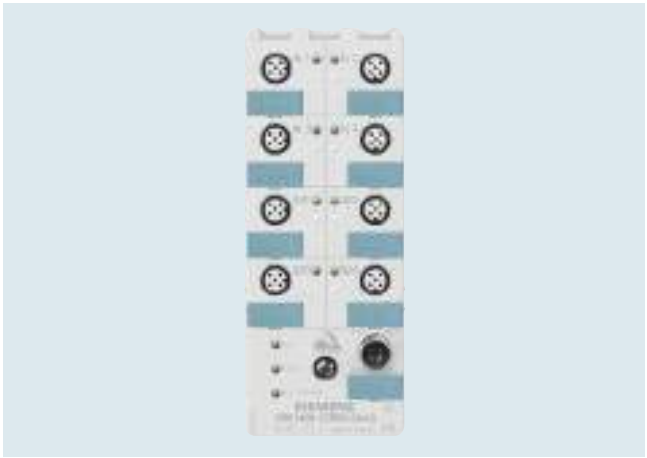
3RK1901-1KA00

3RK1902-0AR00

| Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| **K60 mounting plates**<br>Suitable for all K60 compact modules | | | | |
| • Wall mounting | ▶ | **3RK1901-0CA00** | 1 | 1 unit |
| • Standard rail mounting | ▶ | **3RK1901-0CB01** | 1 | 1 unit |
| **AS-Interface sealing caps M12**<br>For free M12 sockets | ▶ | **3RK1901-1KA00** | 100 | 10 units |
| **Sealing sets**<br>• For K60 mounting plate and standard distributor<br>• Cannot be used for K45 mounting plate<br>• One set contains one straight and one shaped seal | 2 | **3RK1902-0AR00** | 100 | 5 units |

## Overview

### *Operation in particularly harsh environments*



K60R module in degree of protection IP68/IP69K

Modules with degree of protection IP67 cannot be used in areas exposed to permanently high levels of humidity, in applications with drilling emulsions and cutting oils or when cleaning with high-pressure cleaners. The answer for these applications is provided by the expansion of the K60 compact modules with the K60R module with degree of protection IP68/IP69K.

The K60R modules are connected instead of the AS-Interface flat cable using a round cable with M12 cable box.
The AS-Interface bus cable and the 24 V DC auxiliary power supply are routed in this case in a shared round cable.

Degree of protection IP68 permits many new applications that were impossible with the former field modules with degree of protection IP67. In applications such as filling plants or machine tools, the K60R with degree of protection IP68 enables the module to be used directly in zones exposed to permanent loading by humidity. It is thus possible to make even more rigorous savings in wiring with AS-Interface. For more information on IP68 test conditions, see "IP68/IP69K tests" on page 14/54.

Cleaning with high-pressure cleaners, such as is regularly performed in the food and drinks industry for instance, is possible without difficulty (IP69K).

In applications with tow chains, many users rely on placing the AS-Interface bus cable in a round cable. With the K60R module, a round cable connection is possible for direct connection to a round cable. No adapter is required.

### *Mounting*

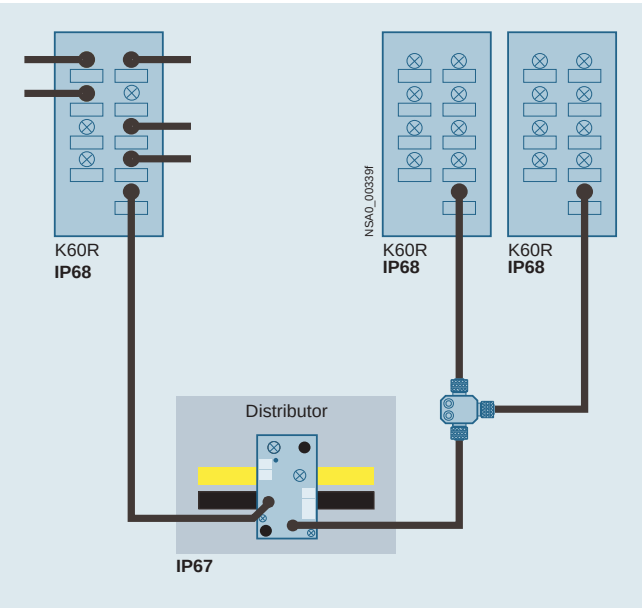
The same mounting plates are used as for the K60 modules. Instead of using flat cables, the K60R is connected using a 4-pole round cable with an M12 connection. With the K60R the mounting plate thus serves only as a fixture and ground terminal.

### *Addressing*

Addressing is performed using the same socket as for the bus connection. Connecting the module to the addressing unit takes place over a 3-pole standard M12 cable.

When the mounting is finished, the module is connected with the addressing cable to the addressing unit and addressed. The addressing cable is then removed and the module connected to the bus cable.

### *Connection*




K60R connection options

In the IP67 environment, the service-proven standard components are connected using flat cables. Spur lines are laid into the IP68 environment by means of an AS-Interface M12 feeder (3RK1901-2NR..). The module is connected with a round cable to an M12 cable box. For this purpose, the module has an M12 bus connection instead of the former addressing socket. The AS-Interface bus cable and the 24 V DC auxiliary voltage are routed together in a 4-pole round cable. There must be no ground conductor in this round cable. Connection to ground is made through the mounting plate.

In the IP68 environment, only cables with extruded M12 plugs may be used.

Please note the following conditions:

- The configuration guidelines for AS-Interface apply. For all M12 connecting cables, the maximum permissible current is limited to 4 A. The cross-section of these cables is just 0.34 $mm^2$. For connection of the K60R modules, the aforementioned M12 connecting cables can be used for the spur lines. The voltage drop caused by the ohmic resistance (approx. 0.11 Ω/m) must be taken into account.
- For round cable connections with shared AS-i and $U_{aux}$ in a single cable, the following maximum lengths apply:
  - Per spur line from feeder to module: max. 5 m
  - Total of all round cable segments in an AS-Interface network: max. 20 m

### *IP68/IP69K tests*

K60R modules were tested with the following tests:

- Stricter test than IP67: 90 min at 1.8 m depth of water (IP67: 30 min at 1 m depth of water)
- Salt water test: Five months in salt water, 20 cm deep, at room temperature
- Test with particularly creepable oil: Five months completely under oil at room temperature
- Test with drilling emulsion: Five months at room temperature (components of the drilling emulsion: Anionic and non-ionic emulsifiers, paraffinic low-aromatic mineral oil, boric acid alkanolamines, corrosion inhibitors, oil content 40%)
- Test in oil bath (Excellence 416 oil) with alternating oil bath temperature: 130 cycles of 15 to 55 °C, two months
- Cleaning with a high-pressure cleaner according to IP69K: 80 to 100 bar, 10 to 15 cm distance, time per side > 30 s, water temperature 80 °C

To simulate requirements as realistically as possible, the modules were artificially aged prior to the tests by 15 temperature cycles of -25/+85 °C. During the test, the modules were connected to 3RX1 connecting cables. Unassigned connections were closed with 3RK1901-1KA00 sealing caps.

Note:

Sealing caps and M12 connections must be tightened with the correct torque.



## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1400-1CR00-0AA3 | **Digital I/O modules, IP68/IP69K – K60R**<br>• 4 inputs/4 outputs<br>• Width 60 mm<br>• IP68/IP69K<br>• Standard assignment<br>• Current carrying capacity<br>- 200 mA (inputs)<br>- 2 A (outputs)<br>• Slave addressing type: Standard address<br>• Modules supplied without mounting plate | 2 | **3RK1400-1CR00-0AA3** | 1 | 1 unit |

## Accessories

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1901-0CA00 | **K60 mounting plates**<br>Suitable for all K60 and K60R compact modules | | | | |
| | • Wall mounting | ► | **3RK1901-0CA00** | 1 | 1 unit |
| | • Standard rail mounting | ► | **3RK1901-0CB01** | 1 | 1 unit |
| 3RK1901-1KA00 | **AS-Interface sealing caps M12**<br>For free M12 sockets | ► | **3RK1901-1KA00** | 100 | 10 units |
| 3RK1901-2NR21 | **AS-Interface M12 feeders, current carrying capacity up to 4 A** | | | | |
| | For flat cable: AS-i/$U_{aux}$ | For: M12 socket | Cable length: -- | Cable end in feeder: Not available | 2 | **3RK1901-2NR20** | 1 | 1 unit |
| | AS-i/$U_{aux}$ | M12 cable box | 1 m | Not available | 2 | **3RK1901-2NR21** | 1 | 1 unit |
| | AS-i/$U_{aux}$ | M12 cable box | 2 m | Not available | 2 | **3RK1901-2NR22** | 1 | 1 unit |
| 3RK1901-1NR04 | **AS-Interface M12 feeders, 4-fold, current carrying capacity up to 4 A** | | | | |
| | For flat cable: AS-i/$U_{aux}$ | For: 4-fold M12 socket, delivery includes mounting plate (for wall and standard rail mounting) | Cable length: -- | Cable end in feeder: Not available | 2 | **3RK1901-1NR04** | 1 | 1 unit |
| 3RK1902-4PB15-3AA0 | **M12 connecting cables**<br>• 3-pole<br>• For addressing AS-i slaves with M12 bus connection<br>• Cable length 1.5 m | 5 | **3RK1902-4PB15-3AA0** | 1 | 1 unit |

## Overview

Compact modules K45

The K45 series of compact modules supplements the large K60 compact modules which have a proven track record in industry. They are the logical consequence for rounding off the bottom end of the existing product range.

The acclaimed advantages of the existing K60 compact modules are fully emulated by the K45 modules. The K45 modules have a substantially smaller basic area and installation depth, however.

Yet in spite of these small dimensions all the modules have large labels and an integrated addressing socket.

Two mounting plates are offered for the K45 compact modules:

- Mounting plate for wall mounting
  This has a hole pattern that is identical to that of the K60 compact modules. This means that K60 compact modules can be mounted together with K45 modules in an aligned arrangement. The shaped cables can be inserted in the recesses of the mounting plates where they cause no hindrance.
- Mounting plate for standard rail mounting

### *Connection of the AS-Interface shaped cables*

The mounting plate and the compact module are joined together by means of a screw, with simultaneous contacting of the AS-Interface cable by the service-proven insulation piercing method.

Now, mounting the AS-Interface shaped cables is in fact easier than ever. The yellow and black AS-Interface shaped cable can be inserted into the mounting plates from the left or right regardless of the position of the coding lug. The correct polarity of the applied voltages is thus guaranteed.

### *Addressing and connection of the sensors/actuators*

Addressing of the K45 compact modules is performed using an addressing socket integrated in the module. The addresses can be assigned even when mounted.

K45 modules with a maximum of four digital inputs and outputs

These compact modules contain up to four M12 standard connections or M8 standard connections for inputs and outputs. Using M12 or M8 standard connectors, a maximum of four sensors and four actuators can be connected to the compact module. Depending on the module, the sockets can be assigned in duplicate.
Pin assignment: Y – i.e. via a socket, two sensors or one sensor/one actuator are connected.

K45 modules with a maximum of eight digital inputs

These modules have eight digital inputs for connection through M12 plugs. The sockets have duplicate assignments.
Pin assignment: Y – i.e. via a socket, two sensors or one sensor/one actuator are connected.

The module requires two AS-Interface addresses for processing all eight inputs. The addresses can be assigned through a double addressing socket integrated in the module.

## Selection and ordering data

3RK1400-0GQ20-0AA3

**Digital I/O modules, IP67 – K45**
- PNP transistor
- Width 45 mm
- Current carrying capacity of the inputs: 200 mA
- Modules supplied without mounting plate

| Type | Current carrying capacity of outputs | Slave addressing type | Pin assignment | $U_{aux}$ 24 V | Connection methods | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|---|
| 8 inputs[1] | -- | A/B | Y | -- | M12 | 2 | **3RK2200-0DQ20-0AA3** | 1 | 1 unit |
| 4 inputs | -- | Standard | Standard | -- | M12 | ► | **3RK1200-0CQ20-0AA3** | 1 | 1 unit |
| | -- | Standard | Standard | -- | M8 | 2 | **3RK1200-0CT20-0AA3** | 1 | 1 unit |
| | -- | A/B | Standard | -- | M12 | ► | **3RK2200-0CQ20-0AA3** | 1 | 1 unit |
| | -- | A/B | Standard | -- | M8 | 5 | **3RK2200-0CT20-0AA3** | 1 | 1 unit |
| 2 x 2 inputs | -- | A/B | Y | -- | M12 | 2 | **3RK2200-0CQ22-0AA3** | 1 | 1 unit |
| 2 inputs/ 2 outputs | 2 A[2] | Standard | Standard | ✓ | M12 | ► | **3RK1400-1BQ20-0AA3** | 1 | 1 unit |
| 2 x (1 input/ 1 output) | 0.2 A | Standard | Y | -- | M12 | 2 | **3RK1400-0GQ20-0AA3** | 1 | 1 unit |
| 4 x (1 input/ 1 output) | 0.2 A | A/B (spec. V3.0) | Y | -- | M12 | 5 | **3RK2400-0GQ20-0AA3** | 1 | 1 unit |
| | 0.5 A | A/B (spec. V3.0) | Y | ✓ | M12 | 5 | **3RK2400-1GQ20-1AA3** | 1 | 1 unit |
| 4 outputs | 1 A | A/B (spec. V3.0) | Standard | ✓ | M12 | 2 | **3RK2100-1CQ20-0AA3** | 1 | 1 unit |
| 3 outputs | 1 A | A/B | Standard | ✓ | M12 | ► | **3RK2100-1EQ20-0AA3** | 1 | 1 unit |
| 4 outputs | 1 A | Standard | Standard | ✓ | M12 | ► | **3RK1100-1CQ20-0AA3** | 1 | 1 unit |
| 2 outputs/ 2 inputs | 2 A | A/B | Standard | ✓ | M12 | 2 | **3RK2400-1BQ20-0AA3** | 1 | 1 unit |

✓ Available
-- Not available

[1] Module occupies two AS-Interface addresses
[2] The typical current carrying capacity per output increases with version "E12" from 1.5 to 2 A (available since approx. 07/2003).

Safety modules for AS-Interface, see page 14/26 onwards.

## Accessories

3RK1901-2EA00

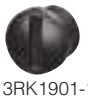
**K45 mounting plates**

| | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| • For wall mounting | ► | **3RK1901-2EA00** | 1 | 1 unit |
| • For standard rail mounting | ► | **3RK1901-2DA00** | 1 | 1 unit |

3RK1901-1MN00

**Cable termination pieces** ► **3RK1901-1MN00** 1 10 units
For sealing of open cable ends (shaped AS-Interface cable) in IP67

3RK1901-1KA00


3RK1901-1PN00

**AS-Interface sealing caps**

| | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| • For free M12 sockets | ► | **3RK1901-1KA00** | 100 | 10 units |
| • For free M8 sockets | 2 | **3RK1901-1PN00** | 100 | 10 units |

## Overview

Digital I/O modules, IP67 – K20

The K20 compact module series rounds off the AS-Interface compact modules with a particularly slim design and only 20-mm width. Thanks to its extremely compact dimensions, these modules are particularly suited for handling machine applications in the field of production engineering where modules need to be arranged in the smallest of spaces.

Robotics is yet another application area. The K20 modules are connected to the AS-Interface with a round cable with M12 cable box instead of with the AS-Interface flat cable. The AS-Interface bus cable and the 24 V DC auxiliary energy are routed in this case in a shared round cable. This enables extremely compact installation.

The flexibility of the round cable means that it can also be used on moving machine parts without any problems. The K20 modules are also ideal for such applications as their non-encapsulated design makes them particularly light in weight.

In applications with tow chains, many users rely on placing the AS-Interface bus cable in a round cable. In this case, the K20 modules support direct connection to the round cable. No flat to round cable adapter is required.

The K20 compact module range includes standard AS-Interface modules, as well as an ASIsafe version for the connection of safety-related sensors, such as EMERGENCY STOP pushbuttons or protective door monitoring.

For particularly space-saving dimensions, the sensors and actuators are connected over M8 plug-in connectors. Alternatively, M12 connectors with Y-assignment can be used.

## Selection and ordering data

3RK2200-0CT30-0AA3

| Version | | | | | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | |
| **Digital I/O modules, IP67 – K20** | | | | | | | | |
| Width 20 mm | | | | | | | | |
| Type | Current carrying capacity of outputs | Slave addressing type | Pin assignment | Connection methods | | | | |
| 4 inputs | -- | A/B | Standard | M8 | 2 | **3RK2200-0CT30-0AA3** | 1 | 1 unit |
| | -- | A/B | Y | M12 | 5 | **3RK2200-0CQ30-0AA3** | 1 | 1 unit |
| 2 inputs/ 2 outputs | 1 | A/B | Standard | M8 | 2 | **3RK2400-1BT30-0AA3** | 1 | 1 unit |
| | 1 | A/B | Y | M12 | 2 | **3RK2400-1BQ30-0AA3** | 1 | 1 unit |
| 4 outputs | 1 | A/B (spec. V3.0) | Standard | M8 | 2 | **3RK2100-1CT30-0AA3** | 1 | 1 unit |
| 4 inputs/ 4 outputs | 1 | Standard | Standard | M8 | 10 | **3RK1400-1CT30-0AA3** | 1 | 1 unit |
| | 1 | A/B (spec. V3.0) | Standard | M8 | 2 | **3RK2400-1CT30-0AA3** | 1 | 1 unit |
| 2 safe inputs | -- | Standard | Y-II | M12 | 2 | **3RK1205-0BQ30-0AA3** | 1 | 1 unit |

Safety modules for AS-Interface, see page 14/26 onwards.

## Accessories

| | Version | | | | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|---|
| | | | | | d | | | |
| 3RK1901-1KA00 3RK1901-1PN00 | **AS-Interface sealing caps** | | | | | | | |
| | • For free M12 sockets | | | | ► | **3RK1901-1KA00** | 100 | 10 units |
| | • For free M8 sockets | | | | 2 | **3RK1901-1PN00** | 100 | 10 units |
| 3RK1901-2NN10 | **AS-Interface compact distributors, for AS-Interface flat cable** Current carrying capacity up to 8 A | | | | 2 | **3RK1901-2NN10** | 1 | 1 unit |
| 3RX9801-0AA00 | **AS-Interface M12 feeders** • Degree of protection IP67 • Current carrying capacity up to 2 A | | | | | | | |
| | For flat cable | For | Cable length | Cable end in feeder | | | | |
| | AS-i | M12 socket | -- | Available | ► | **3RX9801-0AA00** | 1 | 1 unit |
| 3RK1901-2NR10 | **AS-Interface M12 feeders** • Degree of protection IP67/IP68/IP69K • Current carrying capacity up to 4 A | | | | | | | |
| | For flat cable | For | Cable length | Cable end in feeder | | | | |
| | AS-i | M12 socket | -- | Not available | 2 | **3RK1901-2NR10** | 1 | 1 unit |
| 3RK1901-2NR21 | AS-i | M12 cable box | 1 m | Not available | 2 | **3RK1901-2NR11** | 1 | 1 unit |
| | AS-i | M12 cable box | 2 m | Not available | 2 | **3RK1901-2NR12** | 1 | 1 unit |
| | AS-i/$U_{aux}$ | M12 socket | -- | Not available | 2 | **3RK1901-2NR20** | 1 | 1 unit |
| | AS-i/$U_{aux}$ | M12 cable box | 1 m | Not available | 2 | **3RK1901-2NR21** | 1 | 1 unit |
| | AS-i/$U_{aux}$ | M12 cable box | 2 m | Not available | 2 | **3RK1901-2NR22** | 1 | 1 unit |
| 3RK1901-1NR04 | **AS-Interface M12 feeders, 4-fold** Current carrying capacity up to 4 A | | | | | | | |
| | For flat cable | For | Cable length | Cable end in feeder | | | | |
| | AS-i/$U_{aux}$ | 4-fold M12 socket, delivery includes mounting plate (for wall and standard rail mounting) | -- | Not available | 2 | **3RK1901-1NR04** | 1 | 1 unit |
| 6ES7194-1KA01-0XA0 | **M12 Y-shaped coupler plugs** For connection of two sensors to one M12 socket with Y-assignment | | | | 1 | **6ES7194-1KA01-0XA0** | 1 | 1 unit |
| 3RK1902-4PB15-3AA0 | **M12 connecting cables** • 3-pole • For addressing AS-i slaves with M12 bus connection • Cable length 1.5 m | | | | 5 | **3RK1902-4PB15-3AA0** | 1 | 1 unit |

## Overview

K60 analog compact module

**More information**

For the Manual “AS-Interface Analog Modules Profile 7.3/Profile 7.A.9”, see https://support.industry.siemens.com/cs/ww/en/view/7643815

AS-Interface analog modules from the K60 compact series detect or issue analog signals locally. These modules are linked to the higher-level controller through an AS-Interface master according to specification V2.1 or specification V3.0.

The analog modules are divided into the following groups:

- Input modules for
  - Sensors with current sensor
  - Sensors with voltage signal
  - Sensors with thermal resistor
- Output modules for
  - Current actuators
  - Voltage actuators

The input modules according to profile 7.3/7.4 are available with two or four input channels. It is possible in addition to convert the two-channel module to using only one input channel, thus enabling very short times before the analog value is available. The conversion is effected by means of a jumper plug at socket 3. The transmission times achieved with analog modules according to Profile 7.A.9 are twice as fast as those achieved with profile 7.3/7.4. Operation is adjustable in this case, e.g. it is possible to choose with the ID1 code whether the module is operated with one or two channels.

The output modules are configured as two-channel modules as standard.

The input and output channels are electrically separated from the AS-Interface network. If sensors with a higher power requirement are to be connected, more power can be supplied through the auxiliary voltage as an alternative to the internal supply.

In the manual "AS-Interface Analog Modules Profile 7.3/Profile 7.A.9", the modules are presented in great detail along with their technical specifications and in-depth notes on operation. Sample function blocks round off the manual, see "More information" above.

## Benefits

- Analog modules are just as easy to integrate in AS-Interface as digital modules
- Analog values can be easily detected and issued locally
- Preprocessing of the analog value transfer in the master enables rapid evaluation of the analog values
- Up to four values can be detected using one analog module
- Faster transmission and conversion of analog values thanks to the new option for switching to single-channel operation

In addition, specification V3.0 now also offers:

- A/B technology, now also with analog modules
- On average, double fast transmission times (only 3 or 4 cycles, depending on the resolution selected)
- Variable adjustable mode: 12-bit or 14-bit resolution, single-channel or two-channel, selectable via the ID1 code

## Selection and ordering data

| | Version | | | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | d | | | |
| 3RK1207-1BQ44-0AA3 | **Analog I/O modules, IP67 – K60, analog profile 7.3**<br>• Slave addressing type: Standard address<br>• Width 60 mm<br>• Modules supplied without mounting plate | | | | | | |
| | Inputs | Type | Measuring range | | | | |
| | 1 or 2 inputs (selectable using jumper plug at socket 3) | Current | 4 ... 20 mA or ± 20 mA (selectable)[1] | 2 | **3RK1207-1BQ40-0AA3** | 1 | 1 unit |
| | | Voltage | ± 10 V or 1 ... 5 V (selectable) | 2 | **3RK1207-2BQ40-0AA3** | 1 | 1 unit |
| | | Thermal resistance | Pt100 or Ni100 or 0 ... 600 Ω (selectable)[1] | 2 | **3RK1207-3BQ40-0AA3** | 1 | 1 unit |
| | 4 inputs | Current | 4 ... 20 mA or ± 20 mA (selectable) | 2 | **3RK1207-1BQ44-0AA3** | 1 | 1 unit |
| | | Voltage | ± 10 V or 1 ... 5 V (selectable) | 10 | **3RK1207-2BQ44-0AA3** | 1 | 1 unit |
| | | Thermal resistance | Pt100 or Ni100 or 0 ... 600 Ω (selectable) | 2 | **3RK1207-3BQ44-0AA3** | 1 | 1 unit |
| | Outputs | Type | Output range | | | | |
| | 2 outputs | Current for 2-wire actuators | 4 ... 20 mA or ± 20 mA or 0 ... 20 mA (selectable)[1] | 2 | **3RK1107-1BQ40-0AA3** | 1 | 1 unit |
| | | Voltage for 2-wire actuators | ± 10 V or 0 ... 10 V or 1 ... 5 V (selectable) | 2 | **3RK1107-2BQ40-0AA3** | 1 | 1 unit |
| 3RK2207-2BQ50-0AA3 | **Analog I/O modules, IP67 – K60, analog profile 7.A.9**<br>• Slave addressing type: A/B (spec. V3.0)<br>• Width 60 mm<br>• Modules supplied without mounting plate | | | | | | |
| | Inputs | Type | Measuring range | | | | |
| | 1 or 2 inputs (variably adjustable) | Current | 4 ... 20 mA or ± 20 mA (selectable) | 2 | **3RK2207-1BQ50-0AA3** | 1 | 1 unit |
| | | Voltage | ± 10 V or 1 ... 5 V (selectable) | 2 | **3RK2207-2BQ50-0AA3** | 1 | 1 unit |

[1] Some modules are available in the extended temperature range (from -25 to 70 °C) and for use in difficult environmental conditions (coated according to environment standard IEC 60721).

| Description | SIPLUS article number | Corresponds to module |
|---|---|---|
| SIPLUS AS-Interface 2AA, IP67 | 6AG1107-1BQ40-7AA3 | 3RK1107-1BQ40-0AA3 |
| SIPLUS AS-Interface 2AI, IP67 | 6AG1207-1BQ40-7AA3 | 3RK1207-1BQ40-0AA3 |
| SIPLUS AS-Interface 2AI, IP67 | 6AG1207-3BQ40-7AA3 | 3RK1207-3BQ40-0AA3 |

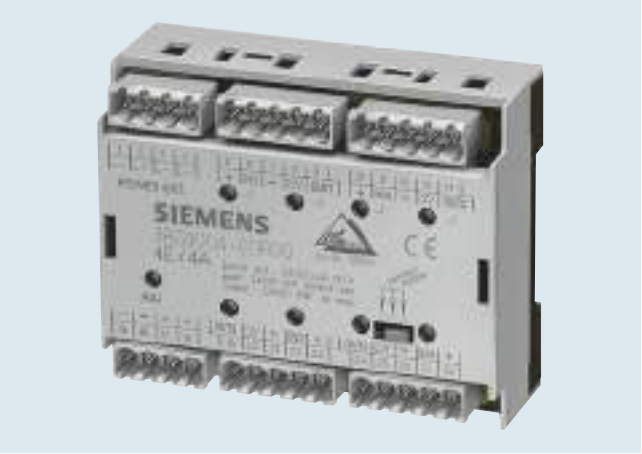
For more information, see www.siemens.com/siplus-extreme.

## Accessories

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1901-0CA00 | **K60 mounting plates** | | | | |
| | • Wall mounting | ► | **3RK1901-0CA00** | 1 | 1 unit |
| | • Standard rail mounting | ► | **3RK1901-0CB01** | 1 | 1 unit |
| 3RK1901-1KA00 | **M12 sealing caps** | ► | **3RK1901-1KA00** | 100 | 10 units |
| 3RK1902-0AR00 | **Sealing sets**<br>• For K60 mounting plate and distributor<br>• Cannot be used for K45 mounting plate<br>• One set contains one straight and one shaped seal | 2 | **3RK1902-0AR00** | 100 | 5 units |
| 3RK1901-1AA00 | **Jumper plugs**<br>For changing over the two channel input modules | 2 | **3RK1901-1AA00** | 1 | 1 unit |

## Overview

SC17.5F, SC17.5 and SC22.5 SlimLine Compact modules




F90 module

Flat module

For AS-Interface applications inside control cabinets, there are various module series for the most diverse requirements:

- SlimLine Compact – particularly slim design ideal for space-saving use in the control cabinet
- F90 module – particularly flat design for flat control boxes
- Flat module – special design for integration into customer-specific solutions

The existing SlimLine series of modules S22.5 and S45 are being replaced by the innovative new devices in the SlimLine Compact SC17.5, SC17.5F and SC22.5 series. The previous SlimLine modules are still available as replacements for existing systems.

### *Available versions*

The following table provides an overview of the key features of the different series of control cabinet modules.

| Feature | SlimLine Compact | F90 module | Flat module |
|---|---|---|---|
| Digital I/O | ✓ | ✓ | ✓ |
| Analog I/O | ✓ | -- | -- |
| Safe inputs | ✓ | -- | -- |
| Relay outputs | ✓ | -- | -- |
| Addressing method A/B address | ✓ | -- | -- |
| Mounting onto TH 35 standard mounting rail according to IEC 60715 | ✓ | ✓ | -- |
| Wall mounting using push-in lugs | ✓ | -- | -- |
| Integrated lugs for screw fixing | -- | -- | ✓ |
| Width in mm | 17.5 or 22.5 | 90 | 80 |

✓ Available
-- Not available

## Overview

***SlimLine Compact modules***

SC17.5 and SC22.5 SlimLine Compact modules with screw terminals

SlimLine Compact module SC22.5 with connector with screw terminals

The AS-Interface module series for the control cabinet SlimLine Compact with degree of protection IP20 creates space in the cabinet and in distributed local control boxes. A width of just 17.5 mm or 22.5 mm ensures considerable space savings in the control cabinet.

The SlimLine Compact module series comprises not only digital and analog I/O modules but also ASIsafe modules with safe inputs. Digital outputs are available as solid-state and relay outputs.

Sensors and actuators, as well as the AS-Interface bus cable, are connected by means of removable screw or push-in spring-loaded terminals. Device connectors available as accessories offer the possibility of looping through the AS-Interface bus cable and the 24 V DC power supply $U_{aux}$ from one module to additional modules. This significantly simplifies the wiring, as the AS-Interface bus cable and $U_{aux}$ only have to be connected to one device.

All devices for the connection of 3-wire sensors offer the option of supplying the sensors either from the AS-Interface bus cable or alternatively from the 24 V DC voltage supply $U_{aux}$ depending on the requirements of the particular application. A slide switch is used to make the selection. If supply via $U_{aux}$ is selected, the wiring of the sensor terminals remains unchanged. This means that no external supply is required for the sensors.

All modules have LEDs on the front that provide diagnostics information and indicate the status of the module inputs and outputs. Devices with semiconductor outputs indicate the status of each output by means of a dual LED. Thus the status (on/off/overload) is displayed for each output. An addressing socket integrated at the front enables the module to be addressed also when it is installed. Integrated adapters permit mounting onto a standard mounting rail – either directly for the module or for the device connector. Alternatively, the modules can also be screw-mounted using push-in lugs (accessories). These lugs for screw fastening must be ordered separately.

## Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit

**More information**

For the Equipment Manual "SlimLine Compact Modules", see https://support.industry.siemens.com/cs/ww/en/view/109481489

| Version I/O type | Width | Inputs | Outputs | SD | Screw terminals | SD | Spring-loaded terminals (push-in) |
|---|---|---|---|---|---|---|---|
| | mm | | | d | Article No. | d | Article No. |
| **SC17.5 and SC22.5 digital SlimLine Compact modules** | | | | | | | |
| ***Slave addressing type: A/B address*** | | | | | | | |
| 4 inputs | 17.5 | 2-wire | -- | 2 | **3RK2200-0CE00-2AA2** | 2 | **3RK2200-0CG00-2AA2** |
| | 22.5 | 3-wire | -- | 2 | **3RK2200-2CE00-2AA2** | 2 | **3RK2200-2CG00-2AA2** |
| 4 outputs | 22.5 | -- | 2A solid-state | 2 | **3RK2100-1CE00-2AA2** | 2 | **3RK2100-1CG00-2AA2** |
| 4 inputs/ 2 outputs, relays | 22.5 | 3-wire | Relay (change-over contact) | 2 | **3RK2402-2ME00-2AA2** | 2 | **3RK2402-2MG00-2AA2** |
| 4 inputs/ 4 outputs, relays | 22.5 | 3-wire | Relay (NO contacts) | 2 | **3RK2402-2CE00-2AA2** | 2 | **3RK2402-2CG00-2AA2** |
| 4 inputs/ 4 outputs | 22.5 | 3-wire | 2A solid-state | 2 | **3RK2400-2CE00-2AA2** | 2 | **3RK2400-2CG00-2AA2** |
| ***Slave addressing type: Standard address*** | | | | | | | |
| 4 inputs/ 4 outputs | 22.5 | 3-wire | 2A solid-state | 2 | **3RK1400-2CE00-2AA2** | 2 | **3RK1400-2CG00-2AA2** |
| **SC22.5 analog SlimLine Compact modules** | | | | | | | |
| ***Slave addressing type: Standard address*** | | | | | | | |
| 4 inputs | 22.5 | Voltage/ current selectable (1 ... 5 V, ± 10 V, 4 ... 20 mA, ± 20 mA) | -- | 2 | **3RK1207-0CE00-2AA2** | 2 | **3RK1207-0CG00-2AA2** |
| | | Thermal resistance (Pt100, Ni100, 0 ... 600 Ω) | -- | 2 | **3RK1207-3CE00-2AA2** | 2 | **3RK1207-3CG00-2AA2** |
| 2 outputs | 22.5 | -- | Voltage/ current selectable (0 ... 10 V, 1 ... 5 V, ± 10 V, 0 ... 20 mA, 4 ... 20 mA, ± 20 mA) | 2 | **3RK1107-0BE00-2AA2** | 2 | **3RK1107-0BG00-2AA2** |
| **SC17.5F ASIsafe SlimLine Compact modules** | | | | | | | |
| ***Slave addressing type: Standard address*** | | | | | | | |
| 2 safe inputs | 17.5 | For mechanical contacts | -- | 2 | **3RK1205-0BE00-2AA2** | 2 | **3RK1205-0BG00-2AA2** |
| 2 safe inputs/ 2 standard outputs | 17.5 | For mechanical contacts | Solid-state, $U_{ASI}/U_{aux}$ supply selectable | 2 | **3RK1405-2BE00-2AA2** | 2 | **3RK1405-2BG00-2AA2** |

3RK2200-0CG00-2AA2

3RK2400-2CG00-2AA2

3RK1207-0CG00-2AA2

3RK1405-2BG00-2AA2

Safety modules for AS-Interface, see page 14/26 onwards.

## Accessories

| Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| **Device connectors** | | | | |
| For electrical connection of SlimLine Compact modules (connects AS-i bus cable and 24 V DC auxiliary power supply $U_{aux}$ when using several SlimLine Compact modules) | | | | |
| • Width 17.5 mm | 2 | **3RK1901-1YA00** | 1 | 1 unit |
| • Width 22.5 mm | 2 | **3RK1901-1YA10** | 1 | 1 unit |
| **Device termination connectors** | | | | |
| Required for the last module in the network | | | | |
| • Width 17.5 mm | 2 | **3RK1901-1YA01** | 1 | 1 unit |
| • Width 22.5 mm | 2 | **3RK1901-1YA11** | 1 | 1 unit |
| **Removable terminals** | | **Screw terminals** | | |
| • Screw terminals up to 2 x 1.5 mm² or 1 x 2.5 mm² | | | | |
| - 2-pole | 2 | **3ZY1121-1BA00** | 1 | 6 units |
| - 4-pole | 2 | **3ZY1141-1BA00** | 1 | 6 units |
| | | **Spring-loaded terminals (push-in)** | | |
| • Push-in terminals up to 2 x 1.5 mm² | | | | |
| - 2-pole | 2 | **3ZY1121-2BA00** | 1 | 6 units |
| - 4-pole | 2 | **3ZY1141-2BA00** | 1 | 6 units |
| **Hinged cover** | | | | |
| Replacement for SlimLine Compact module, without terminal labeling | | | | |
| • Width 17.5 mm | | | | |
| - Titanium gray for SC17.5 | 2 | **3ZY1450-1AA00** | 1 | 5 units |
| - Yellow for SC17.5F | 2 | **3ZY1450-1BA00** | 1 | 5 units |
| • Width 22.5 mm | | | | |
| - Titanium gray for SC22.5 | 2 | **3ZY1450-1AB00** | 1 | 5 units |
| **Push-in lugs for wall mounting** | 2 | **3ZY1311-0AA00** | 1 | 10 units |
| Two lugs are required per device | | | | |
| **Coding pins for removable terminals** | 2 | **3ZY1440-1AA00** | 1 | 12 units |
| For mechanical coding of the terminals | | | | |
| **Blank labels** | | | | |
| Unit labeling plates[1] | | | | |
| • 10 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB10** | 100 | 816 units |
| • 20 mm x 7 mm, titanium gray | 20 | **3RT2900-1SB20** | 100 | 340 units |
| **Tools for opening spring-loaded terminals** | | **Spring-loaded terminals** | | |
| Screwdriver for SIRIUS devices with spring-loaded terminals | 2 | **3RA2908-1A** | 1 | 1 unit |
| 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated | | | | |

3RK1901-1YA00

3RK1901-1YA10

3RK1901-1YA01

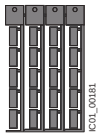
3RK1901-1YA11

3ZY1121-2BA00

3ZY1450-1BA00 3ZY1450-1AB00

3ZY1311-0AA00

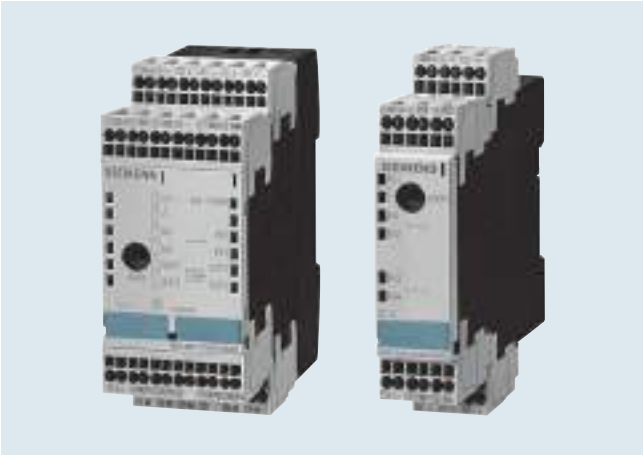
3ZY1440-1AA00


3RT2900-1SB20

3RA2908-1A

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/15).

## More information



SlimLine modules S45 (picture on left) and S22.5 module (picture on right) with spring-loaded terminals

The existing SlimLine series of I/O modules for use in the control cabinet is being replaced by the new, innovative SlimLine Compact series. We recommend that these new devices are used in future.

The Cross reference table indicates the best options for replacing the existing SlimLine devices with SlimLine Compact devices.

Note:

The previous SlimLine devices are still available for use as replacements in existing systems. As a result of the innovation, the new SlimLine Compact devices are not fully compatible in terms of either mechanical dimensions or electrical properties.

The Cross reference table below links the existing S22.5, S22.5F and S45 SlimLine modules with the new SC17.5, SC17.5F and SC22.5 SlimLine Compact devices.

### *Cross reference table*

| **S22.5, S22.5F and S45 SlimLine** | | | **Comparison type: SC17.5, SC17.5F and SC22.5 SlimLine Compact** | | |
|---|---|---|---|---|---|
| Screw terminals | Spring-loaded terminals | Version | Screw terminals | Spring-loaded terminals | Version |
| 3RK1200-0CE00-0AA2 | 3RK1200-0CG00-0AA2 | 4 DI, 2-wire, standard address | 3RK2200-0CE00-2AA2 | 3RK2200-0CG00-2AA2 | 4 DI, 2-wire, A/B address |
| 3RK2200-0CE02-0AA2 | 3RK2200-0CG02-0AA2 | 4 DI, A/B address | 3RK2200-2CE00-2AA2 | 3RK2200-2CG00-2AA2 | 4 DI, A/B address |
| 3RK1200-0CE02-0AA2 | 3RK1200-0CG02-0AA2 | 4 DI, standard address | | | |
| 3RK1400-0BE00-0AA2 | 3RK1400-0BG00-0AA2 | 2 DI / 2 DQ, standard address | 3RK1400-2CE00-2AA2 | 3RK1400-2CG00-2AA2 | 4 DI / 4 DQ, standard address |
| 3RK1402-0BE00-0AA2 | 3RK1402-0BG00-0AA2 | 2 DI / 2 DQ relay, standard address | 3RK2402-2ME00-2AA2 | 3RK2402-2MG00-2AA2 | 4 DI / 2 DQ relay, A/B address |
| 3RK1100-1CE00-0AA2 | 3RK1100-1CG00-0AA2 | 4 DQ, standard address | 3RK2100-1CE00-2AA2 | 3RK2100-1CG00-2AA2 | 4 DQ, A/B address |
| 3RK2400-1CE01-0AA2 | 3RK2400-1CG01-0AA2 | 4 DI / 4 DQ, A/B address | 3RK2400-2CE00-2AA2 | 3RK2400-2CG00-2AA2 | 4 DI / 4 DQ, A/B address |
| 3RK2400-1FE00-0AA2 | 3RK2400-1FG00-0AA2 | 4 DI / 3 DQ, A/B address | | | |
| 3RK1400-1CE00-0AA2 | 3RK1400-1CG00-0AA2 | 4 DI / 4 DQ, 1A solid-state, standard address | 3RK1400-2CE00-2AA2 | 3RK1400-2CG00-2AA2 | 4 DI / 4 DQ, 2A solid-state, standard address |
| 3RK1400-1CE01-0AA2 | 3RK1400-1CG01-0AA2 | 4 DI / 4 DQ, 2A solid-state, standard address | | | |
| 3RK1402-3CE01-0AA2 | 3RK1402-3CG01-0AA2 | 4 DI / 4 DQ (sensor supply from $U_{aux}$), standard address | | | |
| 3RK1402-3CE00-0AA2 | 3RK1402-3CG00-0AA2 | 4 DI / 4 DQ relay, standard address | 3RK2402-2CE00-2AA2 | 3RK2402-2CG00-2AA2 | 4 DI / 4 DQ relay, A/B address |
| 3RK1205-0BE00-0AA2 | 3RK1205-0BG00-0AA2 | 2 F-DI, standard address | 3RK1205-0BE00-2AA2 | 3RK1205-0BG00-2AA2 | 2 F-DI, standard address |
| 3RK1405-0BE00-0AA2 | 3RK1405-0BG00-0AA2 | 2 F-DI / 2 DQ, standard address (outputs supplied from $U_{ASI}$) | 3RK1405-2BE00-2AA2 | 3RK1405-2BG00-2AA2 | 2 F-DI / 2 DQ, standard address (supply $U_{ASI}$/$U_{aux}$ selectable) |
| 3RK1405-1BE00-0AA2 | 3RK1405-1BG00-0AA2 | 2 F-DI / 2 DQ, standard address (outputs supplied from $U_{aux}$) | | | |

## Selection and ordering data

3RG9002-0DB00

**F90 module**

- Slave addressing type: Standard address
- Width 90 mm
- With COMBICON version: Delivery without COMBICON plug

| Version | | | | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | | | | d | | | |
| Type | Connection | Inputs | Outputs | | | | |
| 4 inputs/ 4 outputs | Screw | 2- and 3-wire PNP transistor | PNP transistor 1 A | 5 | **3RG9002-0DB00** | 1 | 1 unit |
| | | 2- and 3-wire PNP transistor | PNP transistor 2 A | 5 | **3RG9002-0DA00** | 1 | 1 unit |
| | | 2- and 3-wire PNP transistor floating | PNP transistor 2 A | 5 | **3RG9002-0DC00** | 1 | 1 unit |
| | COMBICON[1] | 2- and 3-wire PNP transistor | PNP transistor 1 A | 5 | **3RG9004-0DB00** | 1 | 1 unit |
| | | 2- and 3-wire PNP transistor | PNP transistor 2 A | 5 | **3RG9004-0DA00** | 1 | 1 unit |
| | | 2- and 3-wire PNP transistor floating | PNP transistor 2 A | 5 | **3RG9004-0DC00** | 1 | 1 unit |

[1] Scope of supply does not include COMBICON connector set 3RX9810-0AA00, this must be ordered separately, see "Accessories".

## Accessories

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **COMBICON connector sets**<br>For 4I/4O modules with COMBICON connection; one set comprises:<br>• 4 x 5-pole plug for connection<br>• Standard sensors/actuators<br>• 2 x 4-pole plug for AS-Interface and external auxiliary voltage | 5 | **3RX9810-0AA00** | 1 | 1 unit |

## Overview

Flat module 4I/4O

The flat module for the control cabinet in degree of protection IP20 has four inputs and four outputs.

The module is fitted at the front with an LED which indicates the module's status.

With the integrated lugs, the modules can be screwed on.

An integrated addressing socket enables the module to be addressed when it is installed.

Standard sensors/actuators and the AS-Interface cable can be connected using screw terminals.

## Selection and ordering data

| | Version | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | | Article No. | | |
| | | d | | | |
| 3RK1400-0CE00-0AA3 | **Flat module 4I/4O**<br>Slave addressing type: Standard address<br>• 4 inputs/4 outputs<br>• 200 mA for all I/Os | 2 | **3RK1400-0CE00-0AA3** | 1 | 1 unit |

## Overview

Counter module with spring-loaded terminals

The counter module is used to send hexadecimally coded count values (LSB=D0, MSB=D3) to a higher-level controller. The count value is increased by 1 for each valid count pulse at terminal 8. Beginning at 0, the module counts up to 15 and then begins again at 0. The controller adopts the current value and determines the number of pulses between two host invocations through subtraction from the previous value. The total number of count pulses is determined by adding these differences.

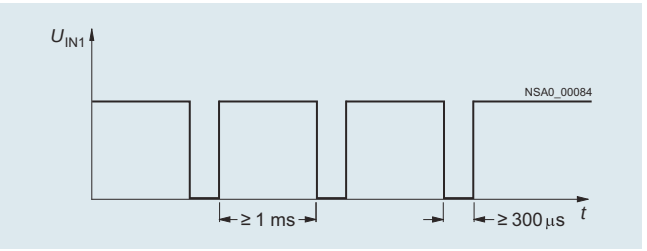
For the values sent to be unambiguous, no more than 15 count values are allowed between two host invocations or AS-Interface master invocations at terminal 8. The maximum permissible transmission frequency is calculated from these times:

$f_{TRmax} = 15 / T_{max}$

$T_{max}$: max. possible transmission time from the slave to the host

A further condition for the maximum frequency is the required pulse shape. For the counter to accept a pulse as valid, a Low must have been applied at the input for at least 300 µs and a High for at least 1 ms.

This results in a maximum frequency of $f_{Zmax}$ = 1 / 1.3 ms = 769 Hz independently of the control system (see figure below).



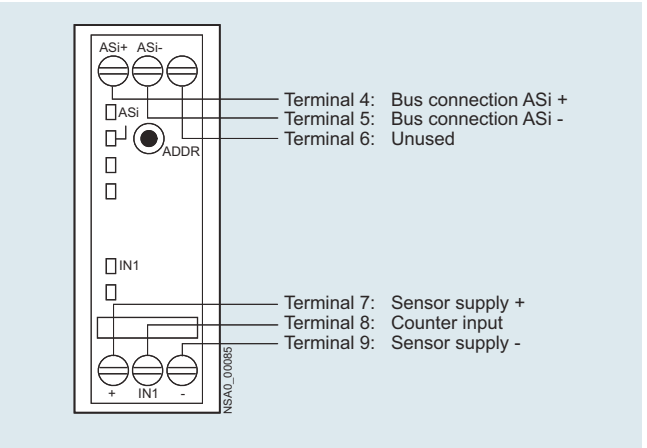

Maximum frequency for the counter module

If the time criterion stipulated in the figure is violated, the count value is rejected.

The counter is active only for the reset parameter P2 (default). The counter is deleted when P2 is set, and the incoming count pulses are not registered until after P2 is reset again.

Note:

A customized function block is necessary or must be programmed.




Counter module connection options

## Selection and ordering data

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **Counter modules** | | | | |
| Slave addressing type: Standard address | | | | |
| Width 22.5 mm | | | | |
| • With screw terminals | 10 | **3RK1200-0CE03-0AA2** | 1 | 1 unit |
| • With spring-loaded terminals | 10 | **3RK1200-0CG03-0AA2** | 1 | 1 unit |

3RK1200-0CG03-0AA2

## Overview

Ground-fault detection module with spring-loaded terminals

*"Ground faults in any control circuit must not lead to unintentional starting or potentially hazardous movements or prevent the machine from stopping." (IEC 60204-1 / VDE 0113-1).*

The AS-Interface ground-fault detection module is used to meet these requirements. Using this module from the SlimLine series, ground faults in AS-Interface systems can be reliably detected and reported.

The following ground faults are detected:

- Ground fault from AS-i "+" to ground
- Ground fault from AS-i "-" to ground
- Ground fault on sensors and actuators that are supplied from the AS-Interface voltage

Note:

Not suitable for AS-i Power24V.

Check whether the AS-i power supply unit or the AS-i master module, etc. features integrated ground-fault detection, and therefore whether a separate ground fault detection module can be omitted.

It should be noted that an AS-i cable segment behind an AS-i repeater requires its own ground-fault monitoring.

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1408-8KG00-0AA2 | **Ground-fault detection modules**<br>Module does not require an AS-i address<br>Width 22.5 mm | | | | |
| | • With screw terminals | 5 | **3RK1408-8KE00-0AA2** | 1 | 1 unit |
| | • With spring-loaded terminals | 5 | **3RK1408-8KG00-0AA2** | 1 | 1 unit |

## Overview

AS-Interface overvoltage protection module

The AS-Interface overvoltage protection module (protection module) protects downstream AS-Interface devices or individual sections in AS-i networks from conducted overvoltages which can be caused by switching operations and remote lightning strikes. The location of the protection module forms the transition from zone 1 to 2/3 within the lightning protection zone concept. Direct lightning strikes must be coped with using additional protective measures at the transitions from lightning protection zone 0A to 1.

With the AS-Interface overvoltage protection module, it is now also possible to integrate AS-Interface in the overall overvoltage protection concept of a plant or machine.

The module has the same design and degree of protection (IP67) as the AS-Interface K45 compact modules. It is a passive module and as such does not need its own address on the AS-Interface network. The module can be used to protect the AS-Interface cable and the cable for the auxiliary voltage from overvoltage. Overvoltages are discharged through a ground cable with a green/yellow oil-proof outer sheath. This cable is fixed in the module and must be connected with low resistance to the system's ground.

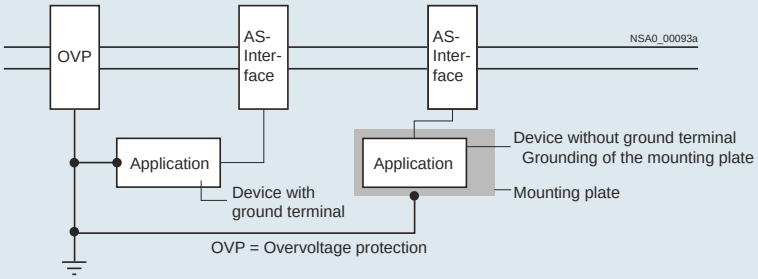
### *Rated discharge current $I_{sn}$*

The rated discharge current is the peak value of a surge current of the form 8/20 µs (microseconds), for which the protection module is designed in accordance with a specified test program. With an 8/20 waveform, 100% of the value is achieved after 8 µs and 50% after 20 µs.

### *Protection level $U_p$*

The protection level of a protection module is the highest momentary value of the voltage at the terminals, established in individual tests and characterizes the capability of a protection module to limit overvoltages to a residual level.

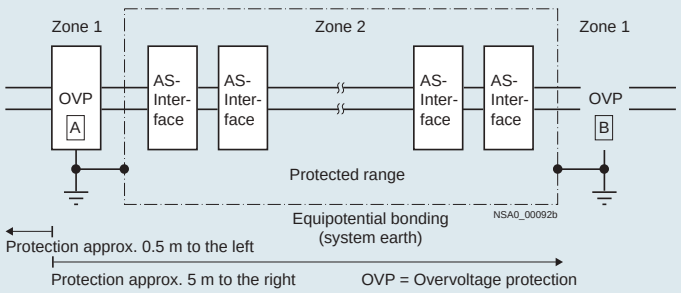
### *Configuration guidelines*




The grounding of protection modules and the units to be protected must be effected through a shared grounding point.

If insulated devices are protected, their mounts must be included in the grounding points.

### *Sample application*




## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| | **AS-Interface overvoltage protection module**<br>Module does not require an AS-i address<br>Delivery includes mounting plate (for wall and standard rail mounting) | 5 | **3RK1901-1GA01** | 1 | 1 unit |

## Overview

AS-Interface power supply unit for 3 A

**More information**

Operating instructions for AS-i power supply units, see https://support.industry.siemens.com/cs/ww/en/view/21489904 and https://support.industry.siemens.com/cs/ww/en/view/22317836

AS-Interface power supply units feed 30 V DC into the AS-Interface cable and supply the AS-Interface components. They include power-optimized data decoupling for the separation of communication signals and supply voltage. As the result, AS-Interface is able to convey both data and power along a single line. The power supply units are resistant to overload and short circuits.

### *Dimensions*

AS-Interface power supply units have compact dimensions in widths of 50/70/120 mm. No distances from other devices need to be observed when mounting the power supply units.

### *Features*

- Higher rating: The power supply units deliver currents of 2.6 to 8 A.
- Integrated data decoupling: As the result, AS-Interface is able to convey both data and power along a single line.
- Integrated ground-fault detection: The power supply units perform the reliable detection and signaling of ground faults according to IEC 60204-1. The AS-Interface voltage can be disconnected automatically in the event of a ground fault.
- Integrated overload detection: An output overload is detected and reported over a diagnostics LED.
- Diagnostics memory: Any ground faults or overloads on the output side are stored in a diagnostics memory until the device is RESET.
- Remote RESET and remote signaling: Using relay contacts, a ground fault can be signaled and evaluated by a central controller and/or indicator light.
- Diagnostics LEDs: Three different LEDs indicate the status of the AS-Interface power supply locally at the power supply unit.
- Ultra-wide input range/two-phase connection: The ultra-wide input range of 120 to 500 V of the 8 A version means that the supply units can be used in virtually any network worldwide. In addition, this version dispenses with the need for an N conductor as the device can be connected directly between 2 phases of a network.
- Operation with 24 V DC: The 3 A power supply unit is also available as a version with a 24 V DC input. This power supply unit is suitable for use in battery-powered systems or in systems with UPS (uninterruptible power supply).
- Removable terminal blocks with spring-loaded terminals: For easy exchanging of devices, each power supply unit has three removable terminal blocks: for the input side, for the output side and for Signal/RESET connections.

## Benefits

- Complete solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Only AS-i masters and AS-i slaves need to be connected to the AS-Interface cable in order to operate AS-Interface
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with a high power requirement
- Integrated ground-fault and overload detection saves the need for additional components and enhances safety
- Fast fault detection and reduced downtimes thanks to diagnostics memory, remote signaling and remote RESET
- Reduced downtimes as the result of removable terminal blocks which enable the fast exchanging of devices
- Ultra-wide input range of the 8 A version permits single-phase and two-phase operation and removes the need for an N conductor
- Can be used world-wide thanks to, for example, UL/CSA approval (UL 508)
- With the 2.6 A version, the output power is restricted to max. 100 W for use in Class 2 circuits in accordance with NEC (National Electrical Code)

## AS-Interface power supply units

### Selection and ordering data

3RX9501-0BA00

3RX9503-0BA00

| Version | | SD | Spring-loaded terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | Article No. | | |
| **AS-Interface power supply units, IP20**<br>• AS-i single output 30 V DC<br>• With integrated ground-fault detection<br>• Ambient temperature during operation -10 ... +70 °C<br>• 2.6 A version with output power restricted to max. 100 W (for Class 2 circuits in accordance with NEC)<br>• Dimensions: Width: 50 mm (2.6 A/3 A), 70 mm (5 A), 120 mm (8 A); Height: 125 mm; Depth: 125 mm | | | | | |
| Output current | Input voltage | | | | |
| 3 A | 120/230 V AC (selectable) | ▶ | **3RX9501-0BA00** | 1 | 1 unit |
| 5 A | 120/230 V AC (selectable) | ▶ | **3RX9502-0BA00** | 1 | 1 unit |
| 8 A | 120/230 ... 500 V AC (selectable) | ▶ | **3RX9503-0BA00** | 1 | 1 unit |
| For special applications | | | | | |
| 3 A | 24 V DC | ▶ | **3RX9501-1BA00** | 1 | 1 unit |
| 2.6 A/max. 100 W | 120/230 V AC (selectable) | 2 | **3RX9501-2BA00** | 1 | 1 unit |

# AS-Interface: Power Supply Units and Data Decoupling Modules

## 30 V power supply units

### Overview

PSN130S 30 V power supply units for 3 A, 4 A and 8 A

**More information**

For operating instructions and other technical information, see https://support.industry.siemens.com/cs/ww/en/view/64364000 and https://support.industry.siemens.com/cs/ww/en/view/44030789

The PSN130S 30 V power supplies feed 30 V DC into the AS-Interface cable and supply the AS-Interface components, but do not include data decoupling. Data decoupling modules are needed in addition therefore to separate communication signals and control supply voltage, see page 14/77 or 14/79.

The power supply units are resistant to overload and short circuits.

#### *Dimensions*

The 30 V power supply units have compact dimensions with widths of 50 and 70 mm. No distances from other devices need to be observed when mounting the power supply units.

#### *Features*

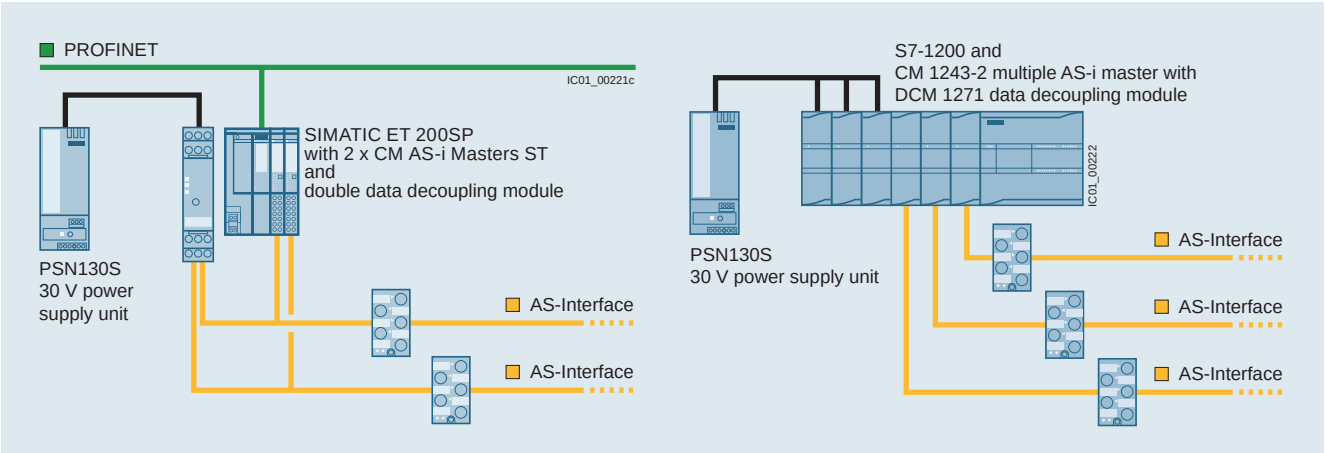
- Primary clocked power supply units for connection to a single-phase AC network
- Power for currents of 3 A, 4 A and 8 A
- The output voltage is floating, and resistant to short-circuits and no-load operation. If there is an overload, the output voltage is reduced or cut-off. After a short-circuit or overload, the devices start up again automatically.
- In the event of a device fault, the output voltage will be limited to max. 37 V.
- Modular installation devices in degree of protection IP20 and safety class I
- Diagnostics: With an output voltage > 26.5 V DC, the green LED (30V O.K.) is lit and the signaling contact 13-14 is closed.

### Benefits

- Low-cost alternative solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Cost advantage particularly for multiple networks
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with a high power requirement
- Can be used world-wide thanks to, for example, UL/CSA approval (UL 508)

### Application

#### *Configuration examples of AS-Interface networks with a 30 V power supply unit*




Configuration of AS-Interface multiple networks with one PSN130S 30 V power supply unit (examples with schematic representation):
Left: Double network based on the S22.5 double data decoupling module and a SIMATIC ET 200SP with two CM AS-i Master ST modules
Right: Triple network based on the SIMATIC S7-1200 with DCM 1271 data decoupling modules and CM 1243-2 communication processors

## Technical specifications

| PSN130S 30 V DC power supply unit | | 3 A | 4 A | 8 A |
|---|---|---|---|---|
| **Input data** | | | | |
| • Input voltage, rated value $U_e$ | V AC | 120/230 V, single-phase, automatic selection | | |
| • Range of input voltage | V AC | 85 ... 132/174 ... 264 | | |
| • Mains frequency | Hz | 50/60 | | |
| • Power consumption at full load, typ. | W | 103 | 139 | 270 |
| **Output data** | | | | |
| • Output voltage, rated value $U_a$ | V DC | 30 | | |
| • Residual ripple | $mV_{pp}$ | < 150 | | |
| • Output current, rated value at -20 ... +60 °C | A | 3 | 4 | 8 |
| • Max. output current at +60 ... +70 °C | A | 3 | 3 | 4 |
| **Degree of efficiency in rated conditions** | | | | |
| • Degree of efficiency | % | 87 | 88 | 90 |
| • Power loss, typ. | W | 12 | 17 | 25 |
| **Protection and monitoring** | | | | |
| • Output overvoltage protection | V | < 37 | | |
| • Current limiting, typ. | A | 4 | 5.5 | 11 |
| **Safety** | | | | |
| • Primary/secondary electrical separation | | Output voltage PELV/SELV according to IEC 60950 and EN 50178 | | |
| • Protection class | | I | | |
| • Degree of protection | | IP20 | | |

| PSN130S 30 V DC power supply unit | | 3 A | 4 A | 8 A |
|---|---|---|---|---|
| **Approvals** | | | | |
| • UL | | UL 508/CSA 22.2 | | |
| • Pollution degree | | IEC 60950 | | |
| • Overvoltage category and electrical separation | | EN 50178 and IEC 61558 | | |
| **EMC** | | | | |
| • Emitted interference (class B) | | IEC 61000-6-3 | | |
| • Line harmonics limit | | IEC 61000-3-2 | | |
| • Interference immunity | | IEC 61000-6-2 | | |
| **Operating data** | | | | |
| Ambient temperature | | | | |
| • Operation | °C | -20 ... +70 | | |
| • Transport/storage | °C | -40 ... +85 | | |
| Pollution degree | | 2 | | |
| Humidity class | | Climate class according to DIN 50010, relative air humidity max. 100%, without condensation | | |
| **Dimensions and weight** | | | | |
| • Width | mm | 50 | 50 | 70 |
| • Height x depth | mm | 125 x 126.5 | | |
| • Weight | kg | 0.4 | 0.4 | 0.7 |

## Selection and ordering data

| | Version | Output current | Input voltage | SD | Screw terminals<br>Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| | **PSN130S 30 V DC power supply unit (without AS-i data decoupling)**<br>• Output voltage 30 V DC<br>• Dimensions: Width: 50 mm (3 A/4 A); 70 mm (8 A); Height: 125 mm; Depth: 126.5 mm | | | d | | | |
| 3RX9511-0AA00 | | 3 A | 120/230 V AC (automatic selection) | 2 | **3RX9511-0AA00** | 1 | 1 unit |
| 3RX9512-0AA00 | | 4 A | 120/230 V AC (automatic selection) | 2 | **3RX9512-0AA00** | 1 | 1 unit |
| 3RX9513-0AA00 | | 8 A | 120/230 V AC (automatic selection) | 2 | **3RX9513-0AA00** | 1 | 1 unit |

## Overview

AS-Interface S22.5 double data decoupling module:
Screw terminal version (picture left),
Spring-loaded terminal version (picture right)

**More information**

Operating instructions, see https://support.industry.siemens.com/cs/ww/en/view/44030789
More information on AS-i Power24V, see System Manual "AS-Interface", https://support.industry.siemens.com/cs/ww/en/view/26250840

With the aid of the S22.5 data decoupling module, the AS-Interface network can also be supplied with 24 V DC or 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.

The combination of data decoupling modules and standard power supply units is therefore a cost-efficient alternative to the service-proven AS-Interface power supply units.

The quality of the data signals and the reliable operation of the AS-i network are not negatively affected as the result.

### *Features of the S22.5 data decoupling unit*

- Degree of protection IP20
- Narrow design: 22.5 mm wide
- Version with screw or spring-loaded terminals
- Versions for single and double data decoupling
- Supply of several AS-i networks with a single power supply unit
- Operation with 24 V DC or 30 V DC, grounded or non-grounded
- Adjustable current limiting up to 2 x 4 A
- Integrated ground-fault detection with fault storage, display can optionally be switched off
- Diagnostics LEDs and signaling contacts
- RESET by button or remote RESET

### *Ground-fault detection*

The integrated ground-fault detection works with a grounded and non-grounded supply: The connection of negative pole and ground (upstream from the data decoupling module) customary with 24 V DC power supplies is permitted. A ground fault to the negative or positive pole on the AS-Interface network (downstream from the data decoupling module) is detected and stored as a fault and will be signaled using LEDs and a relay contact.

Using the ground-fault detection in the AS-i master is recommended for non-grounded supply. In this case, the ground-fault indicator can be deactivated in the data decoupling unit to avoid any unwanted LED messages.

## Benefits

- Compatible expansion of the AS-Interface system
- An existing standard power supply unit with 24 V DC or 30 V DC can be used for supplying AS-i networks
- The AS-Interface system can also be used in tightly budgeted applications because no AS-Interface power supply unit needs to be purchased
- Applications benefit in addition from the advantages of a modern bus system:
  - High level of standardization
  - Additional diagnostics and maintenance information
  - Faster commissioning
- Easy and cost-efficient design of single and multiple networks is possible

## Application

The AS-Interface data decoupling module is designed for AS-Interface networks with 30 V or 24 V supply (AS-i Power24V).

Operation of an AS-i network with the data decoupling module and a 30 V standard power supply unit is technically equivalent to the use of an AS-Interface power supply unit and offers the service-proven features of AS-Interface for all applications.

AS-Interface Power24V uses a 24 V power supply unit in conjunction with a data decoupling module and is particularly suitable for:

- Compact machines using AS-Interface input/output modules
- Applications in the control cabinet for AS-Interface integration of SIRIUS 3RT2 contactors using 3RA27 function modules

When using the double data decoupling module or other data decoupling units, several AS-Interface networks can be operated with a single power supply unit. This results in an additional cost advantage.

Note:

The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 $mV_{pp}$, and in the event of a fault must limit the output voltage to a maximum of 40 V.

We recommend

- SITOP power supplies, see Catalog KT10.1 https://support.industry.siemens.com/cs/ww/en/view/109745655
- PSN130S 30 V power supply units, see page 14/75

Note on AS-i Power24V:

The length of an AS-i Power24V network is restricted to 50 m in order to limit the voltage drop along the cable.

AS-i masters, AS-i slaves and the sensors and actuators supplied through the AS-i cable must be designed for the reduced voltage. Sensors and actuators for the standard voltage range of 10 to 30 V can be supplied with sufficient voltage.

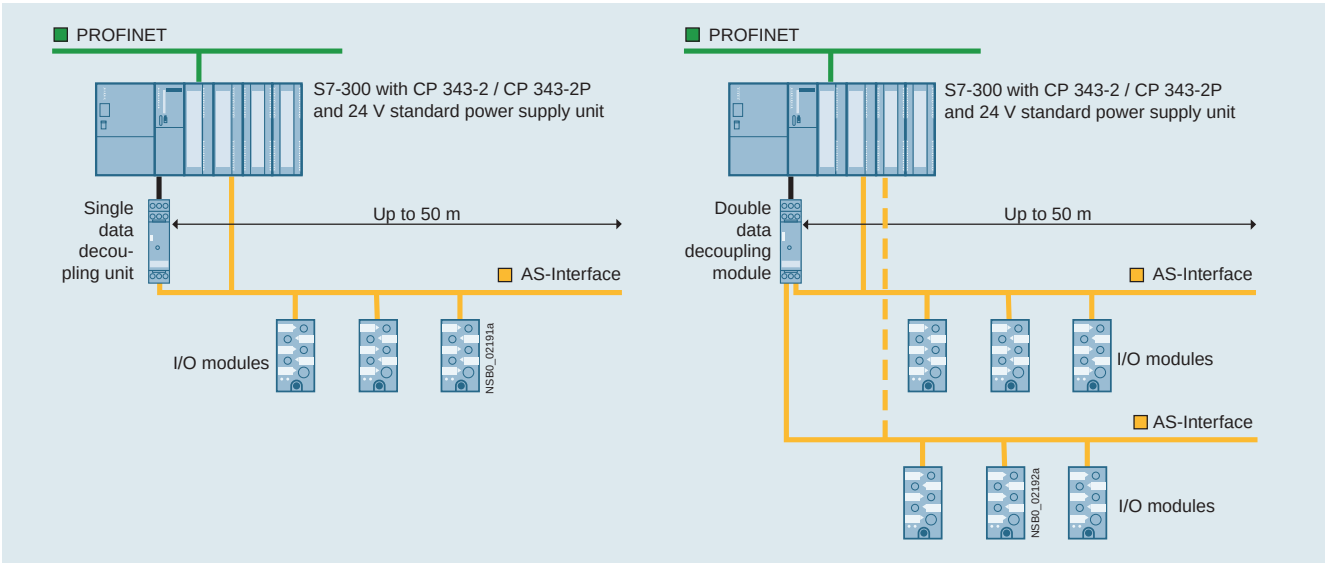
Please also observe the requirements specified in "Extension of AS-i Power24V" for implementation of AS-i Power24V, see page 14/21.

For more information on AS-i Power24V, see "AS-Interface System Manual", https://support.industry.siemens.com/cs/ww/en/view/26250840.

# AS-Interface: Power Supply Units and Data Decoupling Modules

## S22.5 data decoupling modules

***Construction of an AS-i Power24V network with an AS-Interface S22.5 data decoupling module***




Left: single network, right: Multiple network

### Selection and ordering data

| | Version | SD<br>d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 3RK1901-1DE12-1AA0 | **S22.5 data decoupling modules**<br>With screw terminals, removable terminals, width 22.5 mm, height 101 mm, depth 115 mm | | **Screw terminals** | | |
| | • Single data decoupling module, 1 x 4 A | 2 | **3RK1901-1DE12-1AA0** | 1 | 1 unit |
| | • Double data decoupling module, 2 x 4 A | 2 | **3RK1901-1DE22-1AA0** | 1 | 1 unit |
| 3RK1901-1DG12-1AA0 | **S22.5 data decoupling modules**<br>With spring-loaded terminals, removable terminals, width 22.5 mm, height 105 mm, depth 115 mm | | **Spring-loaded terminals** | | |
| | • Single data decoupling module, 1 x 4 A | ▶ | **3RK1901-1DG12-1AA0** | 1 | 1 unit |
| | • Double data decoupling module, 2 x 4 A | ▶ | **3RK1901-1DG22-1AA0** | 1 | 1 unit |

## Overview

DCM 1271 data decoupling module for SIMATIC S7-1200

**More information**

Equipment Manual AS-i Master CM 1243-2 and AS-i Data Decoupling Unit DCM 1271 for SIMATIC S7-1200, see https://support.industry.siemens.com/cs/ww/en/view/44030789

More information on AS-i Power24V, see System Manual "AS-Interface", https://support.industry.siemens.com/cs/ww/en/view/26250840

With the aid of the DCM 1271 data decoupling module, the AS-Interface network can also be supplied with 24 V DC or 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.

The DCM 1271 data decoupling module has the same enclosure design as the S7-1200 module and is therefore ideal for combining with the CM 1243-2 AS-i master.

The DCM 1271 data decoupling module has no connection to the backplane bus of the SIMATIC S7-1200 and is not counted as a communication module when calculating the maximum configuration.

***Features of the DCM 1271 data decoupling module***

- Design: S7-1200, 30 mm wide, degree of protection IP20
- Detachable terminals (scope of supply)
- Single data decoupling
- Supply of several AS-i networks with a single power supply unit
- Operation with 24 V DC or 30 V DC, grounded or non-grounded
- Current limiting at 4 A
- Integrated ground-fault detection
- Diagnostics LEDs for ground faults and overloads
- Signaling contacts for ground-fault detection

***Ground-fault detection***

The integrated ground-fault detection works with a grounded and non-grounded supply: The connection of negative pole and ground (upstream from the data decoupling module) customary with 24 V DC power supplies is permitted. A ground fault to the negative or positive pole on the AS-Interface network (downstream of the data decoupling module) is identified and signaled via LED and a transistor output.

## Benefits

- An existing standard power supply unit with 24 V DC or 30 V DC can be used for supplying AS-i networks
- The AS-Interface system can also be used in tightly budgeted applications because no AS-Interface power supply unit needs to be purchased
- Applications benefit in addition from the advantages of a modern bus system:
  - High level of standardization
  - Additional diagnostics and maintenance information
  - Faster commissioning

## Application

The AS-Interface data decoupling module is designed for AS-Interface networks with 30 V or 24 V supply (AS-i Power24V).

Operation of an AS-i network with the data decoupling module and a 30 V standard power supply unit is technically equivalent to the use of an AS-Interface power supply unit and offers the service-proven features of AS-Interface for all applications.

AS-i Power24V uses a 24 V power supply unit in conjunction with a data decoupling module and is particularly suitable for

- Compact machines using AS-Interface input/output modules
- Applications in the control cabinet for AS-Interface integration of SIRIUS 3RT2 contactors using 3RA27 function modules

Note:

The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 $mV_{pp}$, and in the event of a fault must limit the output voltage to a maximum of 40 V.

We recommend

- SITOP power supplies, see Catalog KT10.1 https://support.industry.siemens.com/cs/ww/en/view/109745655
- PSN130S 30 V power supply units, see page 14/75

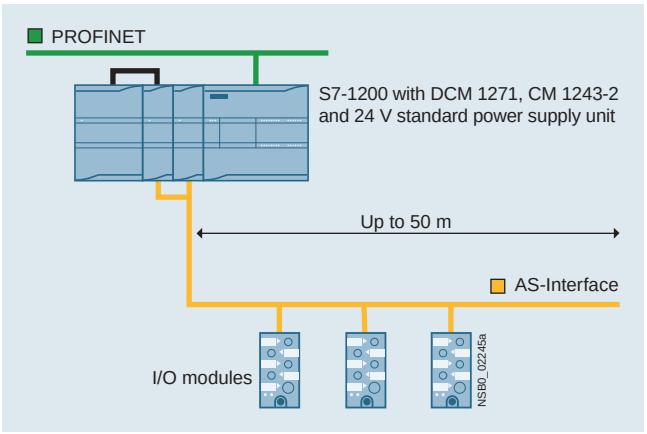
Note on AS-i Power24V:

The length of an AS-i Power24V network is restricted to 50 m in order to limit the voltage drop along the cable.

AS-i masters, AS-i slaves and the sensors and actuators supplied through the AS-i cable must be designed for the reduced voltage. Sensors and actuators for the standard voltage range of 10 to 30 V can be supplied with sufficient voltage.

Please also observe the requirements specified in "AS-i Power24V" for the operation of AS-i Power24V, see page 14/21.

For more information on AS-i Power24V, see "AS-Interface System Manual", https://support.industry.siemens.com/cs/ww/en/view/26250840.




Configuration of an AS-i Power24V network with DCM 1271 AS-Interface data decoupling unit

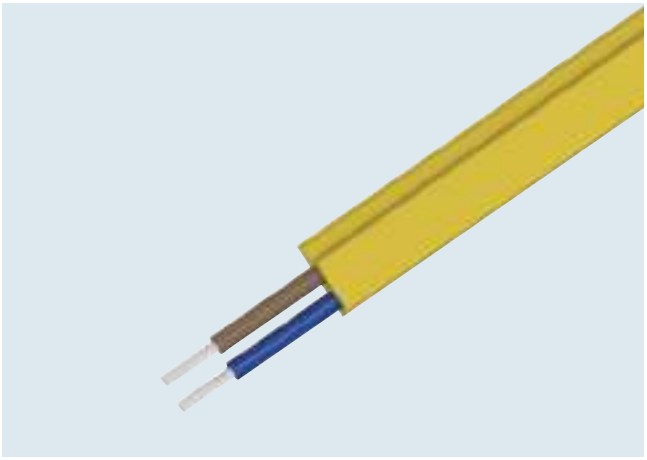
## Selection and ordering data

| | Version | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | Article No. | | |
| 3RK7271-1AA30-0AA0 | **DCM 1271 data decoupling module**<br>• With screw terminals, removable terminals (included in the scope of supply)<br>• Max. current: 1 x 4 A<br>• Dimensions (W × H × D/mm): 30 × 100 × 75 | 2 | **3RK7271-1AA30-0AA0** | 1 | 1 unit |

## Accessories

| | Version | SD | Screw terminals | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | Article No. | | |
| | **Screw terminals (replacement)** | | | | |
| | • 5-pole<br>For CM 1234-2 AS-i master and AS-i DCM 1271 data decoupling module | 5 | **3RK1901-3MA00** | 1 | 1 unit |
| | • 3-pole<br>For AS-i DCM 1271 data decoupling module for connecting the power supply unit | 5 | **3RK1901-3MB00** | 1 | 1 unit |
| 3RK7243-2AA30-0XB0 | **CM 1243-2 communication module**<br>• AS-Interface masters for SIMATIC S7-1200<br>• Corresponds to AS-Interface specification V3.0<br>• With screw terminals, removable terminals (included in the scope of supply)<br>• Dimensions (W × H × D/mm): 30 × 100 × 75<br>See also from page 14/28 onwards | 2 | **3RK7243-2AA30-0XB0** | 1 | 1 unit |

## Overview



AS-Interface shaped cable

The actuator-sensor interface – the networking system used for the lowest field area – is characterized by very easy mounting and installation. A new connection method was developed specially for AS-Interface.

The stations are connected using the AS-Interface cable. This two-wire AS-Interface shaped cable has a trapezoidal shape, thus ruling out polarity reversal.

Connection is effected by the insulation piercing method. In other words, male contacts pierce the shaped AS-Interface cable and make reliable contact with the two wires. Cutting to length and stripping are superfluous. Consequently, AS-Interface stations (e.g. I/O modules, intelligent devices) can be connected in the shortest possible time and exchanging devices is quick.

To enable use in the most varied ambient conditions (e.g. in an oily environment), the AS-Interface cable is available in different materials (rubber, TPE, PUR).

For special applications it is also possible to use an unshielded standard round cable H05VV-F 2 x 1.5 $mm^2$ according to AS-i specification. With AS-Interface, data and energy for the sensors (e.g. proximity switches) and actuators (e.g. indicator lights) are transmitted over the yellow AS-Interface cable.

The black AS-Interface cable must be used for actuators with a 24 V DC supply (e.g. solenoid valves) and a high power requirement.

### *Suitable for operation in tow chains*

The use of the AS-Interface shaped cables with TPE and PUR outer sheath was checked in a tow chain test with the following conditions:

| | | |
|---|---|---|
| Chain length | m | 6 |
| Travel | m | 10 |
| Bending radius | mm | 75 |
| Travel speed | m/s | 4 |
| Acceleration | $m/s^2$ | 4 |
| Number of cycles | | 10 million |
| Duration of test | | approx. 3 years (11 000 cycles per day) |

After termination of the 10 million cycles only slight wear was visible due to the lugs of the tow chain. No damage to the cores and core insulation could be detected.

Note:

When using a tow chain, the cables must be installed in such a way that they are not subject to tensile forces. On no account may the cables be twisted, but they must be routed flat through the tow chain.

## Selection and ordering data

3RX90..-0AA00

| Version | | | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|
| | | | d | | | |
| **AS-Interface shaped cables** | | | | | | |
| Material | Color | Quantity | | | | |
| Rubber | Yellow (AS-Interface) | 100 m roll | 2 | **3RX9010-0AA00** | 1 | 1 unit |
| | Yellow (AS-Interface) | 1 km drum | 5 | **3RX9012-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 100 m roll | 2 | **3RX9020-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 1 km drum | 5 | **3RX9022-0AA00** | 1 | 1 unit |
| TPE | Yellow (AS-Interface) | 100 m roll | 2 | **3RX9013-0AA00** | 1 | 1 unit |
| | Yellow (AS-Interface) | 1 km drum | 5 | **3RX9014-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 100 m roll | 2 | **3RX9023-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 1 km drum | 5 | **3RX9024-0AA00** | 1 | 1 unit |
| TPE special version according to UL Class 2 | Yellow (AS-Interface) | 100 m roll | 5 | **3RX9017-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 100 m roll | 5 | **3RX9027-0AA00** | 1 | 1 unit |
| PUR | Yellow (AS-Interface) | 100 m roll | 2 | **3RX9015-0AA00** | 1 | 1 unit |
| | Yellow (AS-Interface) | 1 km drum | 5 | **3RX9016-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 100 m roll | 2 | **3RX9025-0AA00** | 1 | 1 unit |
| | Black (24 V DC) | 1 km drum | 5 | **3RX9026-0AA00** | 1 | 1 unit |

## Overview

AS-Interface repeater

The AS-Interface repeater is used to extend the AS-Interface cable.

- In its basic version, an AS-i network comprises one segment with a maximum cable length of 100 m. An extension plug (see page 14/84) can be used to increase the cable length for a segment to a maximum of 200 m.
- If this is insufficient, however, you can use one or more repeaters
- A repeater adds an extra segment to an existing segment. The extra segment can have a cable length of up to 100 m (without extension plug) or up to 200 m (with an extension plug in the extra segment)
- Each segment requires a separate AS-i power supply unit
- Electrical separation of the two AS-Interface shaped cable lines
- Slaves can be used on both sides of the repeater
- The additional power supply can increase the current infeed for slaves/sensors and lower the voltage drop on the AS-i cable
- Separate display of the correct AS-Interface voltage for each segment
- Installed in K45 module enclosure IP67 with mounting plate
- Easy mounting

## Benefits

- More possibilities of use and greater freedom for plant planning through extension of the AS-Interface network
- Reduced downtime and servicing times in the event of a fault thanks to separate display of the correct AS-Interface voltage for each side

***Design of an AS-Interface network with repeaters***

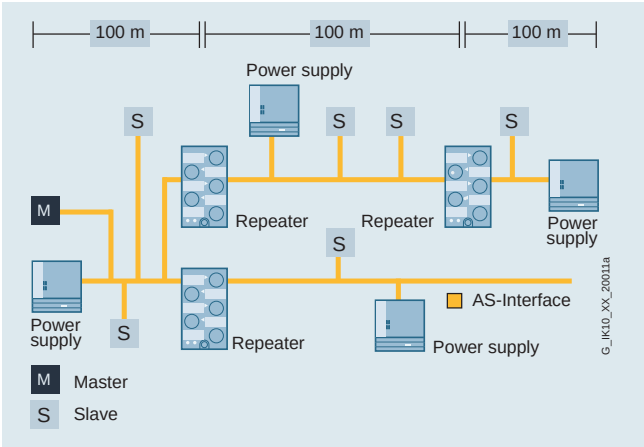
- Parallel switching of several repeaters possible (star configuration)
- Combination of series and parallel switching possible

The following conditions apply:

- When used without an extension plug no more than two repeaters are permitted between AS-i master and slave (repeaters connected in series)
- When used with an extension plug no more than one repeater is permitted between AS-i master and slave

In safety-related applications the following also applies:

- When used without an extension plug, no more than two repeaters are permitted between evaluation unit (e.g. MSS ASIsafe Modular Safety System, F-CM AS-i Safety ST for ET 200SP) and ASIsafe input slave or safe output module.
- When used with an extension plug, no more than one repeater is permitted between the evaluation unit (e.g. MSS ASIsafe Modular Safety System, F-CM AS-i Safety ST for ET 200SP) and ASIsafe input slave or safe output module.




Design of an example AS-Interface network with repeaters (without extension plug)

Note:

The AS-Interface repeater is not suitable for AS-i Power24V networks. It is recommended for use in AS-Interface networks with AS-Interface power supply units (e.g. 3RX9501-0BA00).

## Application

The repeater is used to extend the AS-Interface network. In this case there are AS-Interface slaves and one AS-Interface power supply unit on each side of the repeater.

In the case of a line topology with two repeaters and three extension plugs, the maximum possible size of the AS-Interface network is 600 m, see example configuration with extension plug on page 14/84.

## Selection and ordering data

| | Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 6GK1210-0SA01 | **Repeaters for AS-Interface**<br>For cable extension,<br>scope of supply includes mounting plate (for wall and standard rail mounting),<br>module does not require an AS-i address | 5 | **6GK1210-0SA01** | 1 | 1 unit |

## Overview

AS-Interface extension plug compact

With the extension plug it is possible to double the cable length possible in an AS-Interface segment from 100 to 200 m.

Only one power supply unit is needed to supply power to the slaves on the up to 200 m long segment.

The extension plug compact can be installed directly onto an AS-i shaped cable. A separate M12 feeder, as was required for earlier extension plug versions, is no longer required with extension plug compact.

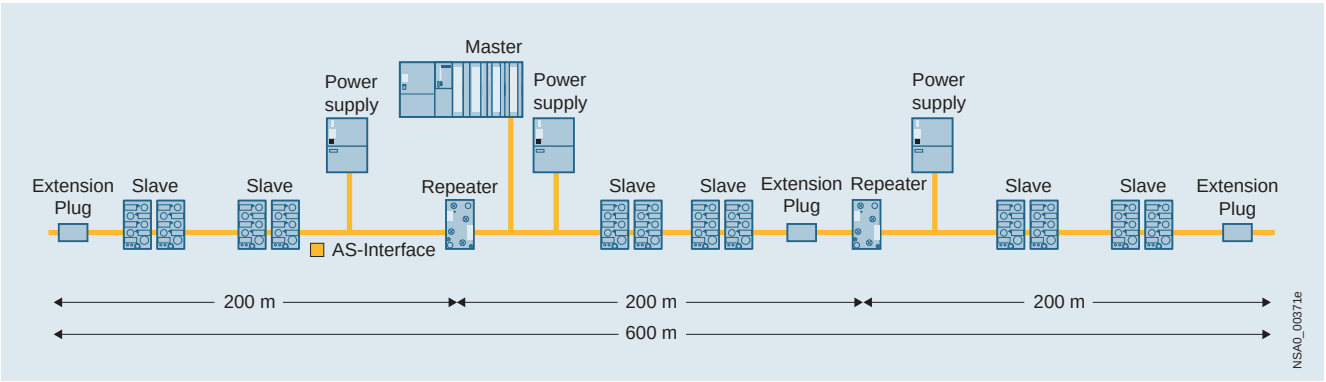
***Design of an AS-Interface segment with an extension plug***

To construct an AS-Interface segment with a cable length of more than 100 m and up to a maximum of 200 m, the extension plug is installed in a radius of around ± 10 m at the point of the network that is furthest from the power supply unit. The extension plug is not allowed to be used in AS-Interface networks smaller than 100 m. As with all AS-Interface networks, any network structure (line, tree, star) is possible when using the extension plug. Only one extension plug is required per 200 m segment even with a tree or star structure.

Note:

The AS-i bus cable must not terminate in the extension plug compact. The AS-Interface shaped cable can be terminated by means of a cable terminating piece to provide degree of protection IP67 where required, see "Miscellaneous accessories" on page 14/91.

The AS-Interface extension plug is not suitable for AS-i Power24V networks.




Maximum network size with repeaters and extension plug (master at center of network)

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1901-1MX02 | **AS-Interface extension plug compact**<br>• Doubling of the cable length to 200 m per AS-Interface segment<br>• With direct connection to AS-Interface shaped cable<br>• Module does not require an AS-i address | 2 | **3RK1901-1MX02** | 1 | 1 unit |

## Accessories

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1901-1MN00 | **Cable terminating piece**<br>For sealing of open cable ends (shaped AS-Interface cable) in IP67 | ▶ | **3RK1901-1MN00** | 1 | 10 units |

## Overview

The innovated addressing unit for AS-Interface of the AS-i specification V3.0

The addressing unit is used to assign an address during commissioning to each AS-Interface slave. The device detects a connected slave module or a complete AS-i network and displays the found module in the LCD display. Each address can be individually set using the Up/Down keys. By turning the rotary switch, further commissioning functions are selected intuitively. The innovative device has been adapted to the current AS-i specification V3.0 and can now also handle the I/O data of the latest slaves.

### *Functionality*

- Reading out and adjusting the slave address 0 to 31 or 1A to 31A, 1B to 31B, with automatic addressing aid and prevention of double addresses
- Reading out the slave profile (IO, ID, ID2)
- Reading out and adjusting the ID1 code
- Input/output test when commissioning the slaves: Read input signals and write outputs with all digital and analog slaves according to AS-Interface specification V3.0, including safe input slaves and complex CTT2 slaves
- Measuring the voltage on the AS-Interface cable (measuring range from 2 to 35 V)
- Display of the operational current in case of direct connection of an AS-i slave (measuring range from 0 to 150 mA)
- Storage of complete network configurations (profiles of all slaves) to simplify the addressing
- Adjusting the slave parameters for commissioning
- Reading out the identification and diagnostics of CTT2 slaves
- Reading out the code table of safe input slaves (ASIsafe)

Note:

For operation of the addressing unit on an AS-Interface cable with connected power supply unit, the following applies: The AS-Interface addressing unit is suitable for standard AS-i networks and AS-i Power24V networks (min. operational voltage on the AS-Interface cable 19 V).

## Benefits

- Increased power supply to the slaves to 150 mA
- Better utilization of the battery capacity thanks to improved circuitry
- Support for the current AS-i specification V3.0
- Expanded display for simultaneously displaying input and output states
- Clearly recognizable display of status of digital inputs/outputs in binary format (0/1), optionally also available as hexadecimal values
- Intuitive display of analog data either as decimal, hexadecimal or as a percentage (e.g. 100% corresponds to input/output value 20 mA)
- I/O data of complex slaves (CTT2 profile) can be displayed
- Decoded display of the input data of safe input slaves, including code table
- Simplification of the operating steps when setting the slave address with automatic read back of the set address
- Addressing cable, ready for operation even without screwing in tight into the M12 socket, thus faster availability of the addressing unit
- Proven compact housing with smooth keys and rotary switch
- Connection of standard AS-i networks possible with 30 V as well as Power24V networks
- Complex slaves with high operating currents can be addressed without external supply
- Longer operating time by automatic shutdown after approx. 5 minutes (or approx. 1 minute when data exchange is active) after last operation
- Can be used with all types of digital and analog slaves
- Comprehensive and fast input/output test of plants, even for A/B slaves with 4 DI/4 DQ and current analog modules with an A/B address
- Faster and more reliable commissioning of the AS-Interface modules
- One-hand operation possible, with unique selection of the functions
- Connection via M12 socket (pin 1: ASI+; pin 3: ASI-; pins 2, 4, 5: not used)
- Universal applicability for all AS-i networks

## Selection and ordering data

| | Version | SD<br>d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| <br>3RK1904-2AB02 | **AS-Interface addressing unit V3.0**<br>• For AS-Interface modules and sensors and actuators with integrated AS-Interface according to AS-i specification V3.0<br>• for setting the AS-i address of slaves with standard addresses, and slaves with extended addressing mode (A/B slaves)<br>• With input/output test function and many other commissioning functions<br>• Battery operation with four type AA batteries (IEC LR6, NEDA 15)<br>• Degree of protection IP40<br>• Dimensions (W x H x D) mm: 84 x 195 x 35<br>• Scope of supply:<br>- Addressing unit with 4 batteries<br>- Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m | 2 | **3RK1904-2AB02** | 1 | 1 unit |

## Accessories

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1902-4PB15-3AA0 | **Addressing cable, with M12 plug to M12 socket**[1] • For addressing slaves with M12 connection, e.g. K20 or K60R modules or light curtains • Length 1.5 m, 3-pole, 3 x 0.34 mm$^2$ | 5 | **3RK1902-4PB15-3AA0** | 1 | 1 unit |
| 3RX9801-0AA00 | **AS-Interface M12 3RX feeder** • Transition of AS-Interface cable to a standard round cable • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Current carrying capacity up to 2 A | ► | **3RX9801-0AA00** | 1 | 1 unit |
| 3RK1901-2NR10 | **AS-Interface M12 3RK feeder** • AS-Interface cable transition without $U_{aux}$, with M12 socket • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable | 2 | **3RK1901-2NR10** | 1 | 1 unit |
| 3RK1902-4HB50-5AA0 | **M12 cable plug**[2] • Extruded M12 plug (angled cable feeder 90°), other cable end open • Length: 5 m, 5-pole, color: Black | 5 | **3RK1902-4HB50-5AA0** | 1 | 1 unit |
| 3RK1902-4BA00-5AA0 | **M12 plug, straight**[2] • For screw fixing, 5-pole screw terminal, max. 0.75 mm$^2$ • A-coded, max. 4 A | 5 | **3RK1902-4BA00-5AA0** | 1 | 1 unit |

1) Not included in scope of supply of the 3RK1904-2AB02 addressing unit.

2) For connecting the addressing unit to an AS-i network via AS-Interface M12 feeder, a connecting cable (M12 plug to M12 connector) must be produced and requires the following wiring:
- M12 cable plug: Pin 1 / core brown ↔ M12 plug: Pin 1
- M12 cable plug: Pin 3 / core blue ↔ M12 plug: Pin 3
- Pin 2, 4, 5 not connected.

## Overview

AS-Interface analyzer

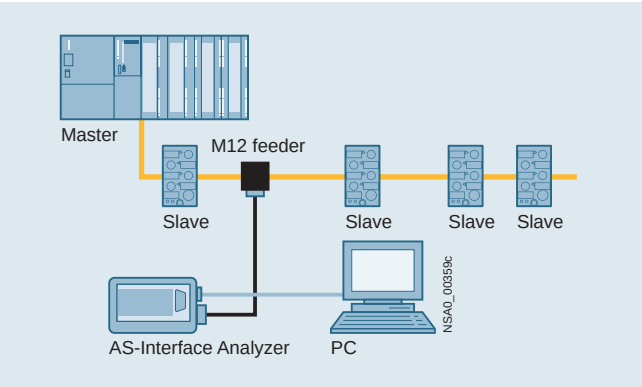
The AS-Interface analyzer is used to test AS-Interface networks.

Installation errors, e.g. loose contacts or EMC interference under extreme loads, can be revealed by this device.

Thanks to the easy-to-use software the user can assess the quality of complete networks even if he lacks detailed specialist knowledge of AS-Interface. In addition it is an easy matter with the AS-Interface analyzer to create test logs from the records produced, thus providing documentation for startups and service assignments.

For advanced AS-Interface users there are trigger functions for detailed diagnostics.

***Connection***




Connection of AS-Interface analyzer to PC and AS-Interface network

The AS-Interface analyzer follows the communication on the AS-Interface network as a passive station. The unit is supplied simultaneously from the AS-Interface cable.

This analyzer interprets the physical signals on the AS-Interface network and records the communication.

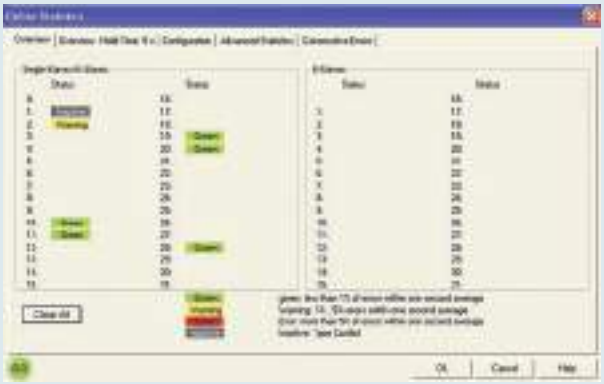
The data thus obtained is transferred through an RS 232 interface to a PC such as a notebook, for evaluation with the supplied diagnostics software.

## Benefits

- Simple and user-friendly operation enables diagnostics of AS-Interface networks without help from specialists
- Speedy troubleshooting thanks to intuitive display in statistics mode
- Test logs provide verification of the state and quality of the installation for service and approval
- Recorded logs facilitate remote diagnostics by Technical Support
- Comprehensive trigger functions enable exact analysis
- Process data can be monitored online

## Application

### *Online statistics*



Online statistics, overview

Online statistics, details, e.g. here a fault on slave 5

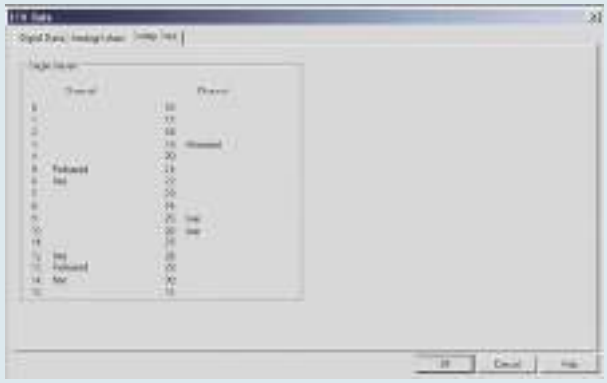
This mode provides a quick overview of the existing AS-Interface system. The error rates are displayed per slave in a traffic-light function (green, yellow, red).

The bus configuration and the currently transmitted data of the slaves are shown in a well arranged presentation.

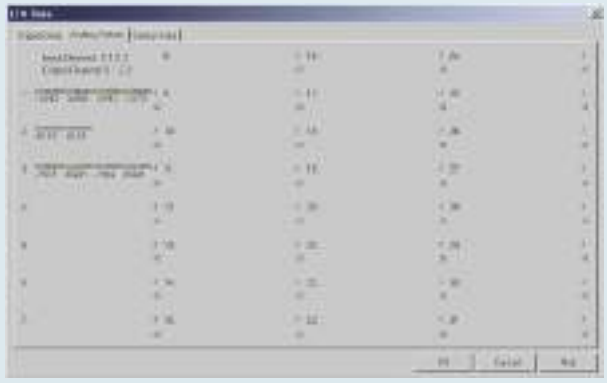
With the expanded statistics function, it is possible to determine the error rates as the number of transmitted or faulty bus message frames.

The bundle error overview shows in steps how many multiple repetitions of message frames occurred in order to enable a selective and look-ahead assessment of the transmission quality.

### *Data mode*



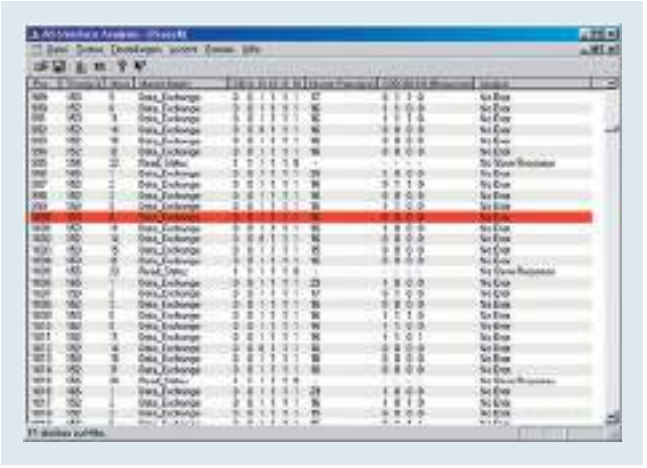
Presentation of the I/O data: Safety data



Presentation of the I/O data: Analog values

In this mode, the analyzer shows not only the digital input/output values but also the current analog values and the input status of the safety slaves.

### *Trace mode*



Presentation of message frames in trace mode

The presentation of message frames in the style of a classic fieldbus analyzer is indispensable for complex troubleshooting. Extensive trigger functions and recording and viewing filters are available for this purpose. An external trigger input and trigger output round off the scope of functions in order to find even the most difficult errors.

For troubleshooting in connection with ASIsafe applications, changes of status in the code tables of safety slaves are identified and assessed.

The AS-i analyzer can be used with an AS-i master in accordance with AS-Interface specification V3.0 or a predecessor version.

The analyzer does not automatically decode the process values for type CTT2 - CTT5 AS-i slaves. As for other slave types, the message frames are recorded and evaluated in the statistics. If required, decoding can also be performed by the user manually.

More information, see https://support.industry.siemens.com/cs/ww/en/view/109746763.

### *Test log*

Example of a test log

The recorded data of the online statistics are easy to output and document using a test log. Verification of the state of the plant can thus be provided for approvals or service assignments.

The integrated measurement assistant records the bus signals for a variable duration, thereby triggering creation of an automatic test log. A standardized quality test of AS-i plants is thus possible.

Note:

The AS-Interface analyzer is suitable for standard AS-i networks and AS-i Power24V networks (min. operating voltage 20 V).



## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1904-3AB01 | **AS-Interface analyzer**<br>• For testing AS-Interface systems<br>• For troubleshooting and service assignments in installations and networks with AS-Interface systems<br>• Dimensions (W x H x D): 145 x 30 x 92 mm<br>• Scope of supply:<br>- AS-Interface analyzer<br>- RS 232 cable for connecting to a PC<br>- USB-to-serial/RS 232 adapter<br>- Screwdriver<br>- Magnetic adhesive tape for fastening the analyzer to metal surfaces<br>- Service case with foam insert, dimensions (W x H x D/mm): approx. 260 x 70 x 200<br>- Diagnostics software (CD-ROM) for PC with Windows operating system | 2 | **3RK1904-3AB01** | 1 | 1 unit |

Note:

Download the current version of the diagnostics software for PC with Windows operating system, see https://support.industry.siemens.com/cs/ww/en/view/109750259.

## Accessories

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RX9801-0AA00 | **AS-Interface M12 3RX feeder**<br>• Transition of shaped AS-Interface cable to a standard round cable<br>• Insulation piercing method for connection of AS-Interface cable<br>• M12 socket for connection of standard round cable<br>• Current carrying capacity up to 2 A<br>• Degree of protection IP67 | ▶ | **3RX9801-0AA00** | 1 | 1 unit |
| 3RK1901-2NR10 | **AS-Interface M12 3RK feeder**<br>• AS-Interface cable transition without $U_{aux}$, with M12 socket<br>• Insulation piercing method for connection of AS-Interface cable<br>• M12 socket for connection of standard round cable<br>• Max. 4 A<br>• Degree of protection IP67/IP68/IP69K | 2 | **3RK1901-2NR10** | 1 | 1 unit |
| 3RK1902-4HB50-5AA0 | **M12 cable plugs**<br>• PUR cable, 5-pole<br>• Length 5 m<br>• Color black<br>• Extruded M12 plug (angled cable feeder 90°), other cable end open | 5 | **3RK1902-4HB50-5AA0** | 1 | 1 unit |

## Selection and ordering data

**More information**

System Manual "AS-Interface", see
https://support.industry.siemens.com/cs/ww/en/view/26250840

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 3RK1901-2NN10 | **AS-Interface compact distributors, for AS-Interface flat cable**<br>• Current carrying capacity up to 8 A<br>• Degree of protection IP67/IP68/IP69K | 2 | **3RK1901-2NN10** | 1 | 1 unit |
| 3RX9801-0AA00 | **AS-Interface M12 3RX feeder**<br>• Degree of protection IP67<br>• Current carrying capacity up to 2 A | | | | |
| | For flat cable: AS-i; For: M12 socket; Cable length: --; Cable end in feeder: Available | ► | **3RX9801-0AA00** | 1 | 1 unit |
| 3RK1901-2NR10 | **AS-Interface M12 3RK feeder**<br>• Degree of protection IP67/IP68/IP69K<br>• Current carrying capacity up to 4 A | | | | |
| | For flat cable: AS-i; For: M12 socket; Cable length: --; Cable end in feeder: Not available | 2 | **3RK1901-2NR10** | 1 | 1 unit |
| | For flat cable: AS-i; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available | 2 | **3RK1901-2NR11** | 1 | 1 unit |
| 3RK1901-2NR21 | For flat cable: AS-i; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available | 2 | **3RK1901-2NR12** | 1 | 1 unit |
| | For flat cable: AS-i/$U_{aux}$; For: M12 socket; Cable length: --; Cable end in feeder: Not available | 2 | **3RK1901-2NR20** | 1 | 1 unit |
| | For flat cable: AS-i/$U_{aux}$; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available | 2 | **3RK1901-2NR21** | 1 | 1 unit |
| | For flat cable: AS-i/$U_{aux}$; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available | 2 | **3RK1901-2NR22** | 1 | 1 unit |
| 3RK1901-1NR04 | **AS-Interface M12 feeders, 4-fold**<br>• Degree of protection IP67<br>• Current carrying capacity up to 4 A | | | | |
| | For flat cable: AS-i/$U_{aux}$; For: 4-fold M12 socket, delivery includes mounting plate (for wall and standard rail mounting); Cable length: --; Cable end in feeder: Not available | 2 | **3RK1901-1NR04** | 1 | 1 unit |
| 6ES7194-1KA01-0XA0 | **M12 Y-shaped coupler plugs**<br>For connection of two sensors to one M12 socket with Y-assignment | 1 | **6ES7194-1KA01-0XA0** | 1 | 1 unit |
| 3RK1901-1KA00 3RK1901-1KA01 | **AS-Interface sealing caps**<br>For free M12 sockets<br>• M12 | | | | |
| | - Standard version | ► | **3RK1901-1KA00** | 100 | 10 units |
| | - Tamper proof | 2 | **3RK1901-1KA01** | 100 | 10 units |
| 3RK1901-1PN00 | • M8 standard version | 2 | **3RK1901-1PN00** | 100 | 10 units |
| 3RK1901-1MD00 | **AS-Interface M20 seals**<br>• For AS-Interface cable, shaped<br>• For insertion in M20 glands | 2 | **3RK1901-1MD00** | 100 | 10 units |

## Miscellaneous accessories

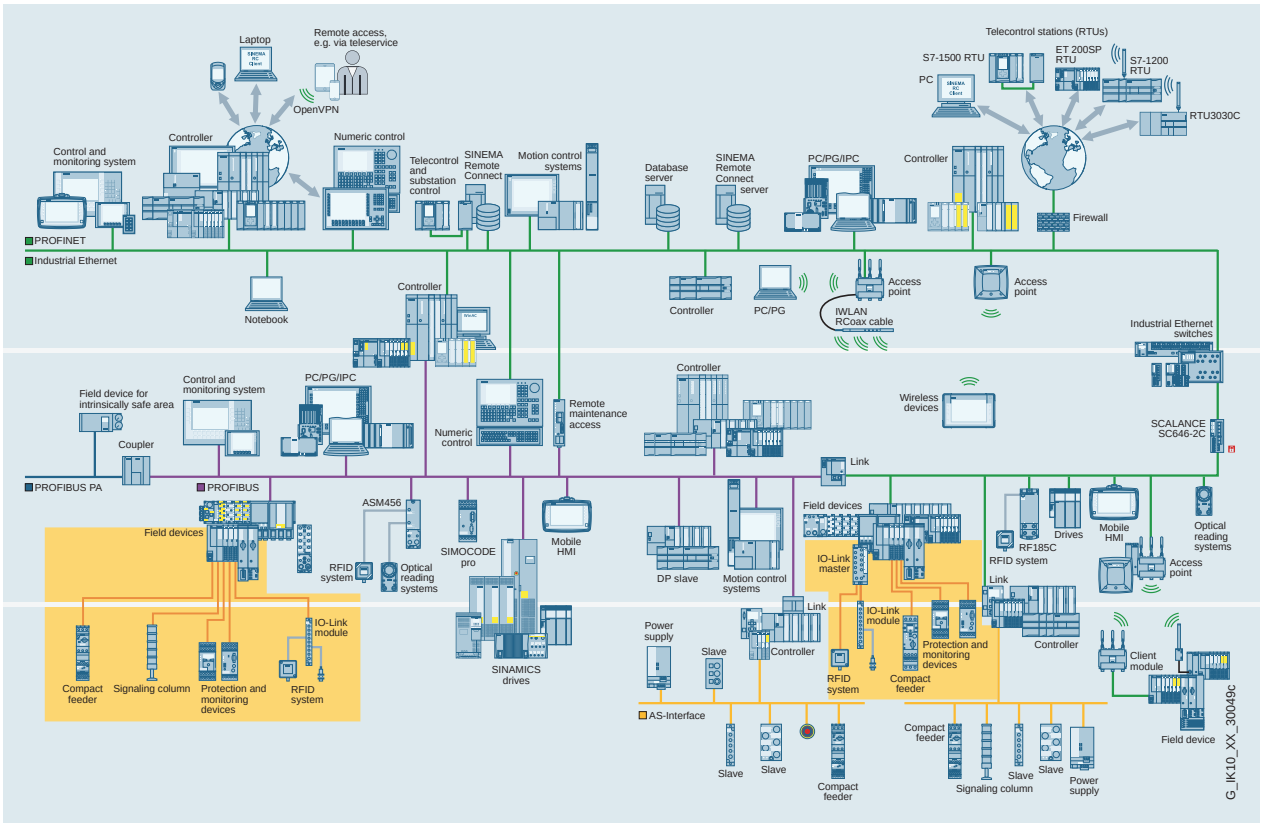


| | Version | SD<br>d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 3RK1901-3QM00 | **Cable adapters for flat cables**<br>Connection of AS-Interface cable to metric gland with insulation piercing method | | | | |
| | • Continuation using standard cable | | | | |
| | - For M16 gland | 5 | **3RK1901-3QM00** | 1 | 1 unit |
| | - For M20 gland | 5 | **3RK1901-3QM10** | 1 | 1 unit |
| | • Continuation using pins | | | | |
| | - For M16 gland | 10 | **3RK1901-3QM01** | 1 | 1 unit |
| | - For M20 gland | 5 | **3RK1901-3QM11** | 1 | 1 unit |
| 3RK1901-3QA00 | **Cable clip for cable adapters** | 5 | **3RK1901-3QA00** | 100 | 10 units |
| 3RK1901-1MN00 | **Cable terminating piece**<br>For sealing of open cable ends (shaped AS-Interface cable) in IP67 | ► | **3RK1901-1MN00** | 1 | 10 units |
| 3RK1901-2EA00 3RK1901-0CA00 | **Mounting plates** | | | | |
| | • K45 | | | | |
| | - For wall mounting | ► | **3RK1901-2EA00** | 1 | 1 unit |
| | - For standard rail mounting | ► | **3RK1901-2DA00** | 1 | 1 unit |
| | • K60, suitable for all K60 compact modules | | | | |
| | - For wall mounting | ► | **3RK1901-0CA00** | 1 | 1 unit |
| | - For standard rail mounting | ► | **3RK1901-0CB01** | 1 | 1 unit |
| 3RK1902-0AR00 | **Sealing set**<br>• For K60 mounting plate and standard distributor<br>• Cannot be used for K45 mounting plate<br>• One set contains one straight and one shaped seal | 2 | **3RK1902-0AR00** | 100 | 5 units |
| 3RK1902-4GB50-4AA0 | **Control cable, assembled at one end**<br>Angular M12 plug for screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A | | | | |
| | • Cable length 5 m | 5 | **3RK1902-4GB50-4AA0** | 1 | 1 unit |
| 3RK1902-4CA00-4AA0 | **M12 socket, angled**<br>For screw fixing, 4-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A | 5 | **3RK1902-4CA00-4AA0** | 1 | 1 unit |
| 3RK1902-4BA00-5AA0 | **M12 plugs**<br>For screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A | | | | |
| | • Straight | 5 | **3RK1902-4BA00-5AA0** | 1 | 1 unit |
| 3RK1902-4DA00-5AA0 | • Angled | 5 | **3RK1902-4DA00-5AA0** | 1 | 1 unit |
| 3RK1902-4H...-5AA0 | **Control cable, assembled at one end**<br>Angular M12 plug for screw fixing, 5-pole, 5 x 0.34 mm², A-coded, black PUR sheath, max. 4 A | | | | |
| | • Cable length 1.5 m | 5 | **3RK1902-4HB15-5AA0** | 1 | 1 unit |
| | • Cable length 5 m | 5 | **3RK1902-4HB50-5AA0** | 1 | 1 unit |
| | • Cable length 10 m | 5 | **3RK1902-4HC01-5AA0** | 1 | 1 unit |
| 3RK1902-4PB15-3AA0 | **Control cable, assembled at both ends**<br>Straight M12 plug, straight M12 socket, for screw fixing, 3-pole, 3 x 0.34 mm², A-coded, black PUR sheath, max. 4 A<br>• Cable length 1.5 m<br>• Also for addressing AS-i slaves with M12 bus connection (e.g. K20, K60R compact modules, M200D motor starters) | 5 | **3RK1902-4PB15-3AA0** | 1 | 1 unit |

## Overview

IO-Link is an open communication standard for sensors and actuators – defined by the PROFIBUS User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system.

Parameter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensors/actuators. The simple, unshielded three-wire cable customary for standard sensors is used for this purpose.




IO-Link in the SIMATIC NET communications landscape

## Benefits

### *Engineering*

- Standardized, open system for greater flexibility (non-Siemens IO-Link devices can be integrated in engineering)
- Uniform, transparent configuring and programming through integrated engineering (SIMATIC STEP 7)
- Unassigned SIMATIC function blocks for easy parameterization, diagnostics and read-out of measured values
- Efficient engineering thanks to pre-integration into SIMATIC HMI
- Low error rate in CAD circuit diagram design as a result of reduced control current wiring

### *Installation and commissioning*

- Faster assembly with minimized error rate as a result of reduced control current wiring
- Less space required in the control cabinet
- Low-cost circuitry where there are several feeders by making full use of existing components

### *Operation and maintenance*

- High transparency in the system right down to field level and integration into power management systems
- Reduction in downtimes and maintenance times thanks to system-wide diagnostics and faster fault correction
- Support of predictive maintenance
- Shorter changeover times, even for field devices, by means of parameter and recipe management

## Application

IO-Link can be used in the following main applications:

- Easy connection of complex IO-Link sensors/actuators with a large number of parameters and diagnostics data to the control system
- Replacement of sensor boxes for connecting binary sensors with the IO-Link input modules optimized in terms of cabling
- Optimized cable connection of switching devices to the control system
- Simple transmission of energy values from the device to the control system for integration into a user program or power management

In these cases, all the diagnostics data are transmitted to the higher-level control system through IO-Link. The parameter settings can be changed during operation.

### *Integration in STEP 7*

Integration of the device configuration in the STEP 7 environment guarantees:

- Quick and easy engineering
- Consistent data storage
- Quick localization and rectification of faults

# IO-Link Introduction

## System components

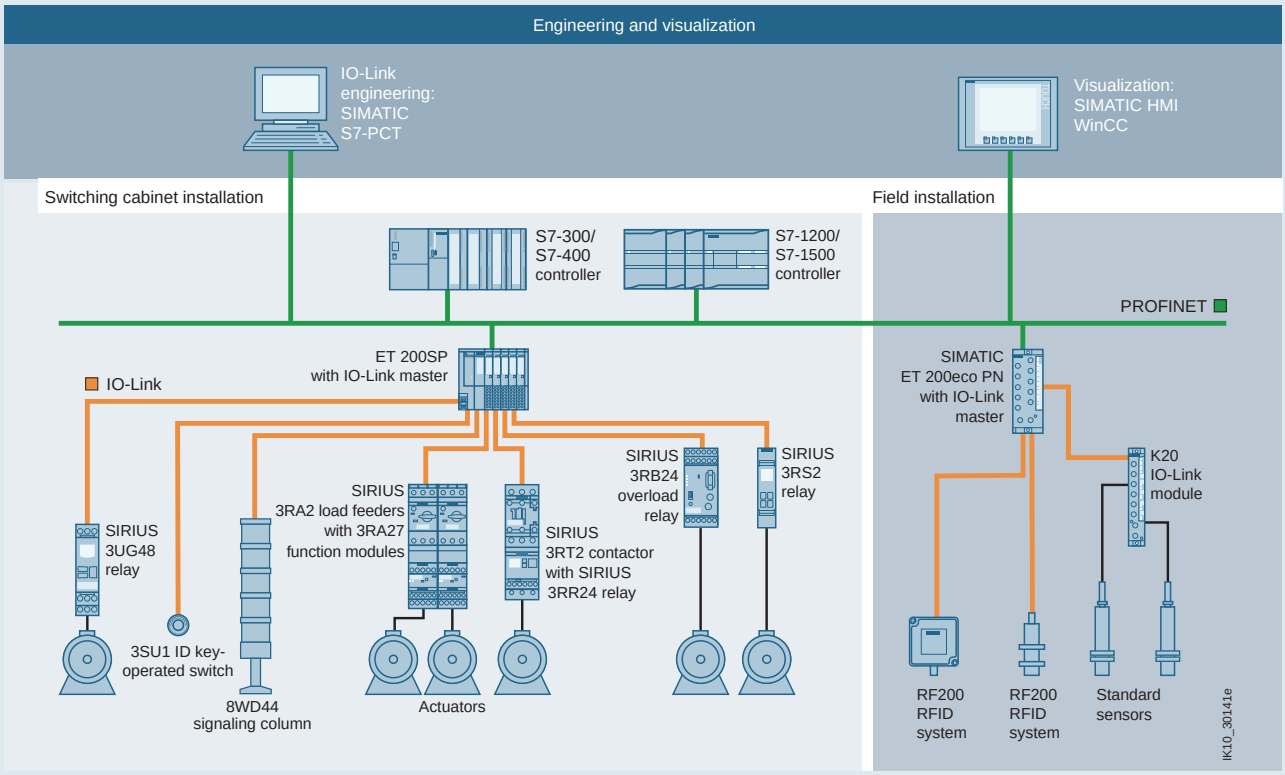
### Overview

| More information | |
|---|---|
| Homepage, see www.usa.siemens.com/io-link | For important topics at a glance, see https://support.industry.siemens.com/cs/ww/en/view/109737170 |

IO-Link product family

To implement communication, a system installation has the following main components:

- An IO-Link master
- One or more IO-Link devices, such as sensors (e.g. RFID systems), actuators or combinations thereof
- A standard 3-wire sensor/actuator cable




Example of a configuration with the system components

### *IO-Link compatibility*

IO-Link ensures compatibility between IO-Link-capable modules and standard modules as follows:

- IO-Link sensors can generally be operated both on IO-Link modules (masters) and standard input modules.
- IO-Link sensors/actuators as well as today's standard sensors/actuators can be used on IO-Link masters.
- If conventional components are used in the IO-Link system, then of course only the standard functions are available at this point.

### *Analog signals*

Another advantage of IO-Link technology is that analog signals are already digitized in the IO-Link sensor itself and are digitally transmitted via IO-Link communication. As the result, faults are prevented and there is no extra cost for cable shielding.

### *Enhancement with IO-Link input modules*

IO-Link compatibility also permits connection of standard sensors/actuators, i.e. conventional sensors/actuators can also be connected to IO-Link. This is particularly cost-effective with the IO-Link input modules, which allow several sensors to be connected at one time via a cable to the controller.

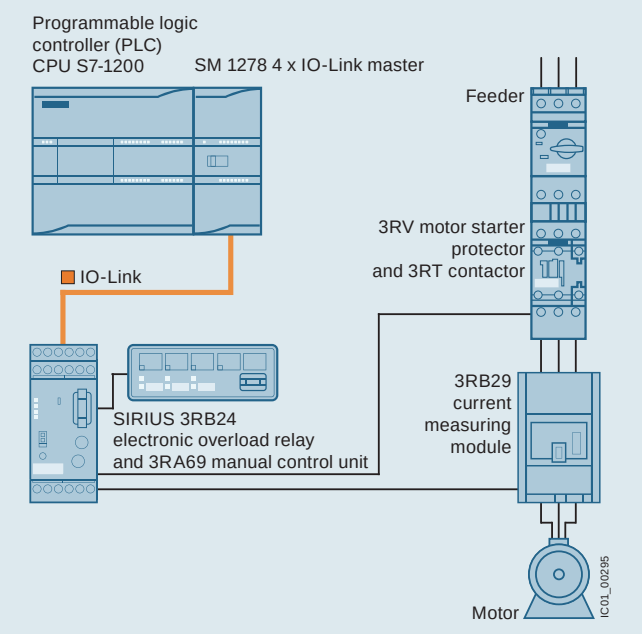
### *Overload relays*

A starter combination, for example, consists of one or more SIRIUS 3RT contactors and one 3RB24 electronic overload relay for IO-Link plus its 3RB29 current measuring module.

3RB24 overload relays with IO-Link are basically designed to provide current-dependent protection for loads against inadmissibly high temperature rises due to overload, phase asymmetry or phase failure.

Direct-on-line starters can, therefore, as shown in the image, be connected to the control system via IO-Link without much wiring. Remote control of connected contactors, current value transmission and immediate remote fault diagnosis are just some examples of the large number of functions that can be implemented with this device.

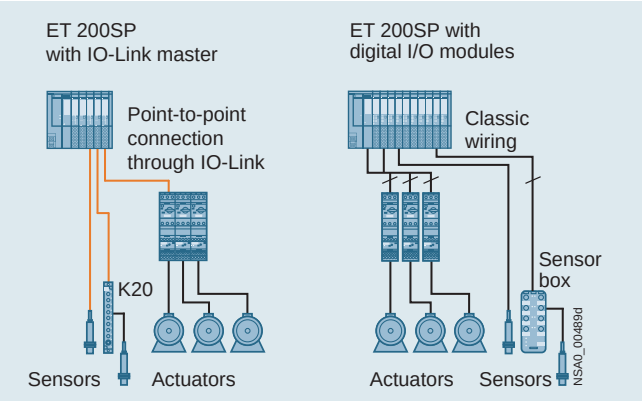
It is also possible to directly address a drive on-site via IO-Link using the optional hand-held device.




Connection of an IO-Link-capable overload relay to a SIMATIC S7-1200 controller

### *Load feeders and motor starters*

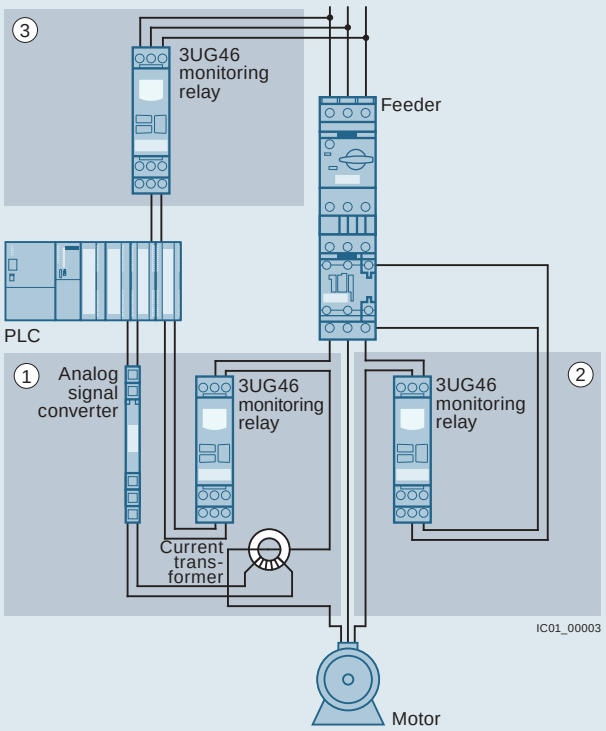
Through IO-Link it is possible to control not only sensors but also actuators in the form of load feeders and motor starters.




Possibilities for connecting load feeders and motor starters to IO-Link or in the conventional way

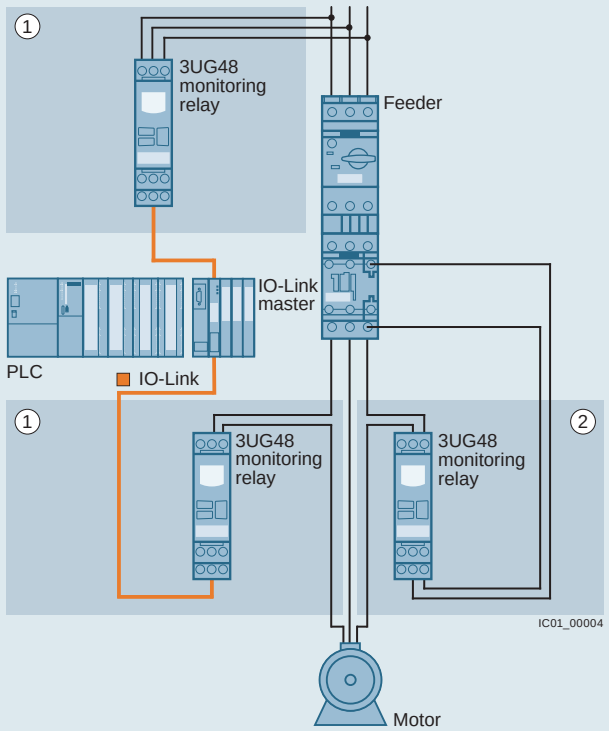
### *Monitoring relays*

By using monitoring relays with IO-Link it is now possible to send data that has already been recorded and evaluated in the devices directly to the controller. This avoids the use of duplicated sensors.




1 Signaling of limit value violation plus measurement data transmission to PLC
2 Autonomous operation without PLC
3 Signaling of limit value violation to PLC

Possibilities for interfacing conventional 3UG46 monitoring relays (in comparison with 3UG48)



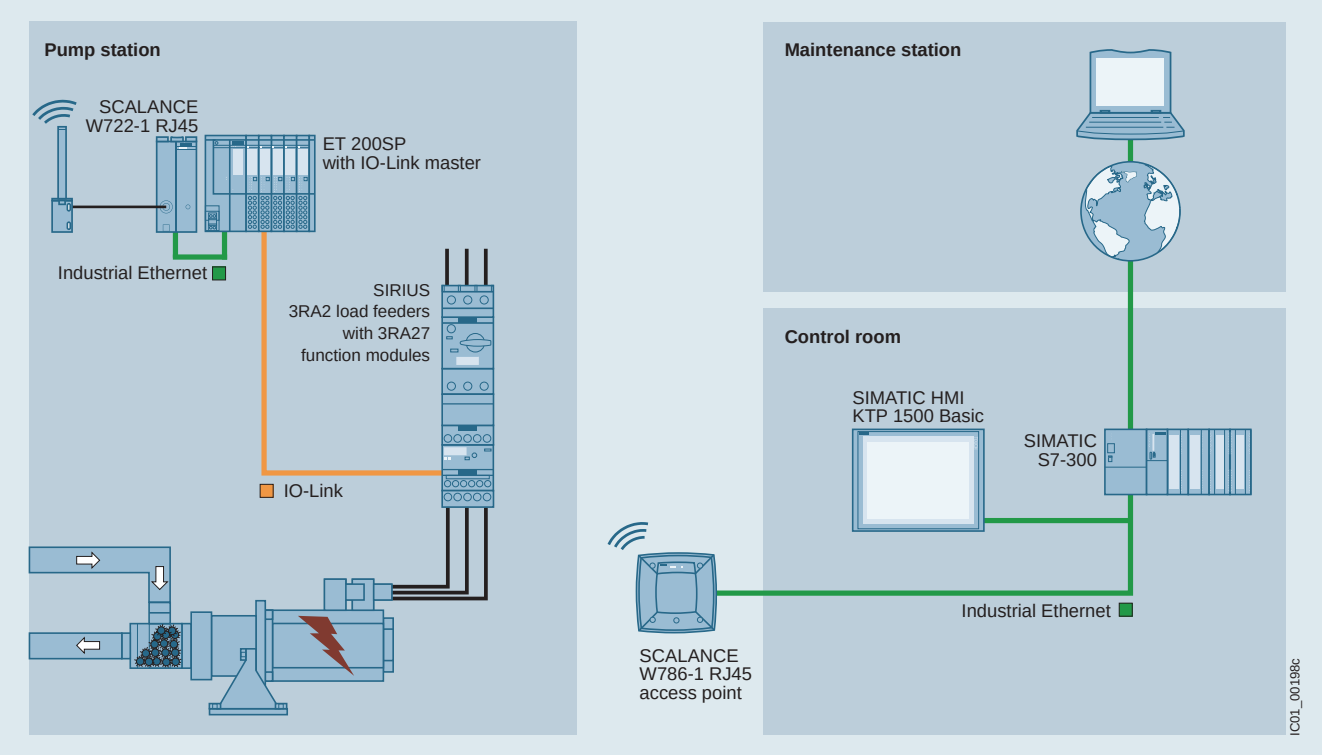

1 Signaling of limit value violation plus measurement data transmission to PLC
2 Autonomous operation without PLC

Possibilities of interfacing 3UG48 monitoring relays for IO-Link

### *Wireless communication*

Using an upstream IWLAN client module, such as SCALANCE W722-1 RJ45, allows IO-Link to be integrated into the PROFINET world via a distributed I/O. Possible uses include acting as an alternative to fault-prone cable carrier or collector wire technology.

The individual diagnostics options offered by the various IO-Link devices provide greater transparency for the production process. Just like the parameter data for a device, these diagnostics data can be evaluated remotely using the possibilities offered by SIMATIC. This supports remote maintenance down to the lowest level in the field.




Wireless communication between Industrial Ethernet and IO-Link components

# IO-Link Introduction

## System components

### *IO-Link components*

#### IO-Link masters

**Masters**

CM 8xIO-Link for S7-1500

**IO-Link master module for S7-1500**

- CM 8xIO-Link communication module, see page 14/102

**IO-Link master module for S7-1200**

- SM 1278 4xIO-Link signal module, see page 14/102

**IO-Link master module for ET 200SP**

- CM 4xIO-Link communication module, see page 14/103

**IO-Link master module for ET 200pro**

- 4 IO-Link HF electronic module, see page 14/104

**IO-Link master module for ET 200eco PN**

- IO-Link master 4 IO-L + 8DI + 4DO 24 V DC/1.3 A
- IO-Link master 4 IO-L

See page 14/105

**IO-Link master module for ET 200AL**

- CM IO-Link communication module, see page 14/106

For full product range, see Catalog ST 70.

#### IO-Link devices

**Detection with IO-Link**

K20 input module

**IO-Link input modules**

K20 input module

- 4 inputs, M12 connections
- 8 inputs, standard M8 connections

See page 14/108

**Switching with IO-Link**

SIRIUS 3RA2711 function module for IO-Link

**Contactors and contactor assemblies**

- SIRIUS 3RT contactors, 3-pole up to 250 kW
- SIRIUS 3RA23 reversing contactor assemblies, up to 55 kW
- SIRIUS 3RA24 contactor assemblies for wye-delta starting, up to 90 kW
- SIRIUS 3RA27 function modules for direct-on-line, reversing, and star-delta (wye-delta) starting

See Catalog Section 5

SIRIUS 3RA64 direct-on-line starter

**Motor starters for use in the control cabinet**

SIRIUS 3RA64, 3RA65 compact starters for IO-Link, infeed systems and accessories

See Catalog Section 5

**Contactors with IO-Link**

SIRIUS 3RB24 overload relay

**Overload relays**

SIRIUS 3RB24 electronic overload relays for IO-Link

- Evaluation modules
- Current measuring modules from 0.3 to 630 A
- Controlling direct-on-line, reversing and star-delta starters via IO-Link in conjunction with contactors
- Full motor protection
- Diagnostics and current value transmission via IO-Link

See Catalog Section 5

#### IO-Link devices (continued)

**Monitoring with IO-Link**

SIRIUS 3RR24 monitoring relay

**SIRIUS 3RR24 monitoring relays for mounting onto 3RT2 contactors for IO-Link**

- Monitoring of current, phase failure, open circuit and phase sequence
- Designed for mounting on 3RT2 contactors
- Terminal supports for stand-alone installation for separate mounting

See Catalog Section 2

SIRIUS 3UG48 monitoring relay

**SIRIUS 3UG48 monitoring relays for stand-alone installation for IO-Link**

- Monitoring the supply system, voltage, current, power factor and active current, residual current or speed depending on device design
- On/tripping delay time can be adjusted

See Catalog Section 11

SIRIUS 3RS14 temperature monitoring relay

**SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link**

- Temperature monitoring with connected sensors
- Two limit values, can be adjusted separately

See Catalog Section 11

**Actuating and indicating with IO-Link**

SIRIUS ACT 3SU1 ID key-operated switch

**SIRIUS ACT 3SU1 ID key-operated switches for IO-Link**

- Access system and selection system for four authorization levels
- Authentication of groups and persons
- Five ID keys with different coding
- Option for individual coding via IO-Link
- For installation in enclosures or fastening on front plate
- Electronic module for ID key-operated switches must be ordered separately.

See Catalog Section 10

SIRIUS ACT 3SU1 electronic module

**SIRIUS ACT 3SU1 electronic modules for IO-Link**

- Eight digital inputs and outputs possible
- DI and DQ freely selectable (programmable)
- Input and output functions parameterizable
- Connection method (push-in)
- For fastening on front plate, see Catalog Section 10
- For installation in enclosure, see Catalog Section 10

Signaling column

8WD44 IO-Link adapter element

**8WD44 IO-Link adapter element**

- Up to five signaling elements can be connected using an IO-Link adapter element
- 24 V DC, diameter 70 mm
- Connection with bayonet mechanism
- For fastening on feet, 8WD44
- Connection elements with screw or spring-loaded terminals or connection element with 5-pole M12 plug

See Catalog Section 10

# IO-Link Introduction

## System components

### IO-Link RFID systems

RFID system for IO-Link

**SIMATIC RF200 RFID system in the HF range**

Products SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF240R, SIMATIC RF250R, SIMATIC RF260R

- Simple identification tasks such as reading an ID number (UID)
- Reading of user data
- Writing of user data
- No RFID-specific programming, ideal for those new to RFID
- Simple connection via master modules for IO-Link, such as SIMATIC S7-1200, ET 200SP, ET 200pro, ET 200eco PN and ET 200AL
- Use with the tried and tested ISO 15693 transponders (MDS xxx)

See Catalog ID 10

### IO-Link Device Description (IODD)

IODD files for IO-Link

**IODD files**

These files provide the device description for IO-Link devices.

- Comprehensive IODD catalog of SIEMENS IO-Link devices
- Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/ps/15851

IODDfinder for IO-Link

**IODDfinder**

The entire world of IO-Link under one roof

The IODDfinder is a service provided by the IO-Link community. It is a central cross-vendor database for descriptive files (IODDs). In addition, the platform provides an overview of the available IO-Link devices.

For more information, see https://ioddfinder.io-link.com/#/.

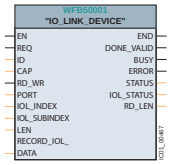
### IO-Link software

STEP 7 PCT

**STEP 7 PCT (Port Configuration Tool)**

Engineering software for configuring the IO-Link master modules for SIMATIC S7-1200, ET 200SP, ET 200pro, ET 200eco PN and ET 200AL

- Available as a stand-alone version or integrated into STEP 7 (V5.5 SP1 or higher) and TIA (V12 or higher)
- Engineering of the IO-Link devices connected to the master
- Monitoring of the process image of the IO-Link devices
- Open interface for importing further IODDs
- Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/view/32469496




IO-Link device function block

**IO-Link function blocks (IO-Link device and IO-Link master)**

STEP 7 function block for easy acyclical data exchange in the user program

- Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/view/82981502

"Siemens IO-Link Devices" block library

**"Siemens IO-Link Devices" block library**

This library provides function blocks and user-defined data types (UDTs) for all IO-Link devices from the Siemens portfolio. These blocks and UDTs standardize and simplify communication with IO-Link devices.

- Freely available for download from Industry Online Support, see https://support.industry.siemens.com/cs/ww/en/view/90529409

## Overview

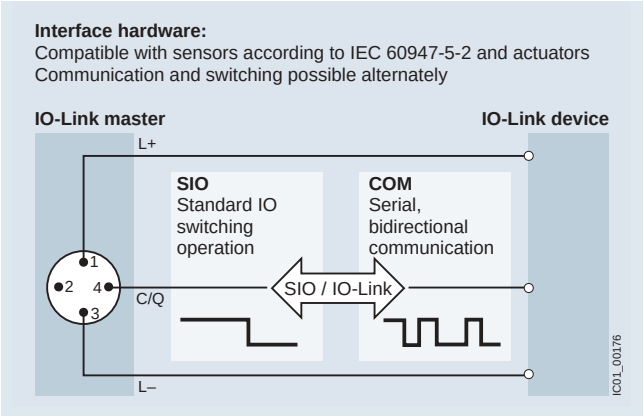
### *Principles of the IO-Link specification*

According to the IO-Link specification, communication functions as follows:

- Transmission takes place via an unshielded three-wire cable no more than 20 m long, of the kind normally used for standard sensors
- Digital communication from 0 to 24 V on the so-called C/Q cable
- Most of the values transmitted are measured values from the sensors
- The sensors and actuators are described by the IO Device Description (IODD)
- As a matter of principle, one IO-Link device can be connected to one IO-Link port of the master (point-to-point connection)
- The transmission rates between IO-Link master and the devices are as follows:
  - Via COM1: 4 800 Bd
  - Via COM2: 38 400 Bd
  - Via COM3: 230 400 Bd
- The average cycle time is 2 ms for the reading/writing of 16 data bits at a transmission rate of 38 400 Bd

### *IO-Link protocol*

The IO-Link protocol supports both the Standard IO mode (SIO) and the IO-Link communication mode (COM).




The structure of the protocol and its message frames depends on the types of data to be transmitted.

### *Data types*

The IO-Link specification makes a distinction between the following data types:

Process data

The process data of the devices are transferred cyclically in a data frame, with the process data width defined by the device. Process data of 0 to 32 bytes are possible per device (input and output in each case). The consistency width of the transmission is not fixed and therefore depends on the master.

Value status

Each port has a value status (PortQualifier). The value status indicates whether the process data are valid or invalid. The value status can be transferred cyclically with the process data.

Device data

Device data can be parameters, identification data and diagnostics information. Device data replacement is acyclic and in response to an inquiry from the IO-Link master. Device data can be written into the device (Write) and also read from the device (Read).

Events

When an event occurs, the device sends a signal to the master to report that an event is active. The master then reads out the event. Events can be fault messages (e.g. short-circuit) and warnings/maintenance data (e.g. contamination, overheating). Fault messages are transferred from the device via the IO-Link master to the controller or HMI. The IO-Link master can also transfer events and states. Events include, for example, cable break or communication breakdown.

Device parameters and events are sent independently of the cyclic transmission of process data. The transmissions do not affect or impair each other.

### *Data storage*

As of specification V1.1, a data storage concept has been created for IO-Link. In this concept, the IO-Link device initiates storage of its data on a higher-level parameter server. In the event that a device is replaced, the parameter server can restore the original parameterization. It is therefore possible to replace the devices without re-parameterization.

The IO-Link master contains the parameter server. The parameter server can also be implemented centrally in the PLC or in a system server. In this case the data must be downloaded to the control system by means of the function blocks provided.

### *IO-Link masters*

The IO-Link master is the interface to higher-level control systems. The IO-Link master presents itself to the fieldbus as a normal fieldbus node, and is integrated into the appropriate network configurator via the relevant device description (GSD file).

### *IO Device Description (IODD)*

The IO Device Description (IODD) has been defined to provide a full, transparent description of system characteristics as far as the IO-Link device.

The IODD contains information on communication characteristics, device parameters, identification, process and diagnostics data, and is supplied by the manufacturer. The design of the IODD is the same for all devices from all manufacturers, and is always presented in the same way by the IODD Interpreter Tools. This therefore ensures that the handling is the same for all IO-Link devices, whatever the manufacturer.

### *New in IO-Link specification V1.1*

The IO-Link specification is currently available in Version 1.1, and standardized in accordance with IEC 61131-9.

Specification V1.1 offers the following new features compared with the previous specification V1.0:

- Transmission of up to 32 bytes of process data in one cycle
- Parameter server function

# IO-Link: Masters

## IO-Link master module for S7-1500 > CM 8xIO-Link NEW

### Overview

CM 8xIO-Link master

- Communication module for connecting up to 8 IO-Link devices (three-wire connection) or 8 standard sensors
- Can be used directly downstream of an S7-1500 CPU or distributed in ET 200MP via PROFINET or PROFIBUS
- Powerful diagnostics functions facilitate preventive maintenance to avoid plant standstills
- Simple replacement of sensors/actuators without time-consuming parameterization

### Application

IO-Link makes it easy to change the parameters for manufacturing and processing different product versions and batches, even during CPU runtime, down to the sensor/actuator level. Easy, much more detailed diagnostics are also possible down to the sensor or actuator, including remote diagnostics.

The CM 8xIO-Link enables direct connection of up to 8 IO-Link devices directly to SIMATIC S7-1500 and ET 200MP. This makes external stations unnecessary.

This results in savings on wiring, engineering and commissioning, because everything can be configured centrally with the CPU.

### Design

- Fastening to the S7-1500 mounting rail with a single screw
- 40-pole front connector, optionally with screw terminals or push-in terminals
- Front flap with expandable cable compartment

Included in the scope of supply:

- One U connector
- Front door

### Function

Overview of functions

- Suitable for connecting up to 8 IO-Link devices (three-wire connection) or 8 standard sensors
- IO-Link master according to IO-Link specification V1.1
- Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd)
- Parameterizable diagnostics can be set for each channel
- Master backup with "IO_Link_MASTER_8" function block
- Replacement of the IO-Link device (for V1.1 devices only)
- Support for firmware updating of IO-Link devices
- Variable address range for I/O data with up to 240 byte inputs and 240 byte outputs; expansion limits:
  - Max. 32 bytes of input data and 32 bytes of output data per port
  - Max. 240 bytes of input data and 240 bytes of output data per module
- Port Qualifier Information (PQI)
- IO-Link port configuration with S7-PCT
- IO-Link port configuration with STEP 7 or GSD (without S7-PCT)
- Standard system functions of SIMATIC ET 200MP:
  - Identification and maintenance data IM0
  - Firmware update
  - Unequivocal, front-side module inscription

### Configuration

The IO-Link master of the S7-1500 can be conveniently configured using the graphical user interface in the free S7-Port Configuration Tool (S7-PCT, V3.5 and higher, SP1).

In addition to this configuration, commissioning without S7-PCT is also possible. In this case, the port is configured by means of either the TIA Portal or GSD file. The following port modes are supported:

- Operation in "IO-Link autostart" mode (default)
- Operation in "IO-Link manual" mode
- Operation as DI
- Deactivated

### Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 6ES7547-1JF00-0AB0 | **CM 8xIO-Link communication module**<br>Communication module for connecting up to 8 IO-Link devices (three-wire connection) or 8 standard sensors | 1 | **6ES7547-1JF00-0AB0** | 1 | 1 unit |

For more information, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10355273

## Overview

SM 1278 4xIO-Link master

Module for connecting up to four IO-Link devices in accordance with the IO-Link specification V1.1. The IO-Link parameters are configured by means of the Port Configuration Tool (PCT) with version V3.2 and higher.

## Application

The SM 1278 module enables an exchange of data with up to four external IO-Link devices through one three-wire cable each or four standard actuators or standard encoders. Control can be flexibly adapted to the communication partners using the comprehensive parameter assignment options. Since IO-Link is compatible with standard sensors, commercially available sensors compliant with IEC 61131 Type 1 can also be operated on the IO-Link master.

## Design

- Expansion limits
  - Cable length: Max. 20 m
  - Max. 32 bytes of input data and 32 bytes of output data per port
  - Max. 32 bytes of input data and 32 bytes of output data per module

LED displays

- DIAG: Operating state display (green/red) of the module
- C1..C4: Port status display (green) for ports 1, 2, 3 and 4
- Q1..Q4: Channel status display (green) for ports 1, 2, 3 and 4
- F1..F4: Port error display (red) for ports 1, 2, 3 and 4

Depending on the CPU type used, up to 8 SM 1278 units can be used on one S7-1200 CPU.

## Function

Supported functions

- I&M identification data
- Firmware update
- SIO Mode (standard IO mode)
- IO-Link parameter assignment with the S7-PCT interface configuration tool, TIA Portal from V13 and an S7-1200 CPU V4.0 or higher

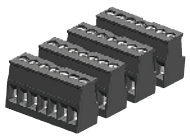
Supported data transmission rates

- COM1 (4.8 kBd)
- COM2 (38.4 kBd)
- COM3 (230.4 kBd)

## Selection and ordering data

| | Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 6ES7278-4BD32-0XB0 | **SM 1278 4xIO-Link master signal module**<br>For connecting up to four IO-Link devices in accordance with the IO-Link specification V1.1 | 1 | **6ES7278-4BD32-0XB0** | 1 | 1 unit |

## Accessories

| | Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
|  6ES7292-1AG30-0XA0 | **Terminal block (spare part)**<br>With 7 screws, zinc-plated; 4 units | 1 | **6ES7292-1AG30-0XA0** | 1 | 4 units |

For more information, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10231178.

## Overview

CM 4xIO-Link communication module

- CM 4xIO-Link communication module
  Serial communication module for connecting up to four IO-Link devices in accordance with the IO-Link specification V1.0 and V1.1. The IO-Link parameters are configured by means of the Port Configuration Tool (PCT) with version V3.0 and higher.
- Time-based IO
  Time-based IO ensures that signals are output with a precisely defined response time. By combination of inputs and outputs, products passing by, for example, can be measured exactly or liquids can be perfectly dosed.
- Supported data transmission rates
  - COM1 (4.8 kBd)
  - COM2 (38.4 kBd)
  - COM3 (230.4 kBd)
- Expansion limits
  - Cable length: Max. 20 m
  - Max. 32 bytes of input data and 32 bytes of output data per port
  - Max. 144 bytes of input data and 128 bytes of output data per module
- ET 200SP system functions supported
  - Exchange of IO-Link device parameters (V1.1 devices only) and of IO-Link master parameters without a PG including automatic backup recovery without an engineering tool by means of redundant parameter storage on the e-coding element
  - Reparameterization during ongoing operation
  - I&M identification data
  - Firmware update
  - PROFIenergy
- Can be plugged onto type A0 BaseUnits (BU) with automatic e-coding
- LED displays
  - DIAG: Operating state display (green/red) of the module
  - C1..C4: Port status display (green) for ports 1, 2, 3 and 4
  - Q1..Q4: Channel status display (green) for ports 1, 2, 3 and 4
  - F1..F4: Port error display (red) for ports 1, 2, 3 and 4
  - PWR: Supply voltage display (green)
- Informative front-side module inscription
  - Plain-text marking of the module type and function class
  - 2D matrix code (Article No. and serial number)
  - Circuit diagram
  - CM module class color coding: Silver
  - Hardware and firmware version
  - Complete article number
- Optional accessories
  - Labeling strips
  - Reference identification label
  - Color-coded label with color code CC04
- Optional system-integrated shield connection

## Application

- The CM 4x IO-Link communication module enables an exchange of data with up to 4 external IO-Link devices through one three-wire cable each.
- Control can be flexibly adapted to the communication partners using the comprehensive parameter assignment options.
- Since IO-Link is compatible with standard sensors, commercially available sensors compliant with IEC 61131 Type 1 can also be operated on the IO-Link master.

## Selection and ordering data

| Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| | d | | | |
| **CM 4xIO-Link V1.1 Standard communication module**<br>• Serial communication module for connecting up to 4 IO-Link devices, time-based IO, BU type A0, color code CC04 | 1 | **6ES7137-6BD00-0BA0** | 1 | 1 unit |

6ES7137-6BD00-0BA0

For more information, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10205200.

## Overview

4 IO-Link HF electronic module

- 45-mm-wide 4 IO-Link HF electronic module
- 4 IO-Link ports according to IO-Link specification V1.1
- Port class B
- The IO-Link parameters are configured using the Port Configuration Tool (S7-PCT), version V3.4 and higher

## Application

The 4 IO-Link HF electronic module enables the exchange of data with up to 4 IO-Link devices.

Since IO-Link is compatible with standard sensors, commercially available sensors compliant with IEC 61131 Type 1 can also be operated on the IO-Link master.

## Design

The 4 IO-Link HF electronic module is used together with the CM IO-Link 4 X M12 P connection module. Sensors and actuators are integrated using commercially available 3- or 5-pole M12 plugs on the CM IO-Link 4 X M12 P.

IO-Link devices (e.g. sensors) with a class A port are interconnected by means of a 3-wire cable. IO-Link devices that require an additional supply voltage and have a class B port (e.g. actuators) are interconnected by means of a 5-wire cable.

## Selection and ordering data

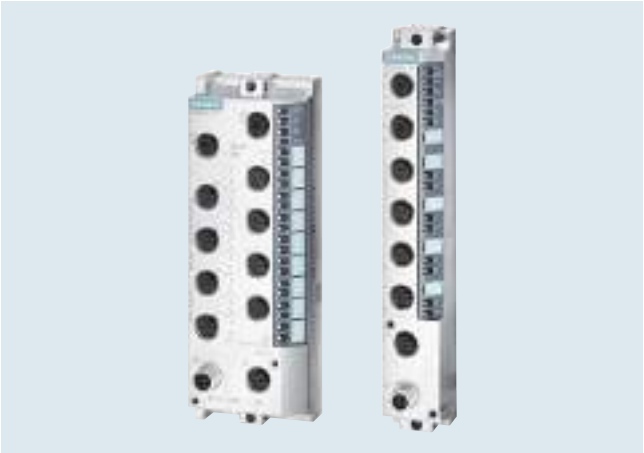
| | Version | SD<br>d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| <br>6ES7147-4JD00-0AB0 | **4 IO-Link HF electronic module**<br>• 4 IO-Link ports acc. to IO-Link specification V1.1<br>• Port class B<br>• High Feature<br>• Channel diagnostics<br>• Including bus module<br>• Connection module must be ordered separately | 1 | **6ES7147-4JD00-0AB0** | 1 | 1 unit |

## Accessories

| Version | SD<br>d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|
| **CM IO-Link 4 X M12 P connection module**<br>4 M12 sockets for connection of IO-Link devices to ET 200pro 4 IO-Link HF electronic module | 1 | **6ES7194-4CA20-0AA0** | 1 | 1 unit |
| **Module labeling plates**<br>For color coding of CM IOs in the colors white, red, blue and green; pack of 100 | 1 | **6ES7194-4HA00-0AA0** | 1 | 500 units |
| **M12 sealing caps**<br>For protection of unused M12 terminals on ET 200pro | ► | **3RX9802-0AA00** | 100 | 10 units |

For more information, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10304039.

## Overview



ET 200eco PN IO-Link master modules

The ET200eco PN IO-Link master modules belong to the ET 200eco PN compact block I/O device family and are distinguished by the following features:

- Compact block I/O devices for connection of IO-Link devices and connection to the PROFINET bus system
- Design without a control cabinet in IP67 degree of protection with M12 connection technology
- Very rugged and resistant encapsulated metal enclosure
- Compact module in an enclosure width of 30 mm or 60 mm
- PROFINET connection: 2 x M12 and automatic PROFINET addressing
- 100 Mbps data transmission rate
- LLDP neighborhood detection without PG
- Supply and load voltage connection: 2 x M12
- Channel-exact diagnostics

## Application

IO-Link enables easy integration of sensors and actuators from different manufacturers. ET200eco PN IO-Link master modules enable an exchange of data with up to 4 IO-Link devices. Since IO-Link is compatible with standard sensors, commercially available sensors compliant with IEC 61131 Type 1 can also be operated on the IO-Link master.

With a high degree of protection, ruggedness and small dimensions, the IO-Link master modules are especially well-suited for use at the machine level in confined spaces. They have adjustable parameters and diagnostic functions and can therefore be flexibly adapted to individual process requirements.

The following IO-Link masters are available:

- Compact module in an enclosure width of 30 mm for connecting up to 4 IO-Link devices in accordance with the IO-Link specification V1.0 and V1.1 and port class B
- Compact module in an enclosure width of 60 mm for connecting up to 4 IO-Link devices in accordance with the IO-Link specification V1.0 and port class A and an additional 8 digital inputs and 4 digital outputs.

## Design

The IO-Link master modules have a screw mounting hole at the front and side, and can be mounted in any position. As a result, they are extremely flexible to install on either a level surface or on aluminum mounting rails using sliding blocks.

ET 200eco PN IO-Link masters are compact modules with M12 connection technology.

Two load power supplies (4 A each) are available that can be used by the compact module or also be looped through to another compact module (line topology). PROFINET is connected via an M12 connection and can be looped through to a further PROFINET device. The maximum cable length to the IO-Link device is 20 m.

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| | **ET 200eco PN IO-Link master** | | | | |
| 6ES7148-6JA00-0AB0 | • 4 IO-L + 8 DI + 4 DQ, 24 V DC/1.3 A; 8 x M12, degree of protection IP67, enclosure width 60 mm; for connecting up to 4 IO-Link devices according to IO-Link specification V1.0 and port class A as well as 8 digital inputs and 4 digital outputs | 1 | **6ES7148-6JA00-0AB0** | 1 | 1 unit |
| 6ES7148-6JD00-0AB0 | • 4 IO-L 4 x M12, degree of protection IP67, enclosure width 30 mm; for connecting up to 4 IO-Link devices according to IO-Link specification V1.0 and V1.1 and port class B | 1 | **6ES7148-6JD00-0AB0** | 1 | 1 unit |

For more information, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10046858.

## Overview

CM IO-Link communication module

- 30-mm-wide CM IO-Link communication module
- For connecting up to 4 IO-Link devices in accordance with the IO-Link specification V1.0 and V1.1 and port class B
- The IO-Link parameters are configured by means of the Port Configuration Tool S7-PCT with version V3.2 and higher.

## Application

The CM IO-Link communication module supports data exchange between up to four IO-Link devices. IO-Link devices (e.g. sensors) with a class A port are interconnected by means of a 3-wire cable. IO-Link devices that require an additional supply voltage and have a class B port (e.g. actuators) are interconnected by means of a 5-wire cable.

Since IO-Link is compatible with standard sensors, commercially available sensors compliant with IEC 61131 Type 1 can also be operated on the IO-Link master.

The 30-mm-wide I/O modules are ideally suited for use in extremely confined spaces. They have adjustable parameters and diagnostic functions and can therefore be flexibly adapted to individual process requirements.

The following IO-Link masters are available:

- CM 4xIO-Link communication modules, 4XM12

## Design

The I/O modules have a screw mounting hole at the front and side, and can be mounted in any position. As a result, they are extremely flexible to install on either a level surface or on aluminum mounting rails using sliding blocks.

The CM IO-Link communication module features:

- A backplane bus connection (Ethernet connection) with M8 connection technology for connection to an interface module or other I/O modules
- A power supply connection with M8 connection technology with loop-through
- LED display for port status
- LED display for channel status in SIO mode
- LED display for module status (DIAG)
- LED display for load voltage 2L+ (PWR)
- Labeling plates for channel, module and slot identification
- Integrated cable tie holder
- Meaningful module inscription on front panel:
  - Plain text marking of module type
  - Interface marking
  - LED label
- Meaningful module inscription on side panel:
  - Article number, function level and FW version
  - 2D matrix code (Article No. and serial number)
  - Pin assignments of all interfaces

Labeling plates for channel, module and slot identification are supplied with the modules. These labeling plates can be inscribed using commercially available inscription machines.

## Selection and ordering data

| | Version | SD | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| | | d | | | |
| 6ES7147-5JD00-0BA0 | **CM IO-Link**<br>CM 4X IO-Link, 4XM12; for the connection of up to 4 IO-Link devices according to IO-Link specification V1.0 and V1.1 and port class B | 1 | **6ES7147-5JD00-0BA0** | 1 | 1 unit |

For more information, see https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10233997.

# IO-Link: Input Modules

## General data

### Overview

IO-Link input modules

Using IO-Link technology, it is basically possible to connect standard sensors to IO-Link masters. However, connecting standard sensors directly to the IO-Link master does not exploit the full potential of IO-Link.

The solution lies in the technology of the IO-Link modules. Their use is a more economically attractive solution in comparison to the direct connection of a sensor.

The IO-Link input module technology enhances IO-Link via a pure point-to-point cable connection towards decentralized structures. The maximum cable length of an IO-Link connection between an IO-Link module and an IO-Link master is 20 m. The use of sensor boxes with accordingly complex and error-prone wiring is no longer necessary.

***Transmission of parameter and diagnostic signals***

The IO-Link input modules also offer the possibility of transmitting parameters and diagnostic signals. This enables for example the inputs of modules to be parameterized as NC contacts or NO contacts through IO-Link. An overload or short-circuit in the sensor supply is signaled to the control system through the IO-Link master.

***M8 and M12 terminals***

M8 and M12 terminals are available for connecting the sensors. Connection to the IO-Link master is made using a standard M12 connecting cable.

### Benefits

Benefits of using IO-Link input modules:

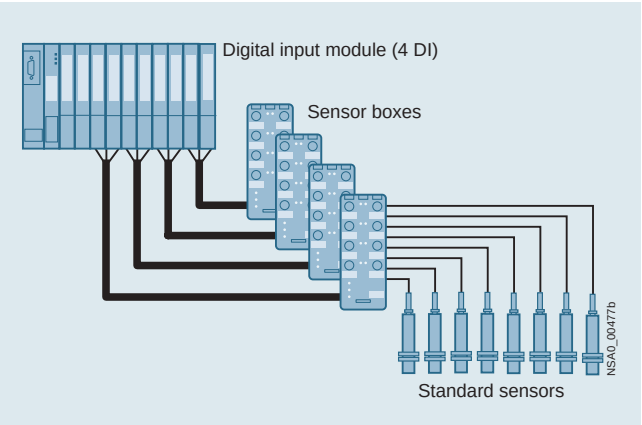
- Economical use of innovative IO-Link technology also for binary sensors
- Optimum use of all ports of the IO-Link master
- Connection of several binary sensors/actuators to one port of the IO-Link master, hence low-cost connection also of binary sensors/actuators to the control system through IO-Link
- Reduction of digital input modules in the peripheral station
- Use of parameters also for binary sensors (e.g. NC contacts, NO contacts and input delay can be parameterized)
- Reduction of cabling and hence less risk of wiring errors by dispensing with sensor boxes
- Expansion toward distributed structures using pure point-to-point wiring
- Easy and elegant integration of sensors within a radius of 20 m around an IO-Link master, e.g. in an ET 200 station
- Possibility of transmitting parameter and diagnostic signals (e.g. sensor supply overload)
- Can also be used in harsh ambient conditions thanks to a very compact design and degree of protection IP67

### Application

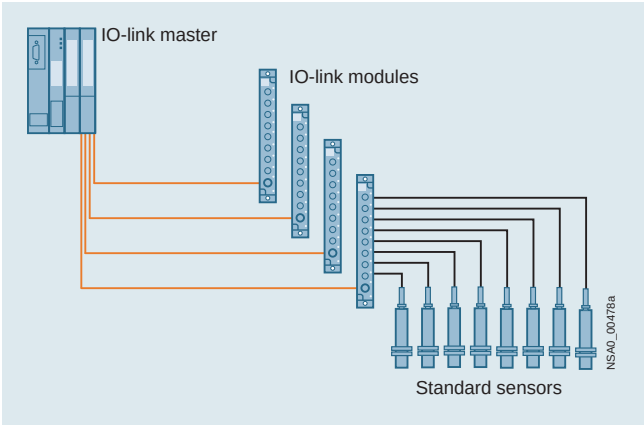
IO-Link input modules are particularly used where sensor boxes had previously been used for the connection of binary sensors.

Application example:

Replacement of sensor boxes by using IO-Link input modules




Former technology with sensor boxes




Technology with IO-Link input modules

## Selection and ordering data

| | Type | Pin assignment | Connection | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|---|---|
| 3RK5010-0BA10-0AA0 3RK5010-0CA00-0AA0 | **K20 IO-Link modules** | | | | | | |
| | • 4 inputs | Y | M12 | 5 | **3RK5010-0BA10-0AA0** | 1 | 1 unit |
| | • 8 inputs | Standard | M8 | 5 | **3RK5010-0CA00-0AA0** | 1 | 1 unit |

## Accessories

| | Version | SD d | Article No. | PU (UNIT, SET, M) | PS* |
|---|---|---|---|---|---|
| 3RK1901-1KA00 3RK1901-1PN00 | **Sealing caps** | | | | |
| | • M12, for free M12 sockets | ▶ | **3RK1901-1KA00** | 100 | 10 units |
| | • M8, for free M8 sockets | 2 | **3RK1901-1PN00** | 100 | 10 units |
| 3RK1902-4GB50-4AA0 | **Control cable, assembled at one end** Angular M12 plug for screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A | | | | |
| | • Cable length 5 m | 5 | **3RK1902-4GB50-4AA0** | 1 | 1 unit |
| 3RK1902-4CA00-4AA0 | **M12 socket, angled** For screw fixing, 4-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A | 5 | **3RK1902-4CA00-4AA0** | 1 | 1 unit |
| 3RK1902-4BA00-5AA0 3RK1902-4DA00-5AA0 | **M12 plugs** For screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A | | | | |
| | • Straight | 5 | **3RK1902-4BA00-5AA0** | 1 | 1 unit |
| | • Angled | 5 | **3RK1902-4DA00-5AA0** | 1 | 1 unit |
| 3RK1902-4H...-5AA0 | **Control cable, assembled at one end** Angular M12 plug for screw fixing, 5-pole, 5 x 0.34 mm², A-coded, black PUR sheath, max. 4 A | | | | |
| | • Cable length 1.5 m | 5 | **3RK1902-4HB15-5AA0** | 1 | 1 unit |
| | • Cable length 5 m | 5 | **3RK1902-4HB50-5AA0** | 1 | 1 unit |
| | • Cable length 10 m | 5 | **3RK1902-4HC01-5AA0** | 1 | 1 unit |
| 3RK1902-4PB15-3AA0 | **Control cable, assembled at both ends** Straight M12 plug, straight M12 socket, for screw fixing, 3-pole, 3 x 0.34 mm², A-coded, black PUR sheath, max. 4 A | | | | |
| | • Cable length 1.5 m | 5 | **3RK1902-4PB15-3AA0** | 1 | 1 unit |
| 6ES7194-1KA01-0XA0 | **M12 Y-shaped coupler plug** For connection of two sensors to one M12 socket with Y-assignment | 1 | **6ES7194-1KA01-0XA0** | 1 | 1 unit |

## contents

**SITOP power supplies**

**SITOP Introduction**
TIA Selection Tool 15/2
The product range at a glance 15/3
Selection tables for power supplies 15/4 – 15/5

**SITOP Three-phase**
SITOP PSU8600 Power Supply System 15/6 – 15/7

**SITOP Single-phase, two-phase and three-phase**
SITOP PSU8200 15/8 – 15/9
SITOP PSU6200 15/10 – 15/11
SITOP smart 15/12 – 15/13

**SITOP Single-phase**
SITOP lite 15/14
LOGO!Power 15/15
SITOP compact 15/16

**SITOP in SIMATIC design**
SIMATIC S7 15/17
SIMATIC ET 200 15/18

**DC/DC Converter**
SITOP PSU3400 15/19 – 15/20
SITOP PSU400M 15/20

**SITOP Special use**
SITOP PSU100D 15/21
SITOP PSU3600 15/22
SITOP PSU100P 15/23
SITOP PSU300E 15/24
SITOP PSU100E 15/24
SITOP PSU3800 15/25

**SITOP uninterruptible power supplies**
SITOP DC-UPS Uninterruptible Power Supply 15/26 – 15/28
SITOP DC-UPS with Battery Modules 15/29 – 15/30

**SITOP Add-on modules**
Redundancy modules 15/31
Selectivity modules 15/32
Buffer modules 15/32

**SIPLUS power supplies**
Introduction 15/33
Ordering data 15/34 – 15/35

**Power supplies for AS interface**
1-phase / 1-2-phase / DC, AS-i 30 V (with data decoupling) 15/36
1-phase, 30 V DC (without data decoupling) 15/37 – 15/38

**SCALANCE XB**
Introduction 15/39
Fast Ethernet 15/40
Gigabit 15/41
Technical specifications 15/42

**FastConnect Cabling System**
Introduction 15/43
Ordering information 15/44

**LOGO! logic modules**
Introduction 15/45

**LOGO! basic and expansion modules**
LOGO! basic modules with display 15/46 – 15/48
LOGO! basic modules without display 15/49 – 15/51
LOGO! expansion modules 15/52 – 15/57
SIPLUS LOGO! basic modules with display 15/58 – 15/60
SIPLUS LOGO! basic modules without display 15/61 – 15/63
SIPLUS LOGO! expansion modules 15/64 – 15/68

**LOGO! communication modules**
Introduction 15/69
LOGO! CMK2000 communication module 15/70
LOGO! CSM unmanaged 15/71 – 15/72
LOGO! CMR (wireless communication) 15/73 – 15/78

**LOGO!Power**
Introduction 15/79
1-phase, 5 V DC 15/80 – 15/82
1-phase, 12 V DC 15/83 – 15/86
1-phase, 15 V DC 15/87 – 15/89
1-phase, 24 V DC 15/90 – 15/93

**SIPLUS LOGO!Power** 15/94

**LOGO! accessories**
LOGO!Contact switching module 15/95
LOGO! mounting kits 15/96

**LOGO! software** 15/97

# TIA Selection Tool

The smart configurator for the entire Siemens automation portfolio

## Prime reasons for the TIA Selection Tool

### Quick, easy and secure

Components can be selected, configured and ordered quickly, easily and securely from the Siemens automation portfolio.

### Intelligent

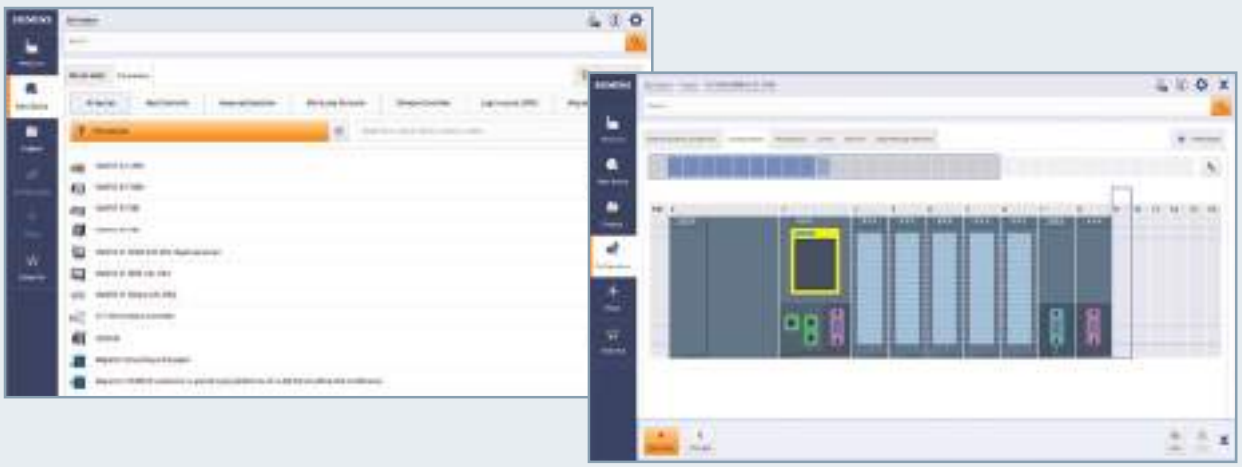
Intelligent selection wizards check the compatibility of the configured components and enable error-free ordering.

### Clear

Required modules, devices and networks are automatically generated and clearly compared to one another.

### Time-saving

Time savings of 80% in design – thanks to ease of use and intelligent support.



**The TIA Selection Tool is a completely paperless solution.**
**Download it now:**
www.siemens.com/tst

For more information, scan the QR code

# The product range at a glance

## Introduction

### Advanced power supplies

***SITOP PSU8600 – the power supply system with complete TIA integration and open communication all the way to the cloud***

### Advanced power supplies

***SITOP PSU8200 – the technology power supply for sophisticated solutions***

### Standard power supplies

***SITOP PSU6200 – the all-round power supply for a wide variety of applications***

### Standard power supplies

***SITOP smart – the high-performance standard power supply***

### Basic power supplies

***SITOP lite – the low-cost basic power supply***

### Basic power supplies

***LOGO!Power – the flat power supply for distribution boards***

### Basic power supplies

***SITOP compact – the slim power supply for switchboxes***

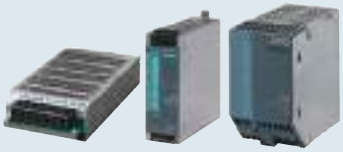
### SIMATIC design power supplies

***The optimum power supply for SIMATIC S7 and more***

### DC/DC converters

***Stable supply despite fluctuating DC voltage***

### Special designs and applications



***Designed for special tasks and conditions***

### SITOP DC-UPS Uninterruptible Power Supply

***SITOP UPS500 with capacitors***
Protection against power failure on the input side through buffering into the minutes range

***SITOP UPS1600 with SITOP PSU8600 battery modules plus DC-UPS***
Protection against power failure on the input side through buffering into the hours range. DC UPS with Ethernet/ PROFINET – open and systemintegrated in TIA

### Add-on modules

***Redundancy modules***
Protection against power supply failure by means of redundant configuration of the power supply unit

***Selectivity modules***
Protection against overload and short circuit by means of electronic protection of 24 V feeds

***Buffer modules***
Protection against power failure in the seconds range

***SITOP inrush current limiters***
Protecting your loads

# Selection tables for power supplies

## Introduction

### Part number selection table

| | Input voltage | Output current | Advanced power supplies | | Standard power supplies | | Basic power supplies |
|---|---|---|---|---|---|---|---|
| | | | SITOP PSU8600 | SITOP PSU8200 | SITOP PSU6200 | SITOP smart | SITOP lite |
| Output voltage 24 V DC | 1-phase 120 V, 230 V AC | 0.6 A | | | | | |
| | | 1.3 A | | | 6EP3331-7SB00-0AX0 | | |
| | | 2 A | | | | | |
| | | 2.5 A | | | 6EP3332-7SB00-0AX0 | 6EP1332-2BA20 | 6EP1332-1LB00 |
| | | 3 A | | | | | |
| | | 3.5 A | | | | | |
| | | 3.7 A | | | 6EP3333-7LB00-0AX0 | | |
| | | 4 A | | | | | |
| | | 5 A | | 6EP1333-3BA10<br>6EP3333-8SB00-0AY0 | 6EP3333-7SB00-0AX0 | 6EP1333-2BA20 | 6EP1333-1LB00 |
| | | 6.2 A | | | | | |
| | | 8 A | | | | | |
| | | 10 A | | 6EP1334-3BA10<br>6EP3334-8SB00-0AY0 | 6EP3334-7SB00-3AX0 | 6EP1334-2BA20<br>6EP1334-2AA01-0AB0 | 6EP1334-1LB00 |
| | | 12.5 A | | | | | |
| | | 20 A | | 6EP1336-3BA10 | 6EP3336-7SB00-3AX0 | 6EP1336-2BA10 | 6EP1336-1LB00 |
| | | 40 A | | 6EP3337-8SB00-0AY0 | | | |
| | 3-phase 400–500 V AC | 5 A | | 6EP1333-3BA10[1)] | | 6EP1433-2BA20 | |
| | | 8 A | | | | | |
| | | 10 A | | 6EP1334-3BA10[1)] | | 6EP1434-2BA20 | |
| | | 17A | | | | | |
| | | 20 A | 6EP3436-8SB00-2AY0 | 6EP3436-8SB00-0AY0 | | 6EP1436-2BA10 | |
| | | 20 A/4 x 5 A | 6EP3436-8MB00-2CY0 | | | | |
| | | 30 A | | | | | |
| | | 40 A | 6EP3437-8SB00-2AY0 | 6EP3437-8SB00-0AY0 | | 6EP1437-2BA20 | |
| | | 40 A/4 x 10 A | 6EP3437-8MB00-2CY0 | | | | |
| | 12 V DC | 4 A | | | | | |
| | 24–110 V DC | 2 A | | | | | |
| | 24 V DC | 5 A | | | | | |
| | | 10 A | | | | | |
| | 48 V DC | 3.5A | | | | | |
| | | 5 A | | | | | |
| | | 10 A | | | | | |
| | 110–300 V DC 120–240 V DC | 0.6 A | | | | | |
| | | 1.3 A | | | 6EP3331-7SB00-0AX0 | | |
| | | 2.5 A | | | 6EP3332-7SB00-0AX0 | | |
| | | 3.7 A | | | 6EP3333-7LB00-0AX0 | | |
| | | 4 A | | | | | |
| | | 5 A | | | 6EP3333-7SB00-0AX0 | | |
| | | 10 A | | | 6EP3334-7SB00-3AX0 | | |
| | | 20 A | | | 6EP3336-7SB00-3AX0 | | |
| | 88...350 (370) V DC 600 V DC | 20 A | | 6EP1336-3BA10 | | | 6EP1336-1LB00 |
| | | 20 A | | | | | |
| Output voltage 5, 12, 15, 48, ... V DC | 1-phase 120 V, 230 V AC | 5 V/3 A | | | | | |
| | | 5 V/6.3 A | | | | | |
| | | 12 V/0.9 A | | | | | |
| | | 12 V/1.9 A | | | | | |
| | | 12 V/2.0 A | | | 6EP3321-7SB00-0AX0 | | |
| | | 12 V/3.0 A | | | | | |
| | | 12 V/4.5 A | | | | | |
| | | 12 V/6.5 A | | | | | |
| | | 12 V/7 A | | | 6EP3323-7SB00-0AX0 | 6EP1322-2BA00 | |
| | | 12 V/8.3 A | | | | | |
| | | 12 V/12 A | | | 6EP3324-7SB00-3AX0 | | |
| | | 12 V/14 A | | | | 6EP1323-2BA00 | |
| | | 15 V/1.9 A | | | | | |
| | | 15 V/4 A | | | | | |
| | | 48 V/5 A | | | | | |
| | | 3–52 V/2–10 A | | | | | |
| | | 2 x 15 V/3.5 A | | | | | |
| | 24 V DC | 12 V/2.5 A | | | | | |
| | | 12 V/8 A | | | | | |
| | | 12 V/15 A | | | | | |
| | 3-phase 400–500 V AC | 4–28 V/20 A | 6EP3436-8SB00-2AY0 | | | | |
| | | 4–28 V/4 x 5 A | 6EP3436-8MB00-2CY0 | | | | |
| | | 4–28 V/40 A | 6EP3437-8SB00-2AY0 | | | | |
| | | 4–28 V/4 x 10 A | 6EP3437-8MB00-2CY0 | | | | |
| | | 12 V/20 A | | | | | |
| | | 36 V/13 A | | 6EP3446-8SB10-0AY0 | | | |
| | | 48 V/10 A | | 6EP3446-8SB00-0AY0 | | | |
| | | 48 V/20 A | | 6EP3447-8SB00-0AY0 | | | |

1) Connection to two phases 230–500 V AC – sheet 24/25, SITOP PSU200M 1-/2-phase

Gray: more information in the Industry Mall

## Part number selection table (cont.)

| | Input voltage | Output current | Basic power supplies (cont.) | | SIMATIC design | SITOP DC/DC converter | Special designs |
|---|---|---|---|---|---|---|---|
| | | | LOGO!Power | SITOP compact | | | |
| Output voltage 24 V DC | 1-phase 120 V, 230 V AC | 0.6 A | 6EP3330-6SB00-0AY0 | 6EP1331-5BA00 | | | |
| | | 1.3 A | 6EP3331-6SB00-0AY0 | 6EP1331-5BA10 | | | |
| | | 2 A | | | 6ES7307-1BA01-0AA0 | | 6EP1331-1LD00 |
| | | 2.5 A | 6EP3332-6SB00-0AY0 | 6EP1332-5BA00 | 6EP1332-1SH71 | | |
| | | 3 A | | | 6EP1332-4BA00 | | 6EP1332-1LD00 |
| | | 3.5 A | | | 6EP1332-1SH31 | | |
| | | 3.7 A | | 6EP1332-5BA20 | | | |
| | | 4 A | 6EP3333-6SB00-0AY0 | 6EP1332-5BA10 | | | 6EP1332-1LD10 |
| | | 5 A | | | 6ES7307-1EA01-0AA0<br>6ES7307-1EA80-0AA0<br>6EP7133-6AB00-0BN0 | | 6EP1333-1AL12<br>6EP1333-7CA00 |
| | | 6.2 A | | | | | 6EP1333-1LD00 |
| | | 8 A | | | 6EP1333-4BA00 | | 6EP1334-7CA00 |
| | | 10 A | | | 6ES7307-1KA02-0AA0<br>6EP7133-6AE00-0BN0 | | 6EP1334-1AL12<br>6EP3343-0SA00-0AY0 |
| | | 12.5 A | | | | | 6EP1334-1LD00 |
| | | 20 A | | | | | |
| | | 40 A | | | | | |
| | 3-phase 400–500 V AC | 5 A | | | | | 6EP1433-0AA00 |
| | | 8 A | | | 6ES7148-4PC00-0HA0 | | 6ES7148-4PC00-0HA0 |
| | | 10 A | | | | | |
| | | 17A | | | | | 6EP3436-8UB00-0AY0 |
| | | 20 A | | | | | |
| | | 20 A/4 x 5 A | | | | | |
| | | 30 A | | | | | 6EP3437-8UB00-0AY0 |
| | | 40 A | | | | | 6EP3437-8UB00-0AY0 |
| | | 40 A/4 x 10 A | | | | | |
| | 12 V DC | 4 A | | | | 6EP3133-0TA10-0AY0 | |
| | 24–110 V DC | 2 A | | | 6ES7305-1BA80-0AA0 | | 6EP1732--0AA0 (as of 48 V DC) |
| | 24 V DC | 5 A | | | | 6EP3133-0TA00-0AY0 | |
| | | 10 A | | | | 6EP3134-0TA00-0AY0 | |
| | 48 V DC | 3.5A | | | | 6EP3233-0TA10-0AY0 | |
| | | 5 A | | | | 6EP3233-0TA00-0AY0 | |
| | | 10 A | | | | 6EP3234-0TA00-0AY0 | |
| | 110–300 V DC 120–240 V DC | 0.6 A | 6EP3330-6SB00-0AY0 | 6EP1331-5BA00 | | | |
| | | 1.3 A | 6EP3331-6SB00-0AY0 | 6EP1331-5BA10 | | | |
| | | 2.5 A | 6EP3332-6SB00-0AY0 | 6EP1332-5BA00 | | | |
| | | 3.7 A | | 6EP1332-5BA20 | | | |
| | | 4 A | 6EP3333-6SB00-0AY0 | 6EP1332-5BA10 | | | |
| | | 5 A | | | | | |
| | | 10 A | | | | | |
| | | 20 A | | | | | |
| | 88...350 (370) V DC | 20 A | | | | | |
| | 600 V DC | 20 A | | | | 6EP1536-3AA00 | |
| Output voltage 5, 12, 15, 48, ... V DC | 1-phase 120 V, 230 V AC | 5 V/3 A | 6EP3310-6SB00-0AY0 | | | | |
| | | 5 V/6.3 A | 6EP3311-6SB00-0AY0 | | | | |
| | | 12 V/0.9 A | 6EP3320-6SB00-0AY0 | | | | |
| | | 12 V/1.9 A | 6EP3321-6SB00-0AY0 | | | | |
| | | 12 V/2.0 A | | 6EP1321-5BA00 | | | |
| | | 12 V/3.0 A | | | | | 6EP1321-1LD00 |
| | | 12 V/4.5 A | 6EP3322-6SB00-0AY0 | | | | |
| | | 12 V/6.5 A | | 6EP1322-5BA10 | | | |
| | | 12 V/7 A | | | | | |
| | | 12 V/8.3 A | | | | | 6EP1322-1LD00 |
| | | 12 V/12 A | | | | | |
| | | 12 V/14 A | | | | | |
| | | 15 V/1.9 A | 6EP3321-6SB10-0AY0 | | | | |
| | | 15 V/4 A | 6EP3322-6SB10-0AY0 | | | | |
| | | 48 V/5 A | | | | | 6EP3344-0SB00-0AY0 |
| | | 3–52 V/2–10 A | | | | | 6EP3343-0SA00-0AY0 |
| | | 2 x 15 V/3.5 A | | | | | 6EP3323-0SA00-0BY0 |
| | 24 V DC | 12 V/2.5 A | | | | 6EP1621-2BA00 | |
| | | 12 V/8 A | | | | 6EP3123-0TA00-0AY0 | |
| | | 12 V/15 A | | | | 6EP3124-0TA00-0AY0 | |
| | 3-phase 400–500 V AC | 4–28 V/20 A | | | | | |
| | | 4–28 V/4 x 5 A | | | | | |
| | | 4–28 V/40 A | | | | | |
| | | 4–28 V/4 x 10 A | | | | | |
| | | 12 V/20 A | | | | | 6EP3424-8UB00-0AY0 |
| | | 36 V/13 A | | | | | |
| | | 48 V/10 A | | | | | |
| | | 48 V/20 A | | | | | |

# SITOP PSU8600 Power Supply System

## Three-phase

### Overview

The three-phase basic units of the SITOP PSU8600 power supply system accommodate within their extremely compact width an Ethernet/PROFINET interface as well as four individually parameterizable outputs (voltage and current threshold) with selective monitoring.

Without wiring overhead, further modules from the modular system can be added to expand the number of outputs (CNX8600), to increase the mains buffering time (BUF8600), or to buffer longer power failures (UPS8600 with BAT8600) according to requirements.

Comprehensive diagnostic and maintenance information is available via PROFINET. It can be evaluated directly in SIMATIC S7 and visualized in SIMATIC WinCC.

Energy management is also optimally supported by collecting the energy data for each output as well as individual activation and deactivation of the outputs via PROFIenergy.

The integrated OPC UA server also allows direct integration into automation applications with OPC UA clients made by different manufacturers, e.g. of controllers or PCs. Not only the parameter assignment but also the diagnostics of the power supply system are possible via the open interface.

- Three-phase wide-range input 400 to 500 V 3 AC for global use
- Extremely slim design with very high efficiency of up to 94%
- Versions with a configurable output with up to 20 A or 40 A and selective monitoring.
- Versions with four integrated, individually configured outputs with up to 5 A or 10 A each and selective monitoring
- Voltage and response threshold can be set separately and are infinitely adjustable for each output
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Integrated Ethernet/PROFINET interface (2 ports)
- Easy configuration in the TIA Portal
- Comprehensive diagnostic information during operation
- Outputs can be deactivated and activated selectively via PROFIenergy
- Individual expansion options from the modular system (CNX8600 expansion modules, BUF8600 buffer modules, or UPS8600 with BAT8600 for buffering longer power failures) without wiring overhead



### Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) mm | SD d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **24 V power supplies** | | | | | | | |
| 6EP3437-8MB00-2CY0 | ***SITOP PSU8600 power supply with Ethernet/PROFINET interface*** | | | | | | |
| | **20 A** | 400 ... 500 V 3 AC | 4 ... 28 V DC | 80 x 125 x 150 | 1 | **6EP3436-8SB00-2AY0** | |
| | **40 A** | | | 125 x 125 x 150 | 1 | **6EP3437-8SB00-2AY0** | |
| | **20 A (4 x 5 A)** | | | 100 x 125 x 150 | 1 | **6EP3436-8MB00-2CY0** | |
| | **40 A (4 x 10 A)** | | | 125 x 125 x 150 | 1 | **6EP3437-8MB00-2CY0** | |
| 6EP4436-8XB00-0CY0 | ***Modular system, expansion of outputs (CNX8600)*** | | | | | | |
| | **4 x 5 A** | Infeed from PSU8600 basic unit via connector plug | 4 ... 28 V DC | 60 x 125 x 150 | 1 | **6EP4436-8XB00-0CY0** | |
| | **4 x 10 A** | | | 60 x 125 x 150 | 1 | **6EP4437-8XB00-0CY0** | |
| | **8 x 2.5 A** | | | 100 x 125 x 150 | 1 | **6EP4436-8XB00-0DY0** | |
| 6EP4297-8HB00-0XY0 | ***Modular system, buffering (BUF8600)*** | | | | | | |
| | **100 ms/40 A** | Infeed from PSU8600 basic unit via connector plug | -- | 60 x 125 x 150 | 1 | **6EP4297-8HB00-0XY0** | |
| | **300 ms/40 A** | | | 125 x 125 x 150 | 1 | **6EP4297-8HB10-0XY0** | |
| | **4 s/40 A** | | | 60 x 125 x 150 | 1 | **6EP4293-8HB00-0XY0** | |
| | **10 s/40 A** | | | 125 x 125 x 150 | 1 | **6EP4295-8HB00-0XY0** | |

| | | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| | | | | | mm | d | | |
| **24 V power supplies (continued)** | | | | | | | | |
| ***Modular system, buffering of longer power failures (UPS8600 with BAT8600)*** | | | | | | | | |
| 6EP4197-8AB00-0XY0 | **UPS8600 UPS module 960W** | | Infeed from PSU8600 basic unit via connector plug | 48 V DC | 60 x 125 x 150 | X | **6EP4197-8AB00-0XY0** | |
| 6EP4143-8JB00-0XY0 | **BAT8600 LiFePo4 battery module 264 Wh** | | Energy exchange with UPS8600 | 48 V DC | 322 x 187 x 110 | X | **6EP4143-8JB00-0XY0** | |
| 6EP4145-8GB00-0XY0 | **BAT8600 Pb battery module 380 Wh** | | | 48 V DC | 322 x 187 x 110 | X | **6EP4145-8GB00-0XY0** | |

# SITOP PSU8200

## Single-, two- and three-phase

### Overview

SITOP modular are the technology power supplies for demanding solutions and provide maximum functionality for use in complex systems and machines.

The wide-range input enables connection to any power system in the world and ensures high safety even in the event of extreme voltage fluctuations. The power boost provides up to three times the rated current for brief periods, and with the extra power of 150%, loads with high power consumption can be connected without problems. And in the event of an overload there is a choice between constant current or automatic restart. The very high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

To further increase 24 V availability, the SITOP modular power supply units can be combined with buffer, UPS, redundancy and selectivity modules, see pages 15/6 and 15/7.

For demanding applications from 5 A to 40 A

- 48 V/10 A and 20 A enable small conductor cross-sections
- Extremely slim design – no lateral clearances required
- Extra power function for brief operational overloads
- Power boost for tripping protective devices
- Selectable short-circuit behavior
- Optional symmetrical load distribution for parallel operation
- Very high degree of efficiency up to 95%
- Operating status indicated by 3 LEDs
- Wide temperature range from -25 °C to +70 °C
- Extensive certification such as cULus, ATEX, IECex or GL

### Selection and ordering data



| Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|
| | | | mm | d | | |
| **24 V power supplies** | | | | | | |
| ***SITOP modular, single-phase and single- and two-phase*** | | | | | | |
| **5 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 24 V DC ± 3% | 45 x 125 x 125 | 1 | **6EP3333-8SB00-0AY0** | |
| **10 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 24 V DC ± 3% | 55 x 125 x 125 | 1 | **6EP3334-8SB00-0AY0** | |
| **20 A** | 120 ... 230 V AC (85 ... 275 V AC or 88 ... 350 V DC) | 24 V DC ± 3% | 90 x 125 x 125 | 1 | **6EP1336-3BA10** | |
| **40 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 24 V DC ± 3% | 145 x 145 x 150 | 1 | **6EP3337-8SB00-0AY0** | |
| **5 A** | 120 ... 230 V AC/ 230 ... 500 V AC (85 ... 264 V AC/ 176 ... 550 V AC) | 24 V DC ± 3% | 70 x 125 x 121 | 1 | **6EP1333-3BA10** **6EP1333-3BA10-8AC0*** | |
| **10 A** | 120 ... 230 V AC/ 230 ... 500 V AC (85 ... 264 V AC/ 176 ... 550 V AC) | 24 V DC ± 3% | 70 x 125 x 121 | 1 | **6EP1334-3BA10** **6EP1334-3BA10-8AB0*** | |

6EP3333-8SB00-0AY0

6EP3334-8SB00-0AY0

6EP1336-3BA10

6EP3337-8SB00-0AY0

6EP1333-3BA10

6EP1334-3BA10

*Protective coating

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **24 V power supplies (continued)** | | | | | | | |
| | ***SITOP modular, three-phase*** | | | | | | |
| 6EP3436-8SB00-0AY0 | **20 A** | 400 ... 500 V 3 AC (320 ... 575 V 3 AC) | 24 V DC ± 3% | 70 x 125 x 125 | 1 | **6EP3436-8SB00-0AY0** | |
| 6EP3437-8SB00-0AY0 | **40 A** | 400 ... 500 V 3 AC (320 ... 575 V 3 AC) | 24 V DC ± 3% | 135 x 145 x 150 | 1 | **6EP3437-8SB00-0AY0** | |
| **36 V power supplies** | | | | | | | |
| | ***SITOP modular, three-phase*** | | | | | | |
| 6EP3446-8SB10-0AY0 | **13 A** | 400 ... 500 V 3 AC (320 ... 575 V 3 AC) | 36 V DC ± 3% | 70 x 125 x 125 | 1 | **6EP3446-8SB10-0AY0** | |
| **48 V power supplies** | | | | | | | |
| | ***SITOP modular, three-phase*** | | | | | | |
| 6EP3446-8SB00-0AY0 | **10 A** | 400 ... 500 V 3 AC (320 ... 575 V 3 AC) | 48 V DC ± 3% | 70 x 125 x 125 | 1 | **6EP3446-8SB00-0AY0** | |
| 6EP3447-8SB00-0AY0 | **20 A** | 400 ... 500 V 3 AC (320 ... 575 V 3 AC) | 48 V DC ± 3% | 135 x 145 x 150 | 1 | **6EP3447-8SB00-0AY0** | |

## Overview

The SITOP PSU6200 product family is the new standard power supply for customers with extreme technical requirements regarding reliability, efficiency and integration.

The stabilized single-phase power supplies with a wide input range of 120–230 V AC nominal voltage and 120–240 V DC are available with an output voltage of 12 V in three performance classes and with an output voltage of 24 V in six performance classes. The high level of efficiency across the entire load range, as well as the minimal no-load losses, result in lower overall energy consumption. For power supply modules up to 10 A, a diagnostics LED indicates DC o.k.; this information is also reported by means of a relay for devices of 3.7 A and above.

To further increase the 24 V availability, the SITOP PSU6200 power supplies can be combined with buffer, DC UPS, redundancy and selectivity modules, see pages 15/6 and 15/7.

- Diagnostic monitor from 10 A output power
- Diagnostics interface from 10 A output power
- Constant current
- Robust AC input
- DC capability / wide-range input
- Narrow overall width
- Push-in terminals
- Selectivity and redundancy modules

## Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **12 V power supplies** | | | | | | | |
| | ***SITOP PSU6200, single-phase*** | | | | | | |
| 6EP3321-7SB00-0AX0 | **2 A** NEW | 120/230 V AC (85 ... 264 V AC) 120/240 V DC (110 ... 275 V DC) | 12 V DC ± 3% | 25 x 100 x 88 | 1 | **6EP3321-7SB00-0AX0** | |
| 6EP3323-7SB00-0AX0 | **7 A** NEW | 120/230 V AC (85 ... 164 V AC) 120/240 V DC (99 ... 275 V DC) | 12 V DC ± 3% | 35 x 135 x 125 | 1 | **6EP3323-7SB00-0AX0** | |
| 6EP3324-7SB00-3AX0 | **12 A** NEW | 120/230 V AC (85 ... 264 V AC) 110/240 V DC (85 ... 275 V DC) | 12 V DC ± 3% | 45 x 135 x 125 | 1 | **6EP3324-7SB00-3AX0** | |
| **24 V power supplies** | | | | | | | |
| | ***SITOP PSU6200, single-phase*** | | | | | | |
| 6EP3331-7SB00-0AX0 | **1.3 A** NEW | 120/230 V AC (85 ... 264 V AC) 120/240 V DC (110 ... 275 V DC) | 24 V DC ± 3% | 25 x 100 x 88 | 1 | **6EP3331-7SB00-0AX0** | |
| 6EP3332-7SB00-0AX0 | **2.5 A** NEW | 120/230 V AC (85 ... 264 V AC) 120/240 V DC (110 ... 275 V DC) | 24 V DC ± 3% | 40 x 100 x 88 | 1 | **6EP3332-7SB00-0AX0** | |
| 6EP3333-7LB00-0AX0 | **3.7 A** NEW | 120/230 V AC (85 ... 264 V AC) 110/240 V DC (99 ... 275 V DC) | 24 V DC ± 3% | 35 x 135 x 125 | 1 | **6EP3333-7LB00-0AX0** | |

## Single-phase

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **24 V power supplies (continued)** | | | | | | | |
| | ***SITOP PSU6200, single-phase*** | | | | | | |
| 6EP3333-7SB00-0AX0 | **5 A** NEW | 120/230 V AC (85 ... 264 V AC) 120/240 V DC (99 ... 275 V DC) | 24 V DC ± 3% | 35 x 135 x 125 | 1 | **6EP3333-7SB00-0AX0** | |
| 6EP3334-7SB00-3AX0 | **10 A** NEW | 120/230 V AC (85 ... 264 V AC) 120/240 V DC (85 ... 275 V DC) | 24 V DC ± 3% | 45 x 135 x 125 | 1 | **6EP3334-7SB00-3AX0** | |
| 6EP3336-7SB00-3AX0 | **20 A** NEW | 120/230 V AC (85 ... 264 V AC) 110/240 V DC (85 ... 275 V DC) | 24 V DC ± 3% | 70 x 135 x 155 | 1 | **6EP3336-7SB00-3AX0** | |

# SITOP smart

## Single-phase and three-phase



### Overview

SITOP smart are the universal and powerful standard power supplies for mechanical and plant engineering.

Despite their compact design, they offer excellent overload behavior: Thanks to a power boost of 150%, loads with high power consumption can be connected without any problems and the permanent overload capability of 120% offers power reserves in case of expansions.

The high degree of efficiency results in low energy consumption and minimal heat generation inside the control cabinet.

To further increase 24 V availability, the SITOP smart power supplies can be combined with buffer, DC-UPS, redundancy and selectivity modules, see pages 15/6 and 15/7.

- Single- and three-phase standard applications up to 40 A
- Compact design, no lateral clearances required
- Extra power with 1.5 times the rated current (5 s/min) for brief operational overloads
- Permanent overload capability with 1.2 times the rated current up to 45 °C ambient temperature
- Adjustable output voltage for compensating voltage drops
- Parallel switching option to increase performance
- High degree of efficiency up to 91.5%
- Wide temperature range from -25 °C or 0 °C to +70 °C
- Comprehensive certification such as cULus, cCSAus, ATEX, IECEx and GL

### Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) mm | SD d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **SITOP smart 1-phase** | | | | | | | |
| 6EP1332-2BA20 | **2.5 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 24 V DC ± 3% | 32.5 x 125 x 120 | 1 | **6EP1332-2BA20** | |
| 6EP1333-2BA20 | Limitation of input current harmonics according to IEC 61000-3-2 **5 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 24 V DC ± 3% | 50 x 125 x 120 | 1 | **6EP1333-2BA20** | |
| 6EP1322-2BA00 | Limitation of input current harmonics according to IEC 61000-3-2 **7 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 12 V DC ± 3% | 50 x 125 x 120 | 1 | **6EP1322-2BA00** | |
| 6EP1334-2BA20 | **10 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 24 V DC ± 3% | 70 x 125 x 120 | 1 | **6EP1334-2BA20** | |
| 6EP1323-2BA00 | **14 A** | 120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC) | 12 V DC ± 3% | 70 x 125 x 120 | 1 | **6EP1323-2BA00** | |
| 6EP1336-2BA10 | **20 A** | 120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC) | 24 V DC ± 3% | 115 x 145 x 150 | 1 | **6EP1336-2BA10** | |

## Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **SITOP smart 3-phase** | | | | | | | |
| 6EP1433-2BA20 | **5 A** | 400 ... 500 V 3 AC (340 ... 550 V 3 AC) | 24 V DC ± 3% | 50 x 125 x 120 | 1 | **6EP1433-2BA20** | |
| 6EP1434-2BA20 | **10 A** | 400 ... 500 V 3 AC (340 ... 550 V 3 AC) | 24 V DC ± 3% | 70 x 125 x 120 | 1 | **6EP1434-2BA20** | |
| 6EP1436-2BA10 | **20 A** | 400 ... 500 V 3 AC (340 ... 550 V 3 AC) | 24 V DC ± 3% | 90 x 145 x 150 | 1 | **6EP1436-2BA10** | |
| 6EP1437-2BA20 | **40 A** | 400 ... 500 V 3 AC (340 ... 550 V 3 AC) | 24 V DC ± 3% | 150 x 145 x 150 | 1 | **6EP1437-2BA20** | |

# SITOP lite

## Single-phase

### Overview

The SITOP lite power supplies are designed for standard requirements in industrial environments and offer all important functions at a favorable price.

The wide range input with manual switchover supports connection to a variety of single-phase supply systems.

Thanks to the slim design, the power supplies have a low space requirement on the standard mounting rail, and their excellent degree of efficiency ensures low thermal losses in the control cabinet.

To further increase 24 V availability, the SITOP lite power supplies can be combined with DC UPS, redundancy and selectivity modules, see pages 15/6 and 15/7.

- 24 V/2.5 A, 5 A, 10 A and 20 A for industrial applications with standard requirements
- Single-phase wide range input with manual switchover
- Narrow width
- Excellent degree of efficiency
- Green LED for "24 V OK"
- Can be switched in parallel
- No lateral installation clearances required
- Ambient temperature range from 0 °C to 60 °C (from 45 °C with derating)
- Cooling through natural convection
- Short-circuit and overload protection
- Certification in accordance with CE, cULus and CB

### Selection and ordering data

| | Version | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| | | | | A | mm | d | | |
| **24 V power supplies** | | | | | | | | |
| 6EP1332-1LB00 | **2.5 A** | 120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC) | 24 V DC ± 3% | 2.5 A | 32.5 x 125 x 120 | 1 | **6EP1332-1LB00** | |
| 6EP1333-1LB00 | **5 A** | 120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC) | 24 V DC ± 3% | 5 A | 50 x 125 x 120 | 1 | **6EP1333-1LB00** | |
| 6EP1334-1LB00 | **10 A** | 120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC) | 24 V DC ± 3% | 10 A | 70 x 125 x 120 | 1 | **6EP1334-1LB00** | |
| 6EP1336-1LB00 | **20 A** | 100/240 V AC or DC (85...264 V AC/ 88...370 V DC) | 24 V DC ± 3% | 20 A | 110 x 125 x 125 | 1 | **6EP1336-1LB00** | |

## Overview

Our new miniature power supply units in the same design as the logic modules offer great performance in the smallest of spaces: Efficiency has been improved across the entire load range, and the low power losses in no-load operation ensure efficient operation.

The wide-range input for single-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the power reserve when switching on capacitive loads makes them suitable for universal use.

These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

To further increase 24 V availability, the LOGO!Power power supply units can be combined with DC-UPS, redundancy and selectivity modules, see pages 15/6 and 15/7.

- Single-phase wide range input from 85 V to 264 V AC and 110 V to 300 V DC
- Low width from a minimum of 18 mm to a maximum of 72 mm saves space in the control cabinet
- Higher efficiency level up to 90% over the entire power range and ERP-compliant no-load losses of < 0.3 W
- Flexible mounting with standard rail or wall mounting in different installation positions
- Load monitoring due to real-time measurement of the output current without disconnecting the cable, i.e. without interrupting the DC supply
- Reliable thanks to assured connection of heavy loads when starting up as well as constant current in the event of overload
- Wide temperature range from -25 °C to +70 °C
- Extensive certification such as cULus, CB, FM, ATEX, cCSAus Class I Div. 2, GL and ABS

## Selection and ordering data

| | Version | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Rated current $I_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| | | | | | mm | d | | |
| **5 V power supplies** | | | | | | | | |
| 6EP3310-6SB00-0AY0 | **3 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 5 V DC ± 3% | 3 A | 36 x 90 x 53 | 1 | **6EP3310-6SB00-0AY0** | |
| | **6.3 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 5 V DC ± 3% | 6.3 A | 54 x 90 x 53 | 1 | **6EP3311-6SB00-0AY0** | |
| **12 V power supplies** | | | | | | | | |
| 6EP3320-6SB00-0AY0 | **0.9 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 12 V DC ± 3% | 0.9 A | 18 x 90 x 53 | 1 | **6EP3320-6SB00-0AY0** | |
| | **1.9 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 12 V DC ± 3% | 1.9 A | 36 x 90 x 53 | 1 | **6EP3321-6SB00-0AY0** | |
| | **4.5 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 12 V DC ± 3% | 4.5 A | 54 x 90 x 53 | 1 | **6EP3322-6SB00-0AY0** | |
| **15 V power supplies** | | | | | | | | |
| 6EP3321-6SB10-0AY0 | **1.9 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 15 V DC ± 3% | 1.9 A | 36 x 90 x 53 | 1 | **6EP3321-6SB10-0AY0** | |
| | **4 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 15 V DC ± 3% | 4 A | 54 x 90 x 53 | 1 | **6EP3322-6SB10-0AY0** | |
| **24 V power supplies** | | | | | | | | |
| 6EP3332-6SB00-0AY0 | **0.6 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 0.6 A | 18 x 90 x 53 | 1 | **6EP3330-6SB00-0AY0** | |
| | **1.3 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 1.3 A | 36 x 90 x 53 | 1 | **6EP3331-6SB00-0AY0** | |
| | **2.5 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 2.5 A | 54 x 90 x 53 | 1 | **6EP3332-6SB00-0AY0** | |
| | **4 A** | 100 ... 240 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 4 A | 72 x 90 x 53 | 1 | **6EP3333-6SB00-0AY0** | |

# SITOP compact

## Single-phase

### Overview

SITOP compact is a series of power supplies for the low performance range. Thanks to the extremely space-saving slim design, they are especially suited to distributed applications in switchboxes or in small control cabinets.

The switching power supply units are characterized by their low power loss over the entire load range. With losses being extremely small even in no-load operation, these units are predestined for supplying machines and plants which are often in stand-by mode, for example. The switching power supply units have a wide range input for AC and DC networks, with plug-in terminals that facilitate easy electrical connection.

To further increase 24 V availability, the SITOP compact power supply units can be combined with DC-UPS, redundancy and selectivity modules, see pages 15/6 and 15/7.

- Small mounting area thanks to narrow design
- Single-phase wide range input for 85 V to 264 V AC and 110 V to 300 V DC
- High degree of efficiency over the entire load range, up to 28% energy savings compared to comparable units
- Low energy consumption in no-load operation and stand-by, possible energy savings of up to 53%
- Adjustable output voltage
- Green LED for "Output voltage OK"
- Plug-in terminals
- Temperature range from -20 °C to +70 °C

Extensive certification, such as UL, ATEX, GL and NEC Class 2 (24 V/3.7 A)

### Selection and ordering data

| | Version | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W x H x D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **12 V power supplies** | | | | | | | | |
| <br>6EP1321-5BA00 | **2 A** | 100 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 12 V DC ± 3% | 2 A | 30 x 80 x 100 | 1 | **6EP1321-5BA00** | |
| <br>6EP1322-5BA10 | **6.5 A** | 100 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 12 V DC ± 3% | 6.5 A | 52.5 x 80 x 100 | 1 | **6EP1322-5BA10** | |
| **24 V power supplies** | | | | | | | | |
| <br>6EP1331-5BA00 | **0.6 A** | 100 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 0.6 A | 22.5 x 80 x 100 | 1 | **6EP1331-5BA00** | |
| <br>6EP1331-5BA10 | **1.3 A** | 100 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 1.3 A | 30 x 80 x 100 | 1 | **6EP1331-5BA10** | |
| <br>6EP1332-5BA00 | **2.5 A** | 100 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 2.5 A | 45 x 80 x 100 | 1 | **6EP1332-5BA00** | |
| <br>6EP1332-5BA10 | **4 A** | 100 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 4 A | 52.5 x 80 x 100 | 1 | **6EP1332-5BA10** | |
| <br>6EP1332-5BA20 | **3.7 A NEC Class 2** | 120 ... 230 V AC or DC (85 ... 264 V AC/ 110 ... 300 V DC) | 24 V DC ± 3% | 3.7 A | 52.5 x 80 x 100 | 1 | **6EP1332-5BA20** | |

## Overview

The original SIMATIC power supplies harmonize perfectly with the PLC network in terms of their design and functionality. This ensures that controller and power supply are perfectly matched.

In addition, the start up and power reserves of the power supply units meet the requirements of the respective controllers. The mounting options of both components are the same. The issued certifications and the permitted temperature range allow the components to be used together in almost all areas.

The system test that was performed for each of the SITOP power supply units in SIMATIC design together with the respective SIMATIC controller is particularly noteworthy.

In addition to the following SIMATIC systems, the SITOP power supply units in SIMATIC design also supply further consumers reliably with 24 V.

- SIMATIC S7-300
- SIMATIC S7-1200
- SIMATIC S7-1500
- SIMATIC ET 200M
- SIMATIC ET 200MP
- SIMATIC ET 200pro
- SIMATIC ET 200SP

## Selection and ordering data

| | Version | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W x H x D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **SIMATIC S7-1200 design** | | | | | | | | |
| <br>6EP1332-1SH71 | **2.5 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 176 ... 264 V AC) | 24 V DC ± 3% | 2.5 A | 70 x 100 x 75 | 1 | **6EP1332-1SH71** | |
| **SIMATIC S7-300 design** | | | | | | | | |
| <br>6ES7307-1BA01-0AA0 | **2 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 2 A | 40 x 125 x 120 | 1 | **6ES7307-1BA01-0AA0** | |
| <br>6ES7307-1EA01-0AA0 | **5 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 5 A | 60 x 125 x 120 | 1 | **6ES7307-1EA01-0AA0** | |
| <br>6ES7307-1K A02-0AA0 | **10 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 10 A | 80 x 125 x 120 | 1 | **6ES7307-1K A02-0AA0** | |
| **SIMATIC S7-1500 design** | | | | | | | | |
| <br>6EP1332-4BA00 | **3 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 176 ... 264 V AC) | 24 V DC ± 3% | 3 A | 50 x 147 x 135 | 1 | **6EP1332-4BA00** | |
| <br>6EP1333-4BA00 | **8 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 176 ... 264 V AC) | 24 V DC ± 3% | 8 A | 75 x 147 x 135 | 1 | **6EP1333-4BA00** | |

## Selection and ordering data

| | Version | Inputs<br>Rated voltage $U_{e\ rated}$ | Outputs<br>Rated voltage $U_{a\ rated}$ | Rated current $I_{a\ rated}$ | Dimensions (W x H x D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **SIMATIC ET 200SP PS** | | | | | | | | |
| <br>6EP7133-6AB00-0BN0 | **5 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 5 A | 160 x 117 x 75 | 1 | **6EP7133-6AB00-0BN0** | |
| <br>6EP7133-6AE00-0BN0 | **10 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 10 A | 160 x 117 x 75 | 1 | **6EP7133-6AE00-0BN0** | |
| **SIMATIC ET 200pro design** | | | | | | | | |
| <br>6ES7148-4PC00-0HA0 | **5 A** | 120/230 V AC, automatic range selection (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 5 A | 160 x 117 x 75 | 1 | **6ES7148-4PC00-0HA0** | |

## Overview

DC-DC converters transform DC voltage supplied at the input into DC voltage with a higher, equal or lower voltage level.

This module is particularly suitable for using with battery-operated devices. The output voltage of the battery varies depending on the state of charge.

DC/DC converters ensure a stable 12 V DC or 24 V DC supply from connected loads, such as control units (CPUs).

If the power supply is unstable, these modules also serve to stabilize the voltage supply in the downtream branch.

- Reverse polarity protection at the input
- Adjustable output voltage for compensation of voltage drops
- Slim design: 32 mm width
- Wide input voltage range—optimized for operation with 24 V DC and 48 V DC batteries (for all states of charge)
- Permanent overload capability with 1.2 times the rated current up to 40 °C ambient temperature
- High efficiency of 89%–93%
- Minimal no-load losses of max. 1.5 W
- Ambient temperature range from -25 to +70 °C (derating > 60 °C)
- LED display for easy recognition of operating state
- Overvoltage protection on input side through insulation voltage input/output 1.5 kV DC
- CE marking and cULus approval
- Approvals for DNV GL, ABS (available soon)
- Parallel switching for enhanced performance

## Selection and ordering data

| | Version | Inputs<br>Rated voltage $U_{e\ rated}$ | Outputs<br>Rated voltage $U_{a\ rated}$ | Rated current $I_{a\ rated}$ | Dimensions (W x H x D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **12 V power supplies** | | | | | | | | |
| <br>6EP3123-0TA00-0AY0 | **8 A**<br>NEW | 24 V DC<br>(18 ... 32 V DC,<br>14 ... 18 V DC,<br>short-term with<br>derating possble) | 12 V DC<br>± 2% | 4.5 A | 32 x 100 x 100 | 1 | **6EP3123-0TA00-0AY0** | |
| <br>6EP3124-0TA00-0AY0 | **15 A** | 24 V DC<br>(14 ... 32 V DC,<br>derating for<br>14 ... 18 V DC) | 12 V DC<br>± 2% | 8.4 A | 42 x 125 x 120 | 1 | **6EP3124-0TA00-0AY0** | |
| **24 V power supplies** | | | | | | | | |
| <br>6EP3133-0TA00-0AY0 | **5 A**<br>NEW | 24 V DC<br>(18 ... 32 V DC,<br>14 ... 18 V DC,<br>short-term with<br>derating possble) | 24 V DC<br>± 1% | 5.5 A | 32 x 100 x 100 | 1 | **6EP3133-0TA00-0AY0** | |
| <br>6EP3233-0TA00-0AY0 | **5 A**<br>NEW | 48 V DC<br>(32 ... 60 V DC,<br>derating for<br>32 ... 42 V DC,<br>28 ... 32 V DC<br>short-term with<br>derating possible) | 24 V DC<br>± 1% | 2.7 A | 32 x 100 x 100 | 1 | **6EP3233-0TA00-0AY0** | |
| <br>6EP3233-0TA10-0AY0 | **3.5 A NEC Class 2**<br>NEW | 48 V DC<br>(32 ... 60 V DC,<br>derating for<br>32 ... 42 V DC),<br>28 ... 32 V DC<br>short-term with<br>derating possible) | 24 V DC<br>± 1% | 1.9 A | 32 x 100 x 100 | 1 | **6EP3233-0TA10-0AY0** | |
| <br>6EP3133-0TA10-0AY0 | **4 A**<br>NEW | 12 V DC<br>(9 ... 18 V DC) | 24 V DC<br>± 2% | 9 A | 32 x 100 x 100 | 1 | **6EP3133-0TA10-0AY0** | |

## DC/DC Converter

### Selection and ordering data

| | Version | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W x H x D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **24 V power supplies (continued)** | | | | | | | | |
| <br>6EP3134-0TA00-0AY0 | **10 A** | 24 V DC<br>(14 ... 32 V DC, derating for 14 ... 18 V DC) | 24 V DC<br>± 1% | 10.8 A | 42 x 125 x 120 | 1 | **6EP3134-0TA00-0AY0** | |
| <br>6EP3234-0TA00-0AY0 | **10 A** | 48 V DC<br>(14 ... 32 V DC, derating for 14 ... 18 V DC) | 24 V DC<br>± 1% | 5.4 A | 42 x 125 x 120 | 1 | **6EP3234-0TA00-0AY0** | |



## SITOP PSU400M

### Overview

The SITOP PSU400M power supply with a 600 V DC input is suitable as an efficient DC/DC converter for drive and battery systems, wide input and temperature range, high efficiency, slim design and with 50% extra power for 5 s/min.

A voltage surge limiter is available as an accessory as ballast for the PSU400M. This gives the option of connecting the DC/DC converter directly to a DC voltage of up to 900 V DC.

### Selection and ordering data

| | Version | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W x H x D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **24 V power supplies** | | | | | | | | |
| <br>6EP1536-3AA00 | **20 A** | 600 V DC<br>(300 ... 900 V DC) | 24 V DC<br>± 3% | 20 A | 90 x 125 x 125 | 1 | **6EP1536-3AA00** | |

## Overview

The PSU100D switch mode power supplies extend the Siemens power supply portfolio to include single-phase devices for direct wall mounting using screws.

The flat and rugged aluminum enclosure with IP20 degree of protection can be installed in various orientations and is therefore ideal for installation locations with limited space or for mounting in control cabinets and enclosures without a DIN rail.

The low-cost devices meet all the basic requirements for a power supply, typical applications being apparatus, automated equipment and automation solutions.

- For 12-V standard applications from 3 A to 8.3 A
- For 24 V standard applications from 2.1 A to 12.5 A
- Compact metal enclosure
- Wide-range input
- Green LED for "24 V OK"
- Certification in accordance with CE and UL
- Adjustable output voltage from 22 to 28 V or from 11 to 14 V for compensating voltage drops
- Temperature range from -10 °C to +70 °C

## Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **Single-phase, 12 V DC (PSU100D), Wall Mounting** | | | | | | | |
| 6EP1321-1LD00 | **3 A** | 100/240 V AC (85 ... 264 V AC) | 12 V DC ± 2% | 97 x 98 x 38 | ► | **6EP1321-1LD00** | |
| 6EP1322-1LD00 | **8.3 A** | 100/240 V AC (85 ... 264 V AC) | 12 V DC ± 2% | 97 x 158 x 38 | ► | **6EP1322-1LD00** | |
| **Single-phase, 24 V DC (PSU100D), Wall Mounting** | | | | | | | |
| 6EP1331-1LD00 | **2.1 A** | 100/240 V AC (85 ... 264 V AC) | 24 V DC ± 2% | 97 x 128 x 38 | ► | **6EP1331-1LD00** | |
| 6EP1332-1LD00 | **3.1 A** | 100/240 V AC (85 ... 264 V AC) | 24 V DC ± 2% | 97 x 128 x 38 | ► | **6EP1332-1LD00** | |
| 6EP1332-1LD10 | **4.1 A** | 100/240 V AC (85 ... 264 V AC) | 24 V DC ± 2% | 97 x 158 x 38 | ► | **6EP1332-1LD10** | |
| 6EP1333-1LD00 | **6.2 A** | 100/240 V AC (85 ... 264 V AC) | 24 V DC ± 2% | 97 x 178 x 38 | ► | **6EP1333-1LD00** | |
| 6EP1334-1LD00 | **12.5 A** | 100/240 V AC (85 ... 264 V AC) | 24 V DC ± 2% | 105 x 199 x 41 | ► | **6EP1334-1LD00** | |

# SITOP PSU3600

## Special design, special use

### Overview

The SITOP PSU3600 single-phase power supply dual was designed as a two-voltage power supply with two independent outputs in order to allow electronic loads to be supplied with both a positive and negative voltage at the same time. If the two potential-free outputs are connected in series, a positive and negative supply voltage of e.g. ±15 V can be generated.

Or you can leave the independent outputs separate and supply different loads with different nominal voltages, e.g. 24 V and 15 V, with only a single power supply unit due to the wide adjustment range of the output voltage from 12 V to 28 V for each output.

In addition, both outputs are power limited according to NEC Class 2, opening up further application possibilities.

What to do if, for example, you need a power supply unit for 5 V, one for 15 V—and then one for 38.5 V as well? Install a special power supply every time?

SITOP PSU3600 power supply is the clever solution in this case! The output voltage can be flexibly adjusted between 3 and 52 V, with a maximum output power of 120 W. The current limitation can also be set between 2 and 10 A. Since you now only need one standard device for multiple applications, you save a lot of time in procurement and avoid costs for logistics and service.

But conventional use as a power supply is not the only conceivable application. The possibility of dynamically changing the output voltage during operation along with numerous additional functions open up a wide range of potential uses.

### Selection and ordering data

| Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) mm | SD d | Article No. | Price per PU |
|---|---|---|---|---|---|---|
| **2 x 15 V/3.5 A SITOP PSU3600, two outputs** | | | | | | |
| | Limitation of input current harmonics according to IEC 61000-3-2; adjustable output voltage 12 V to 28 V, output max. 2 x 3.5 A or 60 W | | | | | |
| **max. 2 x 3.5 A or 60 W** NEW | 120/230 V AC (85 ... 264 V AC) 110/220 V DC (88 ... 250 V DC) | 2 x 15 V DC ± 1% | 42 x 125 x 125 | ► | **6EP3323-0SA00-0BY0** | |
| **3 ... 52 V/10 A SITOP PSU3600, flexible output 3-52 V** | | | | | | |
| | Limitation of input current harmonics according to IEC 61000-3-2; adjustable output voltage 0 to 52 V, output max. 2-10 A or 120 W | | | | | |
| **max. 2-10 A or 120 W** NEW | 120/230 V AC (85 ... 264 V AC) 110/220 V DC (88 ... 250 V DC) | 24 V DC ± 1% | 42 x 125 x 125 | ► | **6EP3343-0SA00-0AY0** | |

6EP3323-0SA00-0BY0

6EP3343-0SA00-0AY0

## Overview

The SITOP PSU100P 1-phase power supplies for wall mounting, with their rugged design and IP 67 degree of protection are ideal for distributed applications outside the control cabinet.

- 24 V DC/ 5 A and 8 A
- Automatic switchover of the input voltage
- Temperature range from -25 °C to +60 °C without derating
- High efficiency of 93 % for low internal power consumption
- Isolated relay contact "24 V OK"
- Operation display on the device by means of LED (green = "24 V OK", flashing red = overload)

## Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) mm | SD d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **Single-phase, 24 V DC (SITOP PSU100P, IP67), High degree of protection** | | | | | | | |
| 6EP1333-7CA00 | **5 A** | 120/230 V AC, automatic range switching (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 120 x 181 x 60.5 | ► | **6EP1333-7CA00** | |
| 6EP1334-7CA00 | **8 A** | 120/230 V AC, automatic range switching (85 ... 132 V AC, 170 ... 264 V AC) | 24 V DC ± 3% | 120 x 181 x 60.5 | ► | **6EP1334-7CA00** | |

## Overview

The SITOP PSU300E 3-phase power supply is designed with a 5 A output current for 24 V applications with low power requirements. The metal enclosure is only 42 mm wide and does not require any lateral gap to other devices on the DIN rail. This is made possible by the low heat dissipation (90% efficiency). The wide-range input from 320 V to 550 V AC permits mains buffering times of 50 ms and thus allows the supply to be used in unstable three-phase networks, thanks to UL certification also in North America. The removable plug-in terminals simplify the AC and DC connection.

This power supply is optimized for 48 V industrial applications with a focus on single-series and special-purpose machines in the manufacturing industry with power demands up to 5 A.

Thanks to the higher voltage of 48 V (instead of 24 V), the same amount of power can be used to achieve a higher performance – even over longer distances. Examples include low-cost machines for cost-efficient switching of valves and magnets, tool systems with electric controls instead of compressed air supplies, supplies for 48 V DC motors or devices which are connected with long cables.

## Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) mm | SD d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **Three-phase, 24 V DC (SITOP PSU300E), Slim design** | | | | | | | |
| 6EP1433-0AA00 | **5 A** | 400 V 3 AC (320 ... 480 V 3 AC) | 24 V DC ± 3% | 42 x 125 x 125 | ► | **6EP1433-0AA00** | |
| **Single-phase, 48 V DC (SITOP PSU100E), Slim design** | | | | | | | |
| 6EP3344-0SB00-0AY0 | **5 A** | 100/230 V AC (85 ... 132 V AC, 170 ... 264 V AC) | 48 V DC ± 3% | 42 x 125 x 125 | ► | **6EP3344-0SB00-0AY0** | |

# SITOP PSU3800 - Power supplies for charging batteries

## Special design, special use

### Overview

The SITOP PSU3800 3-phase power supplies are suitable for battery charging, thanks to their constant-current characteristic. For other applications, the output characteristic can also be switched to latching shutdown. The three-phase, wide-range input enables them to be used worldwide. The slim design requires little space on the DIN rail. Installation gaps are not required.

Thanks to their constant-current characteristic, SITOP PSU3800 3-phase power supplies (24 V DC/17 A and 30 A/ 40 A) are suitable for battery charging, thanks to their constant-current characteristic. For other applications the output characteristic can also be switched to latching shutdown. The three-phase, wide-range input enables them to be used worldwide. The slim design requires little space on the DIN rail. Installation gaps are not required.

### Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W x H x D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **Three-phase, 12 V DC** | | | | | | | |
| 6EP3424-8UB00-0AY0 | **20 A** | 400-500 V 3 AC (320 ... 575 V 3 AC) | 12 V DC ± 3% | 70 x 125 x 125 | ► | **6EP3424-8UB00-0AY0** | |
| **Three-phase, 24 V DC** | | | | | | | |
| 6EP3436-8UB00-0AY0 | **17 A** | 400-500 V 3 AC (320 ... 575 V 3 AC) | 24 V DC ± 3% | 70 x 125 x 125 | ► | **6EP3436-8UB00-0AY0** | |
| 6EP3437-8UB00-0AY0 | **30 A, 40 A** | 400-500 V 3 AC (320 ... 575 V 3 AC) | 24 V DC ± 3% | 135 x 145 x 150 | ► | **6EP3437-8UB00-0AY0** | |

# SITOP DC-UPS Uninterruptible Power Supply

## DC-UPS with capacitors



### Overview

To combat prolonged power failures, the 24 V SITOP power supply units can be upgraded into a 24 V DC uninterruptible power supply.

SITOP offers two systems with different energy stores for this purpose:

- Capacitors for 24 V buffering in the minute range
- Battery modules which provide a buffer in the hours range

The DC UPS systems are used, for example, in machine tool manufacturing, in the textile industry, on all types of production lines and filling plants, and in conjunction with 24 V industrial PCs. They prevent the negative consequences which often result from mains failures.

To bridge brief power failures, 24 V SITOP power supply units can be expanded with a SITOP UPS500 uninterruptible DC power supply (DC-UPS).

In PC-based automation solutions, the highly capacitive double-layer capacitors of the SITOP UPS500 supply enough energy to safeguard operating and application data and close software applications in a defined manner.

- Buffering into the minutes range depending on the load current and DC-UPS configuration
- SITOP UPS500S basic units for standard mounting rails can be combined with up to three UPS501S expansion modules
- SITOP UPS500P in degree of protection IP65 for distributed applications
- Absolutely maintenance-free double-layer capacitors
- Short charging times
- Long service life even at high ambient temperatures
- No ventilation of the installation location required
- USB interface for PC communication
- Easy PC integration thanks to free software tool

| | **SITOP UPS500S/UPS 501S configurations** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Basic unit | 2.5 kWs | 5 kWs | 2.5 kWs | 5 kWs | 2.5 kWs | 5 kWs | 2.5 kWs | 5 kWs |
| Expansion modules | -- | -- | 1 x 5 kWs | 1 x 5 kWs | 2 x 5 kWs | 2 x 5 kWs | 3 x 5 kWs | 3 x 5 kWs |
| Total energy | 2.5 kWs | 5 kWs | 7.5 kWs | 10 kWs | 12.5 kWs | 15 kWs | 17.5 kWs | 20 kWs |
| **Load current** | **Buffer times** | | | | | | | |
| 0.5 A | 134 s | 236 s | 390 s | 478 s | 632 s | 748 s | 851 s | 1 007 s |
| 0.8 A | 90 s | 167 s | 266 s | 346 s | 440 s | 527 s | 580 s | 706 s |
| 1 A | 75 s | 138 s | 219 s | 296 s | 365 s | 414 s | 490 s | 572 s |
| 2 A | 38 s | 76 s | 122 s | 156 s | 203 s | 230 s | 265 s | 306 s |
| 3 A | 26 s | 52 s | 82 s | 106 s | 136 s | 159 s | 186 s | 213 s |
| 4 A | 19 s | 39 s | 61 s | 81 s | 101 s | 120 s | 139 s | 160 s |
| 5 A | 15 s | 31 s | 49 s | 65 s | 81 s | 95 s | 111 s | 130 s |
| 6 A | 12 s | 26 s | 40 s | 55 s | 67 s | 80 s | 94 s | 106 s |
| 7 A | 10 s | 21 s | 34 s | 47 s | 58 s | 69 s | 81 s | 82 s |
| 8 A | 8 s | 18 s | 29 s | 40 s | 50 s | 59 s | 69 s | 79 s |
| 10 A | 6 s | 15 s | 23 s | 32 s | 39 s | 47 s | 54 s | 62 s |
| 12 A | 4 s | 12 s | 19 s | 26 s | 32 s | 38 s | 44 s | 52 s |
| 15 A | 3 s | 9 s | 14 s | 20 s | 25 s | 30 s | 35 s | 40 s |
| **Charging current** | **Charging times** | | | | | | | |
| 2 A | 54 s | 120 s | 158 s | 223 s | 263 s | 318 s | 355 s | 417 s |
| 1 A | 110 s | 205 s | 311 s | 425 s | 503 s | 625 s | 695 s | 816 s |

## Selection and ordering data

| Version | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W × H × D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **SITOP UPS500S** | | | | | | | |
| ***Basic units 15 A*** | | | | | | | |
| **2.5 kWs** | 24 V DC (22 ... 29 V DC) Infeed through SITOP 24 V DC | 24 V DC ± 3% | 15.2 A + approx. 2.3 A (charging mode) | 120 x 125 x 125 | 1 | **6EP1933-2EC41** | |
| **5 kWs** | | | | 120 x 125 x 125 | 1 | **6EP1933-2EC51** | |
| ***SITOP UPS501 expansion module*** | | | | | | | |
| **5 kWs** | Infeed through basic unit | -- | -- | 70 x 125 x 125 | 1 | **6EP1935-5PG01** | |

6EP1933-2EC.1, 6EP1935-5PG01

Note:

For DC-UPS with battery modules, see from page 15/32.

# SITOP DC-UPS Uninterruptible Power Supply

## SITOP UPS1600 DC-UPS modules



### Overview

To bridge longer power failures, 24 V SITOP power supply units can be expanded with a SITOP UPS1600 uninterruptible DC power supply (DC-UPS) and SITOP UPS1100 battery modules.

Intelligent battery management using Energy Storage Link automatically detects the UPS1100 energy storage device, and ensures optimum temperature-controlled charging and continuous monitoring. The compact DC-UPS modules have overload capability, for example, to supply the inrush current of industrial PCs. They enable starting from the battery for stand-alone operation.

The DC-UPS communicates openly through USB or Ethernet/PROFINET and can be easily integrated into the PC or PLC world. Complete integration in TIA offers user-friendly engineering in the TIA Portal and is supported by ready-to-use function blocks for S7 user programs and WinCC faceplates for rapid visualization.

Use of the SITOP UPS manager also enables easy monitoring and configuration in PC systems, e.g. the shutting down of several PCs in accordance with the master-slave principle.

- 24 V buffering for a few hours for continuing processes
- Open communication via USB or two Ethernet/PROFINET ports
- High overload capability for mains and buffering operation
- Intelligent battery management using Energy Storage Link: Automatic detection of the battery modules and selection of the optimum, temperature-controlled charging curve, monitoring of readiness, incoming cable, -aging and charge status
- All diagnostic data and alarm messages are available via USB and Ethernet/PROFINET
- Integrated OPC UA server facilitates flexible, multi-vendor communication with other systems (versions with Ethernet/PROFINET)
- Remote monitoring via integrated web server
- SITOP UPS Manager (free software download) supports configuration and monitoring on PC-based systems, see https://support.industry.siemens.com/cs/ww/en/view/75854607
- Complete integration in TIA:
  - User-friendly engineering in the TIA Portal, see https://support.automation.siemens.com/WW/view/en/75854606
  - SIMATIC S7 function blocks for integration in user programs (free download), see https://support.industry.siemens.com/cs/ww/en/view/78817848
  - Ready-to-use "faceplates" for SIMATIC Panels and SIMATIC WinCC (free download), see https://support.industry.siemens.com/cs/ww/en/view/78817848

### Selection and ordering data

| | Rated current $I_{a\ rated}$ | Inputs Rated voltage $U_{e\ rated}$ | Outputs Rated voltage $U_{a\ rated}$ | Dimensions (W × H × D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| | | | | mm | d | | |
| **SITOP UPS1600** | | | | | | | |
| 6EP4134-3AB00-.AY0 | **10 A** | 24 V DC (21 ... 29 V DC) | 24 V DC | 50 x 125 x 125 | | | |
| | • SITOP UPS1600 | | | | 3 | **6EP4134-3AB00-0AY0** | |
| | - With USB interface | | | | 3 | **6EP4134-3AB00-1AY0** | |
| | - With Ethernet/PROFINET | | | | 3 | **6EP4134-3AB00-2AY0** | |
| 6EP4136-3AB00-.AY0 | **20 A** | 24 V DC (21 ... 29 V DC) | 24 V DC | 50 x 125 x 125 | | | |
| | • SITOP UPS1600 | | | | 3 | **6EP4136-3AB00-0AY0** | |
| | - With USB interface | | | | 3 | **6EP4136-3AB00-1AY0** | |
| | - With Ethernet/PROFINET | | | | 3 | **6EP4136-3AB00-2AY0** | |
| 6EP4137-3AB00-.AY0 | **40 A** | 24 V DC (21 ... 29 V DC) | 24 V DC | 70 x 125 x 150 | | | |
| | • SITOP UPS1600 | | | | 3 | **6EP4137-3AB00-0AY0** | |
| | - With USB interface | | | | 3 | **6EP4137-3AB00-1AY0** | |
| | - With Ethernet/PROFINET | | | | 3 | **6EP4137-3AB00-2AY0** | |

# SITOP DC-UPS with Battery Modules

## SITOP UPS1100 battery modules

### Overview

SITOP UPS1100 maintenance-free battery modules with 1.2 Ah to 12 Ah for SITOP UPS1600 DC-UPS modules. The intelligent UPS1600 battery management charges the UPS1100 with the optimal, temperature-controlled charging characteristics and monitors the status (operating data and diagnostics information) via the energy storage link of the connected battery modules.

For longer buffer times, up to six battery modules can be connected in parallel. Mounting is on a standard mounting rail or directly on a wall.

| Battery modules | SITOP UPS1100 24 V/1.2 Ah<br>6EP4131-0GB00-0AY0 | SITOP UPS1100 24 V/2.5 Ah high temperature<br>6EP4132-GB00-0AY0 | SITOP UPS1100 24 V/3.2 Ah<br>6EP4133-0GB00-0AY0 | SITOP UPS1100 24 V/5 Ah LiFePo<br>6EP4133-0JB00-0AY0 | SITOP UPS1100 24 V/7 Ah<br>6EP4134-0GB00-0AY0 | SITOP UPS1100 24 V/12 Ah<br>6EP4135-0GB00-0AY0 |
|---|---|---|---|---|---|---|
| **Load current** | **Buffering times[1)]** | | | | | |
| 1 A | 27 min | 1 h 30 min | 2 h | 4 h | 5 h | 8 h 30 min |
| 2 A | 14 min | 50 min | 1 h | 2 h 10 min | 2 h 40 min | 4 h 30 min |
| 3 A | 10 min | 36 min | 45 min | 1 h 30 min | 1 h 50 min | 3 h 10 min |
| 4 A | 7 min 50 s | 26 min | 34 min | 1 h 10 min | 1 h 20 min | 2 h 30 min |
| 6 A | 4 min 40 s | 15 min | 21 min | 48 min | 48 min | 1 h 30 min |
| 8 A | 3 min | 11 min | 15 min | 37 min | 34 min | 1 h |
| 10 A | 1 min 30 s | 6 min 40 s | 9 min 30 s | 26 min | 21 min | 42 min |
| 12 A | -- | 5 min 40 s | 8 min 10 s | 23 min | 19 min | 37 min |
| 14 A | -- | 4 min 40 s | 6 min 50 s | 21 min | 16 min | 32 min |
| 16 A | -- | 3 min 40 s | 5 min 30 s | 18 min | 13 min | 27 min |
| 20 A | -- | 1 min 40 s | 2 min 50 s | 13 min | 7 min 50 s | 17 min |
| 30 A | -- | 3 min 20s, 2x[2)] | -- | 17 min, 2x[2)] | 3 min 50 s | 10 min |
| 40 A | -- | 3 min 20s, 2x[2)] | -- | 13 min, 2x[2)] | 1 min 40 s | 5 min 30 s |
| **Ambient temperature** | **Service life (with drop to approx. 80% of original capacity), depending on battery temperature, approx.** | | | | | |
| +20 °C | 4 years | 10 years | 4 years | 15 years | 4 years | 4 years |
| +30 °C | 2 years | 7 years | 2 years | 10 years | 2 years | 2 years |
| +40 °C | 1 year | 3 years | 1 year | 9 years | 1 year | 1 year |
| +50 °C | 0.5 years | 1.5 years | 0.5 years | 2 years | 0.5 years | 0.5 years |
| +60 °C | — | 1 year | — | — | — | — |

1) The determination of the buffer times is based on the discharge period of new and completely charged battery modules with a battery temperature of not less than +25 °C until shutdown of the DC UPS (19 V).

2) With two parallel connected UPS1100 battery modules and UPS1600 40 A.

Buffer times for additional values can be determined using the SITOP Selection Tool, see siemens.com/sitop-selection-tool.

# SITOP DC-UPS with Battery Modules

## SITOP UPS1100 battery modules

### Selection and ordering data

| | Rated current $I_{a\ rated}$ | Dimensions (W × H × D) | SD | Article No. | Price per PU |
|---|---|---|---|---|---|
| | | mm | d | | |
| **SITOP UPS1100 battery modules** | | | | | |
| 6EP4131-0GB00-0AY0 | ***For UPS1100 10 A*** | | | | |
| | **1.2 Ah** | 89 × 130 × 107 | 3 | **6EP4131-0GB00-0AY0** | |
| 6EP4133-0JB00-0AY0 | ***For UPS1100 10 A and 20 A*** | | | | |
| | **3.2 Ah** | 190 × 169 × 79 | 3 | **6EP4133-0GB00-0AY0** | |
| | **5 Ah LiFePo** | 189 × 186 × 113 | 1 | **6EP4133-0JB00-0AY0** | |
| 6EP4134-0GB00-0AY0 | ***For UPS1100 10 A, 20 A and 40 A*** | | | | |
| | **7 Ah** | 186 × 186 × 110 | 3 | **6EP4134-0GB00-0AY0** | |
| 6EP4135-0GB00-0AY0 | ***For UPS1100 10 A, 20 A and 40 A*** | | | | |
| | **12 Ah** | 253 × 186 × 110 | 3 | **6EP4135-0GB00-0AY0** | |
| **SITOP UPS1100 battery modules, high-temperature** | | | | | |
| 6EP4132-0GB00-0AY0 | ***For UPS1600 10 A and 20 A*** | | | | |
| | **2.5 Ah** | 265 × 115 × 76 | 3 | **6EP4132-0GB00-0AY0** | |

## Overview

A power supply unit on its own cannot guarantee fault-free 24 V supply. Power failures, extreme variations in the mains voltage, or a faulty load can bring plant operation to a standstill and cause high costs. The expansion modules offer extensive protection against malfunctions on the primary and secondary sides, right through to complete all-round protection.

The redundancy module disconnects two 24 V power supply units of the same type, enabling the configuration of a redundant 24 V power supply. If a power supply fails, the 24 V supply is reliably maintained. Signaling takes place via LED as well as signaling contacts whereby the switching threshold for LED and signaling contacts can be adjusted.

For the redundant configuration, power supplies up to:

- 5 A → one redundancy module with 10 A summation current
- 10 A → two redundancy modules with 10 A summation current
- 20 A → one redundancy module with 40 A summation current
- 40 A → two redundancy modules with 40 A summation current

The buffer module bridges brief mains failures for up to several seconds for SITOP smart or SITOP modular 24 V power supply units. Maintenance-free capacitors are used as energy stores.

Buffering times:

- 200 ms at 40 A,
- 400 ms at 20 A,
- 800 ms at 10 A

To increase the buffer time (max. 10 s), up to 8 buffer modules can be connected in parallel. To bridge longer mains failures we recommend using uninterruptible power supplies with capacitors (up into the minutes range) or with battery modules (up into the hours range).

## Selection and ordering data

| | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W × H × D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **SITOP RED1200 redundancy module** | | | | | | | |
| <br>6EP4346-7RB00-0AX0 | 12/24/48 V DC<br>(3 ... 100 V DC)<br>NEW | | 20 A<br>(Summation current) | 35 x 135 x 125 | 1 | **6EP4346-7RB00-0AX0** | |
| <br>6EP4347-7RB00-0AX0 | 12/24/48 V DC<br>(3 ... 100 V DC)<br>NEW | | 40 A<br>(Summation current) | 45 x 135 x 125 | 1 | **6EP4347-7RB00-0AX0** | |
| **SITOP PSE202U redundancy module** | | | | | | | |
| <br>6EP1964-2BA00 | 24 V DC<br>(19 ... 29 V DC) | | 10 A<br>(Summation current) | 30 x 80 x 100 | 1 | **6EP1964-2BA00** | |
| <br>6EP1962-2BA00 | 24 V DC<br>(19 ... 29 V DC) | | 3.5 A<br>(NEC Class 2) | 30 x 80 x 100 | 1 | **6EP1962-2BA00** | |
| <br>6EP1961-3BA21 | 24 V DC<br>(24 ... 28.8 V DC) | | 40 A<br>(Summation current) | 70 x 125 x 125 | 1 | **6EP1961-3BA21** | |

## Overview

The SITOP PSE200U selectivity modules and the SITOP select diagnostics module are used in combination with 24 V power supplies for distributing the load current among several current branches and for monitoring the individual partial currents.

Faults caused by overload or short circuits in individual branches are detected and selectively switched off so that the remaining load current paths remain unaffected. Rapid fault diagnosis is achieved and downtimes are minimized.

Signaling is performed via a group alarm contact or single-channel signaling. The selectivity modules with single-channel signaling output the status of the four channels cyclically by means of a serial code which can be read in by a digital PLC input.

Function blocks for SIMATIC S7-1500/1200/300/400 and for SIMOTION CPUs are available free of charge for the evaluation, see https://support.industry.siemens.com/cs/ww/en/view/61450284

## Selection and ordering data

| | Inputs<br>Rated voltage<br>$U_{e\ rated}$ | Outputs<br>Rated voltage<br>$U_{a\ rated}$ | Rated current<br>$I_{a\ rated}$ | Dimensions (W × H × D)<br>mm | SD<br>d | Article No. | Price per PU |
|---|---|---|---|---|---|---|---|
| **SITOP SEL1200 selectivity module with switching characteristic** | | | | | | | |
| <br>6EP4438-7FB00-3DX0 | 24 V DC<br>(22 ... 30 V DC)<br>NEW | | 8 x 10 A<br>(2 ... 10 A) | 43 x 135 x 125 | 1 | **6EP4438-7FB00-3DX0** | |
| **SITOP SEL1400 selectivity module with current limiting characteristic** | | | | | | | |
| <br>6EP4438-7EB00-3DX0 | 24 V DC<br>(22 ... 30 V DC)<br>NEW | | 8 x 10 A<br>(2 ... 10 A) | 43 x 135 x 125 | 1 | **6EP4438-7EB00-3DX0** | |
| **SITOP PSE200U selectivity modules with summation signal** | | | | | | | |
| <br>6EP1961-2BA.1 | 24 V DC<br>(22 ... 30 V DC) | $U_e$ - 0.2 V | 4 x 3 A<br>(0.5 ... 3 A) | 72 x 80 x 72 | 1 | **6EP1961-2BA11** | |
| | 24 V DC<br>(22 ... 30 V DC) | | 4 x 3 A<br>(0.5 ... 3 A<br>NEC Class 2) | 72 x 80 x 72 | 1 | **6EP1961-2BA51** | |
| | 24 V DC<br>(22 ... 30 V DC) | $U_e$ - 0.2 V | 4 x 10 A<br>(3 ... 10 A) | 72 x 80 x 72 | 1 | **6EP1961-2BA21** | |
| **SITOP PSE200U selectivity modules with single-channel signaling** | | | | | | | |
| <br>6EP1961-2BA.1 | 24 V DC<br>(22 ... 30 V DC) | | 4 x 3 A<br>(0.5 ... 3 A) | 72 x 80 x 72 | 1 | **6EP1961-2BA31** | |
| | 24 V DC<br>(22 ... 30 V DC) | | 4 x 3 A<br>(0.5 ... 3 A<br>NEC Class 2) | 72 x 80 x 72 | 1 | **6EP1961-2BA61** | |
| | 24 V DC<br>(22 ... 30 V DC) | | 4 x 10 A<br>(3 ... 10 A) | 72 x 80 x 72 | 1 | **6EP1961-2BA41** | |
| **SITOP select diagnostics modules** | | | | | | | |
| <br>6EP1961-2BA00 | 24 V DC<br>(22 ... 30 V DC) | $U_e$ - 0.2 V | 4 x 10 A<br>(2 ... 10 A) | 72 x 90 x 90 | ▶ | **6EP1961-2BA00** | |
| **Buffer modules** | | | | | | | |
| <br>6EP1961-3BA01 | 24 V DC<br>(24 .. 28.8 V DC) | | 40 A | 70 x 125 x 125 | 1 | **6EP1961-3BA01** | |
| **Buffer modules** | | | | | | | |
| <br>6EP4638-6LB00-0AY0 | 100/240 V AC<br>(85 .. 264 V AC) | | 5 A | 18 x 90 x 58 | 1 | **6EP4638-6LB00-0AY0** | |

## Overview

Particularly harsh industrial environments demand products with special characteristics - products that are more rugged than standard products.

Siemens offers the perfect answer to these requirements with SIPLUS extreme.
SIPLUS product variants are based on the SITOP, LOGO!Power standard power supplies and the power supplies for SIMATIC S7 and expansion modules, and feature the following characteristics:

- Extended ambient temperature range (e.g. -40 … +70 °C) and conformal coating as protection against extreme and difficult conditions and contact with substances
- DIN EN 50155:
  Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category)

| Ambient conditions | |
|---|---|
| Conformal coating | Coating of the printed circuit boards and the electronic components |
| Technical specifications | The technical data of the standard product applies except for the ambient conditions. |
| Relative humidity | 100%, condensation/frost permitted.<br>No commissioning in bedewed state. |
| Biologically active substances, compliance with EN 60721-3-3 | Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation! |
| Chemically active substances, compliance with EN 60721-3-3 | Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation! |
| Mechanically active substances, compliance with EN 60721-3-3 | Class 3S4 incl. conductive sand, dust.<br>The supplied plug covers must remain in place over the unused interfaces during operation! |
| Air pressure (depending on the highest positive temperature range specified) | 1080 ... .795 hPa (-1000 ... +2000 m)<br>see ambient temperature range<br>795 ... 658 hPa (+2000 ... +3500 m)<br>derating 10 K<br>658 … 540 hPa (+3500 … +5000 m)<br>derating 20 K |

For further technical specifications, see the standard products, or visit www.siemens.com/siplus-extreme

| Ordering data | Article No. |
|---|---|
| *SIPLUS LOGO!Power* | |
| **SIPLUS LOGO!Power 24 V 1.3 A**<br>Input: 100 ... 240 V AC<br>Output: 24 V DC, 1.3 A<br>Extended temperature range and exposure to media | **6AG1331-1SH03-7AA0** |
| **SIPLUS LOGO!Power 24 V 2.5 A**<br>Input: 100 ... 240 V AC<br>Output: 24 V DC, 2.5 A<br>Extended temperature range and exposure to media | **6AG1332-1SH43-7AA0** |
| **SIPLUS LOGO!Power 24 V 4 A**<br>Input: 100 ... 240 V AC<br>Output: 24 V DC, 4 A<br>Extended temperature range and exposure to media | **6AG1332-1SH52-7AA0** |
| *SIPLUS smart* | |
| **SIPLUS PSU100S 24 V/10 A**<br>Stabilized power supply<br>Input: 120/230 V AC<br>Output: 24 V DC/10 A<br>Extended temperature range and Exposure to media | **6AG1334-2BA20-4AA0** |
| **SIPLUS PSU300S 3-phase, 24 V DC/10 A**<br>Stabilized power supply<br>Input: 400 … 500 V 3 AC<br>Output: 24 V DC/20 A<br>Exposure to media | **6AG1434-2BA10-7AA0** |
| **SIPLUS PSU300S 3-phase, 24 V DC/20 A**<br>Stabilized power supply<br>Input: 400 … 500 V 3 AC<br>Output: 24 V DC/20 A<br>Extended Temperature range and exposure To media | **6AG1436-2BA10-7AA0** |
| *SIPLUS modular* | |
| **SIPLUS Modular 40 A**<br>Stabilized power supply<br>Input: 120/230 V AC<br>Output: 24 V DC/40 A | |
| • Exposure to media | **6AG1337-3BA00-4AA0** |
| • Extended temperature range and exposure to media | **6AG1337-3BA00-7AA0** |
| **SIPLUS PS PSU200M 1-phase and 2-phase, 24 V DC/5 A**<br>Stabilized power supply<br>Input:<br>120 ... 230 V/230 … 500 V AC | |
| • Output: 24 V DC/5 A | **6AG1333-3BA10-7AA0** |
| • Output: 24 V DC / 10 A | **6AG1334-3BA10-7AA0** |
| Exposure to media | |
| **SIPLUS PS PSU8200 3-phase, 24 V DC/40 A**<br>Stabilized power supply<br>Input: 400 … 500 V 3 AC<br>Output: 24 V DC/20 A<br>Exposure to media | **6AG1437-3BA10-7AA0** |

| Ordering data | Article No. |
|---|---|
| *SIPLUS S7 design* | |
| *For industrial applications with particularly demanding ambient conditions* | |
| **SIPLUS S7-300 PS 305**<br>Input: 24 … 110 V DC<br>Output: 24 V DC/2 A<br>Extended temperature range and exposure to media | **6AG1305-1BA80-2AA0** |
| **SIPLUS S7-300 PS 305 5 A**<br>Incl. connection bracket<br>Input: 120/230 V AC<br>Output: 24 V DC/5 A<br>Extended temperature range and exposure to media | **6AG1307-1EA01-7AA0** |
| **SIPLUS S7-300 PS 305 10 A**<br>Incl. connection bracket<br>Input: 120/230 V AC<br>Output: 24 V DC/10 A<br>(dimensions 80 x 125 x 120)<br>Extended temperature range and exposure to media | **6AG1307-1KA02-7AA0** |
| *For rolling stock railway applications* | |
| **SIPLUS S7-300 PS 305**<br>Input: 24 … 110 V DC<br>Output: 24 V DC/2 A<br>Conforms to EN 50155<br>Extended temperature range and exposure to media | **6AG1305-1BA80-2AA0** |
| **SIPLUS S7-1200 PM 1207 power supply**<br>Input: 120/230 V AC<br>Output: 24 V DC, 2.5 A;<br>Derating from + 55 °C to + 70 °C<br>1.2 A output current | |
| • Ambient temperature -25 ... +70 °C | **6AG1332-1SH71-7AA0** |
| • Ambient temperature 0... +60 °C | **6AG1332-1SH71-4AA0** |
| Extended temperature range and exposure to media | |
| **SIPLUS S7-1500 PM 1507**<br>Input: 120/230 V AC | |
| • Output: 24 V DC, 3 A | **6AG1332-4BA00-7AA0** |
| • Output: 24 V DC, 8 A | **6AG1333-4BA00-7AA0** |
| Extended temperature range and exposure to media | |
| **SIPLUS S7-1500 system power supply**<br>For supplying the backplane bus of the S7-1500 | |
| • 24 V DC input voltage, power 25 W | **6AG1505-0KA00-7AB0** |
| • 24/48/60 V DC input voltage, power 60 W | **6AG1505-0RA00-7AB0** |
| • 120/230 V AC input voltage, power 60 W | **6AG1507-0RA00-7AB0** |
| Extended temperature range and exposure to media | |

| Ordering data | Article No. |
|---|---|
| *SIPLUS DC/DC converter* | |
| **SIPLUS PS 24V/0.375A**<br>DC/DC stabilized power supply<br>Input: 48 … 220 V DC<br>Output: 24 V DC/0.375 A<br>condensation permissible<br>Exposure to media | **6AG1931-2BA00-3AA0** |
| *SIPLUS add-on modules* | |
| **SIPLUS PS E202U redundancy module**<br>Input/output: 24 V DC/40 A<br>suitable for decoupling two SITOP power supplies with a maximum of 20 A output current | |
| • Extended temperature range and exposure to media | **6AG1961-3BA21-7AX0** |
| • Exposure to media | **6AG1961-3BA21-4AX0** |
| **SIPLUS PSE200U 3 A**<br>4-channel selectivity module<br>Input: 24 V DC<br>Output: 24 V DC/3A per channel<br>output current adjustable 0.5 ... 3 A<br>Exposure to media | **6AG1961-2BA31-7AA0** |
| **SIPLUS PSE200U 10 A**<br>4-channel selectivity module<br>Input: 24 V DC<br>Output: 24 V DC/10 A per channel<br>output current adjustable 3 ... 10 A<br>Exposure to media | **6AG1961-2BA41-7AA0** |

| | Article No. |
|---|---|
| **SIPLUS modular buffer module**<br>For 6AG1961-3BA01-7AA0;<br>buffer time 100 ms to 10 s,<br>dependent on load current | **6AG1961-3BA01-7AA0** |
| **SIPLUS PS signaling module modular**<br>For 6AG1XXX-3BA00 -XXXX<br>signaling contacts:<br>Output voltage ok,<br>operational availability ok,<br>remote ON/OFF<br>Extended temperature range and exposure to media | **6AG1961-3BA10-7AA0** |
| **SIPLUS SITOP signaling module**<br>Hard gold-plated contacts;<br>for 6AG1XXX-3BA00 -XXXX<br>signaling contacts:<br>Output voltage ok,<br>operational availability ok,<br>remote ON/OFF | **6AG1961-3BA10-6AA0** |
| *SIPLUS DC-UPS, uninterruptible power supply* | |
| **SIPLUS PS DC UPS module 15 A**<br>Uninterruptible power supply<br>without interface<br>Input: 24 V DC/16 A,<br>Output: 24 V DC/15 A<br>Extended temperature range and exposure to media | **6AG1931-2EC21-2AA0** |
| **SIPLUS PS DC UPS module 40 A**<br>Uninterruptible power supply<br>without interface;<br>Input: 24 V DC/43 A,<br>Output: 24 V DC/40 A<br>Extended temperature range and exposure to media | **6AG1931-2FC21-7AA0** |

# Power supplies for AS interface

## 1-phase / 1-2-phase / DC, AS-i 30 V (with data decoupling)



### Overview

AS-Interface power supply unit for 3 A

AS-Interface power supply units feed 30 V DC into the AS-Interface cable and supply the AS-Interface components. They contain performance-optimized data decoupling for separating communication signals and supply voltage. As the result, AS-Interface is able to convey both data and power along a single line. The power packs are overload and short-circuit proof.

#### *Dimensions*

AS-Interface power supply units have compact dimensions in widths of 50 / 70 / 120 mm. No clearance to other devices is required when mounting.

#### *Features*

- Higher rating: The power supply units deliver currents of 2.6 to 8 A.
- Integrated data decoupling: As the result, AS-Interface is able to convey both data and power along a single line.
- Integrated ground-fault detection: The power supply units perform the reliable detection and signaling of ground faults according to IEC 60204-1. The AS-Interface voltage can be disconnected automatically in the event of a ground fault.
- Integrated overload detection: An output overload is identified and signalized over a diagnostics LED.
- Diagnostics memory: Any ground faults or overloads on the output side are stored in a diagnostics memory until the device is RESET.
- Remote RESET and remote signaling: A ground fault can be signalized and evaluated by relay contacts over a central control and/or indicator light.
- Diagnostics LEDs: Three different LEDs indicate the status of the AS-Interface power supply locally at the power supply unit.
- Ultra-wide input range / 2-phase connection: The ultra-wide input range of 120 to 500 V of the 8 A version means that the supply units can be used in virtually any network worldwide. In addition, this version dispenses with the need for an N conductor as the device can be connected directly between 2 phases of a network.
- Operation with 24 V DC: The 3 A power supply unit is also available as a version with a 24 V DC input. This power supply unit is suitable for use in battery-operated plants or plants with uninterrupted power supply (UPS).
- Removable terminal blocks in spring-type connection: The power supply units are equipped with three removable terminal blocks for simple device replacement: for the input side, for the output side and for Signal/RESET connections.

### Benefits

- Complete solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Only AS-i masters and AS-i slaves need to be connected to the AS-Interface cable to operate AS-Interface
- Compact, room-saving footprint
- Reliable power supply even for large numbers of AS-Interface modules with high power requirements
- Increased safety and savings on additional components owing to the integrated ground fault and overload detection
- Fast fault detection and reduced downtimes thanks to diagnostics memory, remote signaling and remote RESET
- Reduced downtimes as the result of removable terminal blocks which enable the fast exchanging of devices
- Ultra-wide input range of the 8 A version permits single-phase and two-phase operation and removes the need for an N conductor
- Can be used world-wide thanks to, for example, UL/CSA approval (UL 508)
- With the 2.6 A version, the output power is restricted to max. 100 W for use in Class 2 circuits in accordance with NEC (National Electrical Code)

### Ordering data

| | Article No. |
|---|---|
| **AS-Interface power supply units, IP20**<br>• AS-i single output 30 V DC<br>• With integrated ground-fault detection<br>• With spring-type terminals, removable terminals,<br>• 2.6 A version with output power restricted to max. 100 W (for Class 2 circuits in accordance with NEC)<br>Dimensions:<br>Width:<br>50 mm (2.6 A / 3 A),<br>70 mm (5 A),<br>120 mm (8 A);<br>Height: 125 mm;<br>Depth: 125 mm | |
| • Output current: 2.6 A / max. 100 W<br>Input voltage: 120 / 230 V AC (selectable) | **3RX9501-2BA00** |
| • Output current: 3 A<br>Input voltage: 120 / 230 V AC (selectable) | **3RX9501-0BA00** |
| • Output current: 3 A<br>Input voltage: 24 V DC | **3RX9501-1BA00** |
| • Output current: 5 A<br>Input voltage: 120 / 230 V AC (selectable) | **3RX9502-0BA00** |
| • Output current: 8 A<br>Input voltage: 120 / 230 ... 500 V AC (selectable) | **3RX9503-0BA00** |

### More information

More information on AS-Interface, see Catalog IC 10, Chapter 2 "Industrial Communication".

## Overview

PSN130S 30 V power supply units for 3 A, 4 A and 8 A

The PSN130S 30 V power supplies feed 30 V DC into the AS-Interface cable and supply the AS-Interface components, but do not include data decoupling. Additional data decoupling units are needed to separate communication signals and supply voltage, see "S22.5 Data Decoupling Modules" or "DCM 1271 Data Decoupling Module", see Accessories, page 14/4

The power supplies are overload and short-circuit proof.

### *Dimensions*

The 30 V power supply units have compact dimensions in widths of 50 and 70 mm. No distances to other devices must be observed during the installation.

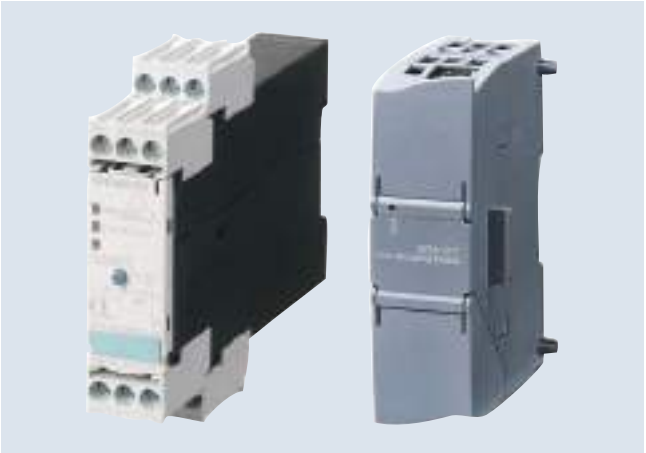
### *Features*

- Primary-clocked power supplies for connecting to a single-phase AC power supply system
- Power for currents of 3 A, 4 A and 8 A
- The output voltage is floating, and resistant to short-circuits and no-load operation. In the event of an overload, the output voltage will be reduced or switched off. After a short-circuit or overload the devices will start up again automatically.
- In the event of a device fault, the output voltage will be limited to max. 37 V.
- Modular installation devices in degree of protection IP20 and safety class I
- Diagnostics: With an output voltage > 26.5 V DC, the green LED (30V O.K.) is lit and the signaling contact 13-14 is closed.

## Benefits

- Low-cost alternative solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Cost advantage particularly for multiple networks
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with high power requirements
- Can be used worldwide thanks to, for example, UL/CSA approval (UL 508)

## Application



Data decoupling modules S22.5 and DCM 1271

A data decoupling module is also required in order to use a PSN130S 30 V power supply unit for AS-Interface.

With the aid of the data decoupling module, the AS-Interface network can be supplied with 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.

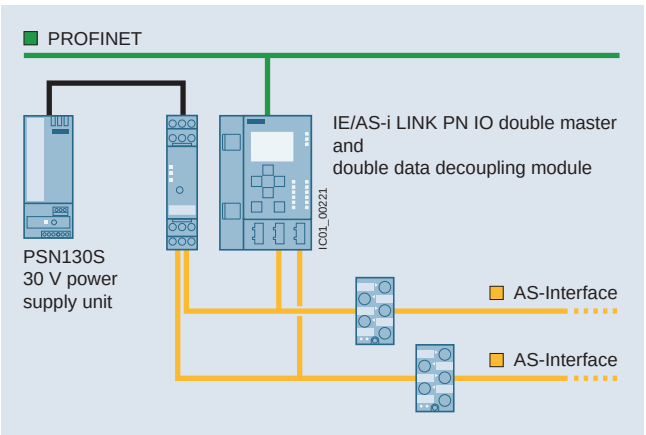
Alternatively, it is also possible to use a standard 24 V DC power supply unit (AS-i Power24V). However, in this case please note that all components involved must be designed for the reduced voltage and that the maximum length of an AS-i Power24V network is limited to 50 m.

The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 mVpp and in the event of a fault, must limit the output voltage to a maximum of 40 V.

The combination of data decoupling modules and standard power supply units is therefore a cost-efficient alternative to the service-proven AS-Interface power supply units.

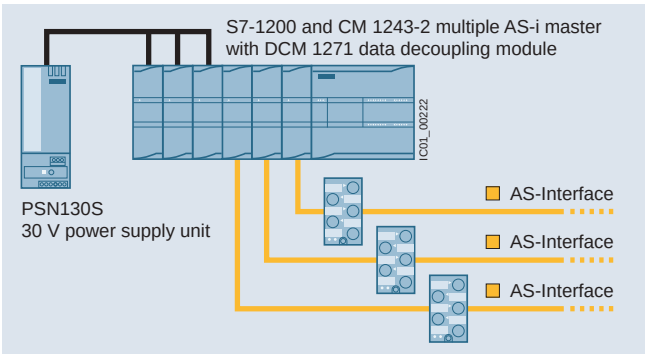
The quality of the data signals and the reliable operation of the AS-i network are not negatively affected as the result.

### *Configuration examples of AS-Interface networks with a 30 V power supply unit*




Configuration of AS-Interface multiple networks, each with one PSN130S 30 V power supply unit (examples with schematic representation): Double network based on S22.5 double data decoupling module and double master IE/AS-i LINK PN IO

## Application (continued)




Configuration of AS-Interface multiple networks, each with one PSN130S 30 V power supply unit (examples with schematic representation): Triple network based on SIMATIC S7-1200 with DCM 1271 data decoupling modules and CM 1243-2 communication processors

## Technical specifications

| Product | | PSN130S 30 V DC power supply unit | | |
|---|---|---|---|---|
| **Version** | | **3 A** | **4 A** | **8 A** |
| **Input data** | | | | |
| • Input voltage, rated value $U_e$ | V AC | 120 / 230 V, single-phase, automatic selection | | |
| • Input voltage range | V AC | 85 ... 132 / 174 ... 264 | | |
| • Mains frequency | Hz | 50 / 60 | | |
| • Power consumption at full load, typ. | W | 103 | 139 | 270 |
| **Output data** | | | | |
| • Output voltage, rated value $U_a$ | V DC | 30 | | |
| • Residual ripple | $mV_{ss}$ | < 150 | | |
| • Output current, rated value at -20 ... +60 °C | A | 3 | 4 | 8 |
| • Max. output current at +60 ... +70 °C | A | 3 | 3 | 4 |
| **Degree of efficiency in rated conditions** | | | | |
| • Degree of efficiency | % | 87 | 88 | 90 |
| • Power loss, typ. | W | 12 | 17 | 25 |
| **Protection and monitoring** | | | | |
| • Output overvoltage protection | V | < 37 | | |
| • Current limit, typ. | A | 4 | 5,5 | 11 |
| **Safety** | | | | |
| • Electrical separation primary / secondary | | Output voltage PELV / SELV according to IEC 60950 and EN 50178 | | |
| • Protection class | | I | | |
| • Degree of protection | | IP20 | | |
| **Approvals** | | | | |
| • UL | | UL 508 / CSA 22.2 | | |
| • Pollution degree | | IEC 60950 | | |
| • Overvoltage category and electrical separation | | EN 50178 and IEC 61558 | | |
| **EMC** | | | | |
| • Emitted interference (class B) | | IEC 61000-6-3 | | |
| • Line harmonics limit | | IEC 61000-3-2 | | |
| • Interference immunity | | IEC 61000-6-2 | | |
| **Operating data** | | | | |
| Ambient temperature | | | | |
| • Operation | °C | -20 ... +70 | | |
| • Transport / storage | °C | -40 ... +85 | | |
| Pollution degree | | 2 | | |
| Humidity class | | Climate class according to DIN 50010, relative air humidity max. 100 %, without condensation | | |
| **Dimensions and weight** | | | | |
| • Width | mm | 50 | 50 | 70 |
| • Height x depth | mm | 125 x 126.5 | | |
| • Weight | kg | 0.4 | 0.4 | |

## Ordering data — Article No.

| | |
|---|---|
| **PSN130S 30 V DC power supply units** (without AS-i data decoupling)<br>Output voltage 30 V DC, with screw terminals,<br>Dimensions: Width: 50 mm (3 A / 4 A), 70 mm (8 A); Height: 125 mm; Depth: 126.5 mm | |
| • Output current: 3 A<br>Input voltage:120 / 230 V AC (automatic selection) | **3RX9511-0AA00** |
| • Output current: 4 A<br>Input voltage: 120 / 230 V AC (automatic selection) | **3RX9512-0AA00** |
| • Output current: 8 A<br>Input voltage: 120 / 230 V AC (automatic selection) | **3RX9513-0AA00** |

## Accessories — Article No.

| | |
|---|---|
| ***Data decoupling modules in enclosure, 22.5 mm*** | |
| **S22.5 data decoupling modules**<br>With screw terminals, removable terminals,<br>Dimensions: Width: 22.5 mm; Height: 101 mm; Depth: 115 mm | |
| • Single data decoupling module, 1 x 4 A | **3RK1901-1DE12-1AA0** |
| • Double data decoupling module, 2 x 4 A | **3RK1901-1DE22-1AA0** |
| With spring-type terminals, removable terminals,<br>Dimensions: Width: 22.5 mm; Height: 105 mm; Depth: 115 mm | |
| • Single data decoupling module, 1 x 4 A | **3RK1901-1DG12-1AA0** |
| • Double data decoupling module, 2 x 4 A | **3RK1901-1DG22-1AA0** |
| ***Data decoupling modules in enclosure for S7-1200*** | |
| **DCM 1271 data decoupling module**<br>With screw terminals, removable terminals (included in the scope of supply),<br>Dimensions: Width: 30 mm; Height: 100 mm; Depth: 75 mm | **3RK7271-1AA30-0AA0** |
| **Screw terminals (replacement) for AS-i DCM 1271 data decoupling module** | |
| • 5-pole | **3RK1901-3MA00** |
| • 3-pole for connecting the power supply unit | **3RK1901-3MB00** |

## More information

For operating instructions and other technical information see http://support.automation.siemens.com/WW/view/en/64364000.

More information on AS-Interface, see Catalog IC 10, Chapter 2 "Industrial Communication".

# Why choose the SCALANCE XB family of unmanaged switches?

**Designed for simple and cost effective entry into the Industrial Ethernet switch market, the Scalance XB family allows engineers to increase the number of end devices or network segments without the need for configuration.**

- Cost-effective solutions starting at $95
- FastEthernet and Gigabit models for maximum performance
- Seamless integration with SIMATIC design
- Compact design
- Plug-and-Play networking; no configuration required
- Distances up to 26km using Fiber
- DIN and wall mountable

## Reliability

Experience the rugged durability and extended reliability designed into all Siemens Industrial Ethernet products.

- Mean Time Between Failure (MTBF) over 100 years
- UL, CSA, CE and C-Tick Certified
- Large operating temperature range from -10° C to 60° C
- LED-diagnostics conveniently indicate power, link and transmission status on the faceplate

## Fiber Optics

Utilize SCALANCE XB Fiber Optic data transmission to evade electromagnetic interference and reach vast distances with minimal data loss.

- Optical SC-Port available
- Length of fiber-optic transmission:

  Max. 5 km with Industrial Ethernet FO cables Multimode

  Max. 26 km with Industrial Ethernet FO cables Singlemode

## Expand your industrial network with Siemens reliable unmanaged switching solutions

## Compact Design

Pocket-sized design allows for convenient placement of your industrial switch inside a panel, especially when space is at a premium.

- Dimensions: 45mm x 100mm x 87mm
- Weight: 165g to 260g

## Flexibility

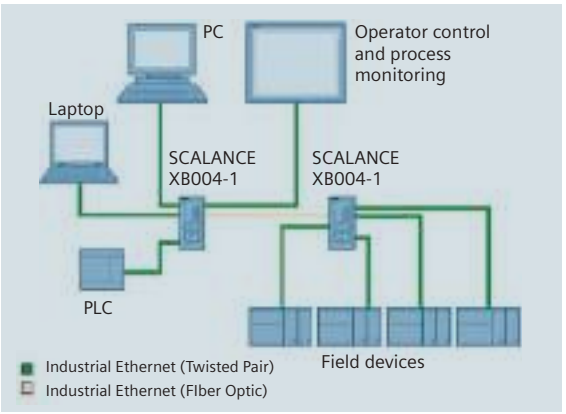
The SCALANCE XB line offers a comprehensive variety of unmanaged switches: full Gigabit capability and distances reaching up to 26 km with optional Fiber Optic ports. All eight switches come with the innovative dual-purpose DIN and Wall mount.

- 4 + 1, 5 and 8 Port models
- RJ45 and SC Fiber Optic connectors
- FastEthernet and Gigabit capability
- Singlemode or Multimode Fiber Optics
- Hybrid DIN/Wall mount

Simply connect your end devices to a SCALANCE XB and allow autosensing, autocrossover detection and autonegotiation features to set data transmission parameters. Large MAC learning tables allow seamless integration of Bus and Star topologies into your Industrial Ethernet network.

- Easy integration with PROFINET networks
- Data transmission rate detection via autosensing
- Autocrossover and autonegotiation
- MAC address learning tables up to 8 k

*Hybrid DIN/wall mount*




*Mixed star topology with SCALANCE XB004-1*

# Fast Ethernet

## SCALANCE XB-000 Industrial Ethernet switches

Unmanaged Industrial Ethernet switches for 10/100 Mbit/s, IP20 degree of protection, including operating instructions, Industrial Ethernet Network manual on CD-ROM

| SCALANCE XB005 | Ordering Data | Order No. |
|---|---|---|
| | 5 x 10/100 Mbit/s electrical RJ45 ports | **6GK5005-0BA00-1AB2** |

| SCALANCE XB008 | Ordering Data | Order No. |
|---|---|---|
| | 8 x 10/100 Mbit/s electrical RJ45 ports | **6GK5008-0BA10-1AB2** |

| SCALANCE XB004-1 | Ordering Data | Order No. |
|---|---|---|
| | 4 x 10/100 Mbit/s electrical RJ45 ports and 1 x 100 Mbit/s optical SC port (multimode, glass), up to 5 km | **6GK5004-1BD00-1AB2** |

| SCALANCE XB004-1LD | Ordering Data | Order No. |
|---|---|---|
| | 4 x 10/100 Mbit/s electrical RJ45 ports and 1 x 100 Mbit/s optical SC port (singlemode, glass), up to 26 km | **6GK5004-1BF00-1AB2** |

# Gigabit

## SCALANCE XB-000 Industrial Ethernet switches

Unmanaged Industrial Ethernet switches for 10/100/1000 Mbit/s, IP20 degree of protection, including operating instructions, Industrial Ethernet Network manual on CD-ROM

| SCALANCE XB005G | Ordering Data | Order No. |
|---|---|---|
| | 5 x 10/100/1000 Mbit/s electrical RJ45 ports | **6GK5005-0GA10-1AB2** |

| SCALANCE XB008G | Ordering Data | Order No. |
|---|---|---|
| | 8 x 10/100/1000 Mbit/s electrical RJ45 ports | **6GK5008-0GA10-1AB2** |

| SCALANCE XB004-1G | Ordering Data | Order No. |
|---|---|---|
| | 4 x 10/100/1000 Mbit/s electrical RJ45 ports and 1 x 1000 Mbit/s optical SC port (multimode, glass), up to 750 m | **6GK5004-1GL10-1AB2** |

| SCALANCE XB004-1LDG | Ordering Data | Order No. |
|---|---|---|
| | 4 x 10/100/1000 Mbit/s electrical RJ45 ports and 1 x 1000 Mbit/s optical SC port (singlemode, glass), up to 10 km | **6GK5004-1GM10-1AB2** |

## Technical specifications

| Interfaces | |
|---|---|
| Connection of terminal equipment or network components via twisted pair | 4, 5 or 8 x 10/100/1000 Mbit/s RJ45 electrical ports |
| Number of optical ports for fiber-optic cables | 1 x 100 or 1 x 1000 Mbit/s optical SC port in multimode and singlemode versions |
| Connection for power supply | 1 x 3 plug-in terminal block |
| **Electrical data** | |
| Power supply Permissible range | +24 V DC +19.2 to +28.8 V DC |
| Power loss at 24 V DC | 1.68 W to 12.5 W |
| Current consumption at rated voltage | 70 mA to 520 mA |
| Power supply input fuse design | 0.6 A / 60 V |
| **Permissible ambient conditions/EMC** | |
| Operating temperature | -10 °C to +60 °C |
| Transport/storage temperature | -40 °C to +80 °C |
| Relative humidity in operation | < 95% (no condensation) |
| Interference immunity | EN 6100-6-2 |
| Emitted interference | EN 6100-6-4 |
| Degree of protection | IP20 |
| Safety certifications | UL, CSA, CE and C-Tick |
| **Construction** | |
| Dimensions (W x H x D) | 45mm x 100mm x 87mm |
| Weight | 0.165 kg to 0.260 kg |
| Installation options | DIN rail, wall mounting |

## Accessories

| FastConnect | Part Number |
|---|---|
| TP cable 2 x 2 (per meter) | |
| IE FC Standard Cable 2x2 | **6XV1840-2AH10** |
| IE FC Flexible Cable GP 2x2 | **6XV1870-2B** |
| TP cable 4 x 2 (per meter) | |
| IE FC TP Standard Cable GP 4 x 2 (AWG24) | **6XV1878-2A** |
| IE FL TP Flexible Cable GP 4x2 (AWG24) | **6XV1878-2B** |
| **Tools** | |
| IE FC Stripping Tool | **6GK1901-1GA00** |
| **Connectors** | |
| IE FC RJ45 180° Connector | **6GK1901-1BB10-2AA0** |
| IE FC RJ45 Plug 180° Gigabit Connector | **6GK1901-1BB11-2AA0** |
| **Cables** | |
| FO Standard Cable GP 50/125 Fiber-optic Cable pre-assembled for use with multimode switches | |
| 80 m | **6XV1873-6AN80** |
| 100 m | **6XV1873-6AT10** |
| 150 m | **6XV1873-6AT15** |
| 200 m | **6XV1873-6AT20** |
| 300 m | **6XV1873-6AT30** |
| IE Standard Cable TP RJ45/RJ45 TP cable 4x2 with 2 RJ45 connectors | |
| 0.5 m | **6XV1870-3QE50** |
| 1 m | **6XV1870-3QH10** |
| 2 m | **6XV1870-3QH20** |
| 6 m | **6XV1870-3QH60** |
| 10 m | **6XV1870-3QN10** |
| 20 m | **6XV1871-5BN20** |
| **24 V DC Power Supply** | |
| SITOP compact 24 V/0.6 A | **6EP1331-5BA00** |

## FastConnect Cabling System

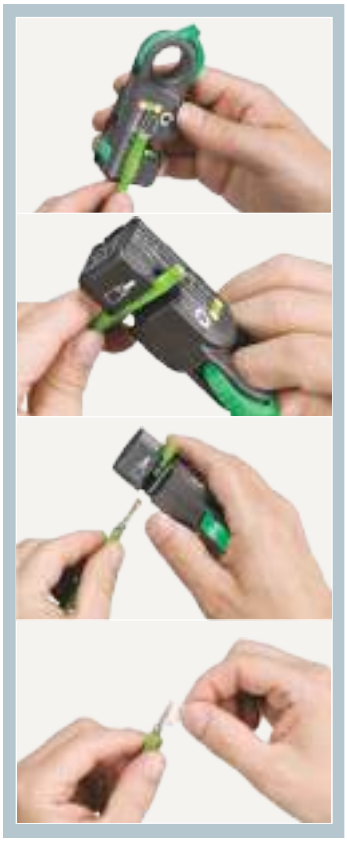
The FastConnect system provides a complete cabling solution for on-site assembly of custom length industrial Ethernet cables. The system comprises of a stripping tool, a full range of connectors, and various cable options.

Regardless of the type of connector you need, the assembly follows the same procedure.

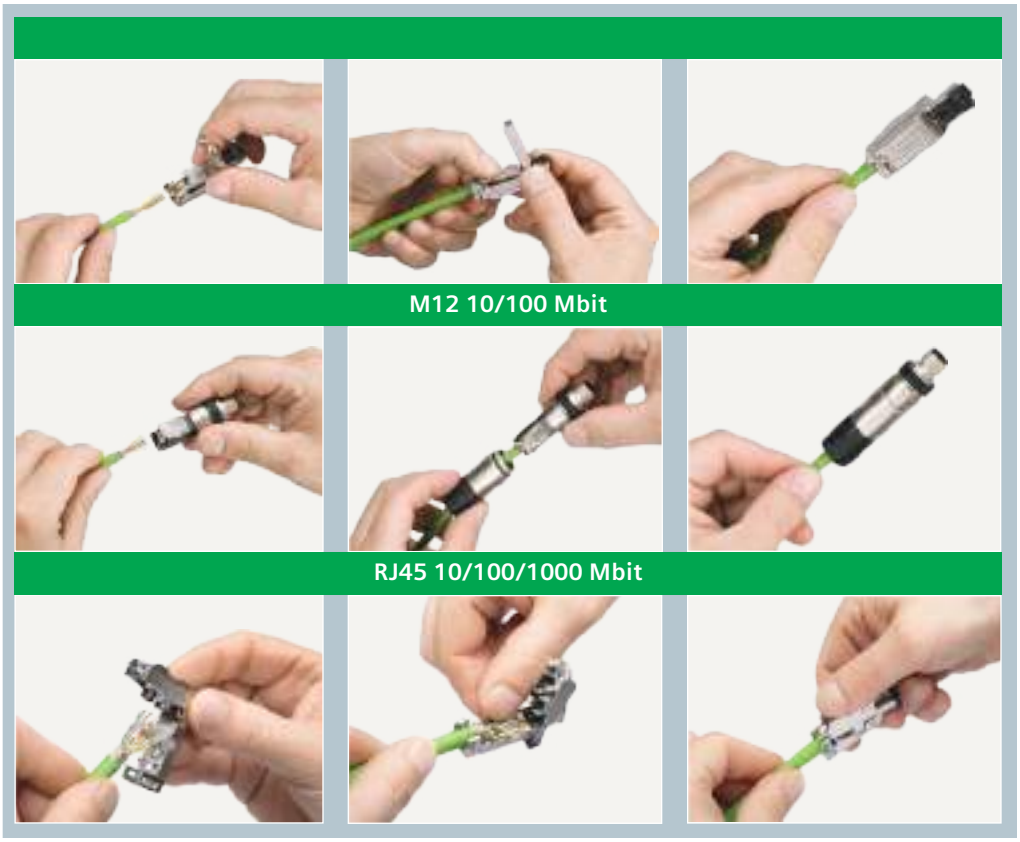
Your benefits:

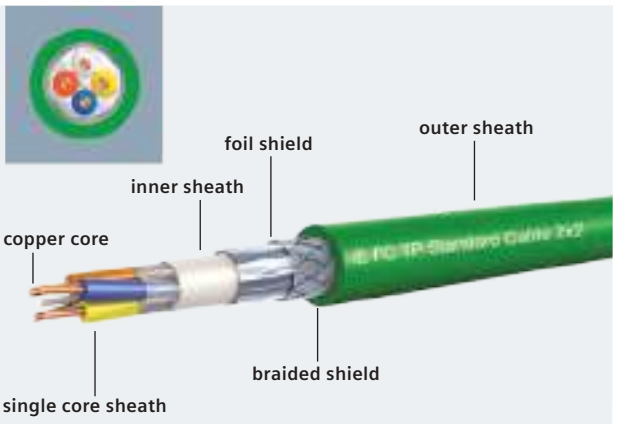
- Greater flexibility for configuring the optimum cable length with the right connector on site
- Reduced stocking costs for ordering pre-assembled cables
- Easy installation using just one tool
- Easy routing of cables with pre-assembled, angled connectors
- Wiring is simplified due to color coding and the transparent contact cover

**Cable Preparation**



**Termination**



## Ordering information

### Connectors for Industrial Ethernet FastConnect System

| | Product | Comments | | Article no *) |
|---|---|---|---|---|
| IE FC RJ45 Plug 2 x 2 | | | | |
| | 10/100 FastConnect RJ45 Plug 180 | RJ45 data connector; for connecting to IE FC TP cables 2x2, 180° cable outlet<br>1 pack = 1 piece | | **6GK1901-1BB10-2AA0** |
| | | 1 pack = 10 pieces | | **6GK1901-1BB10-2AB0** |
| | | 1 pack = 50 pieces | | **6GK1901-1BB10-2AE0** |
| | 10/100 FastConnect RJ45 Plug 90 | 90° cable outlet;<br>1 pack = 1 piece | | **6GK1901-1BB20-2AA0** |
| | | 1 pack = 10 pieces | | **6GK1901-1BB20-2AB0** |
| | | 1 pack = 50 pieces | | **6GK1901-1BB20-2AE0** |
| | 10/100 FastConnect RJ45 Plug 145 | 145° cable outlet;<br>1 pack = 1 piece | | **6GK1901-1BB30-0AA0** |
| | | 1 pack = 10 pieces | | **6GK1901-1BB30-0AB0** |
| | | 1 pack = 50 pieces | | **6GK1901-1BB30-0AE0** |
| IE FC RJ45 Plug 4 x 2 | | | | |
| | 10/100/1000 FastConnect RJ45 Plug (4x2) | RJ45 data connector; for connecting to IE FC TP cables 4x2<br>1 pack = 1 piece | | **6GK1901-1BB12-2AA0** |
| | | 1 pack = 10 pieces | | **6GK1901-1BB12-2AB0** |
| | | 1 pack = 50 pieces | | **6GK1901-1BB12-2AE0** |
| M12 connectors | | | | |
| | 10/100 FastConnect M12 PRO | M12 connector with high degree of protection, 4-pin, D-coded for connection of electrical cables to SCALANCE X208PRO, ET 200 PRO PN or ET 200 eco PN | 1 piece | **6GK1901-0DB30-6AA0** |
| | | | 8 pieces | **6GK1901-0DB30-6AA8** |
| | 10/100/1000 FastConnect M12 PRO | M12 connector with high degree of protection, 8-pin, X-coded for connection of electrical cables to SCALANCE W (Gigabit M12 interface), | 1 piece | **6GK1901-0DB30-6AA0** |
| | | | 8 pieces | **6GK1901-0DB30-6AA8** |

### Cables for Industrial Ethernet FastConnect System

| | Product | Comments | Article no *) |
|---|---|---|---|
| Industrial Ethernet FastConnect cables 2 x 2 at 100 Mbit/s, sold by the meter, in bulk | | | |
| | IE FC TP Standard Cable GP 2 x 2 (Type A) | Standard bus cable (4-core) with rigid cores for fast assembly | **6XV1840-2AH10** |
| | IE FC TP Flexible Cable GP 2 x 2 (Type B) | Flexible bus cable (4-core), for occasionally moved machine components | **6XV1870-2B** |
| | IE FC TP FRNC Cable GP 2 x 2 (Type B) | Flexible, halogen-free bus cable (4-core), for occasionally moved machine components | **6XV1871-2F** |
| | IE FC TP Trailing Cable GP 2 x 2 (Type C) | Highly flexible bus cable (4-core) for continuous movement in cable carriers | **6XV1870-2D** |
| | IE FC TP Trailing Cable 2 x 2 (Type C) | Highly flexible bus cable (4-core) for continuous movement in cable carriers | **6XV1840-3AH10** |
| | IE TP Torsion Cable 2 x 2 (Type C) | Highly flexible bus cable (4-core) for continuous movement when using with robots | **6XV1870-2F** |
| | IE FC TP Food Cable 2 x 2 (Type C) | Flexible bus cable (4-core), for food, beverages and tobacco industries | **6XV1871-2L** |
| | IE FC TP Marine Cable 2 x 2 (Type B) | Bus cable (4-core), for marine and offshore use | **6XV1840-4AH10** |
| | IE TP Ground Cable 2 x 2 (Type C) | Bus cable (4-core) for fixed routing in soil | **6XV1871-2G** |
| | IE TP Train Cable GP 2 (Type C) | Bus cable (4-core) for special applications in trains; certified for railway applications | **6XV1871-2T** |
| Industrial Ethernet FastConnect cables 4 x 2 at 1000 Mbit/s, sold by the meter, in bulk | | | |
| | IE FC TP Standard Cable GP 4 x 2 | Standard bus cable (8-core), AWG22, Standard cable with rigid cores for fast assembly, for fixed installation | **6XV1870-2E** |
| | IE FC TP Flexible Cable GP 4 x 2 | Bus cable (8-core, AWG24) with flexible cores, Flexible cable for quick assembly, for occasionally moving machine parts | **6XV1878-2B** |

### Pre-molded Industrial Ethernet cables

| | | | | |
|---|---|---|---|---|
| | IE TP Cord RJ45/RJ45 | Patch cord, preferred length, pre-assembled with two RJ45 connectors | 0.5 m | **6XV1870-3QE50** |
| | | | 1.0 m | **6XV1870-3QH10** |
| | | | 2.0 m | **6XV1870-3QH20** |
| | | | 6.0 m | **6XV1870-3QH60** |
| | | | 10 m | **6XV1870-3QN10** |

*For additional cabling options, please refer to U.S. Part Number NTBR-1BK02-0114.

## Overview

***LOGO! logic module***

- The compact, easy-to-use and low-cost solution for simple control tasks
- Compact, easy to operate, universally applicable without accessories
- "All in one": Integrated display and operator panel
- 36 different functions can be connected at the press of a button or by means of PC software; up to 130 times over
- LOGO! 8: 38/43 different functions can be linked at the press of a button or using PC software; up to 200/400 times
- Functions are easy to change at the press of a button. No more time-consuming rewiring

***SIPLUS LOGO!***

- The controller for use in the toughest environmental conditions
- With extended temperature range from -40/-25 °C to +70 °C
- Suitable for exposure to environmental substances (harmful gas atmosphere)
- Condensation permissible
- With the proven PLC technology of LOGO!
- Easy to handle, program, maintain, and service
- Ideal for use in automotive engineering, environmental engineering, mining, chemical plants, material handling, food industry, etc.

Accessories:

- The front panel mounting set also allows simple and reliable installation of the logic modules in front panels; IP65 protection is thus possible.
- In order to ensure dependable operation of SIPLUS devices supplied by the battery in conjunction with combustion engines, it is necessary to put in a SIPLUS upmiter upstream device between the battery and the SIPLUS LOGO!.

For more information, please go to:

http://www.siemens.com/siplus-extreme

## Technical specifications SIPLUS LOGO!

| | |
|---|---|
| Ambient temperature range | -40/-25 ... +70 °C |
| Conformal coating | Coating of the printed circuit boards and the electronic components |
| Technical data | The technical data of the standard product applies except for the ambient conditions. |
| **Ambient conditions** | |
| Extended range of environmental conditions | |
| • with reference to ambient temperature, air pressure and altitude | Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m) |
| • At cold restart, min. | 0° C |
| Relative humidity | |
| • with condensation, max. | 100 %; RH incl. bedewing/frost (no commissioning in bedewed state) |
| Resistance | |
| • to biologically active substances/ compliance with EN 60721-3-3 | Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation. |
| • to chemically active substances/ compliance with EN 60721-3-3 | Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation. |
| • to mechanically active substances, compliance with EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation. |

# LOGO! basic and expansion modules

## LOGO! basic modules with display

### Overview

- The space-saving basic variants
- Interface for the connection of expansion modules, up to 24 digital inputs, 20 digital outputs, 8 analog inputs and 8 analog outputs can be addressed
- All basic units with integrated web server
- Enclosure width 72 mm (4 U)
- All basic units with Ethernet interface for communication with LOGO! 8, LOGO! TDE, SIMATIC Controllers, SIMATIC Panels and PCs
- Use of standard micro CF cards

### Technical specifications

| Article number | 6ED1052-1CC08-0BA0 | 6ED1052-1MD08-0BA0 | 6ED1052-1HB08-0BA0 | 6ED1052-1FB08-0BA0 |
|---|---|---|---|---|
| | LOGO! 24CE, 8DI(4AI)/4DQ, 400 Blocks | LOGO!12/24RCE, 8DI(4AI)/4DQ, 400 Blocks | LOGO! 24RCE, 8DI/4DQ, 400 Blocks | LOGO!230RCE, 8DI/4DQ, 400 Blocks |
| **Display** | | | | |
| with display | Yes | Yes | Yes | Yes |
| **Installation type/mounting** | | | | |
| Mounting | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide |
| **Supply voltage** | | | | |
| Rated value (DC) | | | | |
| • 12 V DC | | Yes | | |
| • 24 V DC | Yes | Yes | Yes | |
| • 115 V DC | | | | Yes |
| • 230 V DC | | | | Yes |
| permissible range, lower limit (DC) | 20.4 V | 10.8 V | 20.4 V | 100 V |
| permissible range, upper limit (DC) | 28.8 V | 28.8 V | 28.8 V | 253 V |
| Rated value (AC) | | | | |
| • 24 V AC | | | Yes | |
| • 115 V AC | | | | Yes |
| • 230 V AC | | | | Yes |
| **Time of day** | | | | |
| **Time switching clocks** | | | | |
| • Number | 400; Max. 400, function-specific | 400; Max. 400, function-specific | 400; Max. 400, function-specific | 400; Max. 400, function-specific |
| • Power reserve | 480 h | 480 h | 480 h | 480 h |
| **Digital inputs** | | | | |
| Number of digital inputs | 8; Of which 4 can be used in analog mode (0 to 10 V) | 8; Of which 4 can be used in analog mode (0 to 10 V) | 8 | 8 |
| **Digital outputs** | | | | |
| Number of digital outputs | 4; Transistor | 4; Relays | 4; Relays | 4; Relays |
| Short-circuit protection | Yes; electrical (1 A) | No; external fusing necessary | No; external fusing necessary | No; external fusing necessary |
| **Output current** | | | | |
| • for signal "1" permissible range for 0 to 55 °C, max. | 0.3 A | 10 A | | |
| **Relay outputs** | | | | |
| **Switching capacity of contacts** | | | | |
| - with inductive load, max. | | 3 A | 3 A | 3 A |
| - with resistive load, max. | | 10 A | 10 A | 10 A |

## Technical specifications (continued)

| Article number | 6ED1052-1CC08-0BA0<br>LOGO! 24CE,<br>8DI(4AI)/4DQ,<br>400 Blocks | 6ED1052-1MD08-0BA0<br>LOGO!12/24RCE,<br>8DI(4AI)/4DQ,<br>400 Blocks | 6ED1052-1HB08-0BA0<br>LOGO! 24RCE,<br>8DI/4DQ,<br>400 Blocks | 6ED1052-1FB08-0BA0<br>LOGO!230RCE,<br>8DI/4DQ,<br>400 Blocks |
|---|---|---|---|---|
| **EMC** | | | | |
| **Emission of radio interference acc. to EN 55 011** | | | | |
| • Limit class B, for use in residential areas | Yes; Radio interference suppression according to EN55011, Limit Value Class B | Yes | Yes | Yes |
| **Degree and class of protection** | | | | |
| Degree of protection acc. to EN 60529 | | | | |
| • IP20 | Yes | Yes | Yes | Yes |
| **Standards, approvals, certificates** | | | | |
| CE mark | Yes | Yes | Yes | Yes |
| CSA approval | Yes | Yes | Yes | Yes |
| UL approval | Yes | Yes | Yes | Yes |
| FM approval | Yes | Yes | Yes | Yes |
| developed in accordance with IEC 61131 | Yes | Yes | Yes | Yes |
| according to VDE 0631 | Yes | Yes | Yes | Yes |
| Marine approval | Yes | Yes | Yes | Yes |
| **Ambient conditions** | | | | |
| **Ambient temperature during operation** | | | | |
| • min. | -20 °C; No condensation | -20 °C; No condensation | -20 °C; No condensation | -20 °C; No condensation |
| • max. | 55 °C | 55 °C | 55 °C | 55 °C |
| **Ambient temperature during storage/transportation** | | | | |
| • min. | -40 °C | -40 °C | -40 °C | -40 °C |
| • max. | 70 °C | 70 °C | 70 °C | 70 °C |
| **Altitude during operation relating to sea level** | | | | |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) | | Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) | Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) |
| **Dimensions** | | | | |
| Width | 71.5 mm | 71.5 mm | 71.5 mm | 71.5 mm |
| Height | 90 mm | 90 mm | 90 mm | 90 mm |
| Depth | 60 mm | 60 mm | 60 mm | 60 mm |

## Ordering data

| | Article No. |
|---|---|
| **LOGO! 8 logic module** | |
| **LOGO! 24CE**<br>Supply voltage 24 V DC,<br>8 digital inputs 24 V DC,<br>of which 4 can be used<br>in analog mode (0 to 10 V),<br>4 digital outputs 24 V DC, 0.3 A,<br>integrated time switch,<br>Ethernet interface;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-1CC08-0BA0** |
| **LOGO! 12/24RCE**<br>Supply voltage 12...24 V DC,<br>8 digital inputs 12/24 V DC,<br>of which 4 can be used<br>in analog mode (0 to 10 V)<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-1MD08-0BA0** |
| **LOGO! 24RCE**<br>Supply voltage 24 V AC/DC,<br>8 digital inputs 24 V AC/DC,<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-1HB08-0BA0** |
| **LOGO! 230RCE**<br>Supply voltage 115...230 V AC/DC,<br>8 digital inputs 115...230 V AC/DC,<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-1FB08-0BA0** |

| Ordering data | Article No. |
|---|---|
| **Accessories** | |
| **LOGO! 8 text display HMI**<br>6-line text display, can be connected to all LOGO! 8 variants with and without display, with 2 Ethernet interfaces; incl. installation accessories.<br>Requires additional 12 V DC or 24 V AC/DC power supply | **6ED1055-4MH08-0BA0** |
| **LOGO!Soft Comfort V8**<br>For programming on the PC in LAD/FBD; executes on Windows 8, 7, XP, Linux and Mac OSX; on DVD | **6ED1058-0BA08-0YA1** |
| **LOGO! Starter Kits**<br>In TANOS Box, with LOGO! Soft Comfort V8, WinCC Basic, Ethernet cable | |
| **LOGO! Starter Kit 12/24 RCE**<br>With LOGO! 12/24 RCE, power supply, screwdriver, in Systainer | **6ED1057-3BA01-0AA8** |
| **LOGO! Starter Kit 130 RCE**<br>With LOGO! 230 RCE, power supply, screwdriver, in Systainer | **6ED1057-3BA03-0AA8** |
| **LOGO! Starter Kit 12/24 V**<br>With LOGO! 12/24 RCEO, LOGO! TD, power supply, screwdriver, in Systainer | **6ED1057-3BA11-0AA8** |
| **LOGO! 8 KP300 Basic Starter Kit**<br>With LOGO! 12/24RCE, LOGO! Power 24 V 1.3 A, KP300 Basic mono PN | **6AV2132-0HA00-0AA1** |
| **LOGO! 8 KTP400 Basic Starter Kit**<br>With LOGO! 12/24RCE, LOGO! Power 24 V 1.3 A, KTP400 Basic | **6AV2132-0KA00-0AA1** |
| **LOGO! 8 KTP700 Basic Starter Kit**<br>With LOGO! 12/24RCE, LOGO! Power 24 V 1.3 A, KTP700 Basic | **6AV2132-3GB00-0AA1** |
| **Front panel mounting set** | |
| Width 4 U, with keys | **6AG1057-1AA00-0AA3** |
| Width 8 U, with keys | **6AG1057-1AA00-0AA2** |

## Overview

- Basic variants optimized for costs
- Interface for the connection of expansion modules, up to 24 digital inputs, 20 digital outputs, 8 analog inputs and 8 analog outputs can be addressed
- With connection option for LOGO! TDE text display
- All basic units with integrated web server
- Enclosure width 72 mm (4 U)
- All basic units with Ethernet interface for communication with LOGO! 8, LOGO! TDE, SIMATIC Controllers, SIMATIC Panels and PCs
- Use of standard micro CF cards

## Technical specifications

| Article number | **6ED1052-2CC08-0BA0**<br>LOGO! 24CEO, 8DI(4AI)/4DQ, 400 Blocks | **6ED1052-2MD08-0BA0**<br>LOGO!12/24RCEO, 8DI(4AI)/4DQ,400 Blocks | **6ED1052-2HB08-0BA0**<br>LOGO! 24RCEO, 8DI/4DQ, 400 Blocks |
|---|---|---|---|
| **Installation type/mounting** | | | |
| Mounting | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide |
| **Supply voltage** | | | |
| Rated value (DC) | | | |
| • 12 V DC | | Yes | |
| • 24 V DC | Yes | Yes | Yes |
| permissible range, lower limit (DC) | 20.4 V | 10.8 V | 20.4 V |
| permissible range, upper limit (DC) | 28.8 V | 28.8 V | 28.8 V |
| Rated value (AC) | | | |
| • 24 V AC | | | Yes |
| **Time of day** | | | |
| **Time switching clocks** | | | |
| • Number | 400; Max. 400, function-specific | 400; Max. 400, function-specific | 400; Max. 400, function-specific |
| • Power reserve | 480 h | 480 h | 480 h |
| **Digital inputs** | | | |
| Number of digital inputs | 8; Of which 4 can be used in analog mode (0 to 10 V) | 8; Of which 4 can be used in analog mode (0 to 10 V) | 8 |
| **Digital outputs** | | | |
| Number of digital outputs | 4; Transistor | 4; Relays | 4; Relays |
| Short-circuit protection | Yes; electrical (1 A) | No; external fusing necessary | No; external fusing necessary |
| **Output current** | | | |
| • for signal "1" permissible range for 0 to 55 °C, max. | 0.3 A | 10 A | |
| **Relay outputs** | | | |
| **Switching capacity of contacts** | | | |
| - with inductive load, max. | | 3 A | 3 A |
| - with resistive load, max. | | 10 A | 10 A |
| **EMC** | | | |
| **Emission of radio interference acc. to EN 55 011** | | | |
| • Limit class B, for use in residential areas | Yes; Radio interference suppression according to EN55011, Limit Value Class B | Yes | Yes |
| **Degree and class of protection** | | | |
| Degree of protection acc. to EN 60529 | | | |
| • IP20 | Yes | Yes | Yes |

## Technical specifications (continued)

| Article number | | 6ED1052-2CC08-0BA0<br>LOGO! 24CEO,<br>8DI(4AI)/4DQ, 400 Blocks | 6ED1052-2MD08-0BA0<br>LOGO!12/24RCEO,<br>8DI(4AI)/4DQ,400 Blocks | 6ED1052-2HB08-0BA0<br>LOGO! 24RCEO,<br>8DI/4DQ, 400 Blocks |
|---|---|---|---|---|
| **Standards, approvals, certificates** | | | | |
| CE mark | | Yes | Yes | Yes |
| CSA approval | | Yes | Yes | Yes |
| UL approval | | Yes | Yes | Yes |
| FM approval | | Yes | Yes | Yes |
| developed in accordance with IEC 61131 | | Yes | Yes | Yes |
| according to VDE 0631 | | Yes | Yes | Yes |
| Marine approval | | Yes | Yes | Yes |
| **Ambient conditions** | | | | |
| **Ambient temperature during operation** | • min. | -20 °C; No condensation | -20 °C; No condensation | -20 °C; No condensation |
| | • max. | 55 °C | 55 °C | 55 °C |
| **Ambient temperature during storage/transportation** | • min. | -40 °C | -40 °C | -40 °C |
| | • max. | 70 °C | 70 °C | 70 °C |
| **Altitude during operation relating to sea level** | | | | |
| • Ambient air temperature-barometric pressure-altitude | | Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) | | Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) |
| **Dimensions** | | | | |
| Width | | 71.5 mm | 71.5 mm | 71.5 mm |
| Height | | 90 mm | 90 mm | 90 mm |
| Depth | | 58 mm | 60 mm | 58 mm |

| Article number | 6ED1052-2FB08-0BA0<br>LOGO!230RCEO,<br>8DI/4DQ,400 Blocks |
|---|---|
| **Display** | |
| with display | No |
| **Installation type/mounting** | |
| Mounting | on 35 mm DIN rail,<br>4 spacing units wide |
| **Supply voltage** | |
| Rated value (DC) | |
| • 115 V DC | Yes |
| • 230 V DC | Yes |
| permissible range, lower limit (DC) | 100 V |
| permissible range, upper limit (DC) | 253 V |
| Rated value (AC) | |
| • 115 V AC | Yes |
| • 230 V AC | Yes |
| **Time of day** | |
| **Time switching clocks** | |
| • Number | 400; Max. 400, function-specific |
| • Power reserve | 480 h |
| **Digital inputs** | |
| Number of digital inputs | 8 |
| **Digital outputs** | |
| Number of digital outputs | 4; Relays |
| Short-circuit protection | No; external fusing necessary |
| **Relay outputs** | |
| **Switching capacity of contacts** | |
| - with inductive load, max. | 3 A |
| - with resistive load, max. | 10 A |
| **EMC** | |
| **Emission of radio interference acc. to EN 55 011** | |
| • Limit class B, for use in residential areas | Yes |

| Article number | 6ED1052-2FB08-0BA0<br>LOGO!230RCEO,<br>8DI/4DQ,400 Blocks |
|---|---|
| **Degree and class of protection** | |
| Degree of protection acc. to EN 60529 | |
| • IP20 | Yes |
| **Standards, approvals, certificates** | |
| CE mark | Yes |
| CSA approval | Yes |
| UL approval | Yes |
| FM approval | Yes |
| developed in accordance with IEC 61131 | Yes |
| according to VDE 0631 | Yes |
| Marine approval | Yes |
| **Ambient conditions** | |
| **Ambient temperature during operation** | |
| • min. | -20 °C; No condensation |
| • max. | 55 °C |
| **Ambient temperature during storage/transportation** | |
| • min. | -40 °C |
| • max. | 70 °C |
| **Altitude during operation relating to sea level** | |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) |
| **Dimensions** | |
| Width | 71.5 mm |
| Height | 90 mm |
| Depth | 60 mm |

## LOGO! basic modules without display

| Ordering data | Article No. |
|---|---|
| **LOGO! 8 logic module** | |
| **LOGO! 24CEo logic module**<br>24 V DC supply voltage,<br>8 digital inputs 24 V DC,<br>of which 4 can be used<br>in analog mode (0 to 10 V),<br>4 digital outputs 24 V DC, 0.3 A,<br>integrated time switch,<br>Ethernet interface;<br>without display and keyboard;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-2CC08-0BA0** |
| **LOGO! 12/24RCEo logic module**<br>12...24 V DC supply voltage,<br>8 digital inputs 12...24 V DC,<br>of which 4 can be used<br>in analog mode (0 to 10 V),<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>without display or keyboard;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-2MD08-0BA0** |
| **LOGO! 24RCEo logic module**<br>24 V AC/DC supply voltage,<br>8 digital inputs 24 V AC/DC,<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>without display or keyboard;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-2HB08-0BA0** |
| **LOGO! 230RCEo logic module**<br>115...230 V AC/DC supply voltage,<br>8 digital inputs 115...230 V AC/DC,<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>without display or keyboard;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | **6ED1052-2FB08-0BA0** |

| Accessories | Article No. |
|---|---|
| **LOGO! TDE text display**<br>6-line text display,<br>can be connected to all<br>LOGO! 8 variants with and without<br>display, with 2 Ethernet interfaces;<br>incl. installation accessories.<br>Requires additional 12 V DC or<br>24 V AC/DC power supply | **6ED1055-4MH08-0BA0** |
| **LOGO!Soft Comfort V8**<br>For programming on the PC<br>in LAD/FBD;<br>executes on Windows 8, 7, XP,<br>Linux and Mac OSX; on DVD | **6ED1058-0BA08-0YA1** |
| **LOGO! Starter Kits**<br>In TANOS Box,<br>with LOGO! Soft Comfort V8,<br>WinCC Basic, Ethernet cable | |
| **LOGO! Starter Kit 12/24 RCE**<br>With LOGO! 12/24 RCE,<br>power supply, screwdriver,<br>in Systainer | **6ED1057-3BA01-0AA8** |
| **LOGO! Starter Kit 130 RCE**<br>With LOGO! 230 RCE,<br>power supply, screwdriver,<br>in Systainer | **6ED1057-3BA03-0AA8** |
| **LOGO! Starter Kit 12/24 V**<br>With LOGO! 12/24 RCEO,<br>LOGO! TD, power supply,<br>screwdriver, in Systainer | **6ED1057-3BA11-0AA8** |
| **LOGO! 8 KP300 Basic Starter Kit**<br>With LOGO! 12/24RCE,<br>LOGO! Power 24 V 1.3 A,<br>KP300 Basic mono PN | **6AV2132-0HA00-0AA1** |
| **LOGO! 8 KTP400 Basic Starter Kit**<br>With LOGO! 12/24RCE,<br>LOGO! Power 24 V 1.3 A,<br>KTP400 Basic | **6AV2132-0KA00-0AA1** |
| **LOGO! 8 KTP700 Basic Starter Kit**<br>With LOGO! 12/24RCE,<br>LOGO! Power 24 V 1.3 A,<br>KTP700 Basic | **6AV2132-3GB00-0AA1** |

## Overview

- Expansion modules for connection to LOGO! Modular
- With digital inputs and outputs, analog inputs, or analog outputs

## Technical specifications

| Article number | **6ED1055-1CB00-0BA2**<br>LOGO! DM8 24 Exp. mod., 4DI/4DQ | **6ED1055-1HB00-0BA2**<br>LOGO! DM8 24R Exp. mod. 2 MW, 4DI/4DQ | **6ED1055-1MB00-0BA2**<br>LOGO! DM8 12/24R Exp. mod. 2 MW, 4DI/DQ | **6ED1055-1FB00-0BA2**<br>LOGO! DM8 230R Exp. mod. 2 MW, 4DI/4DQ |
|---|---|---|---|---|
| **Installation type/mounting** | | | | |
| Mounting | on 35 mm DIN rail, 2 spacing units wide | on 35 mm DIN rail, 2 spacing units wide | on 35 mm DIN rail, 2 spacing units wide | on 35 mm DIN rail, 2 spacing units wide |
| **Supply voltage** | | | | |
| Rated value (DC) | | | | |
| • 12 V DC | | | Yes | |
| • 24 V DC | Yes | Yes | Yes | |
| • 115 V DC | | | | Yes |
| • 230 V DC | | | | Yes |
| permissible range, lower limit (DC) | 20.4 V | 20.4 V | 10.8 V | 100 V |
| permissible range, upper limit (DC) | 28.8 V | 28.8 V | 28.8 V | 253 V |
| Rated value (AC) | | | | |
| • 24 V AC | | Yes | | |
| • 115 V AC | | | | Yes |
| • 230 V AC | | | | Yes |
| **Line frequency** | | | | |
| • permissible range, lower limit | | 47 Hz | | 47 Hz |
| • permissible range, upper limit | | 63 Hz | | 63 Hz |
| **Digital inputs** | | | | |
| Number of digital inputs | 4 | 4 | 4 | 4 |
| **Input voltage** | | | | |
| • Type of input voltage | DC | AC/DC | DC | AC/DC |
| • for signal "0" | < 5 V DC | < 5 V AC/DC | < 5 V DC | < 40 V AC, < 30 V DC |
| • for signal "1" | > 12 V DC | > 12 V AC/DC | > 8.5 V | > 79 V AC, > 79 V DC |
| **Input current** | | | | |
| • for signal "0", max. (permissible quiescent current) | 0.88 mA | 1.1 mA | 0.88 mA | 0.06 mA; 0.05 mA with AC, 0.06 mA with DC |
| • for signal "1", typ. | 2.1 mA | 2.63 mA | 1.5 mA | 0.13 mA |
| **Input delay (for rated value of input voltage)** | | | | |
| **for standard inputs** | | | | |
| - at "0" to "1", max. | 1.5 ms | 1.5 ms | 1.5 ms | 40 ms |
| - at "1" to "0", max. | 1.5 ms | 15 ms | 1.5 ms | 75 ms |

## Technical specifications (continued)

| Article number | 6ED1055-1CB00-0BA2<br>LOGO! DM8 24 Exp. mod., 4DI/4DQ | 6ED1055-1HB00-0BA2<br>LOGO! DM8 24R Exp. mod. 2 MW, 4DI/4DQ | 6ED1055-1MB00-0BA2<br>LOGO! DM8 12/24R Exp. mod. 2 MW, 4DI/DQ | 6ED1055-1FB00-0BA2<br>LOGO! DM8 230R Exp. mod. 2 MW, 4DI/4DQ |
|---|---|---|---|---|
| **Digital outputs** | | | | |
| Number of digital outputs | 4 | 4; Relays | 4; Relays | 4; Relays |
| Short-circuit protection | Yes | No | No | No |
| Controlling a digital input | | Yes | Yes | Yes |
| **Switching capacity of the outputs** | | | | |
| • on lamp load, max. | | 1 000 W | 1 000 W | 1 000 W; 500 W at 115V AC |
| **Parallel switching of two outputs** | | | | |
| • for uprating | No | No | No | No |
| **Switching frequency** | | | | |
| • with resistive load, max. | 10 Hz | 2 Hz | 2 Hz | 2 Hz |
| • with inductive load, max. | 0.5 Hz | 0.5 Hz | 0.5 Hz | 0.5 Hz |
| • mechanical, max. | | 10 Hz | 10 Hz | 10 Hz |
| **Relay outputs** | | | | |
| **Switching capacity of contacts** | | | | |
| - with inductive load, max. | | 3 A | 3 A | 3 A |
| - with resistive load, max. | | 5 A | 5 A | 5 A |
| **EMC** | | | | |
| **Emission of radio interference acc. to EN 55 011** | | | | |
| • Limit class B, for use in residential areas | Yes | Yes | Yes | Yes |
| **Degree and class of protection** | | | | |
| Degree of protection acc. to EN 60529 | | | | |
| • IP20 | Yes | Yes | Yes | Yes |
| **Standards, approvals, certificates** | | | | |
| CE mark | Yes | Yes | Yes | Yes |
| CSA approval | Yes | Yes | Yes | Yes |
| UL approval | Yes | Yes | Yes | Yes |
| FM approval | Yes | Yes | Yes | Yes |
| developed in accordance with IEC 61131 | Yes | Yes | Yes | Yes |
| according to VDE 0631 | Yes | Yes | | Yes |
| Marine approval | Yes | Yes | Yes | Yes |
| **Ambient conditions** | | | | |
| **Ambient temperature during operation** | | | | |
| • min. | 0 °C; ES03 and higher: -20 °C | 0 °C; ES03 and higher: -20 °C | 0 °C; ES03 and higher: -20 °C | 0 °C; ES03 and higher: -20 °C |
| • max. | 55 °C | 55 °C | 55 °C | 55 °C |
| **Dimensions** | | | | |
| Width | 35.5 mm | 35.5 mm | 35.5 mm | 35.5 mm |
| Height | 90 mm | 90 mm | 90 mm | 90 mm |
| Depth | 58 mm | 58 mm | 58 mm | 58 mm |

## Technical specifications (continued)

| Article number | 6ED1055-1CB10-0BA2<br>LOGO! DM16 24 Exp. mod., 4 MW, 8DI/8DQ | 6ED1055-1NB10-0BA2<br>LOGO! DM16 24R Exp. mod. 4 MW, 8DI/8DQ | 6ED1055-1FB10-0BA2<br>LOGO! DM16 230R Exp. mod. 4 MW, 8DI/8DQ |
|---|---|---|---|
| **Installation type/mounting** | | | |
| Mounting | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide | on 35 mm DIN rail, 4 spacing units wide |
| **Supply voltage** | | | |
| Rated value (DC) | | | |
| • 24 V DC | Yes | Yes | |
| • 115 V DC | | | Yes |
| • 230 V DC | | | Yes |
| permissible range, lower limit (DC) | 20.4 V | 20.4 V | 100 V |
| permissible range, upper limit (DC) | 28.8 V | 28.8 V | 253 V |
| Rated value (AC) | | | |
| • 24 V AC | | No | |
| • 115 V AC | | | Yes |
| • 230 V AC | | | Yes |
| **Line frequency** | | | |
| • permissible range, lower limit | | | 47 Hz |
| • permissible range, upper limit | | | 63 Hz |
| **Digital inputs** | | | |
| Number of digital inputs | 8 | 8 | 8 |
| **Input voltage** | | | |
| • Type of input voltage | DC | DC | AC/DC |
| • for signal "0" | < 5 V DC | < 5 V DC | < 40 V AC, < 30 V DC |
| • for signal "1" | > 12 V DC | > 12 V DC | > 79 V AC, > 79 V DC |
| **Input current** | | | |
| • for signal "0", max. (permissible quiescent current) | 0.85 mA | 0.85 mA | 0.06 mA; 0.05 mA with AC, 0.06 mA with DC |
| • for signal "1", typ. | 2 mA | 2 mA | 0.13 mA |
| **Input delay (for rated value of input voltage)** | | | |
| **for standard inputs** | | | |
| - at "0" to "1", max. | 1.5 ms | 1.5 ms | 40 ms |
| - at "1" to "0", max. | 1.5 ms | 1.5 ms | 75 ms |
| **Digital outputs** | | | |
| Number of digital outputs | 8 | 8; Relays | 8; Relays |
| Short-circuit protection | Yes | No | No |
| Controlling a digital input | | Yes | Yes |
| **Switching capacity of the outputs** | | | |
| • on lamp load, max. | | 1 000 W | 1 000 W; 500 W at 115V AC |
| **Parallel switching of two outputs** | | | |
| • for uprating | No | No | No |
| **Switching frequency** | | | |
| • with resistive load, max. | 10 Hz | 2 Hz | 2 Hz |
| • with inductive load, max. | 0.5 Hz | 0.5 Hz | 0.5 Hz |
| • mechanical, max. | | 10 Hz | 10 Hz |
| **Relay outputs** | | | |
| **Switching capacity of contacts** | | | |
| - with inductive load, max. | | 3 A | 3 A |
| - with resistive load, max. | | 5 A | 5 A |

## Technical specifications (continued)

| Article number | 6ED1055-1CB10-0BA2<br>LOGO! DM16 24 Exp. mod., 4 MW, 8DI/8DQ | 6ED1055-1NB10-0BA2<br>LOGO! DM16 24R Exp. mod. 4 MW, 8DI/8DQ | 6ED1055-1FB10-0BA2<br>LOGO! DM16 230R Exp. mod. 4 MW, 8DI/8DQ |
|---|---|---|---|
| **EMC** | | | |
| **Emission of radio interference acc. to EN 55 011** | | | |
| • Limit class B, for use in residential areas | Yes | Yes | Yes |
| **Degree and class of protection** | | | |
| Degree of protection acc. to EN 60529 | | | |
| • IP20 | Yes | Yes | Yes |
| **Standards, approvals, certificates** | | | |
| CE mark | Yes | Yes | Yes |
| CSA approval | Yes | Yes | Yes |
| UL approval | Yes | Yes | Yes |
| FM approval | Yes | Yes | Yes |
| developed in accordance with IEC 61131 | Yes | Yes | Yes |
| according to VDE 0631 | Yes | Yes | Yes |
| Marine approval | Yes | Yes | Yes |
| **Ambient conditions** | | | |
| **Ambient temperature during operation** | | | |
| • min. | 0 °C; ES03 and higher: -20 °C | 0 °C; ES03 and higher: -20 °C | 0 °C; ES03 and higher: -20 °C |
| • max. | 55 °C | 55 °C | 55 °C |
| **Dimensions** | | | |
| Width | 71.5 mm | 71.5 mm | 71.5 mm |
| Height | 90 mm | 90 mm | 90 mm |
| Depth | 58 mm | 58 mm | 58 mm |

| Article number | 6ED1055-1MA00-0BA2<br>LOGO! AM2 Exp. mod., 12/24V, 2AI, | 6ED1055-1MD00-0BA2<br>LOGO! AM2 RDT, 2AI, -50..+200°C |
|---|---|---|
| **Installation type/mounting** | | |
| Mounting | on 35 mm DIN rail, 2 spacing units wide | on 35 mm DIN rail, 2 spacing units wide |
| **Supply voltage** | | |
| Rated value (DC) | | |
| • 12 V DC | Yes; 10.8 V DC to 28.8 V DC | Yes; 10.8 V DC to 28.8 V DC |
| • 24 V DC | Yes; 10.8 V DC to 28.8 V DC | Yes; 10.8 V DC to 28.8 V DC |
| **Analog inputs** | | |
| Number of analog inputs | 2 | 2; 2 or 3 wire connection |
| **Input ranges** | | |
| • Voltage | Yes | No |
| • Current | Yes | No |
| • Resistance thermometer | No | Yes; For PT100/PT1000 sensors |
| **Input ranges (rated values), voltages** | | |
| • 0 to +10 V | Yes | No |
| **Input ranges (rated values), currents** | | |
| • 0 to 20 mA | Yes; 0 mA or 4 mA to 20 mA | No |
| **Input ranges (rated values), resistance thermometer** | | |
| • Pt 100 | No | Yes |
| **EMC** | | |
| **Emission of radio interference acc. to EN 55 011** | | |
| • Limit class B, for use in residential areas | Yes | Yes |
| **Degree and class of protection** | | |
| Degree of protection acc. to EN 60529 | | |
| • IP20 | Yes | Yes |

## Technical specifications (continued)

| Article number | **6ED1055-1MA00-0BA2**<br>LOGO! AM2 Exp. mod., 12/24V, 2AI, | **6ED1055-1MD00-0BA2**<br>LOGO! AM2 RDT, 2AI, -50..+200°C |
|---|---|---|
| **Standards, approvals, certificates** | | |
| CE mark | Yes | Yes |
| CSA approval | Yes | Yes |
| UL approval | Yes | Yes |
| FM approval | Yes | Yes |
| developed in accordance with IEC 61131 | Yes | Yes |
| according to VDE 0631 | Yes | |
| Marine approval | Yes | Yes |
| **Ambient conditions** | | |
| **Ambient temperature during operation** | | |
| • min. | 0 °C; ES03 and higher: -20 °C | 0 °C; ES03 and higher: -20 °C |
| • max. | 55 °C | 55 °C |
| **Dimensions** | | |
| Width | 35.5 mm | 35.5 mm |
| Height | 90 mm | 90 mm |
| Depth | 58 mm | 58 mm |

| Article number | **6ED1055-1MM00-0BA2**<br>LOGO! AM2 AQ, 2AQ, 0-10V, 0/4-20mA |
|---|---|
| **Installation type/mounting** | |
| Mounting | on 35 mm DIN rail, 2 spacing units wide |
| **Supply voltage** | |
| Rated value (DC) | |
| • 12 V DC | No |
| • 24 V DC | Yes |
| **Analog outputs** | |
| Number of analog outputs | 2 |
| **Output ranges, voltage** | |
| • 0 to 10 V | Yes |
| **Output ranges, current** | |
| • 0 to 20 mA | Yes |
| • 4 mA to 20 mA | Yes |
| **EMC** | |
| **Emission of radio interference acc. to EN 55 011** | |
| • Limit class B, for use in residential areas | Yes |
| **Degree and class of protection** | |
| Degree of protection acc. to EN 60529 | |
| • IP20 | Yes |

| Article number | **6ED1055-1MM00-0BA2**<br>LOGO! AM2 AQ, 2AQ, 0-10V, 0/4-20mA |
|---|---|
| **Standards, approvals, certificates** | |
| CE mark | Yes |
| CSA approval | Yes |
| UL approval | Yes |
| FM approval | Yes |
| developed in accordance with IEC 61131 | Yes |
| according to VDE 0631 | Yes |
| Marine approval | Yes |
| **Ambient conditions** | |
| **Ambient temperature during operation** | |
| • min. | 0 °C; ES03 and higher: -20 °C |
| • max. | 55 °C |
| **Dimensions** | |
| Width | 35.5 mm |
| Height | 90 mm |
| Depth | 58 mm |

## Ordering data

| | Article No. |
|---|---|
| **LOGO! 8 expansion modules** | |
| **LOGO! DM8 24**<br>24 V DC supply voltage,<br>4 digital inputs 24 V DC,<br>4 digital outputs 24 V DC, 0.3 A | **6ED1055-1CB00-0BA2** |
| **LOGO! DM16 24**<br>24 V DC supply voltage,<br>8 digital inputs 24 V DC,<br>8 digital outputs 24 V DC, 0.3 A | **6ED1055-1CB10-0BA2** |
| **LOGO! DM8 12/24R**<br>12...24 V DC supply voltage,<br>4 digital inputs 12...24 V DC,<br>4 relay outputs 5 A | **6ED1055-1MB00-0BA2** |
| **LOGO! DM8 24R**<br>24 V AC/DC supply voltage,<br>4 digital inputs 24 V AC/DC,<br>4 relay outputs 5 A | **6ED1055-1HB00-0BA2** |
| **LOGO! DM16 24R**<br>24 V DC supply voltage,<br>8 digital inputs 24 V DC,<br>8 relay outputs 5 A | **6ED1055-1NB10-0BA2** |
| **LOGO! DM8 230R**<br>115...230 V AC/DC supply voltage,<br>4 digital inputs 115...230 V AC/DC,<br>4 relay outputs 5 A | **6ED1055-1FB00-0BA2** |
| **LOGO! DM16 230R**<br>115...230 V AC/DC supply voltage,<br>8 digital inputs 115...230 V AC/DC,<br>8 relay outputs 5 A | **6ED1055-1FB10-0BA2** |
| **LOGO! AM2**<br>12...24 V DC supply voltage,<br>2 analog inputs 0 to 10 V or<br>0 to 20 mA, resolution 10 bits | **6ED1055-1MA00-0BA2** |
| **LOGO! AM2 PT 100**<br>12...24 V DC supply voltage,<br>2 analog inputs Pt100,<br>temperature range -50 °C to 200 °C | **6ED1055-1MD00-0BA2** |
| **LOGO! AM2 AQ**<br>24 V DC supply voltage,<br>2 analog outputs 0 to 10 V,<br>0/4 to 20 mA | **6ED1055-1MM00-0BA2** |

| | Article No. |
|---|---|
| **Accessories for LOGO! 8** | |
| **LOGO!Soft Comfort V8**<br>For programming on the PC<br>in LAD/FBD;<br>executes on Windows 8, 7, XP,<br>Linux and Mac OSX; on DVD | **6ED1058-0BA08-0YA1** |

# LOGO! basic and expansion modules

## SIPLUS LOGO! basic modules with display

### Overview

- The space-saving basic variants
- Interface for connecting expansion modules, up to 24 digital inputs, 20 (16) digital outputs, 8 analog inputs and 8 (2) analog outputs can be addressed
- With connection option for LOGO! TDE text display
- All basic units with integrated web server
- Same enclosure width as LOGO! 0BA6 (4 U)
- All basic units with Ethernet interface for communication with LOGO!, SIMATIC Controllers, SIMATIC Panel and PC
- Use of standard micro CF cards

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

### Technical specifications

| Article number | **6AG1052-1CC08-7BA0** | **6AG1052-1MD08-7BA0** | **6AG1052-1HB08-7BA0** | **6AG1052-1FB08-7BA0** |
|---|---|---|---|---|
| Based on | **6ED1052-1CC08-0BA0** | **6ED1052-1MD08-0BA0** | **6ED1052-1HB08-0BA0** | **6ED1052-1FB08-0BA0** |
| | SIPLUS LOGO! 24CE | SIPLUS LOGO! 12/24RCE | SIPLUS LOGO! 24RCE | SIPLUS LOGO! 230RCE |
| **Ambient conditions** | | | | |
| **Ambient temperature during operation** | | | | |
| • min. | -25 °C; = Tmin; Startup @ -20 °C | -25 °C; = Tmin; Startup @ -20 °C | -25 °C; = Tmin; Startup @ -20 °C | -25 °C; = Tmin; Startup @ -20 °C |
| • max. | 70 °C; Tmax; Tmax > +55 °C max. load 0.2 A per output | 70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points) | 70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points) | 70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay |
| • At cold restart, min. | -20 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -20 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -20 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -20 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) |
| **Ambient temperature during storage/transportation** | | | | |
| • min. | -40 °C | -40 °C | -40 °C | -40 °C |
| • max. | 70 °C | 70 °C | 70 °C | 70 °C |
| **Altitude during operation relating to sea level** | | | | |
| • Installation altitude above sea level, max. | 5 000 m | 5 000 m | 5 000 m | 2 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa ( -1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) |
| **Relative humidity** | | | | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |

## Technical specifications (continued)

| Article number | 6AG1052-1CC08-7BA0 | 6AG1052-1MD08-7BA0 | 6AG1052-1HB08-7BA0 | 6AG1052-1FB08-7BA0 |
|---|---|---|---|---|
| Based on | 6ED1052-1CC08-0BA0 | 6ED1052-1MD08-0BA0 | 6ED1052-1HB08-0BA0 | 6ED1052-1FB08-0BA0 |
| | SIPLUS LOGO! 24CE | SIPLUS LOGO! 12/24RCE | SIPLUS LOGO! 24RCE | SIPLUS LOGO! 230RCE |
| **Resistance** | | | | |
| **Coolants and lubricants** | | | | |
| - Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air |
| **Use in stationary industrial systems** | | | | |
| - to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| - to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * |
| **Use on ships/at sea** | | | | |
| - to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| - to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * |
| **Remark** | | | | |
| - Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| **Conformal coating** | | | | |
| • Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability | Yes; Class 2 for high availability | Yes; Class 2 for high availability | Yes; Class 2 for high availability |
| • Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection | Yes; Type 1 protection | Yes; Type 1 protection | Yes; Type 1 protection |
| • Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A |

## SIPLUS LOGO! basic modules with display

### Ordering data

| | Article No. |
|---|---|
| **SIPLUS LOGO! 8 logic module** | |
| **SIPLUS LOGO! 24CE** | |
| Supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used in analog mode (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A, integrated time switch, Ethernet interface; 400 function blocks can be interlinked, modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-1CC08-7BA0** |
| **SIPLUS LOGO! 12/24RCE** | |
| Supply voltage 12...24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used in analog mode (0 to 10 V), 4 relay outputs 10 A, integrated time switch, Ethernet interface; 400 function blocks can be interlinked, modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-1MD08-7BA0** |
| **SIPLUS LOGO! 24RCE** | |
| Supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch, Ethernet interface; 400 function blocks can be interlinked, modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-1HB08-7BA0** |
| **SIPLUS LOGO! 230RCE** | |
| Supply voltage 115...230 V AC/DC, 8 digital inputs 115...230 V AC/DC, 4 relay outputs 10 A, integrated time switch, Ethernet interface; 400 function blocks can be interlinked, modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-1FB08-7BA0** |

| | Article No. |
|---|---|
| **Accessories** | |
| **SIPLUS LOGO! TDE** | **6AG1055-4MH08-2BA0** |
| (Extended temperature range -10 ... +60 °C and exposure to environmental substances) | |
| 6-line text display, can be connected to all LOGO! 8 variants with and without display, with 2 Ethernet interfaces; incl. installation accessories. Requires additional 12 V DC or 24 V AC/DC power supply | |
| **Accessories for SIPLUS LOGO! 6, 7, 8** | |
| **LOGO!Soft Comfort V8** | **6ED1058-0BA08-0YA1** |
| For programming on the PC in LAD/FBD; executes on Windows 8, 7, XP, Linux and Mac OSX; on DVD | |
| **Front panel mounting set** | **6AG1057-1AA00-0AA2** |
| Width 8 U, with keys | |

## SIPLUS LOGO! basic modules without display

### Overview

- Basic variants optimized for costs
- Interface for connecting expansion modules, up to 24 digital inputs, 16 (20) digital outputs, 8 analog inputs and 2 (8) analog outputs can be addressed
- With connection option for LOGO! TDE text display
- All basic units with integrated web server
- Same enclosure width as LOGO! 0BA6 (4 U)
- All basic units with Ethernet interface for communication with LOGO!, SIMATIC Controllers, SIMATIC Panel and PC
- Use of standard micro CF cards

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

### Technical specifications

| Article number<br>Based on | **6AG1052-2CC08-7BA0**<br>**6ED1052-2CC08-0BA0**<br>SIPLUS LOGO! 24CEO | **6AG1052-2MD08-7BA0**<br>**6ED1052-2MD08-0BA0**<br>SIPLUS LOGO! 12/24RCEO | **6AG1052-2HB08-7BA0**<br>**6ED1052-2HB08-0BA0**<br>SIPLUS LOGO! 24RCEO (AC) | **6AG1052-2FB08-7BA0**<br>**6ED1052-2FB08-0BA0**<br>SIPLUS LOGO! 230RCEO |
|---|---|---|---|---|
| **Ambient conditions** | | | | |
| **Ambient temperature during operation** | | | | |
| • min. | -40 °C; = Tmin;<br>Startup @ -25 °C | -40 °C; = Tmin;<br>Startup @ -25 °C | -40 °C; = Tmin;<br>Startup @ -25 °C | -40 °C; = Tmin;<br>Startup @ -25 °C |
| • max. | 70 °C; Tmax; Tmax > +55 °C max. load 0.2 A per output | 70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points) | 70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points) | 70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay |
| • At cold restart, min. | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) |
| **Ambient temperature during storage/transportation** | | | | |
| • min. | -40 °C | -40 °C | -40 °C | -40 °C |
| • max. | 70 °C | 70 °C | 70 °C | 70 °C |
| **Altitude during operation relating to sea level** | | | | |
| • Installation altitude above sea level, max. | 5 000 m | 5 000 m | 5 000 m | 2 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) |
| **Relative humidity** | | | | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |

## Technical specifications (continued)

| Article number | 6AG1052-2CC08-7BA0 | 6AG1052-2MD08-7BA0 | 6AG1052-2HB08-7BA0 | 6AG1052-2FB08-7BA0 |
|---|---|---|---|---|
| Based on | 6ED1052-2CC08-0BA0 | 6ED1052-2MD08-0BA0 | 6ED1052-2HB08-0BA0 | 6ED1052-2FB08-0BA0 |
| | SIPLUS LOGO! 24CEO | SIPLUS LOGO! 12/24RCEO | SIPLUS LOGO! 24RCEO (AC) | SIPLUS LOGO! 230RCEO |
| **Resistance** | | | | |
| **Coolants and lubricants** | | | | |
| - Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air |
| **Use in stationary industrial systems** | | | | |
| - to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| - to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * |
| **Use on ships/at sea** | | | | |
| - to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| - to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * |
| **Remark** | | | | |
| - Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| **Conformal coating** | | | | |
| • Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability | Yes; Class 2 for high availability | Yes; Class 2 for high availability | Yes; Class 2 for high availability |
| • Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection | Yes; Type 1 protection | Yes; Type 1 protection | Yes; Type 1 protection |
| • Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A |

## SIPLUS LOGO! basic modules without display

| Ordering data | Article No. |
|---|---|
| **SIPLUS LOGO! 8 logic module** | |
| **SIPLUS LOGO! 24CEo**<br>24 V DC supply voltage<br>8 digital inputs 24 V DC,<br>of which 4 can be used<br>in analog mode (0 to 10 V)<br>4 digital outputs 24 V DC, 0.3 A,<br>integrated time switch,<br>Ethernet interface;<br>without display and keyboard<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-2CC08-7BA0** |
| **SIPLUS LOGO! 230RCEo**<br>115...230 V AC/DC supply voltage<br>8 digital inputs 115...230 V AC/DC<br>4 relay outputs 10 A<br>integrated time switch,<br>Ethernet interface;<br>without display or keyboard<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-2FB08-7BA0** |
| **SIPLUS LOGO! 24RCEo**<br>24 V AC/DC supply voltage,<br>8 digital inputs 24 V AC/DC,<br>4 relay outputs 10 A,<br>integrated time switch,<br>Ethernet interface;<br>without display or keyboard;<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-2HB08-7BA0** |
| **SIPLUS LOGO! 12/24RCEo**<br>12...24 V DC supply voltage<br>8 digital inputs 12...24 V DC,<br>of which 4 can be used<br>in analog mode (0 to 10 V)<br>4 relay outputs 10 A<br>integrated time switch,<br>Ethernet interface;<br>without display and keyboard<br>400 function blocks<br>can be interlinked,<br>modular expansion capability | |
| Extended temperature range and exposure to environmental substances | **6AG1052-2MD08-7BA0** |

| Accessories | Article No. |
|---|---|
| **SIPLUS LOGO! TDE**<br>(Extended temperature range<br>-10 ... +60 °C and exposure to<br>environmental substances)<br>6-line text display,<br>can be connected to all<br>LOGO! 8 variants with and without<br>display, with 2 Ethernet interfaces;<br>incl. installation accessories.<br>Requires additional 12 V DC or<br>24 V AC/DC power supply | **6AG1055-4MH08-2BA0** |
| **Accessories for SIPLUS LOGO! 6, 8** | |
| **LOGO!Soft Comfort V8**<br>For programming on the PC<br>in LAD/FBD;<br>executes on Windows 8, 7, XP,<br>Linux and Mac OSX; on DVD | **6ED1058-0BA08-0YA1** |
| **Front panel mounting set**<br>Width 8 U, with keys | **6AG1057-1AA00-0AA2** |

## Overview

- Expansion modules for connection to LOGO! modular
- With digital inputs and outputs, analog inputs, or analog outputs

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

## Technical specifications

| Article number | **6AG1055-1CB00-7BA2** | **6AG1055-1HB00-7BA2** | **6AG1055-1MB00-7BA2** |
|---|---|---|---|
| Based on | **6ED1055-1CB00-0BA2** | **6ED1055-1HB00-0BA2** | **6ED1055-1MB00-0BA2** |
| | SIPLUS LOGO! DM8 24 V8 | SIPLUS LOGO! DM8 24R V8 | SIPLUS LOGO! DM8 12/24R (LOGO 8) |
| **Ambient conditions** | | | |
| **Ambient temperature during operation** | | | |
| • min. | -40 °C; = Tmin; Startup @ -25 °C | -40 °C; = Tmin; Startup @ -25 °C | -40 °C; = Tmin; Startup @ -25 °C |
| • max. | 70 °C; Tmax; Tmax > +55 °C max. load 0.2 A per output | 70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay or max. total current 10 A | 70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay or max. total current 10 A |
| • At cold restart, min. | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) |
| **Ambient temperature during storage/transportation** | | | |
| • min. | -40 °C | -40 °C | -40 °C |
| • max. | 70 °C | 70 °C | 70 °C |
| **Altitude during operation relating to sea level** | | | |
| • Installation altitude above sea level, max. | 5 000 m | 5 000 m | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |
| **Relative humidity** | | | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| **Resistance** | | | |
| **Coolants and lubricants** | | | |
| - Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air |
| **Use in stationary industrial systems** | | | |
| - to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| - to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * |

## Technical specifications (continued)

| Article number | 6AG1055-1CB00-7BA2 | 6AG1055-1HB00-7BA2 | 6AG1055-1MB00-7BA2 |
|---|---|---|---|
| Based on | 6ED1055-1CB00-0BA2 | 6ED1055-1HB00-0BA2 | 6ED1055-1MB00-0BA2 |
| | SIPLUS LOGO! DM8 24 V8 | SIPLUS LOGO! DM8 24R V8 | SIPLUS LOGO! DM8 12/24R (LOGO 8) |
| **Use on ships/at sea** | | | |
| - to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| - to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * |
| **Remark** | | | |
| - Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| **Conformal coating** | | | |
| • Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability | Yes; Class 2 for high availability | Yes; Class 2 for high availability |
| • Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection | Yes; Type 1 protection | Yes; Type 1 protection |
| • Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A |
| **Dimensions** | | | |
| Width | 35.5 mm | 35.5 mm | 35.5 mm |
| Height | 90 mm | 90 mm | 90 mm |
| Depth | 58 mm | 58 mm | 58 mm |

| Article number | 6AG1055-1FB00-7BA2 | 6AG1055-1NB10-7BA2 |
|---|---|---|
| Based on | 6ED1055-1FB00-0BA2 | 6ED1055-1NB10-0BA2 |
| | SIPLUS LOGO! DM8 230R V8 | SIPLUS LOGO! DM16 24R V8 |
| **Ambient conditions** | | |
| **Ambient temperature during operation** | | |
| • min. | -40 °C; = Tmin; Startup @ -25 °C | -40 °C; = Tmin; Startup @ -25 °C |
| • max. | 70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay or max. total current 10 A | 70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay |
| • At cold restart, min. | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) |
| **Ambient temperature during storage/transportation** | | |
| • min. | -40 °C | -40 °C |
| • max. | 70 °C | 70 °C |
| **Altitude during operation relating to sea level** | | |
| • Installation altitude above sea level, max. | 2 000 m | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |
| **Relative humidity** | | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| **Resistance** | | |
| **Coolants and lubricants** | | |
| - Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air | Yes; Incl. diesel and oil droplets in the air |

## Technical specifications (continued)

| Article number | **6AG1055-1FB00-7BA2** | **6AG1055-1NB10-7BA2** |
|---|---|---|
| Based on | **6ED1055-1FB00-0BA2** | **6ED1055-1NB10-0BA2** |
| | SIPLUS LOGO! DM8 230R V8 | SIPLUS LOGO! DM16 24R V8 |
| **Use in stationary industrial systems** | | |
| - to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| - to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * | Yes; Class 3S4 incl. sand, dust, * |
| **Use on ships/at sea** | | |
| - to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| - to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * | Yes; Class 6S3 incl. sand, dust; * |
| **Remark** | | |
| - Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| **Conformal coating** | | |
| • Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability | Yes; Class 2 for high availability |
| • Protection against fouling a cc. to EN 60664-3 | Yes; Type 1 protection | Yes; Type 1 protection |
| • Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life | Yes; Discoloration of coating possible during service life |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A | Yes; Conformal coating, Class A |

| Article number | **6AG1055-1MA00-7BA2** |
|---|---|
| Based on | **6ED1055-1MA00-0BA2** |
| | SIPLUS LOGO! AM2 V8 |
| **Ambient conditions** | |
| **Ambient temperature during operation** | |
| • min. | -40 °C; = Tmin; Startup @ -25 °C |
| • max. | 70 °C; = Tmax |
| • At cold restart, min. | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) |
| **Ambient temperature during storage/transportation** | |
| • min. | -40 °C |
| • max. | 70 °C |
| **Altitude during operation relating to sea level** | |
| • Installation altitude above sea level, max. | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |
| **Relative humidity** | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| **Resistance** | |
| **Coolants and lubricants** | |
| - Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air |

| Article number | **6AG1055-1MA00-7BA2** |
|---|---|
| Based on | **6ED1055-1MA00-0BA2** |
| | SIPLUS LOGO! AM2 V8 |
| **Use in stationary industrial systems** | |
| - to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| - to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| **Use on ships/at sea** | |
| - to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| - to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * |
| **Remark** | |
| - Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| **Conformal coating** | |
| • Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability |
| • Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection |
| • Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A |

## Technical specifications (continued)

| Article number | 6AG1055-1MM00-7BA2 |
|---|---|
| Based on | 6ED1055-1MM00-0BA2 |
| | SIPLUS LOGO! AM2 AQ V8 |
| **Ambient conditions** | |
| **Ambient temperature during operation** | |
| • min. | -40 °C; = Tmin; Startup @ -25 °C |
| • max. | 70 °C; = Tmax |
| • At cold restart, min. | -25 °C; incl. condensation / frost permitted (no commissioning under condensation conditions) |
| **Ambient temperature during storage/transportation** | |
| • min. | -40 °C |
| • max. | 70 °C |
| **Altitude during operation relating to sea level** | |
| • Installation altitude above sea level, max. | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |
| **Relative humidity** | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |

| Article number | 6AG1055-1MM00-7BA2 |
|---|---|
| Based on | 6ED1055-1MM00-0BA2 |
| | SIPLUS LOGO! AM2 AQ V8 |
| **Resistance** | |
| **Coolants and lubricants** | |
| - Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air |
| **Use in stationary industrial systems** | |
| - to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| - to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| **Use on ships/at sea** | |
| - to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| - to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| - to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * |
| **Remark** | |
| - Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| **Conformal coating** | |
| • Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability |
| • Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection |
| • Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A |

## SIPLUS LOGO! expansion modules

| Ordering data | Article No. |
|---|---|
| **SIPLUS LOGO! 8 expansion modules** | |
| **SIPLUS LOGO! DM8 24** | |
| Supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1CB00-7BA2** |
| **SIPLUS LOGO! DM8 230R** | |
| 115...230 V AC/DC supply voltage, 4 digital inputs 115...230 V AC/DC, 4 relay outputs 5 A | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1FB00-7BA2** |
| **SIPLUS LOGO! DM8 24R** | |
| Supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1HB00-7BA2** |
| **SIPLUS LOGO! AM2** | |
| 12...24 V DC supply voltage, 2 analog inputs 0 to 10 V or 0 to 20 mA, 10-bit resolution | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1MA00-7BA2** |
| **SIPLUS LOGO! DM8 12/24R** | |
| 12...24 V DC supply voltage, 4 digital inputs 12...24 V DC, 4 relay outputs 5 A | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1MB00-7BA2** |
| **SIPLUS LOGO! AM2 AQ** | |
| Supply voltage 24 V DC, 2 analog outputs 0 to 10 V, 0/4 to 20 mA | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1MM00-7BA2** |
| **SIPLUS LOGO! DM16 24R** | |
| Supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A | |
| Extended temperature range and exposure to environmental substances | **6AG1055-1NB10-7BA2** |

| Accessories | Article No. |
|---|---|
| **LOGO!Soft Comfort V8** | **6ED1058-0BA08-0YA1** |
| For programming on the PC in LAD/FBD; executes on Windows 8, 7, XP, Linux and Mac OSX; on DVD | |
| **Front panel mounting set** | |
| Width 8 U, with keys | **6AG1057-1AA00-0AA2** |

## Overview

- Communication modules for connecting LOGO! Modular to different bus systems.

Note on compatibility:

| Communication module | Can be used with: |
|---|---|
| LOGO! CMK2000 communication module | LOGO! ...0BA8 |
| LOGO! CSM 12/24 | LOGO! ...0BA7/...0BA8 |
| LOGO! CSM 230 | LOGO! ...0BA7 |
| LOGO! CMR2020 | LOGO! ...0BA8 |
| LOGO! CMR2040 | LOGO! ...0BA8 |

## LOGO! CMK2000 communication module

### Overview

- Expansion module for LOGO! 8 basic versions
- For integrating LOGO! 8 in KNX installations
- With 24 digital inputs, 20 digital outputs as well as 8 analog inputs and outputs for processing process signals via KNX.



### Technical specifications

| Article number | **6BK1700-0BA20-0AA0**<br>LOGO! CMK2000 |
|---|---|
| **General information** | |
| Firmware version | |
| • FW update possible | Yes |
| **Installation type/mounting** | |
| Mounting | on 35 mm DIN rail, 4 spacing units wide |
| **Supply voltage** | |
| Rated value (DC) | 24 V |
| • 12 V DC | No |
| • 24 V DC | Yes |
| Rated value (AC) | |
| • 24 V AC | No |
| **Input current** | |
| Current consumption, max. | 0.04 A |
| **Power loss** | |
| Power loss, max. | 1.1 W |
| **Memory** | |
| Flash | Yes |
| **Time of day** | |
| **Clock synchronization** | |
| • supported | Yes |
| **Interfaces** | |
| Number of industrial Ethernet interfaces | 1; Ethernet, 1 port, RJ45 |
| Number of other interfaces | 1; EIB/KNX |
| Transmission rate, max. | 100 Mbit/s over Ethernet,<br>9 600 bit/s over KNX |
| **Protocols** | |
| EIB/KNX | Yes |
| **Web server** | |
| • supported | Yes |

| Article number | **6BK1700-0BA20-0AA0**<br>LOGO! CMK2000 |
|---|---|
| **Communication functions** | |
| **S7 basic communication** | |
| • supported | No |
| **LOGO! communication** | |
| • supported | Yes |
| **Interrupts/diagnostics/ status information** | |
| **Diagnostics indication LED** | |
| • RUN/STOP LED | Yes |
| **EMC** | |
| **Emission of radio interference acc. to EN 55 011** | |
| • Limit class B, for use in residential areas | Yes; In accordance with EN 61000-6-3 |
| **Degree and class of protection** | |
| Degree of protection acc. to EN 60529 | |
| • IP20 | Yes |
| **Standards, approvals, certificates** | |
| CE mark | Yes |
| CSA approval | Yes |
| UL approval | Yes |
| cULus | Yes |
| FM approval | No |
| RCM (formerly C-TICK) | No |
| KC approval | Yes |
| EAC (formerly Gost-R) | Yes |
| according to VDE 0631 | No |
| Marine approval | No |
| **Ambient conditions** | |
| **Ambient temperature during operation** | |
| • min. | 0 °C |
| • max. | 55 °C |
| **Ambient temperature during storage/transportation** | |
| • min. | -40 °C |
| • max. | 70 °C |
| **Relative humidity** | |
| • Operation, max. | 95 % |
| **Connection method** | |
| Design of electrical connection for supply voltage | 2 screw-type terminals:<br>L+, M 0.5 mm² - 2.5 mm²<br>Screw-type terminal:<br>FE 0.5 mm² ... 6.0 mm² |
| Design of plug-in connection | KNX terminal 0.6 mm² - 1.0 mm² |
| **Dimensions** | |
| Width | 71.5 mm; 4TE |
| Height | 90 mm |
| Depth | 58.5 mm |
| **Weights** | |
| Weight, approx. | 0.14 kg |

### Ordering data

| | **Article No.** |
|---|---|
| **LOGO! CMK2000 communication module**<br>For integrating LOGO! 8 in the KNX building system bus, max. 50 communication objects can be configured;<br>RJ45 port for Ethernet;<br>supply voltage 24 V DC/40 mA | **6BK1700-0BA20-0AA0** |

## Overview

The module is used to connect a LOGO! and up to three other nodes to an Industrial Ethernet network with 10/100 Mbps in an electrical linear, tree or star topology.

The essential features of the LOGO! CSM are:

- Unmanaged 4-port switch, of which one port is on the front for easy diagnostics access
- Two versions for the voltage ranges 12/24 V DC or 230 V AC/DC
- Problem-free connection using four RJ45 standard connectors
- Space-saving, optimized for connection to LOGO!
- Low-cost solution for implementing small, local Ethernet networks
- Stand-alone use for networking any Ethernet devices

## Technical specifications

| Article number | **6GK7177-1FA10-0AA0** | **6GK7177-1MA20-0AA0** |
|---|---|---|
| Product type designation | LOGO! CSM 230 | LOGO! CSM 12/24 |
| **Transmission rate** | | |
| Transfer rate | 10 Mbit/s, 100 Mbit/s | 10 Mbit/s, 100 Mbit/s |
| **Interfaces for communication integrated** | | |
| Number of electrical connections | | |
| • for network components or terminal equipment | 4 | 4 |
| Number of 100 Mbit/s SC ports | | |
| • for multimode | 0 | 0 |
| Number of 1000 Mbit/s LC ports | | |
| • for multimode | 0 | 0 |
| • for single mode (LD) | 0 | 0 |
| **Interfaces others** | | |
| Number of electrical connections | | |
| • for power supply | 1 | 1 |
| Type of electrical connection | | |
| • for power supply | 3-pole terminal block | 3-pole terminal block |
| **Supply voltage, current consumption, power loss** | | |
| Type of voltage of the supply voltage | 115...240 V AC/DC | 12/24 V DC |
| Supply voltage | | |
| • external | 230 V | 24 V |
| • external minimum | 100 V | 10.2 V |
| • external maximum | 240 V | 30.2 V |
| Product component fusing at power supply input | Yes | Yes |
| Consumed current maximum | 0.02 A | 0.15 A |
| Power loss [W] | | |
| • at DC at 24 V | | 1.5 W |
| • at AC at 230 V | 1.8 W | |
| **Permitted ambient conditions** | | |
| Ambient temperature | | |
| • during operation | 0 ... 55 °C | 0 ... 55 °C |
| • during storage | -40 ... +70 °C | -40 ... +70 °C |
| • during transport | -40 ... +70 °C | -40 ... +70 °C |
| Relative humidity | | |
| • at 25 °C without condensation during operation maximum | 90 % | 90 % |
| Protection class IP | IP20 | IP20 |

## Technical specifications (continued)

| Article number | 6GK7177-1FA10-0AA0 | 6GK7177-1MA20-0AA0 |
|---|---|---|
| **Design, dimensions and weight** | | |
| Design | LOGO! module | LOGO! module |
| Width | 72 mm | 71.5 mm |
| Height | 90 mm | 90 mm |
| Depth | 55 mm | 58.2 mm |
| Net weight | 0.155 kg | 0.15 kg |
| Mounting type | | |
| • 35 mm DIN rail mounting | Yes | Yes |
| • wall mounting | Yes | Yes |
| • S7-300 rail mounting | No | No |
| • S7-1500 rail mounting | No | No |
| **Product functions management, configuration** | | |
| Product function | | |
| • multiport mirroring | No | No |
| Product function switch-managed | No | No |
| **Standards, specifications, approvals** | | |
| Standard | | |
| • for FM | FM3600 and 3611: CL. I, Div2, Group A,B,C,D T4, CL I, Zone 2, Group IIC, T4, Ta=55°C | |
| • for hazardous zone | no | ATEX: EN 60079-0 : 2009,EN 60079-15 :2010 (Directive 94/9/EC), IECEx: IEC 60079-0 :2011, IEC 60079-15 :2010 |
| • for safety from CSA and UL | UL60079-0, UL60079-15, CSA C22.2 | UL 508, CSA C22.2 No. 142 |
| • for hazardous zone from CSA and UL | | Haz-Loc ANSI/ISA 12.12.01: CL. I, Div2, Group A,B,C,D T4, CL I, Zone 2, Group IIC, T4, Ta=55°C |
| **Standards, specifications, approvals CE** | | |
| Certificate of suitability CE marking | Yes | Yes |
| **Standards, specifications, approvals miscellaneous** | | |
| Certificate of suitability | | |
| • C-Tick | Yes | Yes |
| • KC approval | No | No |
| **Standards, specifications, approvals ship classification** | | |
| Marine classification association | | |
| • American Bureau of Shipping Europe Ltd. (ABS) | No | No |
| • Bureau Veritas (BV) | No | No |
| • Det Norske Veritas (DNV) | No | No |
| • Germanische Lloyd (GL) | No | No |
| • Lloyds Register of Shipping (LRS) | No | No |
| • Nippon Kaiji Kyokai (NK) | No | No |
| • Polski Rejestr Statkow (PRS) | No | No |

## Ordering data

| | Article No. |
|---|---|
| **LOGO! CSM compact switch modules** | |
| Unmanaged switch for connection of one LOGO! and up to three further nodes on Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; LED diagnostics, LOGO! module | |
| • **LOGO! CSM12/24** external 12 V DC or 24 V DC power supply, for LOGO! ... 0BA7/... 0BA8 | **6GK7177-1MA20-0AA0** |
| • **LOGO! CSM230** external 115 ... 240 V AC power supply, for LOGO! ... 0BA7 | **6GK7177-1FA10-0AA0** |

| | Article No. |
|---|---|
| **Accessories** | |
| **IE TP cord RJ45/RJ45** | |
| TP cable 4 x 2 with 2 RJ45 plugs | |
| • 0.5 m | **6XV1870-3QE50** |
| • 1 m | **6XV1870-3QH10** |
| • 2 m | **6XV1870-3QH20** |
| • 6 m | **6XV1870-3QH60** |
| • 10 m | **6XV1870-3QN10** |
| **IE FC outlet RJ45** | **6GK1901-1FC00-0AA0** |
| For connection of Industrial Ethernet FC cables and TP cords; graduated prices for 10 and 50 units or more | |

## Overview

LOGO! CMR in combination with the LOGO! logic module is a cost-efficient communication system suitable for monitoring and controlling distributed plants and systems via text message or email.

LOGO! CMR can send text messages or emails to predefined mobile network numbers as well as receive text messages from predefined mobile network numbers.

Sending a text message/email can be initiated by events in the LOGO! basic module as well as by the two digital alarm inputs of the LOGO! CMR. The values in the LOGO! logic module can be directly influenced by receiving a text message.

The LOGO! CMR offers comfortable Web Based Management commissioning and diagnostics via local and/or remote access.

The two digital outputs can also be switched remotely by incoming text messages/emails.

LOGO! CMR determines the current position of the module based on the GPS signal received by the GPS antenna. In addition, the LOGO! 8 logic module can be time-synchronized by means of the time included in the GPS signal. Determination of time by means of an NTP server or from the data of the mobile network provider offers more options for synchronization of the LOGO! BM with the current time of day.

Product version:

- LOGO! CMR2020 for use in GSM/GPRS mobile wireless networks
- LOGO! CMR2040 for use in LTE mobile wireless networks

Warning! The country-specific mobile network approvals must be observed:

http://www.siemens.com/mobilenetwork-approvals

## Technical specifications

| Article number | **6GK7142-7BX00-0AX0** | **6GK7142-7EX00-0AX0** |
|---|---|---|
| Product type designation | LOGO! CMR2020 | LOGO! CMR2040 |
| **Transmission rate** | | |
| Transfer rate | | |
| • at the 1st interface | 10 ... 100 Mbit/s | 10 ... 100 Mbit/s |
| • for GPRS transmission | | |
| - with downlink maximum | 80 kbit/s | 85.6 kbit/s |
| - with uplink maximum | 40 kbit/s | 85.6 kbit/s |
| • for LTE transmission | | |
| - with downlink maximum | | 100 Mbit/s |
| - with uplink maximum | | 50 Mbit/s |
| **Interfaces** | | |
| Number of interfaces acc. to Industrial Ethernet | 1 | 1 |
| Number of electrical connections | | |
| • at the 1st interface acc. to Industrial Ethernet | 1 | 1 |
| • for external antenna(s) | 2 | 2 |
| • for power supply | 1 | 1 |
| Number of slots | | |
| • for SIM cards | 1 | 1 |
| • for memory cards | 1 | 1 |
| Type of electrical connection | | |
| • at the 1st interface acc. to Industrial Ethernet | RJ45 port | RJ45 port |
| • for external antenna(s) | SMA socket (50 ohms) | SMA socket (50 ohms) |
| • for power supply | 3-pole terminal block | 3-pole terminal block |
| Type of antenna | | |
| • at port 1 connectable | GPS Antenna | GPS Antenna |
| • at port 2 connectable | Mobile radio antenna (GPRS/GSM) | Mobile radio antenna (GPRS/GSM, UMTS, LTE) |
| Wire length of antenna cable maximum | 15 m | 15 m |

## Technical specifications (continued)

| Article number | 6GK7142-7BX00-0AX0 | 6GK7142-7EX00-0AX0 |
|---|---|---|
| Product type designation | LOGO! CMR2020 | LOGO! CMR2040 |
| Slot version | | |
| • for SIM card | Standard | Standard |
| • of the memory card | microSD | microSD |
| Storage capacity of the memory card maximum | 32 Gibyte | 32 Gibyte |
| Performance class of the memory card minimum necessary | Class 6 | Class 6 |
| Type of file system Type of file system | FAT32 | FAT32 |
| **Signal-Inputs/outputs** | | |
| Number of electrical connections for digital input signals | 2 | 2 |
| Type of electrical connection for digital input signals | 3 pole terminal block | 3 pole terminal block |
| Digital input version | not galvanically isolated, not debounced | not galvanically isolated, not debounced |
| Input voltage at digital input | | |
| • with signal <0> at DC | 0 ... 5 V | 0 ... 5 V |
| • for signal <1> at DC | 8.5 ... 24 V | 8.5 ... 24 V |
| Input current at digital input for signal <1> maximum | 5.5 mA | 5.5 mA |
| Number of electrical connections for digital output signals | 2 | 2 |
| Type of electrical connection for digital output signals | 3 pole terminal block | 3 pole terminal block |
| Digital output version | transistor, not potential seperated | transistor, not potential seperated |
| Output voltage at digital output | | |
| • for signal <1> | 12 ... 24 V; Value of the actual supply voltage | 12 ... 24 V; Value of the actual supply voltage |
| • for signal <0> | 0 ... 5 V | 0 ... 5 V |
| Output current at digital output for signal <1> maximum | 0.3 A | 0.3 A |
| **Wireless technology** | | |
| Type of mobile wireless service | | |
| • is supported SMS | Yes | Yes |
| • is supported GPRS | Yes | Yes |
| • Note | GPRS (Multislot Class 10, Mobile Station Class B) | LTE |
| Type of mobile network is supported | | |
| • GSM | Yes | Yes |
| • UMTS | No | Yes |
| • LTE | No | Yes |
| Operating frequency | | |
| • for GSM transmission 850 MHz | Yes | No |
| • for GSM transmission 900 MHz | Yes | Yes |
| • for GSM transmission 1800 MHz | Yes | Yes |
| • for GSM transmission 1900 MHz | Yes | No |
| • with UMTS transmission 850 MHz | No | Yes |
| • with UMTS transmission 900 MHz | No | Yes |
| • with UMTS transmission 2100 MHz | No | Yes |
| • for LTE transmission 800 MHz | No | Yes |
| • for LTE transmission 1800 MHz | No | Yes |
| • for LTE transmission 2600 MHz | No | Yes |

## Technical specifications (continued)

| Article number | 6GK7142-7BX00-0AX0 | 6GK7142-7EX00-0AX0 |
|---|---|---|
| Product type designation | LOGO! CMR2020 | LOGO! CMR2040 |
| **Supply voltage, current consumption, power loss** | | |
| Type of voltage of the supply voltage | DC | DC |
| Supply voltage external | 12 ... 24 V | 12 ... 24 V |
| Supply voltage external at DC | 12 ... 24 V | 12 ... 24 V |
| Supply voltage for GPS antenna maximum | 3.8 V; at 5 mA: 3,575 V / at 10 mA: 3,35 V / at 15 mA: 3,125 V | 3.8 V; at 5 mA: 3,575 V / at 10 mA: 3,35 V / at 15 mA: 3,125 V |
| Relative positive tolerance at DC at 24 V | 20 % | 20 % |
| Relative negative tolerance at DC at 12 V | 10 % | 10 % |
| Consumed current | | |
| • from external supply voltage at DC at 12 V maximum | 0.25 A | 0.25 A |
| • from external supply voltage at DC at 24 V maximum | 0.125 A | 0.125 A |
| Output current for GPS antenna maximum | 15 mA | 15 mA |
| Power loss [W] | 3 W | 3 W |
| **Permitted ambient conditions** | | |
| Ambient temperature | | |
| • during operation | -20 ... +70 °C | -20 ... +70 °C |
| • during storage | -40 ... +85 °C | -40 ... +85 °C |
| • during transport | -40 ... +85 °C | -40 ... +85 °C |
| Relative humidity at 25 °C without condensation during operation maximum | 95 % | 95 % |
| Protection class IP | IP20 | IP20 |
| **Design, dimensions and weight** | | |
| Module format | Compact module, for rail mounting | Compact module, for rail mounting |
| Width | 71.5 mm | 71.5 mm |
| Height | 90 mm | 90 mm |
| Depth | 58.2 mm | 58.2 mm |
| Net weight | 0.16 kg | 0.16 kg |
| Mounting type | | |
| • 35 mm DIN rail mounting | Yes | Yes |
| • wall mounting | Yes | Yes |
| **Product properties, functions, components general** | | |
| Product function | | |
| • DynDNS client | Yes | Yes |
| • no-ip.com client | Yes | Yes |
| **Performance data** | | |
| Number of possible connections to the LOGO! logic module | 1 | 1 |
| Number of users/telephone numbers/ email addresses definable maximum | 20 | 20 |
| Number of user groups definable maximum | 10 | 10 |
| Number of signals for monitoring or device control definable maximum | 32 | 32 |
| Number of events for monitoring definable maximum | 32 | 32 |
| number of actions definable maximum | 32 | 32 |
| Number of assignments definable maximum | 32 | 32 |
| Number of alias SMS commands definable maximum | 20 | 20 |
| Number of constants definable maximum | 10 | 10 |

## Technical specifications (continued)

| Article number | 6GK7142-7BX00-0AX0 | 6GK7142-7EX00-0AX0 |
|---|---|---|
| Product type designation | LOGO! CMR2020 | LOGO! CMR2040 |
| **Performance data IT functions** | | |
| Number of possible connections | | |
| • as server by means of HTTP maximum | 2 | 2 |
| • as server by means of HTTPS maximum | 2; http and https can be combined (max. number of 2 connections cannot be exceeded). Max. one connection via https is possible on the mobile wireless interface. | 2; http and https can be combined (max. number of 2 connections cannot be exceeded). Max. one connection via https is possible on the mobile wireless interface. |
| • as e-mail client maximum | 1 | 1 |
| Number of free texts for e-mails definable by user | 20 | 20 |
| **Performance data Teleservice** | | |
| Product function | | |
| • Remote firmware update | Yes | Yes |
| • remote configuration | Yes | Yes |
| **Product functions Diagnosis** | | |
| Product function Web-based diagnostics | Yes | Yes |
| **Product functions Security** | | |
| Suitability for operation Virtual Private Network | Yes | Yes |
| Operating mode Virtual Private Network note | Open VPN server in PSK mode | Open VPN server in PSK mode |
| Product function with VPN connection | OpenVPN PSK | OpenVPN PSK |
| Type of encryption algorithms with VPN connection | AES-128 CBC | AES-128 CBC |
| Type of authentication with Virtual Private Network PSK | Yes | Yes |
| Type of hashing algorithms with VPN connection | SHA-256 | SHA-256 |
| Number of possible connections with VPN connection | 1 | 1 |
| Product function | | |
| • password protection for Web applications | Yes | Yes |
| • password protection for VPN | Yes | Yes |
| • encrypted data transmission | Yes | Yes |
| • switch-off of non-required services | Yes | Yes |
| • log file for unauthorized access | Yes | Yes |
| **Product functions Time** | | |
| Product function pass on time synchronization | Yes | Yes |
| Accuracy of the hardware real-time clock per day maximum | 7.5 s | 7.5 s |
| time synchronization | | |
| • from NTP-server | Yes | Yes |
| • from GPS-signal | Yes | Yes |
| • from mobile network provider | Yes | Yes |
| • PC | Yes | Yes |
| • manual setting | Yes | Yes |
| **Product functions Position recognition** | | |
| Product function | | |
| • position detection with GPS | Yes | Yes |
| • pass on position data | Yes | Yes |

## Ordering data

| | Article No. |
|---|---|
| **LOGO! CMR Communication Module Radio**<br>Communication modules for connection of LOGO! 0BA8 to GSM/GPRS or LTE network; 1x RJ45 port for Industrial Ethernet connection; 2x digital input; 2x digital output; read/write access to LOGO! tags; possible to send/receive text messages; GPS position detection; time-of-day synchronization/forwarding with real time clock; configuration and diagnostics per web interface; Note country approvals: http://www.siemens.com/mobilenetwork-approvals | |
| **LOGO! CMR2020**<br>For connecting LOGO! 0BA8 to a GSM/GPRS network | **6GK7142-7BX00-0AX0** |
| **LOGO! CMR2040**<br>For connecting LOGO! 0BA8 to an LTE network | **6GK7142-7EX00-0AX0** |
| **Accessories** | |
| **Mobile radio antennas** | |
| **ANT794-4MR**<br>For indoor and outdoor use; 5 m connecting cable permanently connected to antenna; SMA connector; incl. installation bracket, screws, wall anchors | **6NH9860-1AA00** |
| **ANT896-4MA**<br>Rod antenna for direct mounting on device; SMA male connector | **6GK5896-4MA00-0AA3** |
| **ANT896-4ME**<br>Cylinder-shaped antenna for remote installation, e.g. on a control cabinet; N-Connect female connector | **6GK5896-4ME00-0AA0** |

| | Article No. |
|---|---|
| **GPS antenna** | |
| **ANT895-6ML**<br>GPS/Glonass antenna for remote installation indoor and outdoor, magnet or screw mounting, 30 cm cable with N-Connect female connector | **6GK5895-6ML00-0AA0** |
| **Antenna adapter cable**<br>N-Connect/SMA male/male Flexible Connection Cable, pre-assembled, connection cable; suitable for 0 ... 6 GHz, IP68 | |
| • 0.3 m | **6XV1875-5LE30** |
| • 1 m | **6XV1875-5LH10** |
| • 2 m | **6XV1875-5LH20** |
| • 5 m | **6XV1875-5LH50** |
| **IWLAN RCoax/antenna N-Connect male/male flexible connection cable**<br>Flexible connection cable for connecting an RCoax cable or antenna to a SCALANCE W-700 access point with N-Connect connectors; pre-assembled with two N-Connect male connectors; suitable from 0 ... 6 GHz, IP68 | |
| • 1 m | **6XV1875-5AH10** |
| • 2 m | **6XV1875-5AH20** |
| • 5 m | **6XV1875-5AH50** |
| • 10 m | **6XV1875-5AN10** |
| **Cabinet feedthrough**<br>IWLAN RCOAX N-Connect/ N-Connect female/female panel feedthrough; Control cabinet feedthrough for wall thickness max. 4.5 mm; 2.4 GHz and 5 GHz, suitable from 0 ... 6 GHz, IP67 | **6GK5798-2PP00-2AA6** |
| **Lightning protector LP798-2N**<br>Lightning protector with N/N female/female connection for ANT 790 antennas, IP67 (-40 to +85 °C), frequency range: 0 … 6 GHz | **6GK5798-2LP00-2AA6** |

## Ordering data

| | Article No. |
|---|---|
| **Patch cable** | |
| **IE TP Cord RJ45/RJ45** | |
| TP cable 4 x 2 with 2 RJ45 plugs | |
| • 0.5 m | **6XV1870-3QE50** |
| • 1 m | **6XV1870-3QH10** |
| • 2 m | **6XV1870-3QH20** |
| • 6 m | **6XV1870-3QH60** |
| • 10 m | **6XV1870-3QN10** |
| **IE FC outlet RJ45** | **6GK1901-1FC00-0AA0** |
| For connection of Industrial Ethernet FC cables and TP Cords; graduated prices for 10 and 50 units or more | |
| **LOGO! CSM12/24** | **6GK7177-1MA20-0AA0** |
| Compact switch module for connecting a LOGO! (...0BA7/...0BA8) and up to 3 additional nodes to Industrial Ethernet; 12/24 V DC power supply | |
| **LOGO! CSM230** | **6GK7177-1FA10-0AA0** |
| Compact switch module for connecting a LOGO! (...0BA7) and up to 3 additional nodes to Industrial Ethernet 115 ... 240 V AC/DC | |

| | Article No. |
|---|---|
| **Stainless steel enclosure in IP68 degree of protection** | **6NH3112-3BA00-1XX1** |
| Stainless steel enclosure in IP68 degree of protection; suitable for SIMATIC RTU3030C; temperature range -60 to +135 °C; matte surface; cover with Pin Torx screws and padlock 7 cable openings and opening for mobile radio antenna prepared; please order the needed quantity of cable glands and sealing plugs separately | |
| **Aluminum enclosure in IP68 degree of protection** | **6NH3112-3BA00-1XX3** |
| Aluminum enclosure in IP68 degree of protection; suitable for SIMATIC RTU3030C; temperature range -40 to +80 °C; cover with Pin Torx screws; 7 cable openings and opening for mobile radio antenna prepared; please order the needed quantity of cable glands and sealing plugs separately | |
| **Cable gland PG16 F for IP68 enclosure** | **6NH3112-3BA00-1XX4** |
| Cable gland, M16, IP68, -40 to +100 °C; nickel-plated brass; suitable for enclosure with article numbers 6NH3112-3BA00-1x X1 and 6NH3112-3BA00-1x X3 pack quantity = 2 units | |
| **Sealing plug M16 for IP68 enclosure** | **6NH3112-3BA00-1XX5** |
| Sealing plug, M16, IP68, -40 to +100 °C; nickel-plated brass; suitable for enclosure with article numbers 6NH3112-3BA00-1x X1 and 6NH3112-3BA00-1x X3 pack quantity = 2 units | |

## Overview

***The flat power supply unit for distribution boards***

Small. Clever. LOGO!Power

Small. Clever. LOGO!Power: Thanks to its stepped profile design, the LOGO! 8 product line is ideally suited for installation in small distribution boards. The stabilized power supplies with a wide range input of 100 … 240 V AC (85 … 264 V) and 110 ... 300 V DC are available in two performance classes with an output voltage of 5 V and 15 V, in three performance classes with 12 V and in four performance classes with 24 V. The 12 V and 24 V versions are ideal for supplying LOGO! controllers with the corresponding voltage input. The high level of efficiency across the entire load range as well as the low no-load losses result in lower overall energy consumption. Greater convenience when commissioning and servicing thanks to the integrated current monitor. The extended temperature range from -25 °C to +70 °C enables a host of additional applications.

To further increase 24 V availability, the 24 V LOGO!Power power supply units can be combined with **DC-UPS**, **redundancy** and **selectivity modules**.

LOGO!Power is the ideal choice when components need to be supplied with DC voltage. It can provide currents up to 4 A. This mini power pack can be used regardless of industry, e.g. in building technology applications for light and heating controllers or for access control systems. LOGO!Power is also well-suited for use in industrial automation, such as in packaging machine, machine tool, conveyor belt or sorting system applications.

***Main product highlights***

- Low width
  with minimum of 18 mm to maximum of 72 mm, thus requiring very little space in the control cabinet or distribution board
- High energy efficiency
  with efficiency levels of up to 90% over the entire power range and ERP-compliant no-load losses of < 0.3 W
- Global use
  due to operating temperature range from -25 °C to +70 °C and international certificates
- Load monitoring
  due to real-time measurement of the output current without disconnecting the cable, i.e. without interrupting the DC supply
- Flexible mounting
  with DIN rail or wall mounting in different installation positions
- Broad portfolio
  including 11 devices with 5 V, 12 V, 15 V and 24 V DC up to 100 watts (new: 12 V/0.9 A and 24 V/0.6 A)
- Flexible operation
  in all standard 1-phase supply networks thanks to wide range input of 100 … 240 V AC without switchover and operation on DC networks with 110 … 300 V DC
- Reliability
  due to problem-free connection of loads with high inrush currents thanks to power reserve when starting up as well as constant current in the event of overload

## Overview

Thanks to its stepped profile design, the LOGO!Power product family is ideally suited for low installation depths, such as in miniature distribution boards. The stabilized power supplies with a wide range input of 100 … 240 V AC (85 … 264 V) and 110 ... 300 V DC are available with an output voltage of 5 V in two performance classes. The high level of efficiency across the entire load range as well as the low no-load losses result in lower overall energy consumption. Greater convenience when commissioning and servicing thanks to the integrated current monitor. The extended temperature range from -25 °C to +70 °C enables a host of additional applications.

***Main product highlights***

- 5 V DC / 3 A and 6.3 A
- Narrow unit with 36 mm or 54 mm width and overall depth of 53 mm in LOGO! design
- Flexible mounting: DIN rail or wall mounting in a range of installation positions
- Higher energy efficiency: over the entire load range as well as no-load power losses of < 0.3 W
- Integrated current monitor: Actual output current measurement directly at the power supply unit
- Global use: Operating temperature range from -25 °C to +70 °C as well as international certifications such as UL, CSA, FM or ATEX



## Technical specifications

| Article number | **6EP3310-6SB00-0AY0** | **6EP3311-6SB00-0AY0** |
|---|---|---|
| Product | LOGO!Power | LOGO!Power |
| Power supply, type | 5 V/3 A | 5 V/6.3 A |
| **Input** | | |
| Input | 1-phase AC or DC | 1-phase AC or DC |
| Rated voltage value $V_{in\ rated}$ | 100 ... 240 V | 100 ... 240 V |
| Voltage range AC | 85 ... 264 V | 85 ... 264 V |
| Input voltage | | |
| • at DC | 110 ... 300 V | 110 ... 300 V |
| Wide-range input | Yes | Yes |
| Overvoltage resistance | 300 V AC for 1 s | 300 V AC for 1 s |
| Mains buffering at $I_{out\ rated}$, min. | 40 ms; at Vin = 187 V | 40 ms; at Vin = 187 V |
| Rated line frequency 1 | 50 Hz | 50 Hz |
| Rated line frequency 2 | 60 Hz | 60 Hz |
| Rated line range | 47 ... 63 Hz | 47 ... 63 Hz |
| Input current | | |
| • at rated input voltage 120 V | 0.36 A | 0.71 A |
| • at rated input voltage 230 V | 0.22 A | 0.37 A |
| Switch-on current limiting (+25 °C), max. | 26 A | 50 A |
| $I^2t$, max. | 0.8 $A^2 \cdot s$ | 3 $A^2 \cdot s$ |
| Built-in incoming fuse | internal | internal |
| Protection in the mains power input (IEC 898) | Recommended miniature circuit breaker: from 6 A characteristic B or from 2 A characteristic C | Recommended miniature circuit breaker: from 10 A characteristic B or from 6 A characteristic C |

## Technical specifications (continued)

| Article number | 6EP3310-6SB00-0AY0 | 6EP3311-6SB00-0AY0 |
|---|---|---|
| Product | LOGO!Power | LOGO!Power |
| Power supply, type | 5 V/3 A | 5 V/6.3 A |
| **Output** | | |
| Output | Controlled, isolated DC voltage | Controlled, isolated DC voltage |
| Rated voltage $V_{out}$ DC | 5 V | 5 V |
| Total tolerance, static ± | 3 % | 3 % |
| Static mains compensation, approx. | 0.1 % | 0.1 % |
| Static load balancing, approx. | 0.1 % | 0.1 % |
| Residual ripple peak-peak, max. | 100 mV | 100 mV |
| Residual ripple peak-peak, typ. | 30 mV | 30 mV |
| Spikes peak-peak, max. (bandwidth: 20 MHz) | 100 mV | 100 mV |
| Spikes peak-peak, typ. (bandwidth: 20 MHz) | 50 mV | 50 mV |
| Adjustment range | 4.6 ... 5.4 V | 4.6 ... 5.4 V |
| Product function Output voltage adjustable | Yes | Yes |
| Output voltage setting | via potentiometer | via potentiometer |
| Status display | Green LED for output voltage OK | Green LED for output voltage OK |
| On/off behavior | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) |
| Startup delay, max. | 0.5 s | 0.5 s |
| Voltage rise, typ. | 100 ms | 100 ms |
| Rated current value $I_{out\ rated}$ | 3 A | 6.3 A |
| Current range | 0 ... 3 A | 0 ... 6.3 A |
| • Note | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K |
| Supplied active power typical | 15 W | 31.5 W |
| Parallel switching for enhanced performance | Yes | Yes |
| Numbers of parallel switchable units for enhanced performance | 2 | 2 |
| **Efficiency** | | |
| Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 76 % | 80 % |
| Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 5 W | 8 W |
| Power loss [W] during no-load operation maximum | 0.3 W | 0.3 W |
| **Closed-loop control** | | |
| Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max. | 0.2 % | 0.2 % |
| Dynamic load smoothing ($I_{out}$: 10/90/10 %), $U_{out}$ ± typ. | 5 % | 7 % |
| Load step setting time 10 to 90%, typ. | 1 ms | 1 ms |
| Load step setting time 90 to 10%, typ. | 1 ms | 1 ms |
| **Protection and monitoring** | | |
| Output overvoltage protection | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 |
| Current limitation, typ. | 3.8 A | 8.2 A |
| Property of the output Short-circuit proof | Yes | Yes |
| Short-circuit protection | Constant current characteristic | Constant current characteristic |
| Enduring short circuit current RMS value | | |
| • maximum | 3.8 A | 8.2 A |
| Overcurrent overload capability in normal operation | overload capability 150% Iout rated typ. 200 ms | overload capability 150% Iout rated typ. 200 ms |
| Overload/short-circuit indicator | - | - |
| measuring point for output current | 50 mV =^ 3 A | 50 mV =^ 6.3 A |
| Overcurrent overload capability when switching on | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms |

## Technical specifications (continued)

| Article number | 6EP3310-6SB00-0AY0 | 6EP3311-6SB00-0AY0 |
|---|---|---|
| Product | LOGO!Power | LOGO!Power |
| Power supply, type | 5 V/3 A | 5 V/6.3 A |
| **Safety** | | |
| Primary/secondary isolation | Yes | Yes |
| Galvanic isolation | Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178 |
| Protection class | Class II (without protective conductor) | Class II (without protective conductor) |
| CE mark | Yes | Yes |
| UL/cUL (CSA) approval | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-recognized (UL 60950, CSA C22.2 No. 60950), File E151273 |
| Explosion protection | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 |
| FM approval | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 |
| CB approval | Yes | Yes |
| Marine approval | ABS, DNV GL | ABS, DNV GL |
| Degree of protection (EN 60529) | IP20 | IP20 |
| **EMC** | | |
| Emitted interference | EN 55022 Class B | EN 55022 Class B |
| Supply harmonics limitation | not applicable | not applicable |
| Noise immunity | EN 61000-6-2 | EN 61000-6-2 |
| **Operating data** | | |
| Ambient temperature | | |
| • during operation | -25 ... +70 °C | -25 ... +70 °C |
| - Note | with natural convection | with natural convection |
| • during transport | -40 ... +85 °C | -40 ... +85 °C |
| • during storage | -40 ... +85 °C | -40 ... +85 °C |
| Humidity class according to EN 60721 | Climate class 3K3, no condensation | Climate class 3K3, no condensation |
| **Mechanics** | | |
| Connection technology | screw-type terminals | screw-type terminals |
| Connections | | |
| • Supply input | L, N: 1 screw terminal each for 0.5 ... 2.5 mm2 single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 mm2 single-core/finely stranded |
| • Output | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ |
| • Auxiliary | - | - |
| Width of the enclosure | 36 mm | 54 mm |
| Height of the enclosure | 90 mm | 90 mm |
| Depth of the enclosure | 53 mm | 53 mm |
| Required spacing | | |
| • top | 20 mm | 20 mm |
| • bottom | 20 mm | 20 mm |
| • left | 0 mm | 0 mm |
| • right | 0 mm | 0 mm |
| Weight, approx. | 0.12 kg | 0.2 kg |
| Product feature of the enclosure housing for side-by-side mounting | Yes | Yes |
| Installation | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions |
| MTBF at 40 °C | 2 931 709 h | 2 654 280 h |
| Other information | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) |

## Ordering data

| | Article No. | | Article No. |
|---|---|---|---|
| **LOGO!Power 1-phase, 5 V DC/3 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC (110 ... 300 V AC)<br>Output: 5 V DC/3 A | **6EP3310-6SB00-0AY0** | **LOGO!Power 1-phase, 5 V DC/6.3 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC (110 ... 300 V AC)<br>Output: 5 V DC/6.3 A | **6EP3311-6SB00-0AY0** |

## Overview

Thanks to its stepped profile design, the LOGO!Power product family is ideally suited for low installation depths, such as in miniature distribution boards. The stabilized power supplies with a wide range input of 100 … 240 V AC (85 … 264 V) and 110 ... 300 V DC are available with an output voltage of 12 V in three performance classes. The 12 V versions are ideal for supplying LOGO! controllers with the corresponding voltage input. The high level of efficiency across the entire load range as well as the low no-load losses result in lower overall energy consumption. Greater convenience when commissioning and servicing thanks to integrated current monitor (for devices at least 36 mm wide). The extended temperature range from -25 °C to +70 °C enables a host of additional applications.

***Main product highlights***

- 12 V DC / 0.9 A, 1.9 A and 4.5 A
- Narrow unit with width of 18 mm, 36 mm or 54 mm and overall depth of 53 mm in LOGO! design
- Flexible mounting: DIN rail or wall mounting in a range of installation positions
- Higher energy efficiency: over the entire load range as well as no-load power losses of < 0.3 W
- Integrated current monitor: Actual output current measurement directly at the power supply unit (for devices at least 36 mm wide)
- Global use:
  Operating temperature range from -25 °C to +70 °C as well as international certifications such as UL, CSA, FM or ATEX

## Technical specifications

| Article number | **6EP3320-6SB00-0AY0** | **6EP3321-6SB00-0AY0** | **6EP3322-6SB00-0AY0** |
|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 12 V/0.9 A | 12 V/1.9 A | 12 V/4.5 A |
| **Input** | | | |
| Input | 1-phase AC or DC | 1-phase AC or DC | 1-phase AC or DC |
| Rated voltage value $V_{in\ rated}$ | 100 ... 240 V | 100 ... 240 V | 100 ... 240 V |
| Voltage range AC | 85 ... 264 V | 85 ... 264 V | 85 ... 264 V |
| Input voltage | | | |
| • at DC | 110 ... 300 V | 110 ... 300 V | 110 ... 300 V |
| Wide-range input | Yes | Yes | Yes |
| Overvoltage resistance | 300 V AC for 1 s | 300 V AC for 1 s | 300 V AC for 1 s |
| Mains buffering at $I_{out\ rated}$, min. | 40 ms; at $V_{in}$ = 187 V | 40 ms; at $V_{in}$ = 187 V | 40 ms; at $V_{in}$ = 187 V |
| Rated line frequency 1 | 50 Hz | 50 Hz | 50 Hz |
| Rated line frequency 2 | 60 Hz | 60 Hz | 60 Hz |
| Rated line range | 47 ... 63 Hz | 47 ... 63 Hz | 47 ... 63 Hz |
| Input current | | | |
| • at rated input voltage 120 V | 0.3 A | 0.53 A | 1.13 A |
| • at rated input voltage 230 V | 0.2 A | 0.3 A | 0.61 A |
| Switch-on current limiting (+25 °C), max. | 20 A | 25 A | 50 A |
| $I^2t$, max. | 0.8 $A^2 \cdot s$ | 0.8 $A^2 \cdot s$ | 3 $A^2 \cdot s$ |
| Built-in incoming fuse | internal | internal | internal |
| Protection in the mains power input (IEC 898) | Recommended miniature circuit breaker: from 6 A characteristic B or from 2 A characteristic C | Recommended miniature circuit breaker: from 6 A characteristic B or from 2 A characteristic C | Recommended miniature circuit breaker: from 10 A characteristic B or from 6 A characteristic C |

## Technical specifications (continued)

| Article number | 6EP3320-6SB00-0AY0 | 6EP3321-6SB00-0AY0 | 6EP3322-6SB00-0AY0 |
|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 12 V/0.9 A | 12 V/1.9 A | 12 V/4.5 A |
| **Output** | | | |
| Output | Controlled, isolated DC voltage | Controlled, isolated DC voltage | Controlled, isolated DC voltage |
| Rated voltage $V_{out}$ DC | 12 V | 12 V | 12 V |
| Total tolerance, static ± | 3 % | 3 % | 3 % |
| Static mains compensation, approx. | 0.1 % | 0.1 % | 0.1 % |
| Static load balancing, approx. | 0.1 % | 0.1 % | 0.1 % |
| Residual ripple peak-peak, max. | 200 mV | 200 mV | 200 mV |
| Residual ripple peak-peak, typ. | 30 mV | 30 mV | 30 mV |
| Spikes peak-peak, max. (bandwidth: 20 MHz) | 300 mV | 300 mV | 300 mV |
| Spikes peak-peak, typ. (bandwidth: 20 MHz) | 50 mV | 50 mV | 50 mV |
| Adjustment range | | 10.5 ... 16.1 V | 10.5 ... 16.1 V |
| Product function Output voltage adjustable | No | Yes | Yes |
| Output voltage setting | | via potentiometer | via potentiometer |
| Status display | Green LED for output voltage OK | Green LED for output voltage OK | Green LED for output voltage OK |
| On/off behavior | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) |
| Startup delay, max. | 0.5 s | 0.5 s | 0.5 s |
| Voltage rise, typ. | 100 ms | 100 ms | 100 ms |
| Rated current value $I_{out\ rated}$ | 0.9 A | 1.9 A | 4.5 A |
| Current range | 0 ... 0.9 A | 0 ... 1.9 A | 0 ... 4.5 A |
| • Note | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K |
| Supplied active power typical | 10.8 W | 22.8 W | 54 W |
| Parallel switching for enhanced performance | No | Yes | Yes |
| Numbers of parallel switchable units for enhanced performance | | 2 | 2 |
| **Efficiency** | | | |
| Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 78 % | 81 % | 87.1 % |
| Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 3 W | 5 W | 8 W |
| Power loss [W] during no-load operation maximum | 0.3 W | 0.3 W | 0.3 W |
| **Closed-loop control** | | | |
| Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max. | 0.2 % | 0.2 % | 0.2 % |
| Dynamic load smoothing ($I_{out}$: 10/90/10 %), $U_{out}$ ± typ. | 3 % | 2 % | 4 % |
| Load step setting time 10 to 90%, typ. | 1 ms | 1 ms | 1 ms |
| Load step setting time 90 to 10%, typ. | 1 ms | 1 ms | 1 ms |
| **Protection and monitoring** | | | |
| Output overvoltage protection | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 |
| Current limitation, typ. | 1.3 A | 2.5 A | 5 A |
| Property of the output Short-circuit proof | Yes | Yes | Yes |
| Short-circuit protection | Constant current characteristic | Constant current characteristic | Constant current characteristic |
| Enduring short circuit current RMS value | | | |
| • maximum | 1.3 A | 2.5 A | 5 A |
| Overcurrent overload capability in normal operation | overload capability 150% $I_{out\ rated}$ typ. 200 ms | overload capability 150% $I_{out\ rated}$ typ. 200 ms | overload capability 150% $I_{out\ rated}$ typ. 200 ms |
| Overload/short-circuit indicator | - | - | - |
| measuring point for output current | | 50 mV =^ 1.9 A | 50 mV =^ 4.5 A |
| Overcurrent overload capability when switching on | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms |

## Technical specifications (continued)

| Article number | 6EP3320-6SB00-0AY0 | 6EP3321-6SB00-0AY0 | 6EP3322-6SB00-0AY0 |
|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 12 V/0.9 A | 12 V/1.9 A | 12 V/4.5 A |
| **Safety** | | | |
| Primary/secondary isolation | Yes | Yes | Yes |
| Galvanic isolation | Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 |
| Protection class | Class II (without protective conductor) | Class II (without protective conductor) | Class II (without protective conductor) |
| CE mark | Yes | Yes | Yes |
| UL/cUL (CSA) approval | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) |
| Explosion protection | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 |
| FM approval | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 |
| CB approval | Yes | Yes | Yes |
| Marine approval | ABS, DNV GL | ABS, DNV GL | ABS, DNV GL |
| Degree of protection (EN 60529) | IP20 | IP20 | IP20 |
| **EMC** | | | |
| Emitted interference | EN 55022 Class B | EN 55022 Class B | EN 55022 Class B |
| Supply harmonics limitation | not applicable | not applicable | not applicable |
| Noise immunity | EN 61000-6-2 | EN 61000-6-2 | EN 61000-6-2 |
| **Operating data** | | | |
| Ambient temperature | | | |
| • during operation | -25 ... +70 °C | -25 ... +70 °C | -25 ... +70 °C |
| - Note | with natural convection | with natural convection | with natural convection |
| • during transport | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C |
| • during storage | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C |
| Humidity class according to EN 60721 | Climate class 3K3, no condensation | Climate class 3K3, no condensation | Climate class 3K3, no condensation |
| **Mechanics** | | | |
| Connection technology | screw-type terminals | screw-type terminals | screw-type terminals |
| Connections | | | |
| • Supply input | L, N: 1 screw terminal each for 0.5 ... 2.5 mm2 single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 mm2 single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 mm2 single-core/finely stranded |
| • Output | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ |
| • Auxiliary | - | - | - |
| Width of the enclosure | 18 mm | 36 mm | 54 mm |
| Height of the enclosure | 90 mm | 90 mm | 90 mm |
| Depth of the enclosure | 53 mm | 53 mm | 53 mm |
| Required spacing | | | |
| • top | 20 mm | 20 mm | 20 mm |
| • bottom | 20 mm | 20 mm | 20 mm |
| • left | 0 mm | 0 mm | 0 mm |
| • right | 0 mm | 0 mm | 0 mm |
| Weight, approx. | 0.07 kg | 0.12 kg | 0.2 kg |
| Product feature of the enclosure housing for side-by-side mounting | Yes | Yes | Yes |
| Installation | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions |
| MTBF at 40 °C | 3 793 080 h | 2 938 542 h | 2 566 680 h |
| Other information | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) |

## 1-phase, 12 V DC

### Ordering data

| | Article No. |
|---|---|
| **LOGO!Power 1-phase, 12 V DC/0.9 A**<br>Stabilized power supply<br>Input: 100 … 240 V DC (110 ... 300 V AC)<br>Output: 12 V DC/0.9 A | **6EP3320-6SB00-0AY0** |
| **LOGO!Power 1-phase, 12 V DC/1.9 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC (110 ... 300 V DC)<br>Output: 12 V DC/1.9 A | **6EP3321-6SB00-0AY0** |
| **LOGO!Power 1-phase, 12 V DC/4.5 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC (110 ... 300 V AC)<br>Output: 12 V DC/4.5 A | **6EP3322-6SB00-0AY0** |

## Overview

Thanks to its stepped profile design, the LOGO!Power product family is ideally suited for low installation depths, such as in miniature distribution boards. The stabilized power supplies with a wide range input of 100 … 240 V AC (85 … 264 V) and 110 ... 300 V DC are available with an output voltage of 15 V in two performance classes. The high level of efficiency across the entire load range as well as the low no-load losses result in lower overall energy consumption. Greater convenience when commissioning and servicing thanks to the integrated current monitor. The extended temperature range from -25 °C to +70 °C enables a host of additional applications.

***Main product highlights***

- 15 V DC / 1.9 A and 4.0 A
- Narrow unit with 36 mm or 54 mm width and overall depth of 53 mm in LOGO! design
- Flexible mounting: DIN rail or wall mounting in a range of installation positions
- Higher energy efficiency: over the entire load range as well as no-load power losses of < 0.3 W
- Integrated current monitor: Actual output current measurement directly at the power supply unit
- Global use:
  Operating temperature range from -25 °C to +70 °C as well as international certifications such as UL, CSA, FM or ATEX

## Technical specifications

| Article number | **6EP3321-6SB10-0AY0** | **6EP3322-6SB10-0AY0** |
|---|---|---|
| Product | LOGO!Power | LOGO!Power |
| Power supply, type | 15 V/1.9 A | 15 V/4 A |
| **Input** | | |
| Input | 1-phase AC or DC | 1-phase AC or DC |
| Rated voltage value $V_{in\ rated}$ | 100 ... 240 V | 100 ... 240 V |
| Voltage range AC | 85 ... 264 V | 85 ... 264 V |
| Input voltage | | |
| • at DC | 110 ... 300 V | 110 ... 300 V |
| Wide-range input | Yes | Yes |
| Overvoltage resistance | 300 V AC for 1 s | 300 V AC for 1 s |
| Mains buffering at $I_{out\ rated}$, min. | 40 ms; at $V_{in}$ = 187 V | 40 ms; at $V_{in}$ = 187 V |
| Rated line frequency 1 | 50 Hz | 50 Hz |
| Rated line frequency 2 | 60 Hz | 60 Hz |
| Rated line range | 47 ... 63 Hz | 47 ... 63 Hz |
| Input current | | |
| • at rated input voltage 120 V | 0.63 A | 1.24 A |
| • at rated input voltage 230 V | 0.33 A | 0.68 A |
| Switch-on current limiting (+25 °C), max. | 25 A | 55 A |
| $I^2t$, max. | 0.8 $A^2 \cdot s$ | 3 $A^2 \cdot s$ |
| Built-in incoming fuse | internal | internal |
| Protection in the mains power input (IEC 898) | Recommended miniature circuit breaker: from 6 A characteristic B or from 2 A characteristic C | Recommended miniature circuit breaker: from 10 A characteristic B or from 6 A characteristic C |

## Technical specifications (continued)

| Article number | 6EP3321-6SB10-0AY0 | 6EP3322-6SB10-0AY0 |
|---|---|---|
| Product | LOGO!Power | LOGO!Power |
| Power supply, type | 15 V/1.9 A | 15 V/4 A |
| **Output** | | |
| Output | Controlled, isolated DC voltage | Controlled, isolated DC voltage |
| Rated voltage $V_{out}$ DC | 15 V | 15 V |
| Total tolerance, static ± | 3 % | 3 % |
| Static mains compensation, approx. | 0.1 % | 0.1 % |
| Static load balancing, approx. | 0.1 % | 0.1 % |
| Residual ripple peak-peak, max. | 200 mV | 200 mV |
| Residual ripple peak-peak, typ. | 30 mV | 30 mV |
| Spikes peak-peak, max. (bandwidth: 20 MHz) | 300 mV | 300 mV |
| Spikes peak-peak, typ. (bandwidth: 20 MHz) | 50 mV | 50 mV |
| Adjustment range | 10.5 ... 16.1 V | 10.5 ... 16.1 V |
| Product function Output voltage adjustable | Yes | Yes |
| Output voltage setting | via potentiometer | via potentiometer |
| Status display | Green LED for output voltage OK | Green LED for output voltage OK |
| On/off behavior | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) |
| Startup delay, max. | 0.5 s | 0.5 s |
| Voltage rise, typ. | 100 ms | 100 ms |
| Rated current value $I_{out\ rated}$ | 1.9 A | 4 A |
| Current range | 0 ... 1.9 A | 0 ... 4 A |
| • Note | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K |
| Supplied active power typical | 28.5 W | 60 W |
| Parallel switching for enhanced performance | Yes | Yes |
| Numbers of parallel switchable units for enhanced performance | 2 | 2 |
| **Efficiency** | | |
| Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 83 % | 88.4 % |
| Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 6 W | 8 W |
| Power loss [W] during no-load operation maximum | 0.3 W | 0.3 W |
| **Closed-loop control** | | |
| Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max. | 0.2 % | 0.2 % |
| Dynamic load smoothing ($I_{out}$: 10/90/10 %), $U_{out}$ ± typ. | 2 % | 3 % |
| Load step setting time 10 to 90%, typ. | 1 ms | 1 ms |
| Load step setting time 90 to 10%, typ. | 1 ms | 1 ms |
| **Protection and monitoring** | | |
| Output overvoltage protection | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 |
| Current limitation, typ. | 2.5 A | 5 A |
| Property of the output Short-circuit proof | Yes | Yes |
| Short-circuit protection | Constant current characteristic | Constant current characteristic |
| Enduring short circuit current RMS value | | |
| • maximum | 2.5 A | 5 A |
| Overcurrent overload capability in normal operation | overload capability 150% $I_{out\ rated}$ typ. 200 ms | overload capability 150% $I_{out\ rated}$ typ. 200 ms |
| Overload/short-circuit indicator | - | - |
| measuring point for output current | 50 mV =^ 1.9 A | 45 mV =^ 4 A |
| Overcurrent overload capability when switching on | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms |

## Technical specifications (continued)

| Article number | 6EP3321-6SB10-0AY0 | 6EP3322-6SB10-0AY0 |
|---|---|---|
| Product | LOGO!Power | LOGO!Power |
| Power supply, type | 15 V/1.9 A | 15 V/4 A |
| **Safety** | | |
| Primary/secondary isolation | Yes | Yes |
| Galvanic isolation | Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 |
| Protection class | Class II (without protective conductor) | Class II (without protective conductor) |
| CE mark | Yes | Yes |
| UL/cUL (CSA) approval | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) |
| Explosion protection | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 |
| FM approval | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 |
| CB approval | Yes | Yes |
| Marine approval | ABS, BV, DNV GL, LRS | ABS, BV, DNV GL, LRS |
| Degree of protection (EN 60529) | IP20 | IP20 |
| **EMC** | | |
| Emitted interference | EN 55022 Class B | EN 55022 Class B |
| Supply harmonics limitation | not applicable | not applicable |
| Noise immunity | EN 61000-6-2 | EN 61000-6-2 |
| **Operating data** | | |
| Ambient temperature | | |
| • during operation | -25 ... +70 °C | -25 ... +70 °C |
| - Note | with natural convection | with natural convection |
| • during transport | -40 ... +85 °C | -40 ... +85 °C |
| • during storage | -40 ... +85 °C | -40 ... +85 °C |
| Humidity class according to EN 60721 | Climate class 3K3, no condensation | Climate class 3K3, no condensation |
| **Mechanics** | | |
| Connection technology | screw-type terminals | screw-type terminals |
| Connections | | |
| • Supply input | L, N: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ single-core/finely stranded |
| • Output | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ |
| • Auxiliary | - | - |
| Width of the enclosure | 36 mm | 54 mm |
| Height of the enclosure | 90 mm | 90 mm |
| Depth of the enclosure | 53 mm | 53 mm |
| Required spacing | | |
| • top | 20 mm | 20 mm |
| • bottom | 20 mm | 20 mm |
| • left | 0 mm | 0 mm |
| • right | 0 mm | 0 mm |
| Weight, approx. | 0.12 kg | 0.2 kg |
| Product feature of the enclosure housing for side-by-side mounting | Yes | Yes |
| Installation | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions |
| MTBF at 40 °C | 2 938 542 h | 2 566 680 h |
| Other information | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) |

## Ordering data

| | Article No. | | Article No. |
|---|---|---|---|
| **LOGO!Power 1-phase, 15 V DC/1.9 A** | | **LOGO!Power 1-phase, 15 V DC/4 A** | |
| Stabilized power supply<br>Input: 100 … 240 V AC<br>(110 ... 300 V DC)<br>Output: 15 V DC/1.9 A | **6EP3321-6SB10-0AY0** | Stabilized power supply<br>Input: 100 … 240 V AC<br>(110 ... 300 V DC)<br>Output: 15 V DC/4 A | **6EP3322-6SB10-0AY0** |

# LOGO!Power

## 1-phase, 24 V DC

### Overview

Thanks to its stepped profile design, the LOGO!Power product family is ideally suited for low installation depths, such as in miniature distribution boards. The stabilized power supplies with a wide range input of 100 … 240 V AC (85 … 264 V) and 110 ... 300 V DC are available with an output voltage of 24 V in four performance classes. The 24 V versions are ideal for supplying LOGO! controllers with the corresponding voltage input. The high level of efficiency across the entire load range as well as the low no-load losses result in lower overall energy consumption. Greater convenience when commissioning and servicing thanks to integrated current monitor (for devices at least 36 mm wide). The extended temperature range from -25 °C to +70 °C enables a host of additional applications.

To further increase the 24 V availability, the LOGO!Power power supplies can be combined with **DC UPS**, **redundancy** and **selectivity modules**.

***Main product highlights***

- 24 V DC / 0.6 A, 1.3 A, 2.5 A and 4.0 A
- Narrow unit with width of 18 mm, 36 mm, 54 mm or 72 mm and overall depth of 53 mm in LOGO! design
- Flexible mounting: DIN rail or wall mounting in a range of installation positions
- Higher energy efficiency: up to 90 % efficiency over the entire load range as well as no-load power losses of < 0.3 W
- Integrated current monitor: Actual output current measurement directly at the power supply unit (for devices at least 36 mm wide)
- Global use:
  Operating temperature range from -25 °C to +70 °C as well as international certifications such as UL, CSA, FM or ATEX

### Technical specifications

| Article number | **6EP3330-6SB00-0AY0** | **6EP3331-6SB00-0AY0** | **6EP3332-6SB00-0AY0** | **6EP3333-6SB00-0AY0** |
|---|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 24 V/0.6 A | 24 V/1.3 A | 24 V/2.5 A | 24 V/4 A |
| **Input** | | | | |
| Input | 1-phase AC or DC | 1-phase AC or DC | 1-phase AC or DC | 1-phase AC or DC |
| Rated voltage value $V_{in\ rated}$ | 100 ... 240 V | 100 ... 240 V | 100 ... 240 V | 100 ... 240 V |
| Voltage range AC | 85 ... 264 V | 85 ... 264 V | 85 ... 264 V | 85 ... 264 V |
| Input voltage | | | | |
| • at DC | 110 ... 300 V | 110 ... 300 V | 110 ... 300 V | 110 ... 300 V |
| Wide-range input | Yes | Yes | Yes | Yes |
| Overvoltage resistance | 300 V AC for 1 s | 300 V AC for 1 s | 300 V AC for 1 s | 300 V AC for 1 s |
| Mains buffering at $I_{out\ rated}$, min. | 40 ms; at $V_{in}$ = 187 V | 40 ms; at $V_{in}$ = 187 V | 40 ms; at $V_{in}$ = 187 V | 40 ms; at $V_{in}$ = 187 V |
| Rated line frequency 1 | 50 Hz | 50 Hz | 50 Hz | 50 Hz |
| Rated line frequency 2 | 60 Hz | 60 Hz | 60 Hz | 60 Hz |
| Rated line range | 47 ... 63 Hz | 47 ... 63 Hz | 47 ... 63 Hz | 47 ... 63 Hz |
| Input current | | | | |
| • at rated input voltage 120 V | 0.3 A | 0.7 A | 1.22 A | 1.95 A |
| • at rated input voltage 230 V | 0.2 A | 0.35 A | 0.66 A | 0.97 A |
| Switch-on current limiting (+25 °C), max. | 20 A | 25 A | 52 A | 31 A |
| $I^2t$, max. | 0.8 $A^2 \cdot s$ | 0.8 $A^2 \cdot s$ | 3 $A^2 \cdot s$ | 2.5 $A^2 \cdot s$ |
| Built-in incoming fuse | internal | internal | internal | internal |
| Protection in the mains power input (IEC 898) | Recommended miniature circuit breaker: from 6 A characteristic B or from 2 A characteristic C | Recommended miniature circuit breaker: from 6 A characteristic B or from 2 A characteristic C | Recommended miniature circuit breaker: from 10 A characteristic B or from 6 A characteristic C | Recommended miniature circuit breaker: from 10 A characteristic B or from 6 A characteristic C |

## Technical specifications (continued)

| Article number | 6EP3330-6SB00-0AY0 | 6EP3331-6SB00-0AY0 | 6EP3332-6SB00-0AY0 | 6EP3333-6SB00-0AY0 |
|---|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 24 V/0.6 A | 24 V/1.3 A | 24 V/2.5 A | 24 V/4 A |
| **Output** | | | | |
| Output | Controlled, isolated DC voltage | Controlled, isolated DC voltage | Controlled, isolated DC voltage | Controlled, isolated DC voltage |
| Rated voltage $V_{out}$ DC | 24 V | 24 V | 24 V | 24 V |
| Total tolerance, static ± | 3 % | 3 % | 3 % | 3 % |
| Static mains compensation, approx. | 0.1 % | 0.1 % | 0.1 % | 0.1 % |
| Static load balancing, approx. | 0.1 % | 0.1 % | 0.1 % | 0.1 % |
| Residual ripple peak-peak, max. | 200 mV | 200 mV | 200 mV | 200 mV |
| Residual ripple peak-peak, typ. | 30 mV | 30 mV | 30 mV | 30 mV |
| Spikes peak-peak, max. (bandwidth: 20 MHz) | 300 mV | 300 mV | 300 mV | 300 mV |
| Spikes peak-peak, typ. (bandwidth: 20 MHz) | 50 mV | 50 mV | 50 mV | 50 mV |
| Adjustment range | | 22.2 ... 26.4 V | 22.2 ... 26.4 V | 22.2 ... 26.4 V |
| Product function Output voltage adjustable | No | Yes | Yes | Yes |
| Output voltage setting | | via potentiometer | via potentiometer | via potentiometer |
| Status display | Green LED for output voltage OK | Green LED for output voltage OK | Green LED for output voltage OK | Green LED for output voltage OK |
| On/off behavior | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) | No overshoot of $V_{out}$ (soft start) |
| Startup delay, max. | 0.5 s | 0.5 s | 0.5 s | 0.5 s |
| Voltage rise, typ. | 100 ms | 100 ms | 100 ms | 100 ms |
| Rated current value $I_{out\ rated}$ | 0.6 A | 1.3 A | 2.5 A | 4 A |
| Current range | 0 ... 0.6 A | 0 ... 1.3 A | 0 ... 2.5 A | 0 ... 4 A |
| • Note | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K | +55 ... +70 °C: Derating 2%/K |
| Supplied active power typical | 14.4 W | 31.2 W | 60 W | 96 W |
| Parallel switching for enhanced performance | No | Yes | Yes | Yes |
| Numbers of parallel switchable units for enhanced performance | | 2 | 2 | 2 |
| **Efficiency** | | | | |
| Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 81 % | 86 % | 90 % | 89 % |
| Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx. | 3 W | 5 W | 7 W | 12 W |
| Power loss [W] during no-load operation maximum | 0.3 W | 0.3 W | 0.3 W | 0.3 W |
| **Closed-loop control** | | | | |
| Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max. | 0.2 % | 0.2 % | 0.2 % | 0.2 % |
| Dynamic load smoothing ($I_{out}$: 10/90/10 %), $U_{out}$ ± typ. | 2 % | 1 % | 2 % | 2 % |
| Load step setting time 10 to 90%, typ. | 1 ms | 1 ms | 1 ms | 1 ms |
| Load step setting time 90 to 10%, typ. | 1 ms | 1 ms | 1 ms | 1 ms |
| **Protection and monitoring** | | | | |
| Output overvoltage protection | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 | Yes, according to EN 60950-1 |
| Current limitation, typ. | 0.8 A | 1.7 A | 3.2 A | 5 A |
| Property of the output Short-circuit proof | Yes | Yes | Yes | Yes |
| Short-circuit protection | Constant current characteristic | Constant current characteristic | Constant current characteristic | Constant current characteristic |
| Enduring short circuit current RMS value • maximum | 0.8 A | 1.7 A | 3.2 A | 5 A |
| Overcurrent overload capability in normal operation | overload capability 150% $I_{out\ rated}$ typ. 200 ms | overload capability 150% $I_{out\ rated}$ typ. 200 ms | overload capability 150% $I_{out\ rated}$ typ. 200 ms | overload capability 150% $I_{out\ rated}$ typ. 200 ms |
| Overload/short-circuit indicator | - | - | - | - |
| measuring point for output current | | 50 mV =^ 1.3 A | 50 mV =^ 2.5 A | 50 mV =^ 4 A |
| Overcurrent overload capability when switching on | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms | 150% $I_{out\ rated}$ typ. 200 ms |

## Technical specifications (continued)

| Article number | 6EP3330-6SB00-0AY0 | 6EP3331-6SB00-0AY0 | 6EP3332-6SB00-0AY0 | 6EP3333-6SB00-0AY0 |
|---|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 24 V/0.6 A | 24 V/1.3 A | 24 V/2.5 A | 24 V/4 A |
| **Safety** | | | | |
| Primary/secondary isolation | Yes | Yes | Yes | Yes |
| Galvanic isolation | Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178 | Safety extra-low output voltage Uout acc. to EN 60950-1 and EN 50178 |
| Protection class | Class II (without protective conductor) | Class II (without protective conductor) | Class II (without protective conductor) | Class II (without protective conductor) |
| CE mark | Yes | Yes | Yes | Yes |
| UL/cUL (CSA) approval | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310) | cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-recognized (UL 60950, CSA C22.2 No. 60950), File E151273 |
| Explosion protection | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 | ATEX (EX) II 3G Ex nA IIC T3; cULus Class I Div. 2 (ANSI/ISA-12.12.01, CSA C22.2 No. 213) Group ABCD, T4, File E488866 |
| FM approval | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 | Class I, Div. 2, Group ABCD, T4 |
| CB approval | Yes | Yes | Yes | Yes |
| Marine approval | ABS, BV, DNV GL, LRS | ABS, BV, DNV GL, LRS | ABS, BV, DNV GL, LRS | ABS, BV, DNV GL, LRS |
| Degree of protection (EN 60529) | IP20 | IP20 | IP20 | IP20 |
| **EMC** | | | | |
| Emitted interference | EN 55022 Class B | EN 55022 Class B | EN 55022 Class B | EN 55022 Class B |
| Supply harmonics limitation | not applicable | not applicable | not applicable | EN 61000-3-2 |
| Noise immunity | EN 61000-6-2 | EN 61000-6-2 | EN 61000-6-2 | EN 61000-6-2 |
| **Operating data** | | | | |
| Ambient temperature | | | | |
| • during operation | -25 ... +70 °C | -25 ... +70 °C | -25 ... +70 °C | -25 ... +70 °C |
| - Note | with natural convection | with natural convection | with natural convection | with natural convection |
| • during transport | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C |
| • during storage | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C |
| Humidity class according to EN 60721 | Climate class 3K3, no condensation | Climate class 3K3, no condensation | Climate class 3K3, no condensation | Climate class 3K3, no condensation |
| **Mechanics** | | | | |
| Connection technology | screw-type terminals | screw-type terminals | screw-type terminals | screw-type terminals |
| Connections | | | | |
| • Supply input | L, N: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ single-core/finely stranded | L, N: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ single-core/finely stranded |
| • Output | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ | +, -: 1 screw terminal each for 0.5 ... 2.5 $mm^2$ |
| • Auxiliary | - | - | - | - |
| Width of the enclosure | 18 mm | 36 mm | 54 mm | 72 mm |
| Height of the enclosure | 90 mm | 90 mm | 90 mm | 90 mm |
| Depth of the enclosure | 53 mm | 53 mm | 53 mm | 53 mm |
| Required spacing | | | | |
| • top | 20 mm | 20 mm | 20 mm | 20 mm |
| • bottom | 20 mm | 20 mm | 20 mm | 20 mm |
| • left | 0 mm | 0 mm | 0 mm | 0 mm |
| • right | 0 mm | 0 mm | 0 mm | 0 mm |
| Weight, approx. | 0.07 kg | 0.12 kg | 0.2 kg | 0.29 kg |

## Technical specifications (continued)

| Article number | 6EP3330-6SB00-0AY0 | 6EP3331-6SB00-0AY0 | 6EP3332-6SB00-0AY0 | 6EP3333-6SB00-0AY0 |
|---|---|---|---|---|
| Product | LOGO!Power | LOGO!Power | LOGO!Power | LOGO!Power |
| Power supply, type | 24 V/0.6 A | 24 V/1.3 A | 24 V/2.5 A | 24 V/4 A |
| Product feature of the enclosure housing for side-by-side mounting | Yes | Yes | Yes | Yes |
| Installation | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions | Snaps onto DIN rail EN 60715 35x7.5/15, direct mounting in different mounting positions |
| MTBF at 40 °C | 4 415 040 h | 3 094 996 h | 2 864 520 h | 2 391 480 h |
| Other information | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) | Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified) |

## Ordering data

| | Article No. |
|---|---|
| **LOGO!Power 1-phase, 24 V DC/0.6 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC<br>(110 ... 300 V DC)<br>Output: 24 V DC/0.6 A | **6EP3330-6SB00-0AY0** |
| **LOGO!Power 1-phase, 24 V DC/1.3 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC<br>(110 ... 300 V DC)<br>Output: 24 V DC/1.3 A | **6EP3331-6SB00-0AY0** |
| **LOGO!Power 1-phase, 24 V DC/2.5 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC<br>(110 ... 300 V DC)<br>Output: 24 V DC/2.5 A | **6EP3332-6SB00-0AY0** |
| **LOGO!Power 1-phase, 24 V DC/4 A**<br>Stabilized power supply<br>Input: 100 … 240 V AC<br>(110 ... 300 V DC)<br>Output: 24 V DC/4 A | **6EP3333-6SB00-0AY0** |

## Overview

Thanks to its stepped profile design, the SIPLUS LOGO!Power product family is ideally suited for low installation depths, such as in miniature distribution boards. The stabilized power supplies with a wide range input of 100 … 240 V AC (85 … 264 V) and 110 ... 300 V DC are available with an output voltage of 24 V in four performance classes. The 24 V versions are ideal for supplying SIPLUS LOGO! controllers with the corresponding voltage input. The high level of efficiency across the entire load range as well as the low no-load losses result in lower overall energy consumption. Greater convenience when commissioning and servicing thanks to integrated current monitor (for devices at least 36 mm wide). The extended temperature range enables a host of additional applications.

***Main product highlights***

- 24 V DC / 0.6 A, 1.3 A, 2.5 A and 4.0 A
- Narrow unit with width of 18 mm, 36 mm, 54 mm or 72 mm and overall depth of 53 mm in LOGO! design
- Flexible mounting: DIN rail or wall mounting in a range of installation positions
- Higher energy efficiency: up to 90% efficiency over the entire load range as well as no-load power losses of < 0.3 W
- Integrated current monitor: Actual output current measurement directly at the power supply unit (for devices at least 36 mm wide)
- Global use: International certifications such as UL, CSA, FM or ATEX



## Technical specifications

| Article number | 6AG1331-6SB00-7AY0 | 6AG1332-6SB00-7AY0 | 6AG1333-6SB00-7AY0 |
|---|---|---|---|
| Based on | 6EP3331-6SB00-0AY0 | 6EP3332-6SB00-0AY0 | 6EP3333-6SB00-0AY0 |
| Product | SIPLUS LOGO!Power | SIPLUS LOGO!Power | SIPLUS LOGO!Power |
| Power supply, type | 24 V/1.3 A | 24 V/2.5 A | 24 V/4 A |
| **Operating data** | | | |
| Ambient temperature | | | |
| • during operation | -40 ... +70 °C | -40 ... +70 °C | -40 ... +70 °C |
| - Note | with natural convection | with natural convection | with natural convection |
| • during transport | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C |
| • during storage | -40 ... +85 °C | -40 ... +85 °C | -40 ... +85 °C |
| • on cold restart minimum | -25 °C | -25 °C | -25 °C |
| Relative humidity with condensation maximum | 100 %; Relative humidity, incl. condensation/frost permitted (no commissioning under condensation conditions) | 100 %; Relative humidity, incl. condensation/frost permitted (no commissioning under condensation conditions) | 100 %; Relative humidity, incl. condensation/frost permitted (no commissioning under condensation conditions) |
| Resistance to biologically active substances conformity acc. to EN 60721-3-3 | Yes | Yes | Yes |
| Resistance to chemically active substances conformity acc. to EN 60721-3-3 | Yes | Yes | Yes |
| Resistance to mechanically active substances conformity acc. to EN 60721-3-3 | Yes | Yes | Yes |

## Ordering data

| | Article No. |
|---|---|
| **SIPLUS LOGO!Power 24 V 1.3 A**<br>Extended temperature range and exposure to environmental substances<br>Input 100 ... 240 V AC<br>Output 24 V DC, 1.3 A | **6AG1331-6SB00-7AY0** |
| **SIPLUS LOGO!Power 24 V 2.5 A**<br>Extended temperature range and exposure to environmental substances<br>Input 100 ... 240 V AC<br>Output 24 V DC, 2.5 A | **6AG1332-6SB00-7AY0** |
| **SIPLUS LOGO!Power 24 V 4 A**<br>Extended temperature range and exposure to environmental substances<br>Input 100 ... 240 V AC<br>Output 24 V DC, 4 A | **6AG1333-6SB00-7AY0** |

## LOGO!Contact switching module

### Overview

- Switching module for the direct switching of resistive loads and motors

### Technical specifications

| Article number | **6ED1057-4CA00-0AA0**<br>LOGO! Contact Mod., 24 V DC, 3NO/1NC | **6ED1057-4EA00-0AA0**<br>LOGO! Contact Mod., 230 V AC, 3NO/1NC |
|---|---|---|
| **Standards, approvals, certificates** | | |
| CE mark | Yes | Yes |
| **Ambient conditions** | | |
| **Ambient temperature during operation** | | |
| • min. | -25 °C | -25 °C |
| • max. | 55 °C | 55 °C |
| **Weights** | | |
| Weight, approx. | 160 g | 160 g |

### Ordering data

| | **Article No.** |
|---|---|
| **LOGO!Contact** | |
| Switching module for direct switching of resistive loads up to 20 A and motors up to 4 kW | |
| Switching voltage 24 V | **6ED1057-4CA00-0AA0** |
| Switching voltage 230 V | **6ED1057-4EA00-0AA0** |

## LOGO! mounting kits

### Overview

LOGO! and SIPLUS LOGO! are designed for quick and easy mounting on DIN rails. With the mounting kit, these devices can also be easily and safely installed in front panels.
If the supplied washer and seals are used, the devices are reliably protected against harsh environmental conditions up to the IP65 degree of protection.

### Ordering data

| | Article No. |
|---|---|
| **Front panel mounting kit** | |
| Width 4 U, with keys | **6AG1057-1AA00-0AA3** |
| Width 8 U, with keys | **6AG1057-1AA00-0AA2** |

## Overview

- The user-friendly software for generating switching programs on the PC for single-user mode and network mode
- Generation of switching programs in a function block diagram (FBD) or ladder logic (LAD)
- Furthermore, testing, simulation, online testing and archiving of the switching programs
- Professional documentation due to manifold comment and print functions

***Minimum system requirements***

Windows XP (32-bit), 7 (32/64-bit) or 8 (32/64-bit)

- PC Pentium IV.
- 150 MB free disk capacity.
- 256 MB RAM.
- SVGA graphics card with minimum resolution 800 x 600 (256 colors).
- DVD-ROM

Mac OS X

- Mac OS X 10.4

Linux

- Tested with SUSE Linux 11.3 SP2, kernel 3.0.76
- Runs on all Linux distributions on which Java 2 runs.
- Please refer to your relevant Linux distribution for the necessary hardware requirements.

## Ordering data

| | Article No. |
|---|---|
| **LOGO!Soft Comfort V8**<br>for programming on the PC in LAD/FBD; executes on Windows 8, 7, XP, Linux and Mac OSX; on DVD | **6ED1058-0BA08-0YA1** |

## Notes

## contents

### 5SJ4 Branch Circuit Protectors

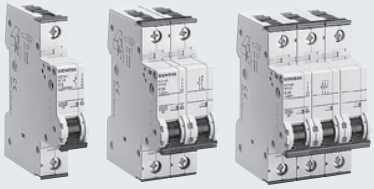
**5SJ4** Page

**Selection and ordering data**

- 1-pole up to 63A 16/4
- 1-pole, 2-pole, 3-pole, 240VAC 16/5
- 1-pole, 2-pole, 3-pole, 480Y/277VAC 16/6
- Additional components 16/7

General data 16/3
Tripping characteristics 16/2
Dimension drawings 16/10
Technical data 16/8

### 5SY4 Supplementary Protectors



**5SY4** Page

**Selection and ordering data**

- 1-pole, 1-pole+ N, and 2-pole up to 63A 16/13
- 3-pole, 3-pole + N, and 4-pole up to 63A 16/14
- Additional components 16/19
- Accessories 16/21

General data 16/11,16/22
Tripping characteristics 16/2
Dimension drawings 16/25
Technical data 16/23

### 5SY6 Supplementary Protectors

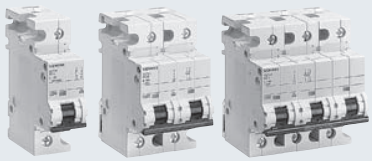
**5SY6** Page

**Selection and ordering data**

- 1-pole, 1-pole+ N, and 2-pole up to 63A 16/15
- 3-pole, 3-pole + N, and 4-pole up to 63A 16/16
- Additional components 16/19
- Accessories 16/21

General data 16/11, 16/22
Tripping characteristics 16/2
Dimension drawings 16/25
Technical data 16/23

### 5SP Supplementary Protectors



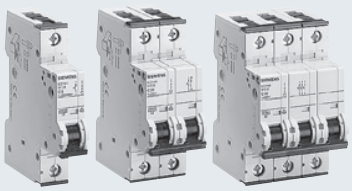
**5SP4** Page

**Selection and ordering data**

- 1-pole, 2-pole, 3-pole and 4-pole up to 125A 16/17
- Additional components 16/19
- Accessories 16/21

General data 16/11, 16/22
Tripping characteristics 16/2
Dimension drawings 16/25
Technical data 16/23

### AC/DC Product Range 5SY5 Supplementary Protectors



**5SY5** Page

**Selection and ordering data**

- 1-pole, 2-pole up to 63A 16/18
- Additional components 16/17
- Accessories 16/21

General data 16/11
Tripping characteristics 16/2
Dimension drawings 16/25
Technical data 16/23

### 3NW7 Cylindrical Fuse Holders

**3NW7 and 3NC10** Page

**Selection and ordering data**

**3NW7**

- 1-, 1+N, 2- and 3-, 3+N and 4-poles up to 100 A 16/27

General data 16/26
Dimension drawings 16/29
Technical data 16/28

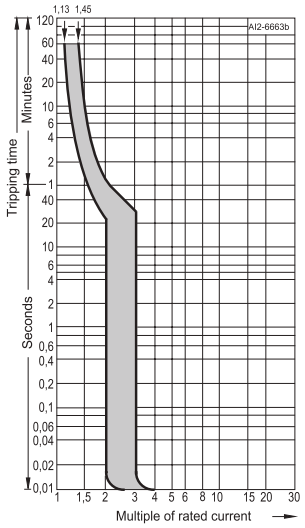
# General Data

## Trip characteristics

### Tripping characteristics acc. to EN 60 898

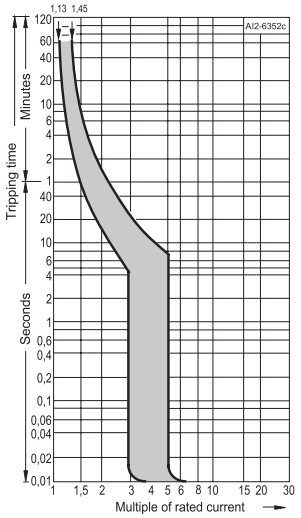
#### Tripping characteristic A, -5

Type A characteristic is designed to protect very sensitive circuits such as semiconductors. Magnetic trip point - 2 to 3 times $I_n$ rating. Thermal trip point - 1.13 to 1.45 protector rating.



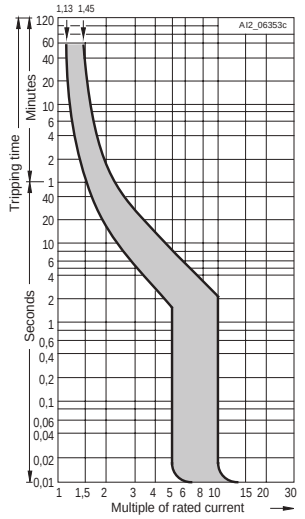

#### Tripping characteristic B, -6

Type B characteristic designed for European residential circuit protection. This characteristic can also be used for protection of computers and electronic equipment. Magnetic trip point - 3 to 5 times $I_n$ rating. Thermal trip point - 1.13 to 1.45 protector rating.



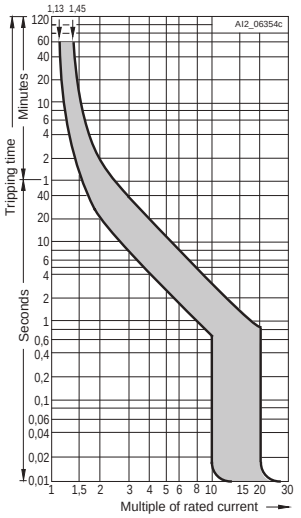

#### Tripping characteristic C, -7

Type C characteristic is for general device protection in control circuits. Magnetic trip point - 5 to10 times $I_n$ rating. Thermal trip point - 1.13 to 1.45 protector rating.




#### Tripping characteristic D, -8

Type D characteristic is designed for high inrush loads. Magnetic trip point - 10 to 20 times $I_n$ rating. Thermal trip point - 1.13 to 1.45 protector rating.




For different ambient temperatures, the current values of the delayed tripping operation change by approximately 5% per 10°K temperature difference. Specifically they increase for temperatures below 25°C (5SJ41), 30°C (5SP, 5SY) and decrease for temperatures above 25°C (5SJ41), 30°C (5SP, 5SY).

For DC voltages the maximum current values of the instantaneous tripping operation increase by a factor of 1.2.

If more that one electrical circuit is loaded in a series of miniature circuit breakers or supplementary protectors, the resulting increase in ambient temperature affects the characteristic curve. In this case an additional correction factor found in the following table must be used.

| Number | 1 | 2 - 3 | 4 - 6 | > 7 |
|---|---|---|---|---|
| Correction factor K | 1.00 | 0.90 | 0.88 | 0.85 |

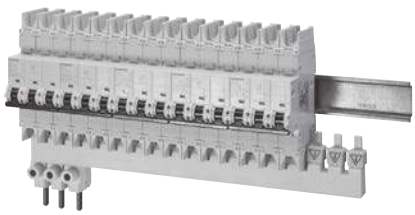
# General Data

## 5SJ4 70 mm mounting depth

### Selection and ordering data

| 5SJ4 Miniature Circuit Breaker Guide | | | |
|---|---|---|---|
| Catalog Series | 5SJ41...-.HG40 | 5SJ4...-.HG41 | 5SJ4...-.HG42 |
| Rated Voltage | 240, 120 VAC<br>60 VDC<br>Same Polarity | 240 VAC<br>60/125 VDC | 480Y/277 VAC<br>60/125 VDC |
| Number of Poles | 1-Pole | 1-, 2- and 3-Poles | |
| Trip Characteristics | B, C, D | C, D | |
| Rated Current | B Characteristic: 6 to 63 A<br>C and D Characteristic: 0.3 to 63 A | | C Characteristic:<br>03. to 40 A<br>D Characteristic:<br>0.3 to 32 A |
| Interrupting Ratings[1] | B Characteristic:<br>14 kA (6 to 63 A) | — | — |
| | C Characteristic:<br>14 kA (0.3 to 40 A)<br>10 kA (45 to 63 A) | | C Characteristic:<br>10 kA (0.3 to 40 A)[2] |
| | D Characteristic:<br>14 kA (0.3 to 20 A)<br>10 kA (25 to 63 A) | | D Characteristic:<br>10 kA (0.3 to 32 A)[2] |

1) 14 kA = Type HSJ; 10 kA = Type NSJ.
2) At 240 VAC the Interrupting Rating is the same as the 5SJ4...-.HG40 and .HG41.



5SJ4…-.HG41 Miniature Circuit Breakers

Certifications:
CE
UL Listed and Certified to Canadian Standards
HACR Rated

### Features

**Features – UL 489**
- Suitable for Branch Circuit Protection Applications up to 277 VAC and 60 VDC (1-pole); and, up to 480Y VAC and 125 VDC (2- and 3-pole)
- UL Listed and Certified to Canadian Standards, File E243414
- HACR Rated
- Hight AC Interrupting Ratings of up to 14,000 (Type HSJ) or 10,000 (Type NSJ) Maximum RMS Symmetrical Amps and, DC interrupting ratings of 10,000 Amps
- 40°C Calibration Base (Industrial Applications)
- Can be used for "field wiring" applications; AWG 14 to AWG 4, Copper (Cu) Only
- Suitable for "reverse feed" applications

**Features – EN/IEC 60 898**
- 30°C Calibration Base
- Trip Characteristic B, C and D
  B: Designed for the protection of computers and electronic equipment. Magnetic trip point is 3 to 5 times the MCB rating.
  C: Designed for general device protection in control circuits and all other miniature circuit breaker systems. Magnetic trip point is 5 to 10 times the MCB rating.
  D: Designed for high inrush loads. Magnetic trip point is 10 to 20 times the MCB rating.
- Rated voltage of 24 VAC minimum, 440 VAC Maximum and 60 VDC per pole
- High Interrupting Rating ($I_{cn}$) of up to 10,000 Amps
- 0.75 to 35 $mm^2$ solid and stranded conductors

**Features – Common**
- Depending on the device selected
  - Available with 1-, 2- or 3-poles
  - Available from 0.3 to 63 amps
- Visible Indicator for ON and OFF/Trip
- Touch Protection to EN50274
- DIN Rail Mounting (Standard 35 mm)
- Identical Wlre Screw Connections on Line and Load Sides
- Smaller Size than traditionsl MCCB's

Auxiliary Circuit Switches (AS) are available with One Normally Open + One Normally Closed, Two Normally Open or Two Normally Closed contacts. They are primarily used to signal the miniature circuit breaker's trip mechanism position.

Fault Signal Contacts (FC) are available with One Normally Open + One Normally Closed, Two Normally Open or Two Normally Closed contacts. They are primarily used to signal the automatic tripping of the miniature circuit breaker's trip mechanism; and, trip position.

Shunt Trip Switches (ST) are available in voltages of 110 to 480 VAC and 24 to 60 V AC/DC. They are used for remote tripping of a miniature circuit breaker.

5ST366.-.HG busbars, touch protection covers and terminal connectors are intended for use with Siemens lines of 5SJ4…-.HG4. UL 489 Miniature Circuit Breakers. They are UL Recognized (File E32159) with a rating of 115 Amps maximum at 480Y/277 VAC. Busbars are available in 1-, 2- or 3-pole versions.

Touch Protection Covers are used to cover any unused busbar terminals. They are intended to protect a user from live electrical parts.

Terminal Connectors are used to connect electrical conductors up to 1 AWG (50$mm^2$) to the busbar terminals. Two versions are available; connecton directly to the miniature circuit breaker or direct connection to the busbar.

# 5SJ Branch Circuit Protection

## 5SJ4 70 mm mounting depth

### Features

**5SJ41..-.HG40** miniature circuit breakers are designed to comply with UL 489 and CSA 22.2 No. 5-02 standards. They are used in single pole, branch circuit protection applications up to 240 VAC maximum and 60 VDC maximum, same polarity. Refer to Technical Data (page 16/8) for additional information.

### Selection and ordering data

| | | $I_n$ | Characteristic B | | | Characteristic C | | | Characteristic D | | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Order No. | Interruption Type [1] | List Price $ | Order No. | Interruption Type [1] | List Price $ | Order No. | Interruption Type [1] | List Price $ | 1 Item |
| | | A | | | 1 item | | | 1 item | | | 1 item | kg |
| | **1-pole** | 0.3 | — | — | | **5SJ4114-7HG40** | **HSJ** | | **5SJ4114-8HG40** | **HSJ** | | 0.155 |
| | | 0.5 | — | — | | **5SJ4105-7HG40** | **HSJ** | | **5SJ4105-8HG40** | **HSJ** | | |
| | | 1 | — | — | | **5SJ4101-7HG40** | **HSJ** | | **5SJ4101-8HG40** | **HSJ** | | |
| | | 1.6 | — | — | | **5SJ4115-7HG40** | **HSJ** | | **5SJ4115-8HG40** | **HSJ** | | |
| | | 2 | — | — | | **5SJ4102-7HG40** | **HSJ** | | **5SJ4102-8HG40** | **HSJ** | | |
| | | 3 | — | — | | **5SJ4103-7HG40** | **HSJ** | | **5SJ4103-8HG40** | **HSJ** | | |
| | | 4 | — | — | | **5SJ4104-7HG40** | **HSJ** | | **5SJ4104-8HG40** | **HSJ** | | |
| | | 5 | — | — | | **5SJ4111-7HG40** | **HSJ** | | **5SJ4111-8HG40** | **HSJ** | | |
| | | 6 | **5SJ4106-6HG40** | **HSJ** | | **5SJ4106-7HG40** | **HSJ** | | **5SJ4106-8HG40** | **HSJ** | | |
| | | 8 | — | — | | **5SJ4108-7HG40** | **HSJ** | | **5SJ4108-8HG40** | **HSJ** | | |
| | | 10 | **5SJ4110-6HG40** | **HSJ** | | **5SJ4110-7HG40** | **HSJ** | | **5SJ4110-8HG40** | **HSJ** | | |
| | | 13 | **5SJ4113-6HG40** | **HSJ** | | **5SJ4113-7HG40** | **HSJ** | | **5SJ4113-8HG40** | **HSJ** | | |
| | | 15 | **5SJ4118-6HG40** | **HSJ** | | **5SJ4118-7HG40** | **HSJ** | | **5SJ4118-8HG40** | **HSJ** | | |
| | | 16 | **5SJ4116-6HG40** | **HSJ** | | **5SJ4116-7HG40** | **HSJ** | | **5SJ4116-8HG40** | **HSJ** | | |
| | | 20 | **5SJ4120-6HG40** | **HSJ** | | **5SJ4120-7HG40** | **HSJ** | | **5SJ4120-8HG40** | **HSJ** | | |
| | | 25 | **5SJ4125-6HG40** | **HSJ** | | **5SJ4125-7HG40** | **HSJ** | | **5SJ4125-8HG40** | **NSJ** | | |
| | | 30 | **5SJ4130-6HG40** | **HSJ** | | **5SJ4130-7HG40** | **HSJ** | | **5SJ4130-8HG40** | **NSJ** | | |
| | | 32 | **5SJ4132-6HG40** | **HSJ** | | **5SJ4132-7HG40** | **HSJ** | | **5SJ4132-8HG40** | **NSJ** | | |
| | | 35 | **5SJ4135-6HG40** | **HSJ** | | **5SJ4135-7HG40** | **HSJ** | | **5SJ4135-8HG40** | **NSJ** | | |
| | | 40 | **5SJ4140-6HG40** | **HSJ** | | **5SJ4140-7HG40** | **HSJ** | | **5SJ4140-8HG40** | **NSJ** | | |
| | | 45 | **5SJ4145-6HG40** | **HSJ** | | **5SJ4145-7HG40** | **NSJ** | | **5SJ4145-8HG40** | **NSJ** | | |
| | | 50 | **5SJ4150-6HG40** | **HSJ** | | **5SJ4150-7HG40** | **NSJ** | | **5SJ4150-8HG40** | **NSJ** | | |
| | | 60 | **5SJ4160-6HG40** | **HSJ** | | **5SJ4160-7HG40** | **NSJ** | | **5SJ4160-8HG40** | **NSJ** | | |
| | | 63 | **5SJ4163-6HG40** | **HSJ** | | **5SJ4163-7HG40** | **NSJ** | | **5SJ4163-8HG40** | **NSJ** | | |

1) Interrupting Rating to UL489, AC Max. RMS Symmetrical: Type NSJ = 10kA, Type HSJ = 14 kA.

# 5SJ Branch Circuit Protection

## 5SJ4 70 mm mounting depth

### Features

**5SJ4...-.HG41** miniature circuit breakers are designed to comply with UL 489 and CSA 22.2 No. 5-02 standards. They are used in single and multi-pole, branch circuit protection applications up to 240 VAC maximum and 60/125 VDC maximum. Refer to Technical Data (page 16/8) for additional information.

### Selection and ordering data

| | | $I_n$ | Characteristic C | | | Characteristic D | | | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | | | Order No. | Interruption Type [1] | List Price $ | Order No. | Interruption Type [1] | List Price $ | 1 item |
| | | A | | | 1 item | | | 1 item | kg |
| | **1-pole** | 0.3 | **5SJ4114-7HG41** | **HSJ** | | **5SJ4114-8HG41** | **HSJ** | | 0.155 |
| | | 0.5 | **5SJ4105-7HG41** | **HSJ** | | **5SJ4105-8HG41** | **HSJ** | | |
| | | 1 | **5SJ4101-7HG41** | **HSJ** | | **5SJ4101-8HG41** | **HSJ** | | |
| | | 1.6 | **5SJ4115-7HG41** | **HSJ** | | **5SJ4115-8HG41** | **HSJ** | | |
| | | 2 | **5SJ4102-7HG41** | **HSJ** | | **5SJ4102-8HG41** | **HSJ** | | |
| | | 3 | **5SJ4103-7HG41** | **HSJ** | | **5SJ4103-8HG41** | **HSJ** | | |
| | | 4 | **5SJ4104-7HG41** | **HSJ** | | **5SJ4104-8HG41** | **HSJ** | | |
| | | 5 | **5SJ4111-7HG41** | **HSJ** | | **5SJ4111-8HG41** | **HSJ** | | |
| | | 6 | **5SJ4106-7HG41** | **HSJ** | | **5SJ4106-8HG41** | **HSJ** | | |
| | | 8 | **5SJ4108-7HG41** | **HSJ** | | **5SJ4108-8HG41** | **HSJ** | | |
| | | 10 | **5SJ4110-7HG41** | **HSJ** | | **5SJ4110-8HG41** | **HSJ** | | |
| | | 13 | **5SJ4113-7HG41** | **HSJ** | | **5SJ4113-8HG41** | **HSJ** | | |
| | | 15 | **5SJ4118-7HG41** | **HSJ** | | **5SJ4118-8HG41** | **HSJ** | | |
| | | 16 | **5SJ4116-7HG41** | **HSJ** | | **5SJ4116-8HG41** | **HSJ** | | |
| | | 20 | **5SJ4120-7HG41** | **HSJ** | | **5SJ4120-8HG41** | **HSJ** | | |
| | | 25 | **5SJ4125-7HG41** | **HSJ** | | **5SJ4125-8HG41** | **NSJ** | | |
| | | 30 | **5SJ4130-7HG41** | **HSJ** | | **5SJ4130-8HG41** | **NSJ** | | |
| | | 32 | **5SJ4132-7HG41** | **HSJ** | | **5SJ4132-8HG41** | **NSJ** | | |
| | | 35 | **5SJ4135-7HG41** | **HSJ** | | **5SJ4135-8HG41** | **NSJ** | | |
| | | 40 | **5SJ4140-7HG41** | **HSJ** | | **5SJ4140-8HG41** | **NSJ** | | |
| | | 45 | **5SJ4145-7HG41** | **NSJ** | | **5SJ4145-8HG41** | **NSJ** | | |
| | | 50 | **5SJ4150-7HG41** | **NSJ** | | **5SJ4150-8HG41** | **NSJ** | | |
| | | 60 | **5SJ4160-7HG41** | **NSJ** | | **5SJ4160-8HG41** | **NSJ** | | |
| | | 63 | **5SJ4163-7HG41** | **NSJ** | | **5SJ4163-8HG41** | **NSJ** | | |
| | **2-pole** | 0.3 | **5SJ4214-7HG41** | **HSJ** | | **5SJ4214-8HG41** | **HSJ** | | 0.310 |
| | | 0.5 | **5SJ4205-7HG41** | **HSJ** | | **5SJ4205-8HG41** | **HSJ** | | |
| | | 1 | **5SJ4201-7HG41** | **HSJ** | | **5SJ4201-8HG41** | **HSJ** | | |
| | | 1.6 | **5SJ4215-7HG41** | **HSJ** | | **5SJ4215-8HG41** | **HSJ** | | |
| | | 2 | **5SJ4202-7HG41** | **HSJ** | | **5SJ4202-8HG41** | **HSJ** | | |
| | | 3 | **5SJ4203-7HG41** | **HSJ** | | **5SJ4203-8HG41** | **HSJ** | | |
| | | 4 | **5SJ4204-7HG41** | **HSJ** | | **5SJ4204-8HG41** | **HSJ** | | |
| | | 5 | **5SJ4211-7HG41** | **HSJ** | | **5SJ4211-8HG41** | **HSJ** | | |
| | | 6 | **5SJ4206-7HG41** | **HSJ** | | **5SJ4206-8HG41** | **HSJ** | | |
| | | 8 | **5SJ4208-7HG41** | **HSJ** | | **5SJ4208-8HG41** | **HSJ** | | |
| | | 10 | **5SJ4210-7HG41** | **HSJ** | | **5SJ4210-8HG41** | **HSJ** | | |
| | | 13 | **5SJ4213-7HG41** | **HSJ** | | **5SJ4213-8HG41** | **HSJ** | | |
| | | 15 | **5SJ4218-7HG41** | **HSJ** | | **5SJ4218-8HG41** | **HSJ** | | |
| | | 16 | **5SJ4216-7HG41** | **HSJ** | | **5SJ4216-8HG41** | **HSJ** | | |
| | | 20 | **5SJ4220-7HG41** | **HSJ** | | **5SJ4220-8HG41** | **HSJ** | | |
| | | 25 | **5SJ4225-7HG41** | **HSJ** | | **5SJ4225-8HG41** | **NSJ** | | |
| | | 30 | **5SJ4230-7HG41** | **HSJ** | | **5SJ4230-8HG41** | **NSJ** | | |
| | | 32 | **5SJ4232-7HG41** | **HSJ** | | **5SJ4232-8HG41** | **NSJ** | | |
| | | 35 | **5SJ4235-7HG41** | **HSJ** | | **5SJ4235-8HG41** | **NSJ** | | |
| | | 40 | **5SJ4240-7HG41** | **HSJ** | | **5SJ4240-8HG41** | **NSJ** | | |
| | | 45 | **5SJ4245-7HG41** | **NSJ** | | **5SJ4245-8HG41** | **NSJ** | | |
| | | 50 | **5SJ4250-7HG41** | **NSJ** | | **5SJ4250-8HG41** | **NSJ** | | |
| | | 60 | **5SJ4260-7HG41** | **NSJ** | | **5SJ4260-8HG41** | **NSJ** | | |
| | | 63 | **5SJ4263-7HG41** | **NSJ** | | **5SJ4263-8HG41** | **NSJ** | | |
| | **3-pole** | 0.3 | **5SJ4314-7HG41** | **HSJ** | | **5SJ4314-8HG41** | **HSJ** | | 0.465 |
| | | 0.5 | **5SJ4305-7HG41** | **HSJ** | | **5SJ4305-8HG41** | **HSJ** | | |
| | | 1 | **5SJ4301-7HG41** | **HSJ** | | **5SJ4301-8HG41** | **HSJ** | | |
| | | 1.6 | **5SJ4315-7HG41** | **HSJ** | | **5SJ4315-8HG41** | **HSJ** | | |
| | | 2 | **5SJ4302-7HG41** | **HSJ** | | **5SJ4302-8HG41** | **HSJ** | | |
| | | 3 | **5SJ4303-7HG41** | **HSJ** | | **5SJ4303-8HG41** | **HSJ** | | |
| | | 4 | **5SJ4304-7HG41** | **HSJ** | | **5SJ4304-8HG41** | **HSJ** | | |
| | | 5 | **5SJ4311-7HG41** | **HSJ** | | **5SJ4311-8HG41** | **HSJ** | | |
| | | 6 | **5SJ4306-7HG41** | **HSJ** | | **5SJ4306-8HG41** | **HSJ** | | |
| | | 8 | **5SJ4308-7HG41** | **HSJ** | | **5SJ4308-8HG41** | **HSJ** | | |
| | | 10 | **5SJ4310-7HG41** | **HSJ** | | **5SJ4310-8HG41** | **HSJ** | | |
| | | 13 | **5SJ4313-7HG41** | **HSJ** | | **5SJ4313-8HG41** | **HSJ** | | |
| | | 15 | **5SJ4318-7HG41** | **HSJ** | | **5SJ4318-8HG41** | **HSJ** | | |
| | | 16 | **5SJ4316-7HG41** | **HSJ** | | **5SJ4316-8HG41** | **HSJ** | | |
| | | 20 | **5SJ4320-7HG41** | **HSJ** | | **5SJ4320-8HG41** | **HSJ** | | |
| | | 25 | **5SJ4325-7HG41** | **HSJ** | | **5SJ4325-8HG41** | **NSJ** | | |
| | | 30 | **5SJ4330-7HG41** | **HSJ** | | **5SJ4330-8HG41** | **NSJ** | | |
| | | 32 | **5SJ4332-7HG41** | **HSJ** | | **5SJ4332-8HG41** | **NSJ** | | |
| | | 35 | **5SJ4335-7HG41** | **HSJ** | | **5SJ4335-8HG41** | **NSJ** | | |
| | | 40 | **5SJ4340-7HG41** | **HSJ** | | **5SJ4340-8HG41** | **NSJ** | | |
| | | 45 | **5SJ4345-7HG41** | **NSJ** | | **5SJ4345-8HG41** | **NSJ** | | |
| | | 50 | **5SJ4350-7HG41** | **NSJ** | | **5SJ4350-8HG41** | **NSJ** | | |
| | | 60 | **5SJ4360-7HG41** | **NSJ** | | **5SJ4360-8HG41** | **NSJ** | | |
| | | 63 | **5SJ4363-7HG41** | **NSJ** | | **5SJ4363-8HG41** | **NSJ** | | |

1) Interrupting Rating to UL489, AC Max. RMS Symmetrical: Type NSJ = 10kA, Type HSJ = 14 kA.

# 5SJ Branch Circuit Protection

## 5SJ4 70 mm mounting depth

### Features

**5SJ4...-.HG42** miniature circuit breakers are designed to comply with UL 489 and CSA 22.2 No. 5-02 standards. They are used in single and multi-pole, branch circuit protection and feeder applications up to 480Y/277 VAC maximum and 60/125 VDC maximum. Refer to Technical Data (page 16/8) for additional information.

### Selection and ordering data

| | | $I_n$ | Characteristic C Order No. | Interruption Type [1] | List Price $ 1 item | Characteristic D Order No. | Interruption Type [1] | List Price $ 1 item | Weight 1 item |
|---|---|---|---|---|---|---|---|---|---|
| | | A | | | | | | | kg |
| | **1-pole** | 0.3 | **5SJ4114-7HG42** | **NSJ** | | **5SJ4114-8HG42** | **NSJ** | | 0.155 |
| | | 0.5 | **5SJ4105-7HG42** | **NSJ** | | **5SJ4105-8HG42** | **NSJ** | | |
| | | 1 | **5SJ4101-7HG42** | **NSJ** | | **5SJ4101-8HG42** | **NSJ** | | |
| | | 1.6 | **5SJ4115-7HG42** | **NSJ** | | **5SJ4115-8HG42** | **NSJ** | | |
| | | 2 | **5SJ4102-7HG42** | **NSJ** | | **5SJ4102-8HG42** | **NSJ** | | |
| | | 3 | **5SJ4103-7HG42** | **NSJ** | | **5SJ4103-8HG42** | **NSJ** | | |
| | | 4 | **5SJ4104-7HG42** | **NSJ** | | **5SJ4104-8HG42** | **NSJ** | | |
| | | 5 | **5SJ4111-7HG42** | **NSJ** | | **5SJ4111-8HG42** | **NSJ** | | |
| | | 6 | **5SJ4106-7HG42** | **NSJ** | | **5SJ4106-8HG42** | **NSJ** | | |
| | | 8 | **5SJ4108-7HG42** | **NSJ** | | **5SJ4108-8HG42** | **NSJ** | | |
| | | 10 | **5SJ4110-7HG42** | **NSJ** | | **5SJ4110-8HG42** | **NSJ** | | |
| | | 13 | **5SJ4113-7HG42** | **NSJ** | | **5SJ4113-8HG42** | **NSJ** | | |
| | | 15 | **5SJ4118-7HG42** | **NSJ** | | **5SJ4118-8HG42** | **NSJ** | | |
| | | 16 | **5SJ4116-7HG42** | **NSJ** | | **5SJ4116-8HG42** | **NSJ** | | |
| | | 20 | **5SJ4120-7HG42** | **NSJ** | | **5SJ4120-8HG42** | **NSJ** | | |
| | | 25 | **5SJ4125-7HG42** | **NSJ** | | **5SJ4125-8HG42** | **NSJ** | | |
| | | 30 | **5SJ4130-7HG42** | **NSJ** | | **5SJ4130-8HG42** | **NSJ** | | |
| | | 32 | **5SJ4132-7HG42** | **NSJ** | | **5SJ4132-8HG42** | **NSJ** | | |
| | | 35 | **5SJ4135-7HG42** | **NSJ** | | — | — | | |
| | | 40 | **5SJ4140-7HG42** | **NSJ** | | — | — | | |
| | **2-pole** | 0.3 | **5SJ4214-7HG42** | **NSJ** | | **5SJ4214-8HG42** | **NSJ** | | 0.310 |
| | | 0.5 | **5SJ4205-7HG42** | **NSJ** | | **5SJ4205-8HG42** | **NSJ** | | |
| | | 1 | **5SJ4201-7HG42** | **NSJ** | | **5SJ4201-8HG42** | **NSJ** | | |
| | | 1.6 | **5SJ4215-7HG42** | **NSJ** | | **5SJ4215-8HG42** | **NSJ** | | |
| | | 2 | **5SJ4202-7HG42** | **NSJ** | | **5SJ4202-8HG42** | **NSJ** | | |
| | | 3 | **5SJ4203-7HG42** | **NSJ** | | **5SJ4203-8HG42** | **NSJ** | | |
| | | 4 | **5SJ4204-7HG42** | **NSJ** | | **5SJ4204-8HG42** | **NSJ** | | |
| | | 5 | **5SJ4211-7HG42** | **NSJ** | | **5SJ4211-8HG42** | **NSJ** | | |
| | | 6 | **5SJ4206-7HG42** | **NSJ** | | **5SJ4206-8HG42** | **NSJ** | | |
| | | 8 | **5SJ4208-7HG42** | **NSJ** | | **5SJ4208-8HG42** | **NSJ** | | |
| | | 10 | **5SJ4210-7HG42** | **NSJ** | | **5SJ4210-8HG42** | **NSJ** | | |
| | | 13 | **5SJ4213-7HG42** | **NSJ** | | **5SJ4213-8HG42** | **NSJ** | | |
| | | 15 | **5SJ4218-7HG42** | **NSJ** | | **5SJ4218-8HG42** | **NSJ** | | |
| | | 16 | **5SJ4216-7HG42** | **NSJ** | | **5SJ4216-8HG42** | **NSJ** | | |
| | | 20 | **5SJ4220-7HG42** | **NSJ** | | **5SJ4220-8HG42** | **NSJ** | | |
| | | 25 | **5SJ4225-7HG42** | **NSJ** | | **5SJ4225-8HG42** | **NSJ** | | |
| | | 30 | **5SJ4230-7HG42** | **NSJ** | | **5SJ4230-8HG42** | **NSJ** | | |
| | | 32 | **5SJ4232-7HG42** | **NSJ** | | **5SJ4232-8HG42** | **NSJ** | | |
| | | 35 | **5SJ4235-7HG42** | **NSJ** | | — | — | | |
| | | 40 | **5SJ4240-7HG42** | **NSJ** | | — | — | | |
| | **3-pole** | 0.3 | **5SJ4314-7HG42** | **NSJ** | | **5SJ4314-8HG42** | **NSJ** | | 0.465 |
| | | 0.5 | **5SJ4305-7HG42** | **NSJ** | | **5SJ4305-8HG42** | **NSJ** | | |
| | | 1 | **5SJ4301-7HG42** | **NSJ** | | **5SJ4301-8HG42** | **NSJ** | | |
| | | 1.6 | **5SJ4315-7HG42** | **NSJ** | | **5SJ4315-8HG42** | **NSJ** | | |
| | | 2 | **5SJ4302-7HG42** | **NSJ** | | **5SJ4302-8HG42** | **NSJ** | | |
| | | 3 | **5SJ4303-7HG42** | **NSJ** | | **5SJ4303-8HG42** | **NSJ** | | |
| | | 4 | **5SJ4304-7HG42** | **NSJ** | | **5SJ4304-8HG42** | **NSJ** | | |
| | | 5 | **5SJ4311-7HG42** | **NSJ** | | **5SJ4311-8HG42** | **NSJ** | | |
| | | 6 | **5SJ4306-7HG42** | **NSJ** | | **5SJ4306-8HG42** | **NSJ** | | |
| | | 8 | **5SJ4308-7HG42** | **NSJ** | | **5SJ4308-8HG42** | **NSJ** | | |
| | | 10 | **5SJ4310-7HG42** | **NSJ** | | **5SJ4310-8HG42** | **NSJ** | | |
| | | 13 | **5SJ4313-7HG42** | **NSJ** | | **5SJ4313-8HG42** | **NSJ** | | |
| | | 15 | **5SJ4318-7HG42** | **NSJ** | | **5SJ4318-8HG42** | **NSJ** | | |
| | | 16 | **5SJ4316-7HG42** | **NSJ** | | **5SJ4316-8HG42** | **NSJ** | | |
| | | 20 | **5SJ4320-7HG42** | **NSJ** | | **5SJ4320-8HG42** | **NSJ** | | |
| | | 25 | **5SJ4325-7HG42** | **NSJ** | | **5SJ4325-8HG42** | **NSJ** | | |
| | | 30 | **5SJ4330-7HG42** | **NSJ** | | **5SJ4330-8HG42** | **NSJ** | | |
| | | 32 | **5SJ4332-7HG42** | **NSJ** | | **5SJ4332-8HG42** | **NSJ** | | |
| | | 35 | **5SJ4335-7HG42** | **NSJ** | | — | — | | |
| | | 40 | **5SJ4340-7HG42** | **NSJ** | | — | — | | |

1) Interrupting Rating to UL489, AC Max. RMS Symmetrical: Type NSJ = 10kA.

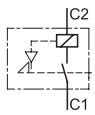
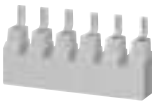
# 5SJ Branch Circuit Protection

## Additional components for 5SJ4 Branch Circuit Protection

### Features

- For use with the **5SJ4…-.HG4.** family of miniature circuit breakers
- UL Listed and CSA Certified to UL 489

### Selection and ordering data

| | | | | Order No. | List Price $ 1 item | Weight 1 item kg |
|---|---|---|---|---|---|---|
| | **Auxiliary switches (AS)** | | | | | |
| | | 1 NO + 1 NC | | **5ST 3010-0HG** | | 0.050 |
| | | 2 NO | | **5ST 3011-0HG** | | |
| | | 2 NC | | **5ST 3012-0HG** | | |
| | **Fault signal contacts (FC)** | | | | | |
| | | 1 NO + 1 NC | | **5ST 3020-0HG** | | 0.050 |
| | | 2 NO | | **5ST 3021-0HG** | | |
| | | 2 NC | | **5ST 3022-0HG** | | |
| | **Shunt trip (ST)** | | | | | |
| |  | 110 - 480 VAC | | **5ST 3030-0HG** | | 0.098 |
| | | 24 - 60 V AC/DC | | **5ST 3031-0HG** | | 0.098 |
| | **Busbars Fixed lengths, cannot be cut**[1] | | **Length** | | | |
|  | 1-Pole | For 6 MCBs | 100 mm | **5ST 3663-0HG** | | 0.056 |
| | | For 12 MCBs | 205 mm | **5ST 3663-1HG** | | 0.112 |
| | | For 18 MCBs | 310 mm | **5ST 3663-2HG** | | 0.170 |
| | 2-Pole | For 3 MCBs | 100 mm | **5ST 3664-0HG** | | 0.065 |
| | | For 6 MCBs | 205 mm | **5ST 3664-1HG** | | 0.137 |
| | | For 9 MCBs | 310 mm | **5ST 3664-2HG** | | 0.211 |
| | 3-Pole | For 2 MCBs | 100 mm | **5ST 3665-0HG** | | 0.067 |
| | | For 4 MCBs | 205 mm | **5ST 3665-1HG** | | 0.155 |
| | | For 6 MCBs | 310 mm | **5ST 3665-2HG** | | 0.243 |
| | **Connection terminals** | | | | | |
| | Infeed - MCBs | 35 mm$^2$ | | **5ST 3666-0HG** | | 0.033 |
| | Infeed - busbars | 50 mm$^2$ | | **5ST 3666-2HG** | | 0.034 |
| | **Touch protection covers**[2] | | | | | |
| | | 3 x 1 pin | | **5ST 3666-1HG** | | 0.003 |

1) Cut-able BusBars Availability to be announced.
2) Always cover all exposed terminals with touch protection covers 5ST3666-1HG.

# General Data

## 5SJ4 Branch Circuit Protection

### Technical data

| | | 5SJ41..-.HG40 | 5SJ4...-.HG41 | 5SJ4...-.HG42 |
|---|---|---|---|---|
| **Standards**<br>**Certifications** | | EN 60898; EN 60947-2; UL 489; CSA C22.2 No. 5-02<br>CE; cULus, UL File No. E243414 | | |
| **Tripping characteristic** | | B, C, D | C, D | |
| **Number of poles** | | 1 | 1, 2 & 3 | |
| **Operating voltage** | Min. V AC/DC | 24 | | |
| - IEC 60898 | Max. V DC/pole | 60 | | |
| | Max. V AC | 440 | | |
| - UL 489 and CSA C22.2 No. 5-02 | Max. V AC | 240 Same Polarity | 240 | 480Y/277 |
| | V DC/1P | 60 | 60 | 60 |
| | V DC/2P, 3P | — | 125 | 125 |
| **Interrupting rating** [1] | | | | |
| - $I_{cn}$ to IEC 60898-1 | kA AC | 10 | | |
| - UL 489 and CSA C22.2 No. 5-02 | | Type NSJ: 10kA | | |
| AC: Max. RMS Symmetrical | kA AC | Type HSJ: 14kA | | Type NSJ: 10kA |
| **Touch protection to EN 50274** | | Yes | | |
| **Degree of protection to EN 60529** | | IP20, with connected conductors | | |
| **CFC and silicone free** | | Yes | | |
| **Mounting** | | On standard mounting rail (DIN 35 mm) | | |
| **Device depth** | mm | 70 | | |
| **Terminals** | | | | |
| - Identical screw terminals on both line and load sides | | Yes | | |
| - Terminal tightening torque | lb. in. | 31 | | |
| | Nm | 3.5 | | |
| **Conductor cross sections** | $mm^2$ | Solid and Stranded: 0.75 to 35 | | |
| | $mm^2$ | Finely Stranded, with end sleeve: 0.75 to 25 | | |
| | AWG | 14 to 4, 60/75°C, Cu Only | | |
| **Calibration Base** | °C | 40 (UL 489) 30 (EN 60898) | | |
| **Average service life, with rated load** | | 20,000 actuations | | |
| **Ambient temperature** | °C | -25 to 45, occassionally +55, max. 95% humidity | | |
| **Storage Temperature** | °C | -40 to +75 | | |
| **Resistance to vibration to IEC 60068-2-6** | $m/s^2$ | 60 at 10 Hz to 150 Hz | | |

1) See Selection and ordering data for specific device interrupting rating

### Busbar & Connecting Terminals

| **Material Version** | | **Busbars**<br>**5ST3663**<br>**5ST3664**<br>**5ST3665** | **Connecting Terminals**<br>**5ST3666-0HG** | <br>**5ST3666-2HG** |
|---|---|---|---|---|
| **Standards**<br>**Certifications** | | UL 489<br>UL Listed, File No. E243414 | | |
| **Operating voltage** | | | | |
| - IEC 60898 | VAC | 690 | | |
| - UL 489 | VAC | 480Y/277 and 240 | | |
| **Rated current to 40°C** | A | 115 | | |
| **Busbar cross section** | $mm^2$ | 16 (Copper) | | |
| **Conductor cross sections** | Solid and Stranded $mm^2$ | - | 2.5 to 35 | 2.5 to 50 |
| | AWG | - | 14 to 2 | 14 to 1 |
| **Terminal tightening torque** | lb. in. | - | 30 | 30 |
| | Nm | - | 3.3 | 3.3 |
| **Temperature Resistance** | °C | 200 - UL 94-V0/0.4mm | | |

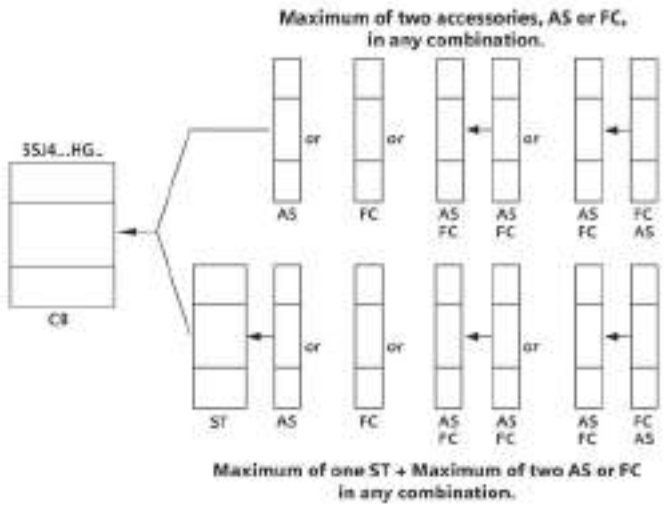
## Technical data

**Auxilliary Switch (AS), Fault Signal Contacts (FC) and Shunt Trip (ST)**

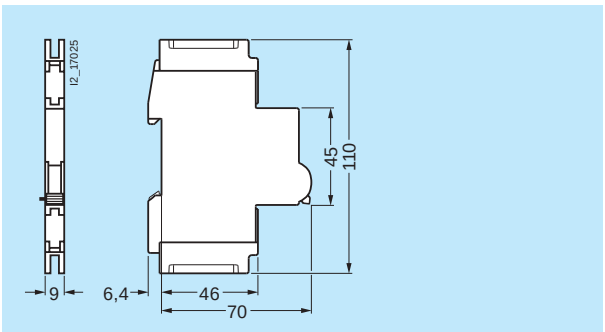
| Material Version | | AS 5ST301.-0HG | FC 5ST302.-0HG | ST 5ST3030-0HG | ST 5ST3032-0HG |
|---|---|---|---|---|---|
| Standards | | UL 489; CSA C22.2 No. 5-02 | | | |
| | | IEC/EN 62019, IEC/EN 60947-5-1 | | IEC/EN 60947-1 | |
| Certifications | | CE, UL 489, CSA, UL File No. E321559 | | | |
| Rated voltages/-load | | IEC AC V 400 I 230 | | 110 to 415 | 24 to 60 |
| | | AC A 2 I 6 (NC:AC13, NO: AC14) | | - | - |
| | | DC V 220 I 110 I 60 I 24 | | 110 | 24 to 60 |
| | | DC A 1 I 1 I 3 I 6 (DC 13) | | - | - |
| | | UL AC V 480 I 277 I 240 I 120 | | 110 to 480 | 24 to 60 |
| | | AC A 1.5 I 3 I 4 I 6 | | - | |
| | | DC V 125 I 60 | | - | 24 to 60 |
| | | DC A 1 I 3 | | - | - |
| Contact load | | min. 50 mA, 24 V | | - | - |
| Conductor cross-sections | AWG | 22 ... 14 | | 22 ... 14 | |
| | $mm^2$ | 0.5 ... 2.5 | | 0.5 ... 2.5 | |
| Terminals - terminal tightening torque | Nm | 0.5 max. | | 0.8 max. | |
| | lb/in. | 4.5 | | 6.8 | |

## Applications

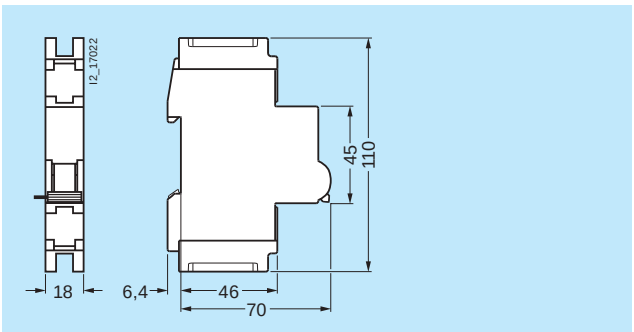
Auxiliary Switch (AS), Fault Signal Contact (FC) and Shunt Trip (ST) accessories are used with 5SJ4…-.HG4. miniature circuit breakers (CB) and are mounted to the right of them.




## Dimensions



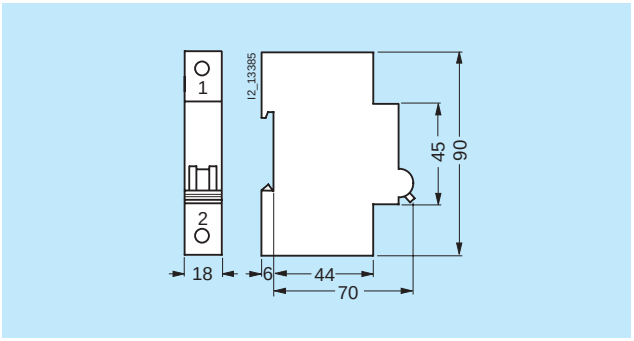

5ST3 010-0HG 5ST3 011-0HG 5ST3 012-0HG
5ST3 020-0HG 5ST3 021-0HG 5ST3 022-0HG



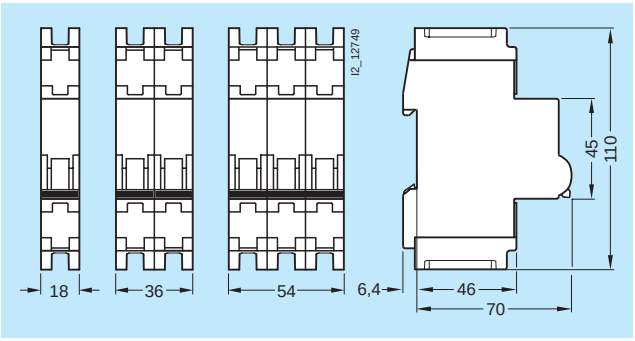

5ST3 030-0HG
5ST3 031-0HG

# General Data

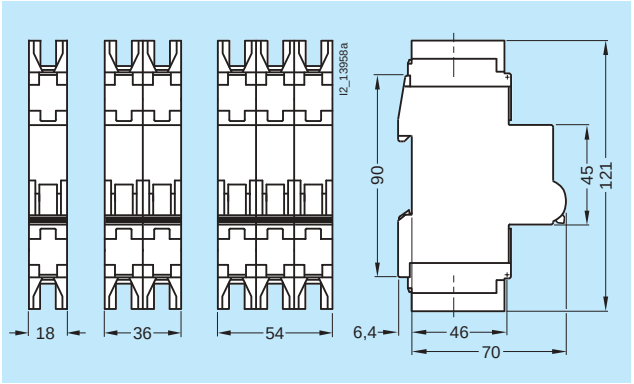
## Dimensions



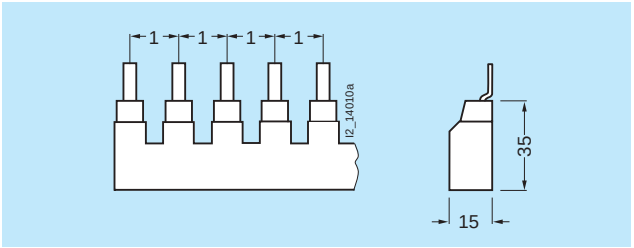

5SJ4...-.HG40




5SJ4...-.HG41



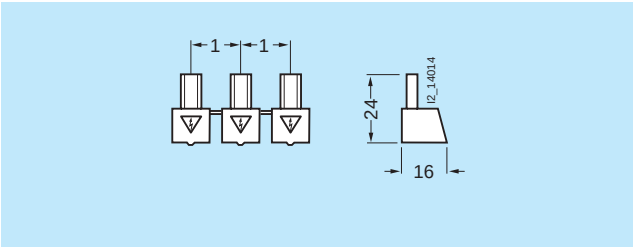

5SJ4...-.HG42



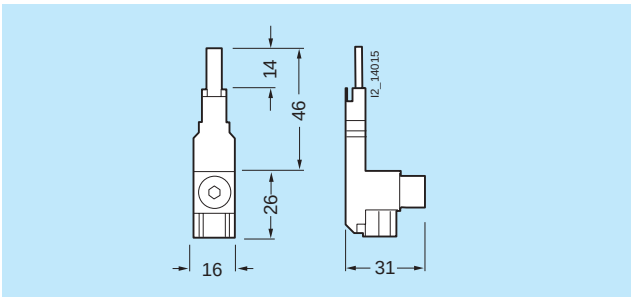

5ST3 663-0HG
5ST3 663-1HG
5ST3 663-2HG

5ST3 664-0HG
5ST3 664-1HG
5ST3 664-2HG

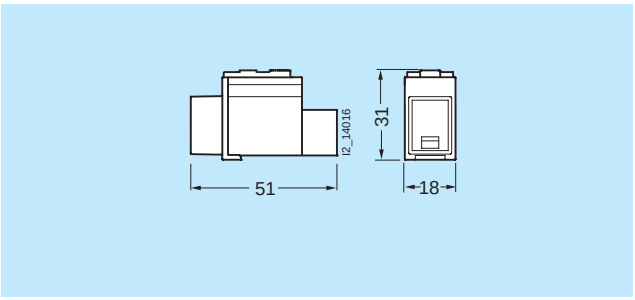
5ST3 665-0HG
5ST3 665-1HG
5ST3 665-2HG




5ST3 666-1HG




5ST3 666-0HG




5ST3 666-2HG

# General Data

## 5SY and 5SP supplementary protection

### Application

Siemens' UL 1077 Supplementary Protectors are designed to provide additional protection along with a branch circuit protection device. Since our Supplementary protectors are made to trip faster than a standard UL 489 Circuit Breaker they are able to provide additional protection for more sensitive devices inside the panel. Supplementary protectors can be used in a number of industrial applications such as to provide selectivity for multiple motor control circuits on the secondary side of a control transformer or power supply by allowing the user to quickly find the problem circuit should a fault occur without having to shut down all of the other control circuits. Supplementary protectors may also be used as a local disconnecting means inside the panel when a branch circuit protection device is already present.

Always remember to follow the National Electric code when wiring your panel for applications within the United States.

### Design

Supplementary protectors are equipped with a delayed overload/time-dependent thermal release (thermal bimetal) for low overcurrents and with an instantaneous electromagnetic release for high overload and short-circuit currents.

The special contact materials used virtually guarantee a long service life and offer a high degree of protection against contact welding.

### Mode of operation

Thanks to the extremely fast contact separation in cases of failures and the rapid quenching of the arc consequently generated in the arcing chamber, supplementary protectors assure a safe and current-limiting off-switching.

The permissible limit-$I^2t$-values of the energy limitation class 3 specified in EN 60 898 are generally undercut. This guarantees an excellent selectivity towards upstream overcurrent protection devices.

### Features

- High rated breaking capacity of up to 10,000 A acc. to EN 60 898 / up to 15 kA acc. to EN 60 947-2
- Excellent current limiting and selectivity characteristics
- Tripping characteristic A, B, C and D
- Terminals offer protection against contact with fingers or the back of the hand acc. to the German accident prevention regulations VBG 4/ BGV A2
- Combined terminals enable a simultaneous connection of busbars and feeder cables
- Uniform components that can be quickly mounted individually, thanks to their snap-on technique
- The handle locking device virtually prevents any unauthorized operation of the handle

#### Features of 5SY

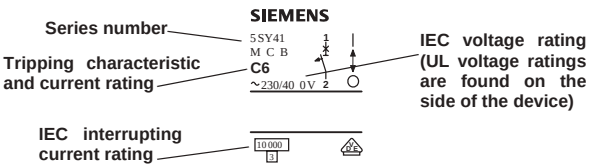
- Rapid connection of the feeder cable in front of the busbar
- Identical terminals at both sides for an optional infeed from the top or the bottom
- No tool required for mounting or dismounting
- Supports a fast and comfortable removal from the assembly
- Trip indication

#### Features of 5SP4

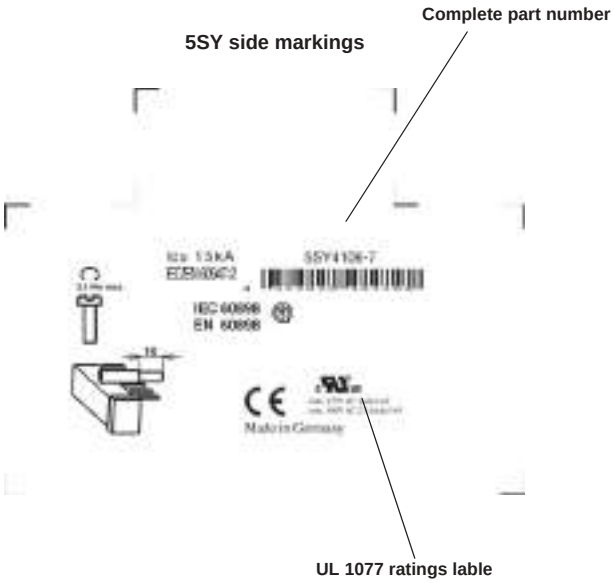
- Disconnection characteristics acc. to EN 60947-3 (DIN VDE 0660 Part 107)
- Main switch characteristics acc. to EN 60 204-1
- Can be screwed onto bases
- Separate switch position indication.

### Device markings

**5SY Front Markings**



**5SY side markings**



# 5SY4 Supplementary Protection

## Overview

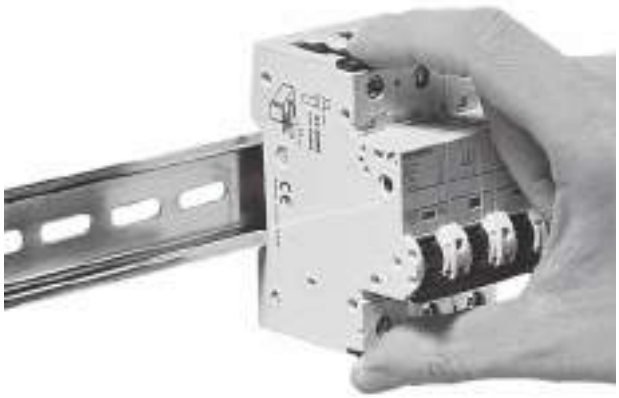
### Features of 5SY supplementary protectors

### Easier, faster, enlarged wiring space

- Identical top and bottom terminals
- Connection of incoming cables vis-à-vis of the busbar
- Enlarged and easily accessible wiring space for the feeder cables
- Comfortable insertion of the incoming cables into the terminal
- Defined, visible and controllable connection of the feeder cables
- Universal infeed with top and bottom busbar mounting options.

### Protection against contact with clear advantages

- Integrated movable terminal covers located at the feeder cable input
- The terminals are completely closed when screws are fully tightened
- Effective protection against contact, also when the device is fully grabbed



### Flexible and no use of tools required

- Manually operable quick-assembly and disassembly systems requiring no use of tools
- Fast assembly and disassembly of 5SY supplementary protectors to and from the standard mounting rail.
- All devices can be easily and comfortably replaced at any time.

### Removal from the assembly

Thanks to the combination of the various features stated above, 5SY supplementary protectors can be easily and rapidly removed from the assembly when circuits need to be changed - with these devices, removal of the busbar is no longer necessary.

# 5SY4 Supplementary Protection

## 5SY4 70 mm mounting depth

### Features

All 5SY4 designs have been certified to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications up to 277 V AC (1-pole and 1-pole + N designs) and 480 V AC (2-pole, 3-pole, 3-pole + N and 4-pole designs).

### Selection and ordering data

| | | $I_n$ | MW | Characteristic A | | Characteristic B | | Characteristic C | | Characteristic D | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Order No. | List Price $ | Order No. | List Price $ | Order No. | List Price $ | Order No. | List Price $ | 1 item |
| | | A | | | 1 item | | 1 item | | 1 item | | 1 item | kg |
| | **1-pole** | 0.3 | 1 | — | | — | | 5SY4 114-7 | | 5SY4 114-8 | | 0.165 |
| | | 0.5 | | 5SY4 105-5 | | — | | 5SY4 105-7 | | 5SY4 105-8 | | |
| | | 1 | | 5SY4 101-5 | | — | | 5SY4 101-7 | | 5SY4 101-8 | | |
| | | 1.6 | | 5SY4 115-5 | | — | | 5SY4 115-7 | | 5SY4 115-8 | | |
| | | 2 | | 5SY4 102-5 | | 5SY4 102-6 | | 5SY4 102-7 | | 5SY4 102-8 | | |
| | | 3 | | 5SY4 103-5 | | — | | 5SY4 103-7 | | 5SY4 103-8 | | |
| | | 4 | | 5SY4 104-5 | | 5SY4 104-6 | | 5SY4 104-7 | | 5SY4 104-8 | | |
| | | 5 | | — | | — | | 5SY4 111-7 | | — | | |
| | | 6 | | 5SY4 106-5 | | 5SY4 106-6 | | 5SY4 106-7 | | 5SY4 106-8 | | |
| | | 8 | | 5SY4 108-5 | | — | | 5SY4 108-7 | | 5SY4 108-8 | | |
| | | 10 | | 5SY4 110-5 | | 5SY4 110-6 | | 5SY4 110-7 | | 5SY4 110-8 | | |
| | | 13 | | 5SY4 113-5 | | 5SY4 113-6 | | 5SY4 113-7 | | 5SY4 113-8 | | |
| | | 15 | | — | | — | | 5SY4 118-7 | | — | | |
| | | 16 | | 5SY4 116-5 | | 5SY4 116-6 | | 5SY4 116-7 | | 5SY4 116-8 | | |
| | | 20 | | 5SY4 120-5 | | 5SY4 120-6 | | 5SY4 120-7 | | 5SY4 120-8 | | |
| | | 25 | | 5SY4 125-5 | | 5SY4 125-6 | | 5SY4 125-7 | | 5SY4 125-8 | | |
| | | 30 | | | | — | | 5SY4 130-7 | | — | | |
| | | 32 | | 5SY4 132-5 | | 5SY4 132-6 | | 5SY4 132-7 | | 5SY4 132-8 | | |
| | | 35 | | — | | — | | 5SY4 135-7 | | — | | |
| | | 40 | | 5SY4 140-5 | | 5SY4 140-6 | | 5SY4 140-7 | | 5SY4 140-8 | | |
| | | 45 | | — | | — | | 5SY4 145-7 | | — | | |
| | | 50 | | 5SY4 150-5 | | 5SY4 150-6 | | 5SY4 150-7 | | 5SY4 150-8 | | |
| | | 60 | | — | | — | | 5SY4 160-7 | | — | | |
| | | 63 | | 5SY4 163-5 | | 5SY4 163-6 | | 5SY4 163-7 | | 5SY4 163-8 | | |
| | **1-pole + N** | 0.3 | 2 | — | | — | | 5SY4 514-7 | | 5SY4 514-8 | | 0.330 |
| | | 0.5 | | — | | — | | 5SY4 505-7 | | 5SY4 505-8 | | |
| | | 1 | | 5SY4 501-5 | | — | | 5SY4 501-7 | | 5SY4 501-8 | | |
| | | 1.6 | | 5SY4 515-5 | | — | | 5SY4 515-7 | | 5SY4 515-8 | | |
| | | 2 | | 5SY4 502-5 | | — | | 5SY4 502-7 | | 5SY4 502-8 | | |
| | | 3 | | 5SY4 503-5 | | — | | 5SY4 503-7 | | 5SY4 503-8 | | |
| | | 4 | | 5SY4 504-5 | | — | | 5SY4 504-7 | | 5SY4 504-8 | | |
| | | 6 | | 5SY4 506-5 | | 5SY4 506-6 | | 5SY4 506-7 | | 5SY4 506-8 | | |
| | | 8 | | 5SY4 508-5 | | — | | 5SY4 508-7 | | 5SY4 508-8 | | |
| | | 10 | | 5SY4 510-5 | | 5SY4 510-6 | | 5SY4 510-7 | | 5SY4 510-8 | | |
| | | 13 | | 5SY4 513-5 | | 5SY4 513-6 | | 5SY4 513-7 | | 5SY4 513-8 | | |
| | | 16 | | 5SY4 516-5 | | 5SY4 516-6 | | 5SY4 516-7 | | 5SY4 516-8 | | |
| | | 20 | | 5SY4 520-5 | | 5SY4 520-6 | | 5SY4 520-7 | | 5SY4 520-8 | | |
| | | 25 | | 5SY4 525-5 | | 5SY4 525-6 | | 5SY4 525-7 | | 5SY4 525-8 | | |
| | | 32 | | 5SY4 532-5 | | 5SY4 532-6 | | 5SY4 532-7 | | 5SY4 532-8 | | |
| | | 40 | | 5SY4 540-5 | | 5SY4 540-6 | | 5SY4 540-7 | | 5SY4 540-8 | | |
| | | 50 | | 5SY4 550-5 | | 5SY4 550-6 | | 5SY4 550-7 | | 5SY4 550-8 | | |
| | | 63 | | 5SY4 563-5 | | 5SY4 563-6 | | 5SY4 563-7 | | 5SY4 563-8 | | |
| | **2-pole** | 0.3 | 2 | — | | — | | 5SY4 214-7 | | 5SY4 214-8 | | 0.330 |
| | | 0.5 | | 5SY4 205-5 | | — | | 5SY4 205-7 | | 5SY4 205-8 | | |
| | | 1 | | 5SY4 201-5 | | — | | 5SY4 201-7 | | 5SY4 201-8 | | |
| | | 1.6 | | 5SY4 215-5 | | — | | 5SY4 215-7 | | 5SY4 215-8 | | |
| | | 2 | | 5SY4 202-5 | | — | | 5SY4 202-7 | | 5SY4 202-8 | | |
| | | 3 | | 5SY4 203-5 | | — | | 5SY4 203-7 | | 5SY4 203-8 | | |
| | | 4 | | 5SY4 204-5 | | — | | 5SY4 204-7 | | 5SY4 204-8 | | |
| | | 5 | | — | | — | | 5SY4 211-7 | | — | | |
| | | 6 | | 5SY4 206-5 | | 5SY4 206-6 | | 5SY4 206-7 | | 5SY4 206-8 | | |
| | | 8 | | 5SY4 208-5 | | — | | 5SY4 208-7 | | 5SY4 208-8 | | |
| | | 10 | | 5SY4 210-5 | | 5SY4 210-6 | | 5SY4 210-7 | | 5SY4 210-8 | | |
| | | 13 | | 5SY4 213-5 | | 5SY4 213-6 | | 5SY4 213-7 | | 5SY4 213-8 | | |
| | | 15 | | — | | — | | 5SY4 218-7 | | — | | |
| | | 16 | | 5SY4 216-5 | | 5SY4 216-6 | | 5SY4 216-7 | | 5SY4 216-8 | | |
| | | 20 | | 5SY4 220-5 | | 5SY4 220-6 | | 5SY4 220-7 | | 5SY4 220-8 | | |
| | | 25 | | 5SY4 225-5 | | 5SY4 225-6 | | 5SY4 225-7 | | 5SY4 225-8 | | |
| | | 30 | | — | | — | | 5SY4 230-7 | | — | | |
| | | 32 | | 5SY4 232-5 | | 5SY4 232-6 | | 5SY4 232-7 | | 5SY4 232-8 | | |
| | | 35 | | | | — | | 5SY4 235-7 | | | | |
| | | 40 | | 5SY4 240-5 | | 5SY4 240-6 | | 5SY4 240-7 | | 5SY4 240-8 | | |
| | | 45 | | — | | — | | 5SY4 245-7 | | — | | |
| | | 50 | | 5SY4 250-5 | | 5SY4 250-6 | | 5SY4 250-7 | | 5SY4 250-8 | | |
| | | 60 | | — | | — | | 5SY4 260-7 | | — | | |
| | | 63 | | 5SY4 263-5 | | 5SY4 263-6 | | 5SY4 263-7 | | 5SY4 263-8 | | |

1 MW = modular width of 18 mm. Depth = 70 mm.

# 5SY4 Supplementary Protection

## 5SY4 70 mm mounting depth

### Selection and ordering data

All 5SY4 designs have been certified acc. to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications of up to 277 V AC (1-pole and 1-pole + N designs) and 480 V AC (2-pole, 3-pole, 3-pole + N and 4-pole designs).

| | | $I_n$ | MW | Characteristic A | | Characteristic B | | Characteristic C | | Characteristic D | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Order No. | List Price $ | Order No. | List Price $ | Order No. | List Price $ | Order No. | List Price $ | 1 item |
| | | A | | | 1 item | | 1 item | | 1 item | | 1 item | kg |
| | **3-pole** | 0.3 | | — | | — | | 5SY4 314-7 | | 5SY4 314-8 | | 0.495 |
| | | 0.5 | | 5SY4 305-5 | | — | | 5SY4 305-7 | | 5SY4 305-8 | | |
| | | 1 | 3 | 5SY4 301-5 | | — | | 5SY4 301-7 | | 5SY4 301-8 | | |
| | | 1.6 | | 5SY4 315-5 | | — | | 5SY4 315-7 | | 5SY4 315-8 | | |
| | | 2 | | 5SY4 302-5 | | — | | 5SY4 302-7 | | 5SY4 302-8 | | |
| | | 3 | | 5SY4 303-5 | | — | | 5SY4 303-7 | | 5SY4 303-8 | | |
| | | 4 | | 5SY4 304-5 | | — | | 5SY4 304-7 | | 5SY4 304-8 | | |
| | | 5 | | — | | — | | 5SY4 311-7 | | — | | |
| | | 6 | | 5SY4 306-5 | | 5SY4 306-6 | | 5SY4 306-7 | | 5SY4 306-8 | | |
| | | 8 | | 5SY4 308-5 | | — | | 5SY4 308-7 | | 5SY4 308-8 | | |
| | | 10 | | 5SY4 310-5 | | 5SY4 310-6 | | 5SY4 310-7 | | 5SY4 310-8 | | |
| | | 13 | | 5SY4 313-5 | | 5SY4 313-6 | | 5SY4 313-7 | | 5SY4 313-8 | | |
| | | 15 | | — | | — | | 5SY4 318-7 | | — | | |
| | | 16 | | 5SY4 316-5 | | 5SY4 316-6 | | 5SY4 316-7 | | 5SY4 316-8 | | |
| | | 20 | | 5SY4 320-5 | | 5SY4 320-6 | | 5SY4 320-7 | | 5SY4 320-8 | | |
| | | 25 | | 5SY4 325-5 | | 5SY4 325-6 | | 5SY4 325-7 | | 5SY4 325-8 | | |
| | | 30 | | — | | — | | 5SY4 330-7 | | — | | |
| | | 32 | | 5SY4 332-5 | | 5SY4 332-6 | | 5SY4 332-7 | | 5SY4 332-8 | | |
| | | 35 | | — | | — | | 5SY4 335-7 | | — | | |
| | | 40 | | 5SY4 340-5 | | 5SY4 340-6 | | 5SY4 340-7 | | 5SY4 340-8 | | |
| | | 45 | | — | | — | | 5SY4 345-7 | | — | | |
| | | 50 | | 5SY4 350-5 | | 5SY4 350-6 | | 5SY4 350-7 | | 5SY4 350-8 | | |
| | | 60 | | — | | — | | 5SY4 360-7 | | — | | |
| | | 63 | | 5SY4 363-5 | | 5SY4 363-6 | | 5SY4 363-7 | | 5SY4 363-8 | | |
| | **3-pole + N** | 0.3 | | — | | — | | 5SY4 614-7 | | 5SY4 614-8 | | 0.660 |
| | | 0.5 | | — | | — | | 5SY4 605-7 | | 5SY4 605-8 | | |
| | | 1 | 4 | 5SY4 601-5 | | — | | 5SY4 601-7 | | 5SY4 601-8 | | |
| | | 1.6 | | 5SY4 615-5 | | — | | 5SY4 615-7 | | 5SY4 615-8 | | |
| | | 2 | | 5SY4 602-5 | | — | | 5SY4 602-7 | | 5SY4 602-8 | | |
| | | 3 | | 5SY4 603-5 | | — | | 5SY4 603-7 | | 5SY4 603-8 | | |
| | | 4 | | 5SY4 604-5 | | — | | 5SY4 604-7 | | 5SY4 604-8 | | |
| | | 6 | | 5SY4 606-5 | | 5SY4 606-6 | | 5SY4 606-7 | | 5SY4 606-8 | | |
| | | 8 | | 5SY4 608-5 | | — | | 5SY4 608-7 | | 5SY4 608-8 | | |
| | | 10 | | 5SY4 610-5 | | 5SY4 610-6 | | 5SY4 610-7 | | 5SY4 610-8 | | |
| | | 13 | | 5SY4 613-5 | | 5SY4 613-6 | | 5SY4 613-7 | | 5SY4 613-8 | | |
| | | 16 | | 5SY4 616-5 | | 5SY4 616-6 | | 5SY4 616-7 | | 5SY4 616-8 | | |
| | | 20 | | 5SY4 620-5 | | 5SY4 620-6 | | 5SY4 620-7 | | 5SY4 620-8 | | |
| | | 25 | | 5SY4 625-5 | | 5SY4 625-6 | | 5SY4 625-7 | | 5SY4 625-8 | | |
| | | 32 | | 5SY4 632-5 | | 5SY4 632-6 | | 5SY4 632-7 | | 5SY4 632-8 | | |
| | | 40 | | 5SY4 640-5 | | 5SY4 640-6 | | 5SY4 640-7 | | 5SY4 640-8 | | |
| | | 50 | | 5SY4 650-5 | | 5SY4 650-6 | | 5SY4 650-7 | | 5SY4 650-8 | | |
| | | 63 | | 5SY4 663-5 | | 5SY4 663-6 | | 5SY4 663-7 | | 5SY4 663-8 | | |
| | **4-pole** | 0.3 | | — | | — | | 5SY4 414-7 | | 5SY4 414-8 | | 0.660 |
| | | 0.5 | | — | | — | | 5SY4 405-7 | | 5SY4 405-8 | | |
| | | 1 | 4 | 5SY4 401-5 | | — | | 5SY4 401-7 | | 5SY4 401-8 | | |
| | | 1.6 | | 5SY4 415-5 | | — | | 5SY4 415-7 | | 5SY4 415-8 | | |
| | | 2 | | 5SY4 402-5 | | — | | 5SY4 402-7 | | 5SY4 402-8 | | |
| | | 3 | | 5SY4 403-5 | | — | | 5SY4 403-7 | | 5SY4 403-8 | | |
| | | 4 | | 5SY4 404-5 | | — | | 5SY4 404-7 | | 5SY4 404-8 | | |
| | | 6 | | 5SY4 406-5 | | 5SY4 406-6 | | 5SY4 406-7 | | 5SY4 406-8 | | |
| | | 8 | | 5SY4 408-5 | | — | | 5SY4 408-7 | | 5SY4 408-8 | | |
| | | 10 | | 5SY4 410-5 | | 5SY4 410-6 | | 5SY4 410-7 | | 5SY4 410-8 | | |
| | | 13 | | 5SY4 413-5 | | 5SY4 413-6 | | 5SY4 413-7 | | 5SY4 413-8 | | |
| | | 16 | | 5SY4 416-5 | | 5SY4 416-6 | | 5SY4 416-7 | | 5SY4 416-8 | | |
| | | 20 | | 5SY4 420-5 | | 5SY4 420-6 | | 5SY4 420-7 | | 5SY4 420-8 | | |
| | | 25 | | 5SY4 425-5 | | 5SY4 425-6 | | 5SY4 425-7 | | 5SY4 425-8 | | |
| | | 32 | | 5SY4 432-5 | | 5SY4 432-6 | | 5SY4 432-7 | | 5SY4 432-8 | | |
| | | 40 | | 5SY4 440-5 | | 5SY4 440-6 | | 5SY4 440-7 | | 5SY4 440-8 | | |
| | | 50 | | 5SY4 450-5 | | 5SY4 450-6 | | 5SY4 450-7 | | 5SY4 450-8 | | |
| | | 63 | | 5SY4 463-5 | | 5SY4 463-6 | | 5SY4 463-7 | | 5SY4 463-8 | | |

1 MW = modular width of 18 mm. Depth = 70 mm.

# 5SY6 Supplementary Protection

## 5SY6 70 mm mounting depth

### Features

All 5SY6 designs have been certified to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications up to 277 V AC (1-pole and 1-pole + N designs) and 480 V AC (2-pole, 3-pole, 3-pole + N and 4-pole designs). The only difference between 5SY4 and 5SY6 is the IEC 60898-1 Interrupting Rating. 5SY4 has10kA and 5SY6 has 6kA Interrupting rating according to IEC 60898-1. However, UL Interrupting ratings are the same for 5SY4 and 5SY6.

### Selection and ordering data

| | $I_n$ | Mounting width | DT | Characteristic B Order No. | Price per PU | PG | DT | Characteristic C Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | MW[1] | | | | | | | | | | | kg |
| **MCBs 6000 A** | 0.3 | 1 | | — | | | | **5SY6 114-7** | | 1 | 1 unit | 001 | 0.167 |
| **1-Pole**, 230/400 V AC | 0.5 | | | — | | | | **5SY6 105-7** | | 1 | 1/12 units | 001 | 0.165 |
| | 1 | | | — | | | | **5SY6 101-7** | | 1 | 1/12 units | 001 | 0.164 |
| | 1.6 | | | — | | | | **5SY6 115-7** | | 1 | 1 unit | 001 | 0.162 |
| | 2 | | | **5SY6 102-6** | | 001 | ▶ | **5SY6 102-7** | | 1 | 1/12 units | 001 | 0.153 |
| | 3 | | | — | | | | **5SY6 103-7** | | 1 | 1/12 units | 001 | 0.145 |
| | 4 | | | **5SY6 104-6** | | 001 | ▶ | **5SY6 104-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 5 | | | — | | | | **5SY6 111-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 6 | | ▶ | **5SY6 106-6** | | 001 | ▶ | **5SY6 106-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 8 | | | — | | | | **5SY6 108-7** | | 1 | 1/12 units | 001 | 0.158 |
| | 10 | | ▶ | **5SY6 110-6** | | 001 | ▶ | **5SY6 110-7** | | 1 | 1/12 units | 001 | 0.158 |
| | 13 | | | **5SY6 113-6** | | 001 | | **5SY6 113-7** | | 1 | 1/12 units | 001 | 0.148 |
| | 15 | | | — | | | | **5SY6 118-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 16 | | ▶ | **5SY6 116-6** | | 001 | ▶ | **5SY6 116-7** | | 1 | 1/12 units | 001 | 0.158 |
| | 20 | | | **5SY6 120-6** | | 001 | | **5SY6 120-7** | | 1 | 1/12 units | 001 | 0.162 |
| | 25 | | | **5SY6 125-6** | | 001 | | **5SY6 125-7** | | 1 | 1/12 units | 001 | 0.163 |
| | 30 | | | — | | | | **5SY6 130-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 32 | | | **5SY6 132-6** | | 001 | | **5SY6 132-7** | | 1 | 1/12 units | 001 | 0.149 |
| | 40 | | | **5SY6 140-6** | | 001 | | **5SY6 140-7** | | 1 | 1/12 units | 001 | 0.150 |
| | 50 | | | **5SY6 150-6** | | 001 | | **5SY6 150-7** | | 1 | 1/12 units | 001 | 0.168 |
| | 63 | | | **5SY6 163-6** | | 001 | | **5SY6 163-7** | | 1 | 1/12 units | 001 | 0.172 |
| **1-Pole + N**, 230 V AC | 0.3 | 2 | | — | | | | **5SY6 514-7** | | 1 | 1 unit | 001 | 0.328 |
| | 0.5 | | | — | | | | **5SY6 505-7** | | 1 | 1 unit | 001 | 0.325 |
| | 1 | | | — | | | | **5SY6 501-7** | | 1 | 1 unit | 001 | 0.321 |
| | 1.6 | | | — | | | | **5SY6 515-7** | | 1 | 1 unit | 001 | 0.318 |
| | 2 | | | **5SY6 506-6** | | 001 | | **5SY6 502-7** | | 1 | 1 unit | 001 | 0.324 |
| | 3 | | | — | | | | **5SY6 503-7** | | 1 | 1 unit | 001 | 0.314 |
| | 4 | | | **5SY6 510-6** | | 001 | | **5SY6 504-7** | | 1 | 1 unit | 001 | 0.314 |
| | 6 | | | **5SY6 513-6** | | 001 | | **5SY6 506-7** | | 1 | 1/6 units | 001 | 0.310 |
| | 8 | | | — | | | | **5SY6 508-7** | | 1 | 1 unit | 001 | 0.310 |
| | 10 | | | **5SY6 510-6** | | 001 | | **5SY6 510-7** | | 1 | 1/6 units | 001 | 0.301 |
| | 13 | | | **5SY6 513-6** | | 001 | | **5SY6 513-7** | | 1 | 1/6 units | 001 | 0.320 |
| | 15 | | | — | | | | **5SY6 218-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 16 | | | **5SY6 516-6** | | 001 | | **5SY6 516-7** | | 1 | 1/6 units | 001 | 0.302 |
| | 20 | | | **5SY6 520-6** | | 001 | | **5SY6 520-7** | | 1 | 1 unit | 001 | 0.316 |
| | 25 | | | **5SY6 525-6** | | 001 | | **5SY6 525-7** | | 1 | 1 unit | 001 | 0.318 |
| | 32 | | | **5SY6 532-6** | | 001 | | **5SY6 532-7** | | 1 | 1 unit | 001 | 0.319 |
| | 40 | | | **5SY6 540-6** | | 001 | | **5SY6 540-7** | | 1 | 1 unit | 001 | 0.318 |
| | 50 | | | **5SY6 550-6** | | 001 | | **5SY6 550-7** | | 1 | 1 unit | 001 | 0.323 |
| | 63 | | | **5SY6 563-6** | | 001 | | **5SY6 563-7** | | 1 | 1 unit | 001 | 0.343 |
| **2-Pole**, 400 V AC | 0.3 | 2 | | — | | | | **5SY6 214-7** | | 1 | 1 unit | 001 | 0.328 |
| | 0.5 | | | — | | | | **5SY6 205-7** | | 1 | 1 unit | 001 | 0.324 |
| | 1 | | | — | | | | **5SY6 201-7** | | 1 | 1/6 units | 001 | 0.302 |
| | 1.6 | | | — | | | | **5SY6 215-7** | | 1 | 1 unit | 001 | 0.317 |
| | 2 | | | — | | | ▶ | **5SY6 202-7** | | 1 | 1/6 units | 001 | 0.324 |
| | 3 | | | — | | | | **5SY6 203-7** | | 1 | 1/6 units | 001 | 0.320 |
| | 4 | | | — | | | ▶ | **5SY6 204-7** | | 1 | 1/6 units | 001 | 0.300 |
| | 5 | | | — | | | | **5SY6 211-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 6 | | | **5SY6 206-6** | | 001 | ▶ | **5SY6 206-7** | | 1 | 1/6 units | 001 | 0.292 |
| | 8 | | | — | | | | **5SY6 208-7** | | 1 | 1 unit | 001 | 0.309 |
| | 10 | | | **5SY6 210-6** | | 001 | ▶ | **5SY6 210-7** | | 1 | 1/6 units | 001 | 0.310 |
| | 13 | | | **5SY6 213-6** | | 001 | | **5SY6 213-7** | | 1 | 1 unit | 001 | 0.318 |
| | 15 | | | — | | | | **5SY6 218-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 16 | | | **5SY6 216-6** | | 001 | ▶ | **5SY6 216-7** | | 1 | 1/6 units | 001 | 0.291 |
| | 20 | | | **5SY6 220-6** | | 001 | | **5SY6 220-7** | | 1 | 1/6 units | 001 | 0.300 |
| | 25 | | | **5SY6 225-6** | | 001 | | **5SY6 225-7** | | 1 | 1/6 units | 001 | 0.308 |
| | 30 | | | — | | | | **5SY6 230-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 32 | | | **5SY6 232-6** | | 001 | | **5SY6 232-7** | | 1 | 1/6 units | 001 | 0.318 |
| | 40 | | | **5SY6 240-6** | | 001 | | **5SY6 240-7** | | 1 | 1 unit | 001 | 0.318 |
| | 50 | | | **5SY6 250-6** | | 001 | | **5SY6 250-7** | | 1 | 1 unit | 001 | 0.330 |
| | 63 | | | **5SY6 263-6** | | 001 | | **5SY6 263-7** | | 1 | 1 unit | 001 | 0.340 |

[1] 1 MW (modular width) = 18 mm.

* Availability to be announced

# 5SY6 Supplementary Protection

## 5SY6 70 mm mounting depth (cont.)

### Selection and ordering data

| | $I_n$ | Mounting width | DT | Characteristic B Order No. | Price per PU | PG | DT | Characteristic C Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | MW[1] | | | | | | | | | | | kg |
| **MCBs 6000 A 3-Pole**, 400 V AC | 0.3 | 3 | | — | | | | **5SY6 314-7** | | 1 | 1 unit | 001 | 0.489 |
| | 0.5 | | | — | | | | **5SY6 305-7** | | 1 | 1 unit | 001 | 0.481 |
| | 1 | | | — | | | | **5SY6 301-7** | | 1 | 1 unit | 001 | 0.473 |
| | 1.6 | | | — | | | | **5SY6 315-7** | | 1 | 1 unit | 001 | 0.471 |
| | 2 | | | — | | | | **5SY6 302-7** | | 1 | 1/4 units | 001 | 0.480 |
| | 3 | | | — | | | | **5SY6 303-7** | | 1 | 1 unit | 001 | 0.465 |
| | 4 | | | — | | | | **5SY6 304-7** | | 1 | 1/4 units | 001 | 0.458 |
| | 5 | | | — | | | | **5SY6 311-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 6 | | | **5SY6 306-6** | | 001 | ► | **5SY6 306-7** | | 1 | 1/4 units | 001 | 0.435 |
| | 8 | | | — | | | | **5SY6 308-7** | | 1 | 1 unit | 001 | 0.461 |
| | 10 | | | **5SY6 310-6** | | 001 | ► | **5SY6 310-7** | | 1 | 1/4 units | 001 | 0.443 |
| | 13 | | | **5SY6 313-6** | | 001 | | **5SY6 313-7** | | 1 | 1 unit | 001 | 0.471 |
| | 15 | | | — | | | | **5SY6 318-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 16 | | ► | **5SY6 316-6** | | 001 | ► | **5SY6 316-7** | | 1 | 1/4 units | 001 | 0.437 |
| | 20 | | | **5SY6 320-6** | | 001 | | **5SY6 320-7** | | 1 | 1/4 units | 001 | 0.455 |
| | 25 | | | **5SY6 325-6** | | 001 | | **5SY6 325-7** | | 1 | 1/4 units | 001 | 0.464 |
| | 30 | | | — | | | | **5SY6 330-7** | | 1 | 1/12 units | 001 | 0.160 |
| | 32 | | | **5SY6 332-6** | | 001 | ► | **5SY6 332-7** | | 1 | 1/4 units | 001 | 0.459 |
| | 40 | | | **5SY6 340-6** | | 001 | | **5SY6 340-7** | | 1 | 1/4 units | 001 | 0.472 |
| | 50 | | | **5SY6 350-6** | | 001 | | **5SY6 350-7** | | 1 | 1/4 units | 001 | 0.489 |
| | 63 | | | **5SY6 363-6** | | 001 | | **5SY6 363-7** | | 1 | 1/4 units | 001 | 0.488 |
| 3-Pole + N, 400 V AC | 0.3 | 4 | | — | | | | **5SY6 614-7** | | 1 | 1 unit | 001 | 0.631 |
| | 0.5 | | | — | | | | **5SY6 605-7** | | 1 | 1 unit | 001 | 0.643 |
| | 1 | | | — | | | | **5SY6 601-7** | | 1 | 1 unit | 001 | 0.623 |
| | 1.6 | | | — | | | | **5SY6 615-7** | | 1 | 1 unit | 001 | 0.631 |
| | 2 | | | — | | | | **5SY6 602-7** | | 1 | 1 unit | 001 | 0.632 |
| | 3 | | | — | | | | **5SY6 603-7** | | 1 | 1 unit | 001 | 0.590 |
| | 4 | | | — | | | | **5SY6 604-7** | | 1 | 1 unit | 001 | 0.620 |
| | 6 | | | **5SY6 606-6** | | 001 | | **5SY6 606-7** | | 1 | 1 unit | 001 | 0.609 |
| | 8 | | | — | | | | **5SY6 608-7** | | 1 | 1 unit | 001 | 0.607 |
| | 10 | | | **5SY6 610-6** | | 001 | | **5SY6 610-7** | | 1 | 1 unit | 001 | 0.611 |
| | 13 | | | **5SY6 613-6** | | 001 | | **5SY6 613-7** | | 1 | 1/3 units | 001 | 0.630 |
| | 16 | | | **5SY6 616-6** | | 001 | | **5SY6 616-7** | | 1 | 1/3 units | 001 | 0.613 |
| | 20 | | | **5SY6 620-6** | | 001 | | **5SY6 620-7** | | 1 | 1 unit | 001 | 0.623 |
| | 25 | | | **5SY6 625-6** | | 001 | | **5SY6 625-7** | | 1 | 1 unit | 001 | 0.622 |
| | 32 | | | **5SY6 632-6** | | 001 | | **5SY6 632-7** | | 1 | 1 unit | 001 | 0.628 |
| | 40 | | | **5SY6 640-6** | | 001 | | **5SY6 640-7** | | 1 | 1 unit | 001 | 0.629 |
| | 50 | | | **5SY6 650-6** | | 001 | | **5SY6 650-7** | | 1 | 1 unit | 001 | 0.655 |
| | 63 | | | **5SY6 663-6** | | 001 | | **5SY6 663-7** | | 1 | 1 unit | 001 | 0.671 |
| **4-Pole**, 400 V AC | 0.3 | 4 | | — | | | | **5SY6 414-7** | | 1 | 1 unit | 001 | 0.640 |
| | 0.5 | | | — | | | | **5SY6 405-7** | | 1 | 1 unit | 001 | 0.641 |
| | 1 | | | — | | | | **5SY6 401-7** | | 1 | 1 unit | 001 | 0.634 |
| | 1.6 | | | — | | | | **5SY6 415-7** | | 1 | 1 unit | 001 | 0.620 |
| | 2 | | | — | | | | **5SY6 402-7** | | 1 | 1 unit | 001 | 0.642 |
| | 3 | | | — | | | | **5SY6 403-7** | | 1 | 1 unit | 001 | 0.625 |
| | 4 | | | — | | | | **5SY6 404-7** | | 1 | 1 unit | 001 | 0.615 |
| | 6 | | | **5SY6 406-6** | | 001 | | **5SY6 406-7** | | 1 | 1 unit | 001 | 0.612 |
| | 8 | | | — | | | | **5SY6 408-7** | | 1 | 1 unit | 001 | 0.605 |
| | 10 | | | **5SY6 410-6** | | 001 | | **5SY6 410-7** | | 1 | 1/3 units | 001 | 0.603 |
| | 13 | | | **5SY6 413-6** | | 001 | | **5SY6 413-7** | | 1 | 1 unit | 001 | 0.628 |
| | 16 | | | **5SY6 416-6** | | 001 | | **5SY6 416-7** | | 1 | 1/3 units | 001 | 0.620 |
| | 20 | | | **5SY6 420-6** | | 001 | | **5SY6 420-7** | | 1 | 1/3 units | 001 | 0.598 |
| | 25 | | | **5SY6 425-6** | | 001 | | **5SY6 425-7** | | 1 | 1/3 units | 001 | 0.625 |
| | 32 | | | **5SY6 432-6** | | 001 | | **5SY6 432-7** | | 1 | 1/3 units | 001 | 0.627 |
| | 40 | | | **5SY6 440-6** | | 001 | | **5SY6 440-7** | | 1 | 1/3 units | 001 | 0.628 |
| | 50 | | | **5SY6 450-6** | | 001 | | **5SY6 450-7** | | 1 | 1 unit | 001 | 0.651 |
| | 63 | | | **5SY6 463-6** | | 001 | | **5SY6 463-7** | | 1 | 1/3 units | 001 | 0.673 |

[1] 1 MW (modular width) = 18 mm.

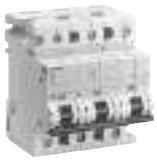
# Supplementary Protection, High-Current Product Range

## 5SP4 70 mm mounting depth

### Features

5SP4 designs have been certified to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as “supplementary protectors” for applications of up to 277 V AC (1-pole designs) and 480 V AC (2-pole, 3-pole, and 4-pole designs).

### Selection and ordering data

| | | $I_n$ | MW | Characteristic B | | Characteristic C | | Characteristic D | | Weight 1 item |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Order No. | List Price $ 1 item | Order No. | List Price $ 1 item | Order No. | List Price $ 1 item | |
| | | A | | | | | | | | kg |
| | **1-pole** | 80<br>100<br>125 | 1.5 | **5SP4 180-6**<br>**5SP4 191-6**<br>**5SP4 192-6** | | **5SP4 180-7**<br>**5SP4 191-7**<br>**5SP4 192-7** | | **5SP4 180-8**<br>**5SP4 191-8**<br>**-** | | 0.258 |
| | **2-pole** | 80<br>100<br>125 | 3 | **5SP4 280-6**<br>**5SP4 291-6**<br>**5SP4 292-6** | | **5SP4 280-7**<br>**5SP4 291-7**<br>**5SP4 292-7** | | **5SP4 280-8**<br>**5SP4 291-8**<br>**-** | | 0.516 |
|  | **3-pole** | 80<br>100<br>125 | 4.5 | **5SP4 380-6**<br>**5SP4 391-6**<br>**5SP4 392-6** | | **5SP4 380-7**<br>**5SP4 391-7**<br>**5SP4 392-7** | | **5SP4 380-8**<br>**5SP4 391-8**<br>**-** | | 0.762 |
| | **4-pole** | 80<br>100<br>125 | 6 | **5SP4 480-6**<br>**5SP4 491-6**<br>**5SP4 492-6** | | **5SP4 480-7**<br>**5SP4 491-7**<br>**5SP4 492-7** | | **5SP4 480-8**<br>**5SP4 491-8**<br>**-** | | 1.032 |

1 MW = modular width of 18 mm.
Depth = 70 mm.

# Supplementary Protection, AC/DC Product Range

## 5SY5 70 mm mounting depth

### Features

All 5SY5 designs have been certified to **UL 1077** and can therefore be used as “supplementary protectors” for applications up to 277 VAC or 250 VDC (1-pole) and 480 VAC or 500 VDC (2-pole).

### Selection and ordering data

| | | $I_n$ | MW[1] | Characteristic B Order No. | List Price $ 1 item | Characteristic C Order No. | List Price $ 1 item | Weight 1 item |
|---|---|---|---|---|---|---|---|---|
| | | A | | | | | | kg |
| | **1-pole** | | | | | | | |
| | | 0.3 | 1 | - | | 5SY5 114-7 | | 0.147 |
| | | 0.5 | | - | | 5SY5 105-7 | | |
| | | 1 | | - | | 5SY5 101-7 | | |
| | | 1.6 | | - | | 5SY5 115-7 | | |
| | | 2 | | 5SY5 102-6 | | 5SY5 102-7 | | |
| | | 3 | | - | | 5SY5 103-7 | | |
| | | 4 | | - | | 5SY5 104-7 | | |
| | | 6 | | 5SY5 106-6 | | 5SY5 106-7 | | |
| | | 8 | | - | | 5SY5 108-7 | | |
| | | 10 | | 5SY5 110-6 | | 5SY5 110-7 | | |
| | | 13 | | 5SY5 113-6 | | 5SY5 113-7 | | |
| | | 16 | | 5SY5 116-6 | | 5SY5 116-7 | | |
| | | 20 | | 5SY5 120-6 | | 5SY5 120-7 | | |
| | | 25 | | 5SY5 125-6 | | 5SY5 125-7 | | |
| | | 32[1] | | 5SY5 132-6 | | 5SY5 132-7 | | |
| | | 40 | | 5SY5 140-6 | | 5SY5 140-7 | | |
| | | 50 | | 5SY5 150-6 | | 5SY5 150-7 | | |
| | | 63 | | 5SY5 163-6 | | 5SY5 163-7 | | |
| | **2-pole** | | | | | | | |
| | | 0.3 | 2 | - | | 5SY5 214-7 | | 0.304 |
| | | 0.5 | | - | | 5SY5 205-7 | | |
| | | 1 | | - | | 5SY5 201-7 | | |
| | | 1.6 | | - | | 5SY5 215-7 | | |
| | | 2 | | - | | 5SY5 202-7 | | |
| | | 3 | | - | | 5SY5 203-7 | | |
| | | 4 | | - | | 5SY5 204-7 | | |
| | | 6 | | 5SY5 206-6 | | 5SY5 206-7 | | |
| | | 8 | | - | | 5SY5 208-7 | | |
| | | 10 | | 5SY5 210-6 | | 5SY5 210-7 | | |
| | | 13 | | 5SY5 213-6 | | 5SY5 213-7 | | |
| | | 16 | | 5SY5 216-6 | | 5SY5 216-7 | | |
| | | 20 | | 5SY5 220-6 | | 5SY5 220-7 | | |
| | | 25 | | 5SY5 225-6 | | 5SY5 225-7 | | |
| | | 32 | | 5SY5 232-6 | | 5SY5 232-7 | | |
| | | 40 | | 5SY5 240-6 | | 5SY5 240-7 | | |
| | | 50 | | 5SY5 250-6 | | 5SY5 250-7 | | |
| | | 63 | | 5SY5 263-6 | | 5SY5 263-7 | | |

1) MW = modular width of 18 mm.
Depth = 70 mm.

# Supplementary Protection

## Additional components for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors

### Features

- UL Recognized to UL 1077 (5ST3 010, 011, 012, 020, 021 & 022)
- Individual retrofitting possible
- Assembly via factory-fitted clips
- Short-circuit protection via supplementary protectors of characteristic B or C and $I_n$ = 6 A or 6 A gL fuses
- Low output versions in accordance with EN 61131-2 for controlling PLCs

### Design

**Auxiliary switches (AS) and fault signal contacts (FC)**
(5ST30.0, 5ST30.1, 5ST30.2)

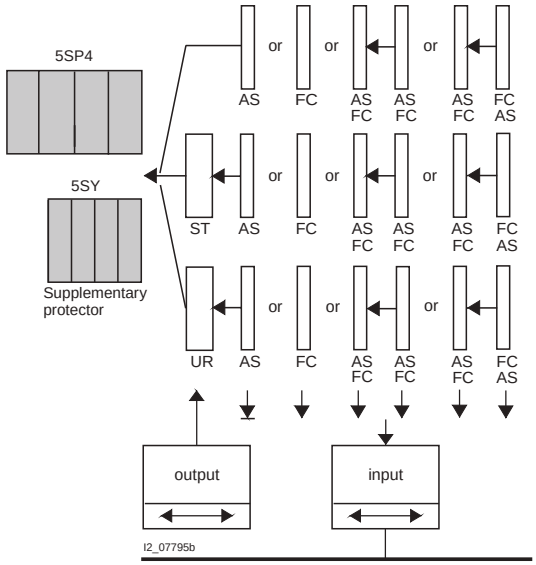
- Min. contact load: 50 mA, 24 V
- Max. contact load:
  NO contacts:
  2 A, 400 V AC, AC-14
  6 A, 230 V AC, AC-14
  1 A, 220 V DC, DC-13
  1 A, 110 V DC, DC-13
  3 A, 60 V DC, DC-13
  6 A, 24 V DC, DC-13
  NC contacts:
  2 A, 400 V AC, AC-13
  6 A, 230 V AC, AC-13
  1 A, 220 V DC, DC-13
  1 A, 110 V DC, DC-13
  3 A, 60 V DC, DC-13
  6 A, 24 V DC, DC-13
- Connectable to *instabus EIB* and AS-Interface bus via binary inputs

**Auxilliary switches (AS) with low output**
(5ST3013, 5ST3014, 5ST3015)

- Area of application: 1mA / 5 V DC to 50 mA / 30 V DC

### Application

Indication of the supplementary protectors' switching state:
- AS: ON/OFF
- FC: tripped




### Selection and ordering data

| | | MW | Order No. | List Price $ 1 item | Price group | Weight 1 item kg |
|---|---|---|---|---|---|---|
| | **Auxiliary switches (AS) for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors** | | | | | |
| | 1 NO + 1 NC,<br>1 NO + 1 NC, low output [1] | 0.5 | **5ST3 010**<br>**5ST3 013** | | | 0.050 |
| | 2 NO<br>2 NO, low output [1] | | **5ST3 011**<br>**5ST3 014** | | | |
| | 2 NC<br>2 NC, low output [1] | | **5ST3 012**<br>**5ST3 015** | | | |
| | **Fault signal contacts (FC) for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors** | | | | | |
| | 1 NO + 1 NC | 0.5 | **5ST3 020** | | | 0.050 |
| | 2 NO | | **5ST3 021** | | | |
| | 2 NC | | **5ST3 022** | | | |

[1] Not UL Rated.

# Supplementary Protection

## Additional components for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors

### Features

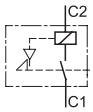
**Shunt trips**

- Response limits acc. to DIN VDE 0660 Part 100, 7.2.1.4
- Suitable for voltages: 110 to 415 V AC, 110 V AC, 24 to 48 V AC/DC

### Application

Remote tripping of the supplementary protectors

### Selection and ordering data

| | | MW | Order No. | List Price $ 1 item | Price group | Weight 1 item kg |
|---|---|---|---|---|---|---|
| | **Shunt trips (ST) for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors 1)** | | | | | |
|   | 110-415 V AC | 1 | **5ST3 030** | | | 0.098 |
| | 24-48 V AC/DC | 1 | **5ST3 031** | | | |

### Features

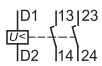
**Undervoltage releases**

- Response limits acc. to DIN VDE 0660 Part 100, 7.2.1.3
- Suitable for voltages: 230 V AC, 110 V DC, 24 V DC
- Connectable to *instabus EIB* and AS-Interface bus via binary inputs.

### Application

- Applicable as remote trip in an EMERGENCY-OFF loop
- Assures disconnection of the control circuit acc. to EN 60 204
- In cases of interrupted or insufficient voltage, the undervoltage release trips the supplementary protector or prevents it from switching on.

### Selection and ordering data

| | | MW | Order No. | List Price $ 1 item | Price group | Weight 1 item kg |
|---|---|---|---|---|---|---|
| | **Undervoltage releases (UR) for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors 1)** | | | | | |
|   | 230 V AC<br>110 V DC<br>24 V DC | 1 | **5ST3 040**<br>**5ST3 041**<br>**5ST3 042** | | | 0.115 |
| | 230 V AC<br>110 V DC<br>24 V DC | 1 | **5ST3 043**<br>**5ST3 044**<br>**5ST3 045** | | | |

1) Not UL/CSA Rated.

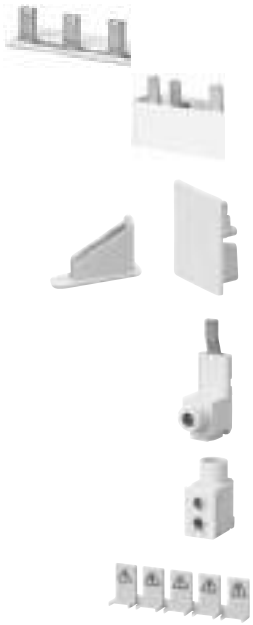
# Supplementary Protection Accessories

## Accessories for 5SY and 5SP supplementary protectors

### Features

- For use with 5SY and 5SP supplementary protectors
- UL and CSA Certified to UL 508

### Selection and ordering data



| | Length | For use with 5SY | | | For use with 5SP[3] | | |
|---|---|---|---|---|---|---|---|
| | | Order No. | List Price $ | Weight 1 item | Order No. | List Price $ | Weight 1 item |
| | mm | | 1 item | kg | | 1 item | kg |
| **Busbars[2] without end caps (can be cut)** | | | | | | | |
| 1-pole | 1000 | **5ST3 701-0HG** | | 0.330 | **5ST3 701-2HG** | | 0.450 |
| 1-pole + AS or FC[1] | | **5ST3 703-0HG** | | | **-** | | |
| 2-pole | 1000 | **5ST3 705-0HG** | | 0.508 | **5ST3 705-2HG** | | 0.690 |
| 2-pole + AS or FC[1] | | **5ST3 707-0HG** | | | **-** | | |
| 3-pole | 1000 | **5ST3 710-0HG** | | 0.800 | **5ST3 710-2HG** | | 1.090 |
| 3-pole + AS or FC[1] | | **5ST3 712-0HG** | | | **-** | | |
| **Busbar End Caps** | | | | | | | |
| 1-pole | | **5ST3 748-0HG** | | 0.001 | **5ST3 748-0HG** | | 0.001 |
| 2- & 3- pole | | **5ST3 750-0HG** | | | **5ST3 750-0HG** | | |
| **Connection terminals** | Wire size | | | | | | |
| Infeed - MCBs | 6 - 35 mm$^2$<br>10 - 1/0 AWG | **5ST3 770-0HG** | | 0.035 | **5ST3 770-0HG** | | 0.035 |
| Infeed - busbars | 1.5 - 50 mm$^2$<br>14 - 1 AWG | **5ST3 770-1HG** | | 0.016 | **5ST3 770-1HG** | | 0.016 |
| **Touch protection covers[2]** | | | | | | | |
| 5 x 1 pin | | **5ST3 655-0HG** | | 0.003 | **5ST3 655-0HG** | | 0.003 |

1) Used with appropriate pole supplementary protector + 1 auxiliary switch (AS) or 1 fault signal contact (FC).

2) Always cover all exposed terminals with touch protection covers 5ST3655-0HG.

3) Maximum 100 A for infeed at the start of a busbar.

### Technical Data

| | | 5ST3 7..-0HG | 5ST3 7..-2HG | 5ST3 770-0HG | 5ST3 770-1HG |
|---|---|---|---|---|---|
| **Standards** | | UL 508, CSA C22.2 No. 14-M 95, | | | |
| Certifications | | UL 508 File No. E328403 | | | |
| | | CSA | | | |
| **Operational voltage** | | | | | |
| • IEC | V AC | 690 | | | |
| • UL 508 | V AC | 600 | | | |
| **Rated current** | A | - | - | 115 | |
| **Maximum busbar current $I_s$ per phase** | | | | | |
| • Infeed at the start of the busbar | A | 80 | 100 | - | - |
| • Infeed at the center of the busbar | A | 160 | 200 | - | - |
| **Busbar cross-section** | mm$^2$ Cu | 18 | 25 | - | - |
| **Conductor cross-sections** | AWG | - | - | 10-1/0 | 14-1 |
| | mm$^2$ | - | - | 6-35 | 1.5-50 |
| **Terminals - terminal tightening torque** | Nm | - | - | 5 | 3.5 |
| | lbs/in | - | - | 50 | 35 |

# Supplementary Protection Accessories

## Accessories for 5SY and 5SP supplementary protectors

### Technical Data

**Busbar system** [1)]

- Acc. to DIN 57 606 and DIN 57 659
- Load for one-side/central infeed: 80 A/130 A for 16 mm²
- Pin-type connections
- Single and multi-phase
- Cu: 16 mm² and fully insulated
- Lug spacing: 18 mm
- No additional connection terminal required for stranded connections up to 35 mm²
- Excellent accessibility of the feeder cables
- Busbars do not comply with UL1077

### Selection and ordering data

| | Length | Order No. | List Price $ | Price group | Weight 1 item |
|---|---|---|---|---|---|
| | mm | | 1 item | | kg |
| **Accessories for 5SY4, 5SY5 miniature circuit-breakers** | | | | | |
| **Busbars 16mm²** | | | | | |
| Fully insulated (Do not cut): | | | | | |
| 1-phase | 214 | **5ST3 700** | | | 0.040 |
| 1-phase + AS | | **5ST3 702** | | | |
| 2-phase | | **5ST3 704** | | | 0.060 |
| 2-phase + AS | | **5ST3 706** | | | |
| 3-phase | | **5ST3 708** | | | 0.100 |
| 3-phase + AS | | **5ST3 711** | | | |
| 3 × (1-phase + AS) | | **5ST3 713** | | | |
| 4-phase | | **5ST3 715** | | | 0.150 |
| Without end caps (Can be cut): | | | | | |
| 1-phase | 1016 | **5ST3 701** | | | 0.190 |
| 1-phase + AS | | **5ST3 703** | | | |
| 2-phase | | **5ST3 705** | | | 0.290 |
| 2-phase + AS | | **5ST3 707** | | | |
| 3-phase | | **5ST3 710** | | | 0.430 |
| 3-phase + AS | | **5ST3 712** | | | |
| 3 × (1-phase + AS) | | **5ST3 714** | | | |
| 4-phase | | **5ST3 716** | | | 0.700 |
| **End caps** for lateral insulation of cut-to-length busbars | | | | | |
| 1- phase | | **5ST3 748** | | | 0.001 |
| 2- and 3-phase | | **5ST3 750** | | | 0.001 |
| 4-phase | | **5ST3 718** | | | 0.001 |
| **Accessories for 5SY4, 5SY5, 5SP4 supplementary protectors** | | | 1 item | | 1 item |
| **Handle locking device** applicable with all types of poles; sealable against unintended on- and off-switching; padlock with a shackle of max. 3 mm | | **5ST3 801** | | | 0.008 |
| **Terminal cover** applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standard mounting rail; sealable | | **5ST3 800** | | | 0.001 |
| **Padlock** for handle locking device 5ST3 801 | | **5ST3 802** | | | 0.027 |
| **Locking mechanism** consisting of 5ST3 801 handle locking device and 5ST3 802 padlock | | **5ST3 803** | | | 0.035 |
| **Inscription labels (white) for 5SY4, 5SY5, 5SP4 miniature circuit-breakers** 15 x 9 mm, 3 frames containing 44 labels each, attachable to the lower casing collar • Self-adhesive | | **5ST2 173** | | | 0.038 |

1) Not UL/CSA Rated.

# Supplementary Protection

## 5SY and 5SP supplementary protectors

### Technical data

| | | 5SY4 | 5SY6 | 5SY5 | 5SP4 |
|---|---|---|---|---|---|
| **Standards** | | EN60898<br>EN 60947-2<br>UL 1077;<br>CSA C22.2 No. 235 | EN60898<br>EN 60947-2<br>UL 1077;<br>CSA C22.2 No. 235 | EN60898<br>EN 60947-2 | EN60898<br>EN 60947-2<br>UL 1077;<br>CSA C22.2 No. 235 |
| **Certifications** | | cE; cURus,<br>UL File No. E116386 | cE; cURus,<br>UL File No. E116386 | cE; cURus,<br>UL File No. E116386 | cE; cURus,<br>UL File No. E106582 |
| **Tripping characteristic** | | A, B, C, D | B, C | B, C | B, C, D |
| **Number of poles** | | 1, 1+N, 2, 3, 3+N, 4 | 1, 1+N, 2, 3, 3+N, 4 | 1, 2 | 1, 2, 3, 4 |
| **Operating voltage** | Min. V AC/DC | 24 | 24 | 24 | 24 |
| – EN 60898, EN 60947-2 | Max. V DC/pole | 60 [1] | 60 [1] | 250 | 60 [1] |
| | Max. V AC | 400 | 400 | 400 | 400 |
| – UL 1077 and CSA 22.2 No. 235 | Max. V AC | 480Y/277 | 480Y/277 | 480Y/277 | 480Y/277 |
| | V DC/pole | — | | | |
| **Interrupting rating** | | | | | |
| $I_{cn}$ to IEC/EN 60898-1 | kA AC | 10 | 6 | 10 | 10 |
| $I_{cn}$ to IEC/EN 60898-2 | kA AC | 10 | 10 | 10 | 10 |
| – UL 1077 and CSA 22.2 No. 235 | 120/240, 240 V: kA AC | 14 | 14 | 14 | 14 |
| AC: Max. RMS Symmetrical | 240 V: kA AC | 7.5 | 7.5 | 7.5 | 7.5 |
| | 277 V: kA AC | 5 | 5 | 5 | 5 |
| | 480 V: kA AC | 5 | 5 | 5 | 5 |
| **Touch Protection to EN 50274-1** | | Yes | | | |
| **Degree of protection to EN 60529** | | IP20, with connected conductors | | | |
| **CFC and silicone free** | | Yes | | | |
| **Mounting** | | | | | |
| – Snap-on mounting | | Yes | | | — |
| – Standard mounting rail and mounting | | — | | | Yes |
| **Device Depth** | mm | 70 | | | |
| **Terminals** | | | | | |
| – Tunnel Terminals at both ends | | — | — | — | Yes |
| – Combined terminals at both ends | | Yes | Yes | Yes | — |
| – Terminal, solid, stranded or finely stranded with end sleeve | $mm^2$ | 0.75 to 25 | | | |
| – Terminal tightening torque | lb. in. | 22 to 26 | | | 22 to 31 |
| | Nm | 2.5 to 3 | | | 2.5 to 3.5 |
| **Conductor cross sections** | | | | | |
| – Solid and stranded | $mm^2$ | 0.75 to 35 | | | 0.75 to 50 |
| – Finely stranded, with end sleeve | $mm^2$ | 0.75 to 25 | | | 0.75 to 35 |
| | AWG | 14 to 4 | | | 14 to 2 |
| **Calibration Base** | °C | 30 (EN 60898) | | | |
| **Average service life, with rated load** | Operations | 20,000 | 20,000 | 20,000 (above 40A: 10, 000) | 20,000 |
| **Ambient temperature** | °C | -25 to 45, occassionally +55, max. 95% humidity | | | |
| **Storage Temperature** | °C | -40 to +75 | | | |
| **Resistance to vibration to IEC 600068-2-6** | m/s2 | 60 at 10 Hz to 150 Hz | | | |

1) The operating voltage 60 V DC/pole takes into account a battery charging voltage with peak value of 72 V.

# Supplementary Protection, General Data

## Tripping characteristics and breaking capacity

### Tripping characteristics

#### Tripping performance at an ambient temperature of 30 °C

| Tripping characteristic | Standards | Thermal release Test currents: low test current $I_1$ | high test current $I_2$ | tripping time 63 A ≥ $I_n$ $t$ | 63A ≤ $I_n$ | Electromagnetic release Test currents: hold $I_4$ | trips at the latest at $I_5$ | tripping time $t$ |
|---|---|---|---|---|---|---|---|---|
| A | | 1.13 x $I_n$ | | > 1 h | > 2 h | 2 x $I_n$ | | ≥ 0.1 s |
| | | | 1.45 x $I_n$ | < 1 h | < 2 h | | 3 x $I_n$ | < 0.1 s |
| B | IEC 60 898/EN 60 898 DIN VDE 0641 Part 11 | 1.13 x $I_n$ | | > 1 h | > 2 h | 3 x $I_n$ | | ≥ 0.1 s |
| | | | 1.45 x $I_n$ | < 1 h | < 2 h | | 5 x $I_n$ | < 0.1 s |
| C | | 1.13 x $I_n$ | | > 1 h | > 2 h | 5 x $I_n$ | | ≥ 0.1 s |
| | | | 1.45 x $I_n$ | < 1 h | < 2 h | | 10 x $I_n$ | < 0.1 s |
| D | | 1.13 x $I_n$ | | > 1 h | > 2 h | 10 x $I_n$ | | ≥ 0.1 s |
| | | | 1.45 x $I_n$ | < 1 h | < 2 h | | 20 x $I_n$ | < 0.1 s |
| | | | | | | | (IEC 60 898: 50 x $I_n$) | |

### Breaking capacity

Breaking capacity ratings for UL1077 are broken down in four main line voltages that are tested. These voltages shown in the table below.

For IEC ratings, there are special requirements with regard to the breaking capacity.

The values are standardized and determined according to the testing conditions of EN 60 898 and DIN VDE 0641 Part 11.

The most usual values are 6 000 and 10 000.

For other test conditions, other values can be specified which lie above those of EN 60 898 and DIN VDE 0641 Part 11.

An example of another standard is EN 60 947-2 or DIN VDE 0660 Part 101 for MCBs.

#### Interrupting Rating

| | | UL 1077 1-pole 120/240 V AC (in pairs) 240 V AC | 1-pole 240 V AC | 1-pole 277 V AC | 2-, 3-, 4-pole 480 V AC (3-phase) |
|---|---|---|---|---|---|
| **Rated current** | $I_n$ [A] | $I_{cn}$ [kA] | $I_{cn}$ [kA] | $I_{cu}$ [kA] | $I_{cu}$ [kA] |
| **5SP4** | 80 - 125 | 14 | 7.5 | 5 | 5 |
| **5SY4** | 0.3 - 63 | 14 | 7.5 | 5 | 5 |

| | | UL 1077 1-pole 65 V DC | 2-pole 125 V DC |
|---|---|---|---|
| **Rated current** | $I_n$ [A] | $I_{cn}$ [A] | $I_{cn}$ [A] |
| **5SP4** | 80 - 125 | 400 | 600 |
| **5SY4** | 0.3 - 63 | 400 | 600 |

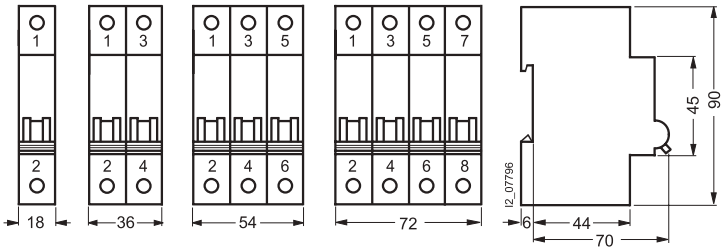
| | | EN 60 898 (IEC 60 898) 1-pole 230 V AC | 2-, 3-, 4-pole 400 V AC | EN 60 947-2 (IEC 60 947-2) 1-pole 230 V AC | 2-, 3-, 4-pole 400 V AC |
|---|---|---|---|---|---|
| **Rated current** | $I_n$ [A] | $I_{cn}$ [kA] | $I_{cn}$ [kA] | $I_{cu}$ [kA] | $I_{cu}$ [kA] |
| **5SP4** | 80 - 125 | 10 | 10 | 15 | 15 |
| **5SY4** | 0.3 ...6 | 10 | 10 | 35 | 35 |
| | 8 ...32 | 10 | 10 | 20 | 20 |
| | 40 ...63 | 10 | 10 | 15 | 15 |

| | | EN 60 898-2 1-pole 230 V AC | 2-pole 400 V AC | EN 60 898-2 1-pole 220 V DC | 2-pole 440 V DC |
|---|---|---|---|---|---|
| **Rated current** | $I_n$ [A] | $I_{cn}$ [kA] | $I_{cn}$ [kA] | $I_{cn}$ [kA] | $I_{cn}$ [kA] |
| **5SY5** | 0.5 - 63 | 10 | 10 | 15 | 15 |

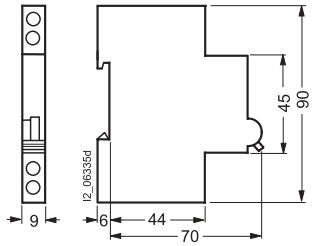
# Supplementary Protection

## Dimensions

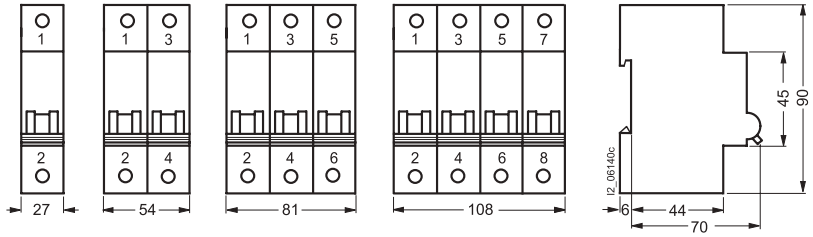
### 5SY4, 5SY5, 5SY6 supplementary protectors



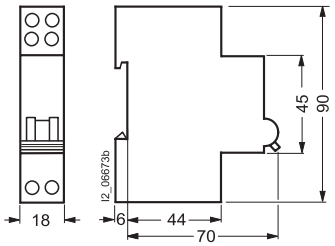

### 5ST3 auxiliary switch
### 5ST3 fault signal contact
can be used with 5SY4, 5SY5, 5SY6, 5SP4




### 5SP4 supplementary protectors




### 5ST3 shunt trip
### 5ST3 undervoltage release
can be used with
5SY4, 5SY5, 5SY6, 5SP4



# General Data

## 3NW7 Cylindrical Fuse Holders

### Key Common Features

- Meets a wide variety of fuse sizes
- Multi-pole configurations
- Standard 35 mm (DIN) rail mounting
- Housing material meets UL-94-V0, self-extinguishing
- Meets UL 512 and CSA C22.2, No. 39 certifications
- CE Mark
- No tools required for insertion or removal of fuses
- Finger safe design
- With or without Blown Fuse Indicator
- Draw design includes spare fuse holder

### Description

Depending on the cylindrical* fuse size selected 3NW7 fuse holders are available in 1, 1 + N, 2, 3, 3 + N and 4 pole configurations. Fuse sizes include 13/32" x 1-1/2" (Class CC and Midget), 8 mm x 32 mm,
10 mm x 38 mm, 14 mm x 51 mm and 22 x 58 mm.

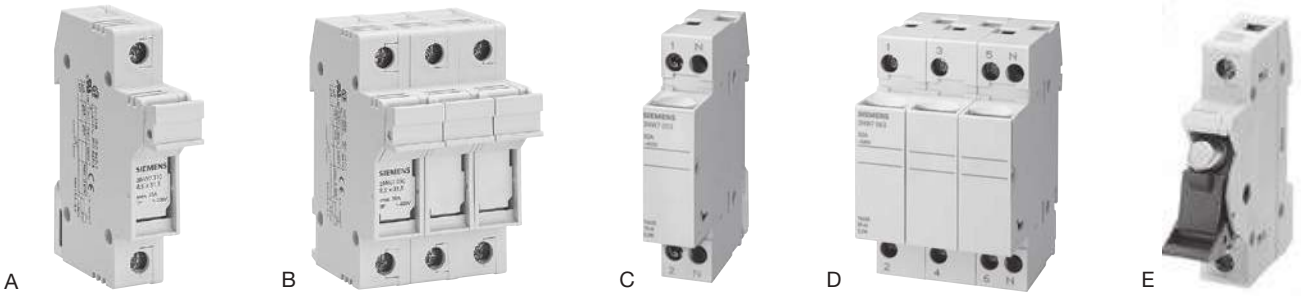
Class CC fuse holders are UL Listed for branch circuit protection according to UL 512 and CSA C22.2, No. 39. They incorporate a rejection feature that only allows Class CC fuses to be used.

Midget, 8 mm x 32 mm, 10 mm x 38 mm, 14 mm x 51 mm, and 22 x 58 mm fuse holders are UL Recognized (refer to Technical Data for specific fuse holder certifications) as supplementary protectors according to UL 512 and CSA C22.2, No. 39. Supplementary protectors are designed to provide additional protection along with branch circuit protection devices. All fuse holders are equipped with either a fuse handle or draw mechanism for easy insertion and removal of cylindrical type fuses. During insertion and removal the fuses are isolated from the power/control circuit. Their compact size requires less space than typical open-type fuse holders and they mount directly onto standard 35 mm mounting rails.

Fuse holders for 8 mm x 32 mm, 10 mm x 38 mm fuses in the 1 + N draw design occupy the same mounting space as 1 pole designs. This unique design saves space when compared to the typical handle type fuse holder which requires two poles.

## 3NW7 Cylindrical Fuse Holders

### Selection and ordering data



A B C D E

Construction Type

Class CC Fuse Holders: UL Listed for Branch Circuit Protection[3]

| No. of Poles | $I_n$ A | Fuse Size mm x mm | Without Blown Fuse Indicator | | | | With Blown Fuse Indicator [2] | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Order No. | List Price $ 1 Item | Construction Type | Weight 1 Item kg | Order No. | List Price $ 1 Item | Construction Type | Weight 1 Item kg |
| 1<br>2<br>3 | 30 | Class CC<br>10.3 x 38.1<br>(13/32" x 1-1/2") | 3NW7513-0HG<br>3NW7523-0HG<br>3NW7533-0HG | —<br>—<br>— | E[1] | 0.056<br>0.118<br>0.172 | —<br>—<br>— | —<br>—<br>— | —<br>—<br>— | —<br>—<br>— |

Midget Class Fuse Holders: UL Recognized for Supplementary Protection

| No. of Poles | $I_n$ A | Fuse Size mm x mm | Without Blown Fuse Indicator | | | | With Blown Fuse Indicator [2] | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Order No. | List Price $ 1 Item | Construction Type | Weight 1 Item kg | Order No. | List Price $ 1 Item | Construction Type | Weight 1 Item kg |
| 1 | | | 3NW7013 | — | | 0.056 | 3NW7014 | — | | 0.059 |
| 1 + N | | Midget Class | 3NW7053 | — | | 0.069 | 3NW7054 | — | | 0.072 |
| 2 | 30 | 10.3 x 38.1 | 3NW7023 | — | C & D[1] | 0.118 | 3NW7024 | — | C & D[1] | 0.123 |
| 3 | | (13/32" x 1-1/2") | 3NW7033 | — | | 0.172 | 3NW7034 | — | | 0.180 |
| 3 + N | | | 3NW7063 | — | | 0.185 | 3NW7064 | — | | 0.193 |

Other Supplementary Protectors (Refer to page 16/26 for UL and CSA status)

| No. of Poles | $I_n$ A | Fuse Size mm x mm | Without Blown Fuse Indicator | | | | With Blown Fuse Indicator [2] | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Order No. | List Price $ 1 Item | Construction Type | Weight 1 Item kg | Order No. | List Price $ 1 Item | Construction Type | Weight 1 Item kg |
| 1 | 20 | 8 x 32 | 3NW7313 | — | C | 0.056 | 3NW7314 | — | C | 0.059 |
| | 32 | 10 x 38 | 3NW7013 | — | C | 0.056 | 3NW7014 | — | C | 0.059 |
| | 50 | 14 x 51 | 3NW7111 | — | A | 0.095 | 3NW7112 | — | A | 0.095 |
| | 100 | 22 x 58 | 3NW7211 | — | A | 0.145 | 3NW7212 | — | A | 0.145 |
| 1 + N | 20 | 8 x 32 | 3NW7353 | — | C & D[1] | 0.069 | 3NW7354 | — | C & D[1] | 0.072 |
| | 32 | 10 x 38 | 3NW7053 | — | C & D[1] | 0.069 | 3NW7054 | — | C & D[1] | 0.072 |
| | 50 | 14 x 51 | 3NW7151 | — | A & B[1] | 0.215 | 3NW7152 | — | A & B[1] | 0.215 |
| | 100 | 22 x 58 | 3NW7251 | — | A & B[1] | 0.330 | 3NW7252 | — | A & B[1] | 0.330 |
| 2 | 20 | 8 x 32 | 3NW7323 | — | C & D[1] | 0.118 | 3NW7324 | — | C & D[1] | 0.123 |
| | 32 | 10 x 38 | 3NW7023 | — | C & D[1] | 0.118 | 3NW7024 | — | C & D[1] | 0.123 |
| | 50 | 14 x 51 | 3NW7121 | — | A & B[1] | 0.195 | 3NW7122 | — | A & B[1] | 0.195 |
| | 100 | 22 x 58 | 3NW7221 | — | A & B[1] | 0.300 | 3NW7222 | — | A & B[1] | 0.300 |
| 3 | 20 | 8 x 32 | 3NW7333 | — | C | 0.172 | 3NW7334 | — | D | 0.180 |
| | 32 | 10 x 38 | 3NW7033 | — | D | 0.172 | 3NW7034 | — | D | 0.180 |
| | 50 | 14 x 51 | 3NW7131 | — | B | 0.295 | 3NW7132 | — | B | 0.295 |
| | 100 | 22 x 58 | 3NW7231 | — | B | 0.691 | 3NW7232 | — | B | 0.480 |
| 3 + N | 20 | 8 x 32 | 3NW7363 | — | C & D[1] | 0.185 | 3NW7364 | — | C & D[1] | 0.193 |
| | 32 | 10 x 38 | 3NW7063 | — | C & D[1] | 0.185 | 3NW7064 | — | C & D[1] | 0.193 |
| | 50 | 14 x 51 | 3NW7161 | — | A & B[1] | 0.315 | 3NW7162 | — | A & B[1] | 0.315 |
| | 100 | 22 x 58 | 3NW7261 | — | A & B[1] | 0.475 | 3NW7262 | — | A & B[1] | 0.475 |

1) Same Mechanical Design - Other Pole Types Not Shown
2) LED is "ON" when fuse is blown (open)
3) UL 508 busbar available; 5ST3701-0HG, 5ST3705-0HG, 5ST3710-0HG. See page 16/19.

# General Data

## 3NW7 Cylindrical Fuse Holders

### Technical data

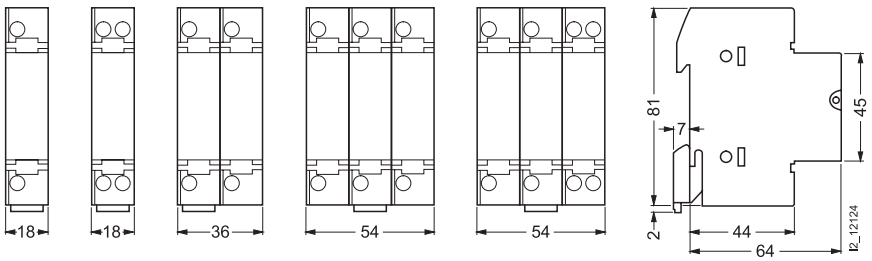
| Type | | | Class CC 3NW75.3-0HG | Midget 3NW70.3, 3NW70.4 | 3NW73.. | 3NW70.. | 3NW71.. | 3NW72.. |
|---|---|---|---|---|---|---|---|---|
| **Fuse size** | | mm x mm | 10.3 x 38.1 | 10.3 x 38.1 | 8 x 32 | 10 x 38 | 14 x 51 | 22 x 58 |
| | | inch x inch | 13/32" x 1-1/2" | 13/32" x 1-1/2" | - | - | - | - |
| **Standards** | | | UL512, CSA C22.2 | | IEC 60269-1, -2, -3 NF C 60-200, NF C 63-210, -211 NBN C 63269-2-1 CEI 32-4, -12 | | UL512, CSA C22.2 | IEC 60269-1, -2, -3 NF C 60-200, NF C 63-210, -211 NBN C 63269-2-1 CEI 32-4, -12 |
| **Certifications** | | | UL Listed, Certified to Canadian Standards | UL Recognized, Certified to Canadian Standards | Not UL / CSA Rated | | UL Recognized, Certified to Canadian Standards | Not UL / CSA Rated |
| **UL file no.** | | | E171267 | | - | | E171267 | - |
| **Rated voltage** | | | | | | | | |
| | $U_n$ | V AC | - | - | 400 | 690 | | |
| | UL/CSA | V AC | 600 | 600 | 400 | 600 | | |
| | UL | V DC | - | 600[1]) | - | - | | |
| **Rated current** | | A | 30 | 30 | 20 | 32 | 50 | 100 |
| **Rated breaking capacity** | | kA | Fuse Selection Dependent | | 20 | 100 | | |
| **Touch protection to BGV AC** | | | Yes | | | | | |
| **Degree of protection to IEC 60529** | | | IP20, with connected conductors | | | | | |
| **Operating temperature range** | | °C | -5 to +40; 90% max. humidity at +20 | | | | | |
| **Conductor cross sections** | | | | | | | | |
| Solid | | $mm^2$ | 1.5 to 25 | 0.5 to 10 | 0.5 to 10 | | 2.5 to 10 | 4 to 10 |
| Stranded | | $mm^2$ | 1.5 to 25 | 0.5 to 10 | 0.5 to 10 | | 2.5 to 25 | 4 to 50 |
| Finely Stranded | | $mm^2$ | - | 0.5 to 10 | 0.5 to 10 | | 2.5 to 16 | 4 to 35 |
| UL/CSA | | AWG | 18 to 4 | 20 to 10 | - | 20 to 10 | 6 to 10 | - |
| **Terminal Tightening Torque** | | Nm | - | - | 1.2 | | 2 | 2.5 |
| | | lb. in. | - | - | 10.9 | | 18.2 | 22.7 |

1) UL Recognized 600 V DC to meet the requirements of the US Solar Industry.

## Dimensional drawings

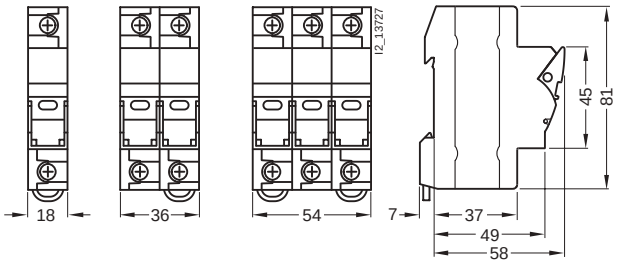
### Typical Construction Type C & D

3NW73: Fuse Size 8 mm x 32 mm
3NW70: Fuse Size 10 mm x 38 mm



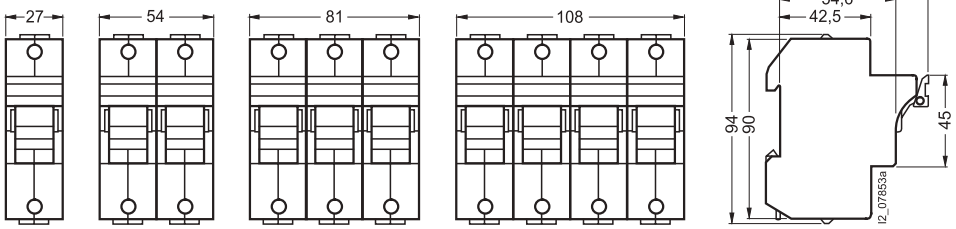

### Typical Construction Type E

3NW75.3: Fuse Size 13/32" x 1-1/2", Class CC

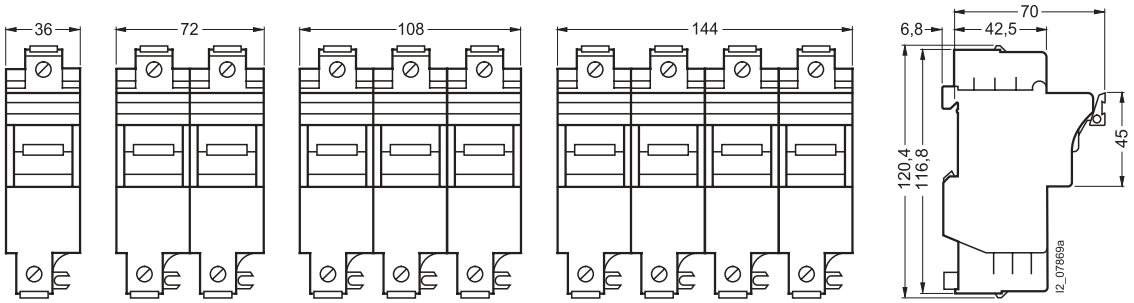



### Typical Construction Type A & B

3NW71: 14 mm x 51 mm



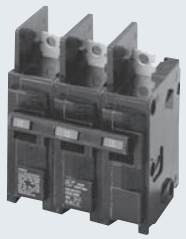

3NW72: 22 mm x 58 mm



## Notes

## contents

### 240V Circuit Breakers



**BQ Breakers**

**Selection and ordering data**

| | 240V |
|---|---|
| BQ | 10KAIC |
| BQH | 22KAIC |
| HBQ | 65KAIC |

1-, 2- & 3-pole up to 125A for circuit protection up to 240 volt circuits (UL)


| Information | Page |
|---|---|
| General Data | 17/7 – 17/8 |
| Accessories | 17/129 – 17/131 |

**QR Breakers**

**Selection and ordering data**

| | 240V |
|---|---|
| QR2 | 10KAIC |
| QRH-2 | 25KAIC |
| QR2-H | 65KAIC |
| HQR2-H | 100KAIC |

2- & 3-pole up to 225A for circuit protection up to 240 voltcircuits (UL)


| Information | Page |
|---|---|
| General Data | 17/9 |
| Accessories | 17/129 – 17/131 |


### 600/347V Circuit Breakers

**CQD Breakers**

**Selection and ordering data**

| | 480/277V | 600/347V |
|---|---|---|
| CQD | 14KAIC | — |
| CQD-6 | — | 10KAIC |

1-, 2- & 3-pole up to 100A for circuit protection up to 600/347V (CSA) & 480/277V (UL) circuits


| Information | Page |
|---|---|
| General Data | 17/11 |
| Internal Accessories | 17/129 – 17/131 |
| External Accessories | 17/132 – 17/137 |


### 600/347V Circuit Breakers

**GG Breakers**

**Selection and ordering data**

| | 480V | 600/347V |
|---|---|---|
| NGG | 25KAIC | 14KAIC |
| HGG | 35KAIC | 22KAIC |
| LGG | 65KAIC | 25KAIC |

1-, 2- & 3-pole up to 125A for circuit protection up to 600/347 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| General Data | 17/12 |
| Internal Accessories | 17/13 |
| External Accessories | 17/132 – 17/137 |


### 600V Circuit Breakers

**3VA51 Breakers**

**Selection and ordering data**

| UL Type | 480V | 600Y/347V |
|---|---|---|
| SEAS | 25KAIC | 14KAIC |
| MEAS | 35KAIC | 18KAIC |
| HEAS | 65KAIC | 25KAIC |

1-, 2-, 3- & 4-pole up to 125A for circuit protection up to 600/347 volt circuits (UL/CSA/IEC))


| Information | Page |
|---|---|
| Breakers | 17/16 – 17/19 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

**3VA61 Breakers**

**Selection and ordering data**

| UL Type | 480V① | 600V |
|---|---|---|
| MDAE | 35KAIC | 18KAIC |
| HDAE | 65KAIC | 22KAIC |
| CDAE | 100KAIC | 35KAIC |
| LDAE | 150KAIC | 50KAIC |
| EDAE | 200KAIC | 100KAIC |

3- & 4-pole up to 150A for circuit protection up to 600Y/347 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/20 – 17/23 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

# contents

## 600V Circuit Breakers

### 3VA52 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MFAS | 35KAIC | 18KAIC |
| HFAS | 65KAIC | 25KAIC |
| CFAS | 100KAIC | 35KAIC |

2(3)-, 3- & 4-pole up to 250A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/24 – 17/27 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

### 3VA62 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MFAE | 35KAIC | 18KAIC |
| HFAE | 65KAIC | 22KAIC |
| CFAE | 100KAIC | 35KAIC |
| LFAE | 150KAIC | 50KAIC |
| EFAE | 200kAIC | 100KAIC |

3- & 4-pole up to 250A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/28 – 17/31 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

### 3VA53 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MJAS | 35KAIC | 18KAIC |
| HJAS | 65KAIC | 25KAIC |
| CJAS | 100KAIC | 35KAIC |

2(3)-, 3- & 4-pole up to 400A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/32 – 17/33 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |


## 600V Circuit Breakers

### 3VA63 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MJAE | 35KAIC | 18KAIC |
| HJAE | 65KAIC | 22KAIC |
| CJAE | 100KAIC | 35KAIC |
| LJAE | 150KAIC | 50KAIC |
| EJAE | 200KAIC | 100KAIC |

3- & 4-pole up to 400A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/34 – 17/36 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

### 3VA54 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MLAS | 35KAIC | 18KAIC |
| HLAS | 65KAIC | 25KAIC |
| CLAS | 100KAIC | 35KAIC |

2(3)-, 3- & 4-pole up to 600A for circuit protection up to 600 volts volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/37 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

### 3VA64 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MLAE | 35KAIC | 18KAIC |
| HLAE | 65KAIC | 22KAIC |
| CLAE | 100KAIC | 35KAIC |
| LLAE | 150KAIC | 50KAIC |
| ELAE | 200KAIC | 100KAIC |

3- & 4-pole up to 600A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/38 – 17/40 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

# contents

## 600V Circuit Breakers

### 3VA55 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MMAS | 35KAIC | 18KAIC |
| HMAS | 65KAIC | 25KAIC |
| CMAS | 100KAIC | 50KAIC |

2(3)-, 3- & 4-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/41 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

### 3VA65 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MMAE | 35KAIC | 25KAIC |
| HMAE | 65KAIC | 35KAIC |
| CMAE | 100KAIC | 50KAIC |

3- & 4-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/42 – 17/43 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |

### 3VA66 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MMNAE | 35KAIC | 25KAIC |
| HMNAE | 65KAIC | 35KAIC |
| CMNAE | 100KAIC | 50KAIC |

3- & 4-pole up to 1000A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/45 – 17/46 |
| Internal Accessories | 17/60 |
| External Accessories | 17/61 – 17/88 |


## 600V Circuit Breakers

### 3VA57 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MNAS | 35KAIC | 25KAIC |
| HNAS | 65KAIC | 35KAIC |
| CNAS | 100KAIC | 65KAIC |

2(3)-, 3-pole up to 1200A for protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/47 |
| Technical Info/Connectors | 17/49 |
| Internal Accessories | 17/50 |
| External Accessories | 17/61 – 17/88 |

### 3VA67 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MNAE | 35KAIC | 25KAIC |
| HNAE | 65KAIC | 35KAIC |
| CNAE | 100KAIC | 65KAIC |

3-pole up to 1200A for protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/48 |
| Technical Info/Connectors | 17/49 |
| Internal Accessories | 17/50 |
| External Accessories | 17/61 – 17/88 |

### 3VA58 Breakers

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MPAS | 35KAIC | 25KAIC |
| HPAS | 65KAIC | 35KAIC |
| CPAS | 100KAIC | 65KAIC |

3-pole up to 1600A for protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/51 |
| Technical Info/Connectors | 17/53 |
| Internal Accessories | 17/54 |
| External Accessories | 17/61 – 17/88 |

## contents

### 600V Circuit Breakers

**3VA68 Breakers**

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MPAE | 35KAIC | 25KAIC |
| HPAE | 65KAIC | 35KAIC |
| CPAE | 100KAIC | 65KAIC |

3-pole up to 1600A for protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/52 |
| Technical Info/Connectors | 17/53 |
| Internal Accessories | 17/54 |
| External Accessories | 17/61 – 17/88 |

**3VA59 Breakers**

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MRAS | 35KAIC | 25KAIC |
| HRAS | 65KAIC | 35KAIC |
| CRAS | 100KAIC | 65KAIC |

3-pole up to 2000A for protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/55 |
| Technical Info/Connectors | 17/55 |
| Internal Accessories | 17/57 |
| External Accessories | 17/61 – 17/88 |

**3VA69 Breakers**

**Selection and ordering data**

| UL Type | 480V | 600V |
|---|---|---|
| MRAE | 35KAIC | 25KAIC |
| HRAE | 65KAIC | 35KAIC |
| CRAE | 100KAIC | 65KAIC |

3-pole up to 2000A for protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| Breakers | 17/56 |
| Technical Info/Connectors | 17/56 |
| Internal Accessories | 17/57 |
| External Accessories | 17/61 – 17/88 |


### 600V Circuit Breakers

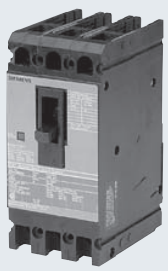
**Sentron ED Breakers**

**Selection and ordering data**

| | 240V | 480V | 600V |
|---|---|---|---|
| ED2 | 10KAIC | — | — |
| ED4 | 65KAIC | 18KAIC | — |
| ED6 | 65KAIC | 25KAIC | 18KAIC |

1-, 2- & 3-pole up to 125A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| General Data | 17/93 |
| Internal Accessories | 17/95 |
| External Accessories | 17/129 – 17/136 |

**Sentron HED/CED Breakers**

**Selection and ordering data**

| | 480V | 600/V |
|---|---|---|
| HED4 | 42KAIC | |
| CED6 | 200KAIC | 100KAIC |

1-, 2- & 3-pole up to 125A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| General Data | 17/94 |
| Internal Accessories | 17/95 |
| External Accessories | 17/129 – 17/136 |

**Sentron FD Breakers**

**Selection and ordering data**

| | 480V | 600V |
|---|---|---|
| FD6 | 35KAIC | 22KAIC |
| HFD6 | 65KAIC | 25KAIC |
| HHFD6 | 100KAIC | 25KAIC |
| CFD6 | 200KAIC | 100KAIC |

2- & 3-pole up to 250A for circuit protection up to 600 volt circuits (UL/CSA/IEC)


| Information | Page |
|---|---|
| General Data | 17/96 – 17/97 |
| Internal Accessories | 17/98 |
| External Accessories | 17/129 – 17/136 |

# contents

## 600V Circuit Breakers

### Sentron JD Breakers

**Selection and ordering data**

| | 240V | 480V | 600V |
|---|---|---|---|
| JD2 | 65KAIC | — | — |
| JD6, SJD6-A | 65KAIC | 35KAIC | 25KAIC |
| HHJD6 | 200KAIC | 100KAIC | 50KAIC |
| CJD6,SCJD6-A | 200KAIC | 150KAIC | 100KAIC |
| HJD6, SHJD6-A | 100KAIC | 65KAIC | 35KAIC |

2- & 3-pole up to 400A for circuit protection up to 600 volt circuits (UL/CSA)


| Information | Page |
|---|---|
| General Data | 17/99 – 17/100 |
| Internal Accessories | 17/101 |
| External Accessories | 17/129 – 17/136 |

### Sentron LD Breakers

**Selection and ordering data**

| | 480V | 600V |
|---|---|---|
| LD6, SLD6-A | 35KAIC | 25KAIC |
| HLD6, SHLD6-A | 65KAIC | 25KAIC |
| HHLD6 | 100KAIC | 50KAIC |
| CLD6, SCLD6-A | 150KAIC | 100KAIC |

2- & 3-pole up to 600A for circuit protection up to 600 volt circuits (UL/CSA)


| Information | Page |
|---|---|
| General Data | 17/102 – 17/103 |
| Internal Accessories | 17/104 |
| External Accessories | 17/129 – 17/136 |

### Sentron LMD Breakers

**Selection and ordering data**

| | 480V | 600/V |
|---|---|---|
| LMD6 | 50KAIC | 25KAIC |
| HLMD6 | 65KAIC | 50KAIC |

2- & 3-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA)


| Information | Page |
|---|---|
| General Data | 17/105 – 17/106 |
| Internal Accessories | 17/107 |
| External Accessories | 17/129 – 17/136 |


## 600V Circuit Breakers

### Sentron MD Breakers

**Selection and ordering data**

| | 480V | 600V |
|---|---|---|
| MD, SMD6 | 50KAIC | 25KAIC |
| HMD, SHMD6 | 65KAIC | 50KAIC |
| CMD, SCMD6 | 100KAIC | 65KAIC |

2- & 3-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA)


| Information | Page |
|---|---|
| General Data | 17/108 – 17/109 |
| Internal Accessories | 17/110 |

### Sentron ND Breakers

**Selection and ordering data**

| | 480V | 600V |
|---|---|---|
| ND, SND6 | 50KAIC | 25KAIC |
| HND, SHND6 | 65KAIC | 50KAIC |
| CND, SCND6 | 100KAIC | 65KAIC |

2- & 3-pole up to 1600A for circuit protection up to 600 volt circuits (UL/CSA)


| Information | Page |
|---|---|
| General Data | 17/105 – 17/112 |
| Internal Accessories | 17/113 |

### Sentron PD Breakers

**Selection and ordering data**

| | 480V | 600V |
|---|---|---|
| PD, SPD6 | 50KAIC | 25KAIC |
| HPD, SHPD6 | 65KAIC | 50KAIC |
| CPD | 100KAIC | 65KAIC |

2- & 3-pole up to 1600A for circuit protection up to 600 volt circuits (UL/CSA)


| Information | Page |
|---|---|
| General Data | 17/114 – 17/115 |
| Internal Accessories | 17/116 |

## Ordering

The 3VA breakers are shipped complete with non-interchangeable trip units and without lugs.

The 3VA41 panelboard mounted circuit breakers are shipped with aluminum load side lugs installed as standard.

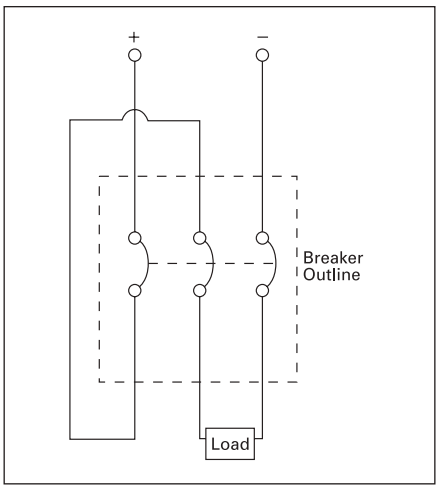
3VA51 through 3VA55 thermal-magnetic trip breakers as well as 3VA61 through 3VA66 electronic trip breakers are shipped as standard without lugs installed. To order factory installed nut keepers, which are required for installation in panelboards or switchboards, the 12th digit of the catalog should be change to "2" when ordering. (For example, a 35KA@480VAC, 40A, 3-pole, 3VA51 with lugs would be catalog number 3VA5140-5ED32-0AA0).

To order factory installed standard line and load lugs, the 12th digit of the catalog number should be changed to "6" (standard lugs are identified in the respective lug tables and footnotes in the SpeedFax). (For example, a 35KA@480VAC, 40A, 3-pole, 3VA51 with lugs would be catalog number 3VA5140-5ED3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "NAVAL", and are suitable for use at 50C.

To order NAVAL-rated thermal-magnetic trip circuit breakers, the 13th digit of the catalog number should be changed to the number "1". (For example, a 35KA @480VAC, 40A, 3-pole, NAVAL rated 3VA51 would be catalog number 3VA5140-5ED3**1**-1AA0).

All 3VA5 thermal-magnetic trip and 3VA6 electronic trip circuit breakers are UL listed for reverse feed applications.

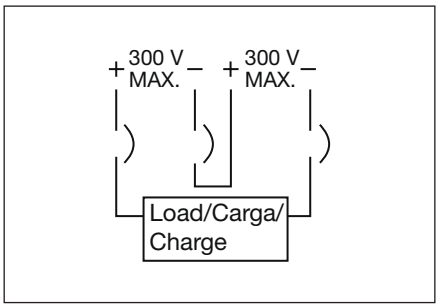



500V DC Wiring Configuration

## Connecting Breakers for DC Application

Most Siemens thermal magnetic trip MCCBs are applicable on direct current (dc) systems. Generally, for 250 V dc systems a two pole breaker is used, with one pole on each leg of the supply circuit. For three pole breakers applied on 500 V undergrounded DC systems, it is important to connect the power supply "zig-zag" through the breaker as shown in the figure below. This assures that the Voltage between phases on the breaker terminals is uniformly distributed.

See below for an alternative connection diagram. For a list of 3VA5 breakers with the DC ratings, please refer to pages 7-10 to 7-11.



# Lug-In/Lug-Out with INSTA-WIRE

## Selection

All BQ/BQH/HBQ circuit breakers are supplied with load side lugs. If line side lugs are required, add suffix "L" to catalog number. Consult Siemens for any additional charge. All standard circuit breakers are calibrated for 40°C maximum ambient application.

| Continuous Current Rating @ 40° C | Type BQ① 10,000A IR Catalog Number | Type BQH 22,000A IR Catalog Number | Type HBQ 65,000A IR Catalog Number |
|---|---|---|---|
| **1-Pole (120/240V AC)⑤** | | | |
| 15 | BQ1B015④ | BQ1B015H④ | HB1B015■④ |
| 20 | BQ1B020④ | BQ1B020H④ | HB1B020■④ |
| 25 | BQ1B025 | BQ1B025H■ | — |
| 30 | BQ1B030 | BQ1B030H | HB1B030■ |
| 35 | BQ1B035■ | BQ1B035H■ | — |
| 40 | BQ1B040 | BQ1B040H | HB1B040■ |
| 45 | BQ1B045■ | — | HB1B045■ |
| 50 | BQ1B050 | BQ1B050H | HB1B050■ |
| 60 | BQ1B060■⑨ | BQ1B060H■ | HB1B060■ |
| 70 | BQ1B070■ | BQ1B070H■ | HB1B070■ |
| **2-Pole (Common-Trip 120/240V AC)⑥** | | | |
| 15 | BQ2B015 | BQ2B015H | HB2B015■ |
| 20 | BQ2B020 | BQ2B020H | HB2B020■ |
| 25 | BQ2B025 | BQ2B025H■ | HB2B025■ |
| 30 | BQ2B030 | BQ2B030H | HB2B030■ |
| 35 | BQ2B035 | BQ2B035H■ | — |
| 40 | BQ2B040 | BQ2B040H | HB2B040■ |
| 45 | BQ2B045 | — | — |
| 50 | BQ2B050 | BQ2B050H | HB2B050■ |
| 60 | BQ2B060⑨ | BQ2B060H | HB2B060■ |
| 70 | BQ2B070 | BQ2B070H■ | HB2B070■ |
| 80 | BQ2B080 | BQ2B080H■ | HB2B080 |
| 90 | BQ2B090 | BQ2B090H■ | HB2B090■ |
| 100 | BQ2B100 | BQ2B100H | HB2B100 |
| 110 | BQ2B110 | — | — |
| 125 | BQ2B125 | BQ2B125H | — |
| **2-Pole (Common-Trip 240V AC)③⑥** | | | |
| 15 | BQ2H015 | — | — |
| 20 | BQ2H020 | — | — |
| 30 | BQ2H030 | — | — |
| 40 | BQ2H040■ | — | — |
| 50 | BQ2H050 | — | — |
| 60 | BQ2H060 | — | — |
| 70 | BQ2H070■ | — | — |
| 80 | BQ2H080■ | — | — |
| 90 | BQ2H090■ | — | — |
| 100 | BQ2H100■ | — | — |
| **3-Pole (Common-Trip 240V AC)⑦** | | | |
| 15 | BQ3B015 | BQ3B015H | HB3B015■ |
| 20 | BQ3B020 | BQ3B020H | HB3B020■ |
| 25 | BQ3B025■ | BQ3B025H■ | — |
| 30 | BQ3B030 | BQ3B030H | HB3B030 |
| 35 | BQ3B035■ | BQ3B035H | — |
| 40 | BQ3B040 | BQ3B040H | HB3B040 |
| 45 | BQ3B045■ | BQ3B045H | — |
| 50 | BQ3B050 | BQ3B050H | HB3B050 |
| 60 | BQ3B060 | BQ3B060H | HB3B060 |
| 70 | BQ3B070 | BQ3B070H | HB3B070■ |
| 80 | BQ3B080 | BQ3B080H■ | HB3B080■ |
| 90 | BQ3B090 | BQ3B090H■ | HB3B090■ |
| 100 | BQ3B100 | BQ3B100H | HB3B100 |

1-Pole

2-Pole

3-Pole

### Factory Modifications

| Description | Catalog Number |
|---|---|
| Line Side Lugs | **add suffix...L** |
| Quick Connect Lug | **add suffix...QX** |
| Marine 50° C Ambient Calibration | **add suffix...M** |
| Fungus Proofing | **add suffix...F** |

### BQ / BQH / HBQ Internal Accessories

| Description | Catalog Number | Field/Factory Installed |
|---|---|---|
| 120VAC Shunt Trip | **add suffix...00S01■** | Factory |
| 24VAC Shunt Trip | **add suffix...00S07■** | Factory |
| 120V Auxiliary Switch | add suffix...01■② | Factory |

For external accessories, please refer to page 7-164

■ Built to order. Allow 2-3 weeks for delivery

① UL Listed for use with 60/75° wire through 40 amps, UL listed for use with 75° wire only for 50 amps and above, HACR rated.

② 1A and 1B contacts.

③ UL Listed for use on 3-phase grounded "B" systems — 10,000 for this application.

④ UL Listed for frequent switching applications (SWD). 120V AC Fluorescent Lighting.

⑤ Shipped 12 per sleeve.

⑥ Shipped 6 per sleeve.

⑦ Shipped 4 per sleeve.

⑧ UL Listed 5KA IR.

⑨ Refer to Table A on page 17/125

# DIN Rail Mounted Circuit Breakers

## Selection/Dimensions

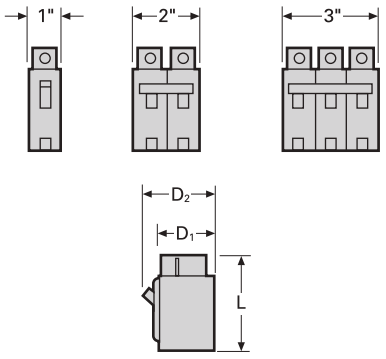
| Breaker Type | Ampere Rating | Catalog Number | Line Side Connector | Load Side Connector | Interrupting Ratings (KA) (RMS Symmetrical Amperes) Volts AC 120 | 120/240 |
|---|---|---|---|---|---|---|
| **1-Pole DIN Rail (120/240V AC)** | | | | | | |
| **BQLD** 1-Pole 120V DIN Rail | 10 | **BQ1B010QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 15 | **BQ1B015QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 20 | **BQ1B020QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 25 | **BQ1B025QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 30 | **BQ1B030QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 35 | **BQ1B035QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 40 | **BQ1B040QLD** | TC1Q1 | TC1Q1 | 10 | |
| | 45 | **BQ1B045QLD** | TA1Q1 | TA1Q1 | 10 | |
| | 50 | **BQ1B050QLD** | TA1Q1 | TA1Q1 | 10 | |
| | 60 | **BQ1B060QLD** | TA1Q1 | TA1Q1 | 10 | |
| **BQXD** 1-Pole 120V DIN Rail | 10 | **BQ1B010QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 15 | **BQ1B015QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 20 | **BQ1B020QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 25 | **BQ1B025QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 30 | **BQ1B030QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 35 | **BQ1B035QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 40 | **BQ1B040QXD** | TC1Q1 | Quick-Connect | 10 | |
| | 45 | **BQ1B045QXD** | TA1Q1 | Quick-Connect | 10 | |
| | 50 | **BQ1B050QXD** | TA1Q1 | Quick-Connect | 10 | |
| | 60 | **BQ1B060QXD** | TA1Q1 | Quick-Connect | 10 | |
| **2-Pole DIN Rail (120/240V AC)** | | | | | | |
| **BQLD** 2-Pole 120/240V DIN Rail | 10 | **BQ2B010QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 15 | **BQ2B015QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 20 | **BQ2B020QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 25 | **BQ2B025QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 30 | **BQ2B030QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 35 | **BQ2B035QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 40 | **BQ2B040QLD** | TC1Q1 | TC1Q1 | | 10 |
| | 45 | **BQ2B045QLD** | TA1Q1 | TA1Q1 | | 10 |
| | 50 | **BQ2B050QLD** | TA1Q1 | TA1Q1 | | 10 |
| | 60 | **BQ2B060QLD** | TA1Q1 | TA1Q1 | | 10 |
| **BQXD** 2-Pole 120/240V DIN Rail | 10 | **BQ2B010QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 15 | **BQ2B015QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 20 | **BQ2B020QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 25 | **BQ2B025QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 30 | **BQ2B030QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 35 | **BQ2B035QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 40 | **BQ2B040QXD** | TC1Q1 | Quick-Connect | | 10 |
| | 45 | **BQ2B045QXD** | TA1Q1 | Quick-Connect | | 10 |
| | 50 | **BQ2B050QXD** | TA1Q1 | Quick-Connect | | 10 |
| | 60 | **BQ2B060QXD** | TA1Q1 | Quick-Connect | | 10 |

**BQ1B015QLD**

**BQ2B015QLD**

**BQ1B015QXD**

**BQ2B015QXD**




### Lugs-For Use with BQXD⑥

| Circuit Breaker Amp. Rtg. | Cab. Per Lug | Lug Wire Range AWG | Catalog Number |
|---|---|---|---|
| **Line Side** | | | |
| 10–40 | 1<br>1 | #16–#6 Cu<br>#12–#6 Al | **TC1Q1**①② |
| 45–125 | 1<br>1 | #8–#1 Cu<br>#6–#1/0 Al | **TA1Q1** |

### Finger Safe Terminal Shield

Protects against accidental contact with lugs–1 per lug. Fits line and load end.

| Catalog Number | Qty |
|---|---|
| **BQFS2** | 2 |
| **BQFS1K** | 1000 |

### BQ Enclosures

| Type | Catalog Number④ |
|---|---|
| 1 | **EB3100S**③⑤ |
| 3R | **WB3100** |

### BQ Breaker Dimensions

| Number of Poles | Breaker Type | Amperes | Dimensions (inches) L | D1 | D2 |
|---|---|---|---|---|---|
| 1, 2 | BQ | 15-50 | 3¾ | 2⅜ | 3 |
| 1, 2 | BQH, HBQ | 15-50 | 4 | 2⅜ | 3 |
| 1, 2 | BQ, BQH, HBQ | 55-125 | 4 | 2⅜ | 3 |
| 3 | BQ, BQH, HBQ | 15-100 | 4 | 2⅜ | 3 |
| 1, 2 | BQXD | 15-60 | 4½ | 2⅜ | 3 |

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

① UL Listed for use with 60/75° wire through 40 amps, UL listed for use with 75° wire only for 50 amps and above, HACR rated.

②Connector has steel construction.

③Surface mounted indoor. If flush mounting is required, replace suffix "S" in catalog number with suffix "F".

④Neutral included in enclosure.

⑤Enclosure will not accept circuit breakers with shunt trips or auxiliary switches installed.

⑥Type BQXD uses TA1Q1 or TC1Q1 lugs on line side of circuit breaker.

For external accessories, please refer to pages 17/130, 17/132 to 17/137

| Continuous Current Rating @ 40°C | 2-Pole 240V AC Catalog Number | 3-Pole 240V AC Catalog Number |
|---|---|---|
| **Type QR2①** | | |
| 100 | **QR22B100** | **QR23B100** |
| 125 | **QR22B125** | **QR23B125** |
| 150 | **QR22B150** | **QR23B150** |
| 175 | **QR22B175** | **QR23B175** |
| 200 | **QR22B200** | **QR23B200** |
| 225 | **QR22B225** | **QR23B225** |
| 250 | **QR22B250** | **QR23B250** |
| **Type QRH2①** | | |
| 100 | **QRH22B100■** | **QRH23B100** |
| 125 | **QRH22B125** | **QRH23B125** |
| 150 | **QRH22B150** | **QRH23B150** |
| 175 | **QRH22B175■** | **QRH23B175** |
| 200 | **QRH22B200** | **QRH23B200** |
| 225 | **QRH22B225** | **QRH23B225** |
| 250 | **QRH22B250** | **QRH23B250** |
| **Type HQR2①** | | |
| 100 | **HQR22B100■** | **HQR23B100** |
| 125 | **HQR22B125** | **HQR23B125** |
| 150 | **HQR22B150** | **HQR23B150** |
| 175 | **HQR22B175■** | **HQR23B175** |
| 200 | **HQR22B200** | **HQR23B200** |
| 225 | **HQR22B225** | **HQR23B225** |
| 250 | **HQR22B250** | **HQR23B250** |
| **Type HQR2H①** | | |
| 100 | **HQR22B100H** | **HQR23B100H** |
| 125 | **HQR22B125H** | **HQR23B125H** |
| 150 | **HQR22B150H** | **HQR23B150H** |
| 175 | **HQR22B175H** | **HQR23B175H** |
| 200 | **HQR22B200H** | **HQR23B200H** |
| 225 | **HQR22B225H** | **HQR23B225H** |
| 250 | **HQR22B250H** | **HQR23B250H** |

## Ordering Information

Load side 3TA1QR300 lugs are mounted and included when circuit breaker is ordered. For line and load lugs (3TA1QR300) installed at no additional charge, add suffix "L" to catalog number.

**50°C Calibration** - See page 7-162.
**400HZ.** - See page 7-162.

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| 2 | 1 | 3.2 |
| 3 | 1 | 4.5 |

## Lugs For 75°C Wire

| Catalog Number | Lug Body | Lug Wire Range |
|---|---|---|
| **3TA1QR300** | Al | #3 - 300 Kcmil Al/Cu |
| **3TC1QR250** | Cu | #3 - 300 Kcmil Cu ONLY |
| **CCQ250** | CMP | #6 AWG - 350kcmil Al/Cu |

## Enclosures (Neutral Included)

| Type | Catalog Number |
|---|---|
| 1 | **QR2N1S or QR2N1F** |
| 3R | **QR2N3R3** |
| 12 | **QR2N12** |
| 4X | **QR2N4X** |
| 4X316 | **QR2N4X316** |

## UL 489 Interrupting Ratings

| Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) |
|---|---|
| | **240** |
| QR2 | 10 |
| QRH2 | 25 |
| HQR2 | 65 |
| HQR2H | 100 |

Enclosures Section 6
For external accessories, please refer to pages 7-166 to 7-171

# QR Accessories

## Selection

### Shunt Trip

| Control Voltage | | In Rush | Shunt Trip | Shunt Trip and Auxiliary Switch Combination |
|---|---|---|---|---|
| AC | DC | | Catalog Number | Catalog Number |
| — | 24 | 1.1A | **S07QR2** | **S07QR2A** |
| 120 - 240 | 48 | 2.0A AC / 1.8A DC | **S01QR2** | **S01QR2A** |

### Auxiliary Switch

Contains (1) or (2) sets of "A" contacts and "B" contacts

| Maximum Control Supply Voltage (V) | Maximum Allowable Current (A) | Single Auxiliary 1A -1B Contact Catalog Number | Double Auxiliary 2A - 2B Contact Catalog Number |
|---|---|---|---|
| 250 AC /125 DC | 5 AC / 0.5 DC | **A01QR2** | **A02QR2** |

### External Accessories

| Description | Catalog Number |
|---|---|
| Padlock Device | **HPLQR** |
| Mounting Screw Kit | **MSQR3** |
| Handle Blocking Device | **HBLQR** |
| Handle Sliding-bar Interlock | **SBMIQR** |

Padlock Device HPLQR

Handle Block Device HBLQR

Mechanical Interlock SBMIQR

## Type CQD (Cable In - Cable Out) DIN Rail Mount③

| Continuous Current Rating @ 40°C | 1-Pole<br>277V AC<br>125V DC<br>Catalog Number | 2-Pole<br>480Y/277V AC<br>125/250V DC<br>Catalog Number | 3-Pole<br>480Y/277V AC<br>Catalog Number |
|---|---|---|---|
| 15 | **CQD115**①② | **CQD215**② | **CQD315**② |
| 20 | **CQD120**①② | **CQD220**② | **CQD320**② |
| 25 | **CQD125**② | **CQD225**② | **CQD325**② |
| 30 | **CQD130**② | **CQD230**② | **CQD330**② |
| 35 | **CQD135**②■ | **CQD235**②■ | **CQD335**② |
| 40 | **CQD140**②■ | **CQD240**② | **CQD340**② |
| 45 | **CQD145**②■ | **CQD245**②■ | **CQD345**②■ |
| 50 | **CQD150**②■ | **CQD250**② | **CQD350**② |
| 60 | **CQD160**■ | **CQD260** | **CQD360** |
| 70 | **CQD170**■ | **CQD270** | **CQD370** |
| 80 | **CQD180**■ | **CQD280** | **CQD380** |
| 90 | **CQD190**■ | **CQD290**■ | **CQD390** |
| 100 | **CQD1100**■ | **CQD2100** | **CQD3100** |

## Interrupting Ratings (max. RMS symmetrical amperes kA)

| Breaker Type | Number of Poles | UL<br>Volts AC<br>120 | 240 | 277 | 480/277 | 600/347 | Volts DC<br>125 | 125/250 | IEC 947-2④<br>Volts AC<br>220/240<br>$I_{cu}$ | $I_{cs}$ | 380/415<br>$I_{cu}$ | $I_{cs}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CQD | 1-Pole | 65 | — | 14 | — | — | 14 | — | 18 | 9 | — | — |
| | 2-Pole | — | 65 | — | 14 | — | — | 14 | 65 | 33 | 18 | 9 |
| | 3-Pole | — | 65 | — | 14 | — | — | 14 | 65 | 33 | 18 | 9 |

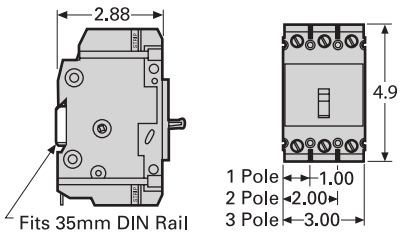
## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight lbs. (kg) |
|---|---|---|
| 1 | 1 | 0.5 (0) |
| 2 | 1 | 1.0 (0) |
| 3 | 1 | 1.5 (1) |

## Lugs For 60/75°C Wire

| Amps | Wire Size |
|---|---|
| 15–40 | #14–#6 AWG Cu<br>#12–#6 AWG Al |
| 45–100 | #8–#1 AWG Cu<br>#6–#1/0 AWG Al |

**CQD**




**CQD**

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

① SWD rated.

**Note:** CQD breakers are UL Listed for reverse feed applications.

② HID rated.

③ HACR rated.

④ Applicable for 15-30A breakers only.

For accessories, please refer to pages 17/13 and 17/132 to 17/137

# GG 125A Frame

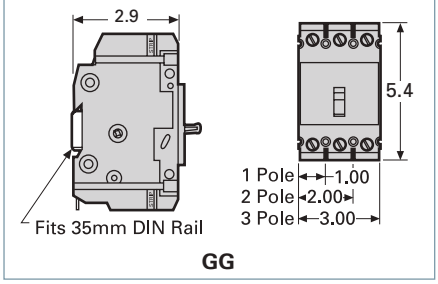
## Selection/Dimensions

### Type NGG (Cable In - Cable Out)

| Continuous Current Rating @ 40°C | 1-Pole | 2-Pole | 3-Pole |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| 15 | NGG1B015L①② | NGG2B015L② | NGG3B015L② |
| 20 | NGG1B020L①② | NGG2B020L② | NGG3B020L② |
| 25 | NGG1B025L② | NGG2B025L② | NGG3B025L② |
| 30 | NGG1B030L② | NGG2B030L② | NGG3B030L② |
| 35 | NGG1B035L② | NGG2B035L② | NGG3B035L② |
| 40 | NGG1B040L② | NGG2B040L② | NGG3B040L② |
| 45 | NGG1B045L② | NGG2B045L② | NGG3B045L② |
| 50 | NGG1B050L② | NGG2B050L② | NGG3B050L② |
| 60 | NGG1B060L | NGG2B060L | NGG3B060L |
| 70 | NGG1B070L | NGG2B070L | NGG3B070L |
| 80 | NGG1B080L | NGG2B080L | NGG3B080L |
| 90 | NGG1B090L | NGG2B090L | NGG3B090L |
| 100 | NGG1B100L | NGG2B100L | NGG3B100L |
| 110 | NGG1B110L | NGG2B110L | NGG3B110L |
| 125 | NGG1B125L | NGG2B125L | NGG3B125L |

Line and load lugs are included as standard. If no lugs are required, remove the "L" suffix.
HACR rated.
Suitable for screws or DIN rail mounting.

GG




GG

### Type HGG (Cable In - Cable Out)

| Continuous Current Rating @ 40°C | 1-Pole | 2-Pole | 3-Pole |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| 15 | HGG1B015L①② | HGG2B015L② | HGG3B015L② |
| 20 | HGG1B020L①② | HGG2B020L② | HGG3B020L② |
| 25 | HGG1B025L② | HGG2B025L② | HGG3B025L② |
| 30 | HGG1B030L② | HGG2B030L② | HGG3B030L② |
| 35 | HGG1B035L② | HGG2B035L② | HGG3B035L② |
| 40 | HGG1B040L② | HGG2B040L② | HGG3B040L② |
| 45 | HGG1B045L② | HGG2B045L② | HGG3B045L② |
| 50 | HGG1B050L② | HGG2B050L② | HGG3B050L② |
| 60 | HGG1B060L | HGG2B060L | HGG3B060L |
| 70 | HGG1B070L | HGG2B070L | HGG3B070L |
| 80 | HGG1B080L | HGG2B080L | HGG3B080L |
| 90 | HGG1B090L | HGG2B090L | HGG3B090L |
| 100 | HGG1B100L | HGG2B100L | HGG3B100L |
| 110 | HGG1B110L | HGG2B110L | HGG3B110L |
| 125 | HGG1B125L | HGG2B125L | HGG3B125L |

### Type LGG (Cable In - Cable Out)

| Continuous Current Rating @ 40°C | 1-Pole | 2-Pole | 3-Pole |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| 15 | LGG1B015L①② | LGG2B015L② | LGG3B015L② |
| 20 | LGG1B020L①② | LGG2B020L② | LGG3B020L② |
| 25 | LGG1B025L② | LGG2B025L② | LGG3B025L② |
| 30 | LGG1B030L② | LGG2B030L② | LGG3B030L② |
| 35 | LGG1B035L② | LGG2B035L② | LGG3B035L② |
| 40 | LGG1B040L② | LGG2B040L② | LGG3B040L② |
| 45 | LGG1B045L② | LGG2B045L② | LGG3B045L② |
| 50 | LGG1B050L② | LGG2B050L② | LGG3B050L② |
| 60 | LGG1B060L | LGG2B060L | LGG3B060L |
| 70 | LGG1B070L | LGG2B070L | LGG3B070L |
| 80 | LGG1B080L | LGG2B080L | LGG3B080L |
| 90 | LGG1B090L | LGG2B090L | LGG3B090L |
| 100 | LGG1B100L | LGG2B100L | LGG3B100L |
| 110 | LGG1B110L | LGG2B110L | LGG3B110L |
| 125 | LGG1B125L | LGG2B125L | LGG3B125L |

### Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight lbs. (kg) |
|---|---|---|
| 1 | 1 | .75 (0.34) |
| 2 | 1 | 1.3 (0.59) |
| 3 | 1 | 2.0 (0.98) |

### Lugs For 60/75°C Wire

| NGG | | |
|---|---|---|
| Ampere Rating | Wire Size | Catalog Number |
| 15–30A | #14–#6 AWG Cu<br>#12–#6 AWG Al | TC1Q1 (qty. 1)<br>3TC1Q1 (qty. 3) |
| 35–125A | #8-2/0 AWG CU/AL | 3TC1GG20 (qty. 3) |
| 15–125A | Nut Keeper plate w/ screw (for crimp terminals) | TNKG3 (qty. 3) |

### Interrupting Ratings (max. RMS symmetrical amperes kA)

| Breaker Type | Poles | UL489 | | | | | | | | IEC 60947-2 (Ics = 50%Icu) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC | | | | | | Volts DC | | Volts AC | | Volts DC |
| | | 120 | 240 | 277 | 347 | 480 | 600Y/347 | 125 | 125/250 | 240 | 415 | 125/250 |
| NGG | 1 | 65 | — | 25 | 14 | — | — | 14 | — | 25 | — | — |
| | 2,3 | — | 65 | — | — | 25 | 14 | — | 14① | 65 | — | 14 |
| HGG | 1 | 65 | — | 35 | 14 | — | — | 14 | — | — | — | — |
| | 2,3 | — | 65 | — | — | 35 | 14 | — | 14① | — | — | — |
| LGG | 1 | 65 | — | 65 | 14 | — | — | 14 | — | — | — | — |
| | 2,3 | — | 65 | — | — | 65 | 14 | — | 14① | — | — | — |

**For inches / millimeters conversion, see Application Data section.**

① SWD rated.

② HID rated at 15-50A 1-pole @ 277 VAC; 2 & 3-pole @ 480 VAC

For accessories, please refer to pages 17/13 and 17/132 to 17/137.

## Shunt Trip

| Control Voltage | | BQD, BQD6, CQD, NGG, HGG, LGG, NGB, HGB and LGB |
|---|---|---|
| V AC | V DC | Catalog Number |
| 120 | — | **CQDST120** |
| 240 | — | **CQDST240▲** |
| 277 | — | **CQDST277▲** |
| 480 | — | **CQDST480▲** |
| 600 | — | **CQDST600** |
| — | 12 | **CQDST12** |
| — | 24 | **CQDST24** |
| — | 48 | **CQDST48** |
| — | 125 | **CQDST125** |

**CQDST120AAS**

## Auxiliary Switch

| Maximum Voltage | | Number of Contacts | BQD, BQD6, CQD, NGG, HGG, LGG, NGB, HGB and LGB |
|---|---|---|---|
| AC | DC | | Catalog Number |
| 240 | 125 | 1A–1B | **CQDA1** |
| 240 | 125 | 2A–2B | **CQDA2** |

## Alarm Switch

| Maximum Voltage | | BQD, BQD6, CQD, NGG, HGG, LGG, NGB, HGB and LGB |
|---|---|---|
| AC | DC | Catalog Number |
| 240 | 125 | **CQDBA** |

CQD with Accessory Installed

## Shunt Trip and Auxiliary Switch Combinations

| Shunt Trip Voltage | | BQD, BQD6, CQD, NGG, HGG, LGG, NGB, HGB and LGB |
|---|---|---|
| AC | DC | Catalog Number |
| 24 | — | **CQDST24AAS▲** |
| 120 | — | **CQDST120AAS▲** |
| 240 | — | **CQDST240AAS▲** |
| 277 | — | **CQDST277AAS▲** |
| 480 | — | **CQDST480AAS▲** |
| 600 | — | **CQDST600AAS▲** |
| — | 12 | **CQDST12DAS▲** |
| — | 24 | **CQDST24DAS▲** |
| — | 48 | **CQDST48DAS▲** |
| — | 125 | **CQDST125DAS▲** |

## Alarm and Auxiliary Switch Combinations

| For Breaker | Catalog Number |
|---|---|
| BQD, BQD6, CQD, NGG, HGG, LGG, NGB, HGB and LGB | **CQDA1BA▲** |

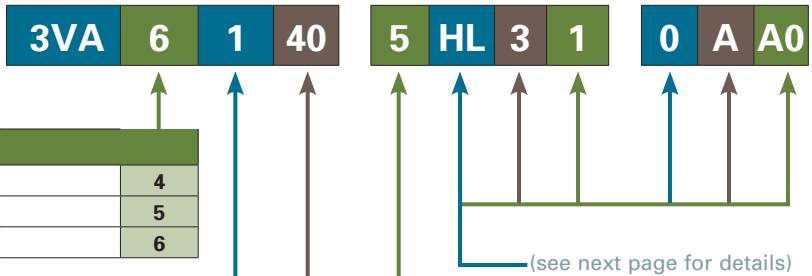
▲ Built to order. Allow 6–8 weeks for delivery.

①Adds 1-pole space for accessory.

# 3VA UL Breakers

## Catalog Numbering System

## Catalog Numbering Logic




| Breaker Designation | |
|---|---|
| Thermal magnetic panelboard breakers | 4 |
| Thermal magnetic (Cable-in Cable-out) breakers | 5 |
| Electronic trip breakers | 6 |

| Frame Size | |
|---|---|
| 125/150A | 1 |
| 250A | 2 |
| 400A | 3 |
| 600A | 4 |
| 800A | 5 |
| 1000A | 6 |
| 1200A | 7 |
| 1600A | 8 |
| 2000A | 9 |

**Rated Current**

| 3VA41/ 3VA51 | 3VA52 | 3VA53 | 3VA54 | 3VA55 | 3VA57 | 3VA58 | 3VA59 | 3VA61 | 3VA62 | 3VA63 | 3VA64 | 3VA65 | 3VA66 | 3VA67 | 3VA68 | 3VA69 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15A | | | | | | | | | | | | | | | | | 95 |
| 20A | 200A | 200A | | | | | | | | | | | | | | | 20 |
| | 225A | 225A | | | | | | | | | | | | | | | 22 |
| 25A | 250A | 250A | | | | | | | 250A | 250A | | | | | | | 25 |
| 30A | | 300A | | | | | | | | | | | | | | | 30 |
| 35A | | 350A | | | | | | | | | | | | | | | 35 |
| 40A | 40A | 400A | | | | | | 40A | | 400A | 400A | | | | | | 40 |
| 45A | 45A | | 450A | | | | | | | | | | | | | | 45 |
| 50A | 50A | | 500A | | | | | | | | | | | | | | 50 |
| 60A | 60A | | 600A | 600A | | | | | | | 600A | 600A | | | | | 60 |
| 70A | 70A | | | 700A | | | | | | | | | | | | | 70 |
| 80A | 80A | | | 800A | 800A | | | | | | | 800A | | 800A | | | 80 |
| 90A | 90A | | | | 900A | | | | | | | | | | | | 90 |
| 100A | 100A | | | | 1000A | | | 100A | 100A | | | | 1000A | 1000A | | | 10 |
| 110A | 110A | | | | | | | | | | | | | | | | 11 |
| 125A | 125A | | | | 1200A | | | | | | | | | 1200A | | | 12 |
| | | | | | | 1400A | | | | | | | | | | | 14 |
| | 150A | | | | | | | 150A | | | | | | | | | 15 |
| | | | | | | 1600A | | | | | | | | | 1600A | | 16 |
| | 175A | | | | | | | | | | | | | | | | 17 |
| | | | | | | | 1800A | | | | | | | | | | 18 |
| | | | | | | | 2000A | | | | | | | | | 2000A | 20 |

| Interrupting Capacity @ 480V | | | |
|---|---|---|---|
| 3VA4/3VA5 | 3VA6 | | |
| MCP/MCS | 200K | | 0 |
| MCP/MCS | MCP/MCS | | 1 |
| 25K | | | 4 |
| 35K | 35K | | 5 |
| 65K | 65K | | 6 |
| 100K | 100K | | 7 |
| | 150K | | 8 |

# Catalog Numbering Logic (cont.)

| 3VA | 6 | 1 | 40 | – | 5 | HL | 3 | 1 | 0 | A | A0 |
|---|---|---|---|---|---|---|---|---|---|---|---|

(see previous page for details)

| Trip Unit Protection Functions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3VA4/3VA5 | | L | I | N | | | | | | |
| TM230 | MCCB | fix | adj | | | | | | | EC |
| TM210 | MCCB | fix | fix | | | | | | | ED |
| TM240 | MCCB | adj | adj | | | | | | | EF |
| TM230 | MCCB | fix | adj | 100% | | | | | | GC |
| TM210 | MCCB | fix | fix | 100% | | | | | | GD |
| TM240 | MCCB | adj | adj | 100% | | | | | | GF |
| TM110M | MSP | | fix | | | | | | | MG |
| TM120M | MSP | | adj | | | | | | | MH |
| TM120M | MSP | | adj | | | | | | | MU |
| MCS110 | MCS | | fix | | | | | | | BB |
| **3VA6** | | **L** | **S** | **I** | **G** | **N** | **LCD** | **com.** | **measurement values** | |
| ETU320 LI | MCCB | adj | | adj | | 0%/50%/100% | | | | HL |
| ETU330 LIG | MCCB | adj | | adj | adj | 0%/50%/100% | | | | HM |
| ETU350 LSI | MCCB | adj | adj | fix | | 0%/50%/100% | | | | HN |
| ETU360 LSIG | MCCB | adj | adj | adj | adj | 0%/50%/100% | | | | HQ |
| ETU550 LSI | MCCB | adj | adj | adj | | 20/40%...100/160% | yes | yes | standard | JP |
| ETU556 LSI(G) | MCCB | adj | adj | adj | alarm | 20/40%...100/160% | yes | yes | standard | JT |
| ETU560 LSIG | MCCB | adj | adj | adj | adj | 20/40%...100/160% | yes | yes | standard | JQ |
| ETU820 LI | MCCB | adj | | adj | | 20/40%...100/160% | yes | yes | advanced | KL |
| ETU830 LIG | MCCB | adj | | adj | adj | 20/40%...100/160% | yes | yes | advanced | KM |
| ETU850LSI | MCCB | adj | adj | adj | | 20/40%...100/160% | yes | yes | advanced | KP |
| ETU856 LSI(G) | MCCB | adj | adj | adj | alarm | 20/40%...100/160% | yes | yes | advanced | KT |
| ETU860 LSIG | MCCB | adj | adj | adj | adj | 20/40%...100/160% | yes | yes | advanced | KQ |
| ETU310M | MCP | | | adj | | | | | | MS |
| MCS110 | MCS | | | fix | | | | | | BB |

| Number of Poles | |
|---|---|
| 1 pole | 1 |
| 2 pole | 2 |
| 3 pole | 3 |
| 4 pole | 4 |
| 1-in-2 pole | 5 |
| 2-in-3 pole | 6 |

| Connection Technology | |
|---|---|
| No wire connector | 1 |
| Nut keeper kit, line and load | 2 |
| Wire connector, line and load | 6 |

| Regional Specifics (as applicable) | |
|---|---|
| Standard | 0 |
| NAVAL/50C (3VA41/3VA5) | 1 |
| 100% Rated (3VA41/3VA5) | 2 |

| Auxiliary Releases | | |
|---|---|---|
| | Without | A |

| Auxiliary/Alarm Switches | | |
|---|---|---|
| | Without | A0 |

# 3VA51 125A Thermal-magnetic Trip Circuit Breakers

## Selection

### 3VA51 125A Frame, 1-Pole Thermal-Magnetic Trip Unit

| Cont. Amp Rating | S-Interrupting Class (SEAS) Catalog Number | M-Interrupting Class (MEAS) Catalog Number | H-Interrupting Class (HEAS) Catalog Number |
|---|---|---|---|
| | | TM210 FTFM | |
| 15 | 3VA5195-4ED11-0AA0 | 3VA5195-5ED11-0AA0 | 3VA5195-6ED11-0AA0 |
| 20 | 3VA5120-4ED11-0AA0 | 3VA5120-5ED11-0AA0 | 3VA5120-6ED11-0AA0 |
| 25 | 3VA5125-4ED11-0AA0 | 3VA5125-5ED11-0AA0 | 3VA5125-6ED11-0AA0 |
| 30 | 3VA5130-4ED11-0AA0 | 3VA5130-5ED11-0AA0 | 3VA5130-6ED11-0AA0 |
| 35 | 3VA5135-4ED11-0AA0 | 3VA5135-5ED11-0AA0 | 3VA5135-6ED11-0AA0 |
| 40 | 3VA5140-4ED11-0AA0 | 3VA5140-5ED11-0AA0 | 3VA5140-6ED11-0AA0 |
| 45 | 3VA5145-4ED11-0AA0 | 3VA5145-5ED11-0AA0 | 3VA5145-6ED11-0AA0 |
| 50 | 3VA5150-4ED11-0AA0 | 3VA5150-5ED11-0AA0 | 3VA5150-6ED11-0AA0 |
| 60 | 3VA5160-4ED11-0AA0 | 3VA5160-5ED11-0AA0 | 3VA5160-6ED11-0AA0 |
| 70 | 3VA5170-4ED11-0AA0 | 3VA5170-5ED11-0AA0 | 3VA5170-6ED11-0AA0 |
| 80 | 3VA5180-4ED11-0AA0 | 3VA5180-5ED11-0AA0 | 3VA5180-6ED11-0AA0 |
| 90 | 3VA5190-4ED11-0AA0 | 3VA5190-5ED11-0AA0 | 3VA5190-6ED11-0AA0 |
| 100 | 3VA5110-4ED11-0AA0 | 3VA5110-5ED11-0AA0 | 3VA5110-6ED11-0AA0 |
| 110 | 3VA5111-4ED11-0AA0 | 3VA5111-5ED11-0AA0 | 3VA5111-6ED11-0AA0 |
| 125 | 3VA5112-4ED11-0AA0 | 3VA5112-5ED11-0AA0 | 3VA5112-6ED11-0AA0 |

### 3VA51 125A Frame, 1 in 2-Pole Thermal-Magnetic Trip Unit

| Cont. Amp Rating | S-Interrupting Class (SEAS) Catalog Number | M-Interrupting Class (MEAS) Catalog Number | H-Interrupting Class (HEAS) Catalog Number |
|---|---|---|---|
| | | TM210 FTFM | |
| 15 | 3VA5195-4ED56-0AA0 | 3VA5195-5ED56-0AA0 | 3VA5195-6ED56-0AA0 |
| 20 | 3VA5120-4ED56-0AA0 | 3VA5120-5ED56-0AA0 | 3VA5120-6ED56-0AA0 |
| 25 | 3VA5125-4ED56-0AA0 | 3VA5125-5ED56-0AA0 | 3VA5125-6ED56-0AA0 |
| 30 | 3VA5130-4ED56-0AA0 | 3VA5130-5ED56-0AA0 | 3VA5130-6ED56-0AA0 |
| 35 | 3VA5135-4ED56-0AA0 | 3VA5135-5ED56-0AA0 | 3VA5135-6ED56-0AA0 |
| 40 | 3VA5140-4ED56-0AA0 | 3VA5140-5ED56-0AA0 | 3VA5140-6ED56-0AA0 |
| 45 | 3VA5145-4ED56-0AA0 | 3VA5145-5ED56-0AA0 | 3VA5145-6ED56-0AA0 |
| 50 | 3VA5150-4ED56-0AA0 | 3VA5150-5ED56-0AA0 | 3VA5150-6ED56-0AA0 |
| 60 | 3VA5160-4ED56-0AA0 | 3VA5160-5ED56-0AA0 | 3VA5160-6ED56-0AA0 |
| 70 | 3VA5170-4ED56-0AA0 | 3VA5170-5ED56-0AA0 | 3VA5170-6ED56-0AA0 |
| 80 | 3VA5180-4ED56-0AA0 | 3VA5180-5ED56-0AA0 | 3VA5180-6ED56-0AA0 |
| 90 | 3VA5190-4ED56-0AA0 | 3VA5190-5ED56-0AA0 | 3VA5190-6ED56-0AA0 |
| 100 | 3VA5110-4ED56-0AA0 | 3VA5110-5ED56-0AA0 | 3VA5110-6ED56-0AA0 |
| 110 | 3VA5111-4ED56-0AA0 | 3VA5111-5ED56-0AA0 | 3VA5111-6ED56-0AA0 |
| 125 | 3VA5112-4ED56-0AA0 | 3VA5112-5ED56-0AA0 | 3VA5112-6ED56-0AA0 |

### 3VA51 125A Frame, 2-Pole Thermal-Magnetic Trip Unit

| Cont. Amp Rating | S-Interrupting Class (SEAS) Catalog Number | M-Interrupting Class (MEAS) Catalog Number | H-Interrupting Class (HEAS) Catalog Number |
|---|---|---|---|
| | | TM210 FTFM① | |
| 15 | 3VA5195-4ED21-0AA0 | 3VA5195-5ED21-0AA0 | 3VA5195-6ED21-0AA0 |
| 20 | 3VA5120-4ED21-0AA0 | 3VA5120-5ED21-0AA0 | 3VA5120-6ED21-0AA0 |
| 25 | 3VA5125-4ED21-0AA0 | 3VA5125-5ED21-0AA0 | 3VA5125-6ED21-0AA0 |
| 30 | 3VA5130-4ED21-0AA0 | 3VA5130-5ED21-0AA0 | 3VA5130-6ED21-0AA0 |
| 35 | 3VA5135-4ED21-0AA0 | 3VA5135-5ED21-0AA0 | 3VA5135-6ED21-0AA0 |
| 40 | 3VA5140-4ED21-0AA0 | 3VA5140-5ED21-0AA0 | 3VA5140-6ED21-0AA0 |
| 45 | 3VA5145-4ED21-0AA0 | 3VA5145-5ED21-0AA0 | 3VA5145-6ED21-0AA0 |
| 50 | 3VA5150-4ED21-0AA0 | 3VA5150-5ED21-0AA0 | 3VA5150-6ED21-0AA0 |
| 60 | 3VA5160-4ED21-0AA0 | 3VA5160-5ED21-0AA0 | 3VA5160-6ED21-0AA0 |
| 70 | 3VA5170-4ED21-0AA0 | 3VA5170-5ED21-0AA0 | 3VA5170-6ED21-0AA0 |
| 80 | 3VA5180-4ED21-0AA0 | 3VA5180-5ED21-0AA0 | 3VA5180-6ED21-0AA0 |
| 90 | 3VA5190-4ED21-0AA0 | 3VA5190-5ED21-0AA0 | 3VA5190-6ED21-0AA0 |
| 100 | 3VA5110-4ED21-0AA0 | 3VA5110-5ED21-0AA0 | 3VA5110-6ED21-0AA0 |
| 110 | 3VA5111-4ED21-0AA0 | 3VA5111-5ED21-0AA0 | 3VA5111-6ED21-0AA0 |
| 125 | 3VA5112-4ED21-0AA0 | 3VA5112-5ED21-0AA0 | 3VA5112-6ED21-0AA0 |

① Available with NAVAL/50C ratings.

② Applies to 3VA51 3-Pole

3VA51
125A 1-Pole

3VA51
125A 1 in 2-Pole

3VA51
125A 2-Pole

### 3VA51 Dimensions

| Poles | Dimensions inches (mm) W | H | D | Shipping Weight lbs. | kg |
|---|---|---|---|---|---|
| 1 | 1 (25.4) | 5.5 (140) | 3 (76.5) | 0.84 | 0.38 |
| 2 | 2 (50.8) | 5.5 (140) | 3 (76.5) | 1.37 | 0.62 |
| 3 | 3 (76.2) | 5.5 (140) | 3 (76.5) | 1.73 | 0.78 |
| 4 | 4 (101.6) | 5.5 (140) | 3 (76.5) | 2.09 | 0.95 |

# 3VA51 125A Thermal-magnetic Trip Circuit Breakers



## 3VA51 125A Frame, 3-Pole Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | S-Interrupting Class (SEAS) Catalog Number | M-Interrupting Class (MEAS) Catalog Number | H-Interrupting Class (HEAS) Catalog Number |
|---|---|---|---|
| | **TM210 FTFM①** | | |
| 15 | 3VA5195-4ED31-0AA0 | 3VA5195-5ED31-0AA0 | 3VA5195-6ED31-0AA0 |
| 20 | 3VA5120-4ED31-0AA0 | 3VA5120-5ED31-0AA0 | 3VA5120-6ED31-0AA0 |
| 25 | 3VA5125-4ED31-0AA0 | 3VA5125-5ED31-0AA0 | 3VA5125-6ED31-0AA0 |
| 30 | 3VA5130-4ED31-0AA0 | 3VA5130-5ED31-0AA0 | 3VA5130-6ED31-0AA0 |
| 35 | 3VA5135-4ED31-0AA0 | 3VA5135-5ED31-0AA0 | 3VA5135-6ED31-0AA0 |
| 40 | 3VA5140-4ED31-0AA0 | 3VA5140-5ED31-0AA0 | 3VA5140-6ED31-0AA0 |
| 45 | 3VA5145-4ED31-0AA0 | 3VA5145-5ED31-0AA0 | 3VA5145-6ED31-0AA0 |
| 50 | 3VA5150-4ED31-0AA0 | 3VA5150-5ED31-0AA0 | 3VA5150-6ED31-0AA0 |
| 60 | 3VA5160-4ED31-0AA0 | 3VA5160-5ED31-0AA0 | 3VA5160-6ED31-0AA0 |
| 70 | 3VA5170-4ED31-0AA0 | 3VA5170-5ED31-0AA0 | 3VA5170-6ED31-0AA0 |
| 80 | 3VA5180-4ED31-0AA0 | 3VA5180-5ED31-0AA0 | 3VA5180-6ED31-0AA0 |
| 90 | 3VA5190-4ED31-0AA0 | 3VA5190-5ED31-0AA0 | 3VA5190-6ED31-0AA0 |
| 100 | 3VA5110-4ED31-0AA0 | 3VA5110-5ED31-0AA0 | 3VA5110-6ED31-0AA0 |
| 110 | 3VA5111-4ED31-0AA0 | 3VA5111-5ED31-0AA0 | 3VA5111-6ED31-0AA0 |
| 125 | 3VA5112-4ED31-0AA0 | 3VA5112-5ED31-0AA0 | 3VA5112-6ED31-0AA0 |
| | **TM230 FTAM①** | | |
| 15 | 3VA5195-4EC31-0AA0 | 3VA5195-6EC31-0AA0 | 3VA5195-6EC31-0AA0 |
| 20 | 3VA5120-4EC31-0AA0 | 3VA5120-5EC31-0AA0 | 3VA5120-6EC31-0AA0 |
| 25 | 3VA5125-4EC31-0AA0 | 3VA5125-5EC31-0AA0 | 3VA5125-6EC31-0AA0 |
| 30 | 3VA5130-4EC31-0AA0 | 3VA5130-5EC31-0AA0 | 3VA5130-6EC31-0AA0 |
| 35 | 3VA5135-4EC31-0AA0 | 3VA5135-5EC31-0AA0 | 3VA5135-6EC31-0AA0 |
| 40 | 3VA5140-4EC31-0AA0 | 3VA5140-5EC31-0AA0 | 3VA5140-6EC31-0AA0 |
| 45 | 3VA5145-4EC31-0AA0 | 3VA5145-5EC31-0AA0 | 3VA5145-6EC31-0AA0 |
| 50 | 3VA5150-4EC31-0AA0 | 3VA5150-5EC31-0AA0 | 3VA5150-6EC31-0AA0 |
| 60 | 3VA5160-4EC31-0AA0 | 3VA5160-5EC31-0AA0 | 3VA5160-6EC31-0AA0 |
| 70 | 3VA5170-4EC31-0AA0 | 3VA5170-5EC31-0AA0 | 3VA5170-6EC31-0AA0 |
| 80 | 3VA5180-4EC31-0AA0 | 3VA5180-5EC31-0AA0 | 3VA5180-6EC31-0AA0 |
| 90 | 3VA5190-4EC31-0AA0 | 3VA5190-5EC31-0AA0 | 3VA5190-6EC31-0AA0 |
| 100 | 3VA5110-4EC31-0AA0 | 3VA5110-5EC31-0AA0 | 3VA5110-6EC31-0AA0 |
| 110 | 3VA5111-4EC31-0AA0 | 3VA5111-5EC31-0AA0 | 3VA5111-6EC31-0AA0 |
| 125 | 3VA5112-4EC31-0AA0 | 3VA5112-5EC31-0AA0 | 3VA5112-6EC31-0AA0 |
| | **TM240 ATAM** | | |
| 15 | 3VA5195-4EF31-0AA0 | 3VA5195-5EF31-0AA0 | 3VA5195-6EF31-0AA0 |
| 20 | 3VA5120-4EF31-0AA0 | 3VA5120-5EF31-0AA0 | 3VA5120-6EF31-0AA0 |
| 30 | 3VA5130-4EF31-0AA0 | 3VA5130-5EF31-0AA0 | 3VA5130-6EF31-0AA0 |
| 40 | 3VA5140-4EF31-0AA0 | 3VA5140-5EF31-0AA0 | 3VA5140-6EF31-0AA0 |
| 50 | 3VA5150-4EF31-0AA0 | 3VA5150-5EF31-0AA0 | 3VA5150-6EF31-0AA0 |
| 60 | 3VA5160-4EF31-0AA0 | 3VA5160-5EF31-0AA0 | 3VA5160-6EF31-0AA0 |
| 70 | 3VA5170-4EF31-0AA0 | 3VA5170-5EF31-0AA0 | 3VA5170-6EF31-0AA0 |
| 80 | 3VA5180-4EF31-0AA0 | 3VA5180-5EF31-0AA0 | 3VA5180-6EF31-0AA0 |
| 100 | 3VA5110-4EF31-0AA0 | 3VA5110-5EF31-0AA0 | 3VA5110-6EF31-0AA0 |

## Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA91330QA00), change the 12th digit of the catalog number to "2". (For example, a 35KA @480VAC, 40A, 3-pole, 3VA51 with nut keepers would be catalog number 3VA5140-5ED3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 40A, 3-pole, 3VA51 with lugs would be catalog number 3VA5140-5ED3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

For NAVAL-rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "1". (For example, a 35KA @480VAC, 40A, 3-pole, NAVAL rated 3VA51 would be catalog number 3VA5140-5ED31-**1**AA0)

All 3VA51 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

**3VA51 125A 3-Pole**

## Interrupting Ratings for 3VA51

| Inter-rupting Class | Breaker Type | Poles | RMS Symmetrical Amperes (kA) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Volts AC (50/60 Hz) | | | | | | | Volts DC | | | |
| | | | 120 | 240 | 277 | 347 | 480Y/ 277V | 480 | 600Y/ 347V | 125 | 250 | 500② | 600② |
| S | SEAS | 1 | 65 | | 25 | 14 | | | | 14 | | | |
| | | 2, 3, 4 | | 65 | | | 25 | 25 | 14 | 14 | 50 | 50 | 50 |
| M | MEAS | 1 | 85 | | 35 | 18 | | | | 25 | | | |
| | | 2, 3, 4 | | 85 | | | 35 | 35 | 18 | 25 | 85 | 85 | 85 |
| H | H5EAS | 1 | 150 | | 50 | 18 | | | | 30 | | | |
| | HEAS | 1 in 2 | 150 | | 65 | 25 | | | | 30 | | | |
| | HEAS | 2, 3, 4 | | 150 | | | 65 | 65 | 25 | 30 | 100 | 100 | 100 |

## Enclosures (3-pole only)

| Nema Type | Catalog Number |
|---|---|
| 1 surface | **3VAE125N1S** |
| 1 flush | **3VAE125N1F** |
| 3R | **3VAE125N3R** |
| 12 | **3VAE125N12** |
| 4X (304) | **3VAE125N4X** |
| 4X (316) | **3VAE125N4X316** |
| Neutral | **N125X** |

① Available with NAVAL/50C ratings.

# 3VA51 125A Thermal-magnetic Trip Circuit Breakers

## Selection

### 3VA51 125A Frame, 4-Pole Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | S-Interrupting Class (SEAS) Catalog Number | M-Interrupting Class (MEAS) Catalog Number | H-Interrupting Class (HEAS) Catalog Number |
|---|---|---|---|
| **TM210 FTFM Unprotected Neutral** | | | |
| 15 | 3VA5195-4ED41-0AA0 | 3VA5195-5ED41-0AA0 | 3VA5195-6ED41-0AA0 |
| 20 | 3VA5120-4ED41-0AA0 | 3VA5120-5ED41-0AA0 | 3VA5120-6ED41-0AA0 |
| 25 | 3VA5125-4ED41-0AA0 | 3VA5125-5ED41-0AA0 | 3VA5125-6ED41-0AA0 |
| 30 | 3VA5130-4ED41-0AA0 | 3VA5130-5ED41-0AA0 | 3VA5130-6ED41-0AA0 |
| 35 | 3VA5135-4ED41-0AA0 | 3VA5135-5ED41-0AA0 | 3VA5135-6ED41-0AA0 |
| 40 | 3VA5140-4ED41-0AA0 | 3VA5140-5ED41-0AA0 | 3VA5140-6ED41-0AA0 |
| 45 | 3VA5145-4ED41-0AA0 | 3VA5145-5ED41-0AA0 | 3VA5145-6ED41-0AA0 |
| 50 | 3VA5150-4ED41-0AA0 | 3VA5150-5ED41-0AA0 | 3VA5150-6ED41-0AA0 |
| 60 | 3VA5160-4ED41-0AA0 | 3VA5160-5ED41-0AA0 | 3VA5160-6ED41-0AA0 |
| 70 | 3VA5170-4ED41-0AA0 | 3VA5170-5ED41-0AA0 | 3VA5170-6ED41-0AA0 |
| 80 | 3VA5180-4ED41-0AA0 | 3VA5180-5ED41-0AA0 | 3VA5180-6ED41-0AA0 |
| 90 | 3VA5190-4ED41-0AA0 | 3VA5190-5ED41-0AA0 | 3VA5190-6ED41-0AA0 |
| 100 | 3VA5110-4ED41-0AA0 | 3VA5110-5ED41-0AA0 | 3VA5110-6ED41-0AA0 |
| 110 | 3VA5111-4ED41-0AA0 | 3VA5111-5ED41-0AA0 | 3VA5111-6ED41-0AA0 |
| 125 | 3VA5112-4ED41-0AA0 | 3VA5112-5ED41-0AA0 | 3VA5112-6ED41-0AA0 |
| **TM210 FTFM 100% Neutral** | | | |
| 90 | 3VA5190-4GD41-0AA0 | 3VA5190-5GD41-0AA0 | 3VA5190-6GD41-0AA0 |
| 100 | 3VA5110-4GD41-0AA0 | 3VA5110-5GD41-0AA0 | 3VA5110-6GD41-0AA0 |
| 110 | 3VA5111-4GD41-0AA0 | 3VA5111-5GD41-0AA0 | 3VA5111-6GD41-0AA0 |
| 125 | 3VA5112-4GD41-0AA0 | 3VA5112-5GD41-0AA0 | 3VA5112-6GD41-0AA0 |
| **TM230 FTAM Unprotected Neutral** | | | |
| 15 | 3VA5195-4EC41-0AA0 | 3VA5195-5EC41-0AA0 | 3VA5195-6EC41-0AA0 |
| 20 | 3VA5120-4EC41-0AA0 | 3VA5120-5EC41-0AA0 | 3VA5120-6EC41-0AA0 |
| 25 | 3VA5125-4EC41-0AA0 | 3VA5125-5EC41-0AA0 | 3VA5125-6EC41-0AA0 |
| 30 | 3VA5130-4EC41-0AA0 | 3VA5130-5EC41-0AA0 | 3VA5130-6EC41-0AA0 |
| 35 | 3VA5135-4EC41-0AA0 | 3VA5135-5EC41-0AA0 | 3VA5135-6EC41-0AA0 |
| 40 | 3VA5140-4EC41-0AA0 | 3VA5140-5EC41-0AA0 | 3VA5140-6EC41-0AA0 |
| 45 | 3VA5145-4EC41-0AA0 | 3VA5145-5EC41-0AA0 | 3VA5145-6EC41-0AA0 |
| 50 | 3VA5150-4EC41-0AA0 | 3VA5150-5EC41-0AA0 | 3VA5150-6EC41-0AA0 |
| 60 | 3VA5160-4EC41-0AA0 | 3VA5160-5EC41-0AA0 | 3VA5160-6EC41-0AA0 |
| 70 | 3VA5170-4EC41-0AA0 | 3VA5170-5EC41-0AA0 | 3VA5170-6EC41-0AA0 |
| 80 | 3VA5180-4EC41-0AA0 | 3VA5180-5EC41-0AA0 | 3VA5180-6EC41-0AA0 |
| 90 | 3VA5190-4EC41-0AA0 | 3VA5190-5EC41-0AA0 | 3VA5190-6EC41-0AA0 |
| 100 | 3VA5110-4EC41-0AA0 | 3VA5110-5EC41-0AA0 | 3VA5110-6EC41-0AA0 |
| 110 | 3VA5111-4EC41-0AA0 | 3VA5111-5EC41-0AA0 | 3VA5111-6EC41-0AA0 |
| 125 | 3VA5112-4EC41-0AA0 | 3VA5112-5EC41-0AA0 | 3VA5112-6EC41-0AA0 |
| **TM230 FTFM 100% Neutral** | | | |
| 90 | 3VA5190-4GC41-0AA0 | 3VA5190-5GC41-0AA0 | 3VA5190-6GC41-0AA0 |
| 100 | 3VA5110-4GC41-0AA0 | 3VA5110-5GC41-0AA0 | 3VA5110-6GC41-0AA0 |
| 110 | 3VA5111-4GC41-0AA0 | 3VA5111-5GC41-0AA0 | 3VA5111-6GC41-0AA0 |
| 125 | 3VA5112-4GC41-0AA0 | 3VA5112-5GC41-0AA0 | 3VA5112-6GC41-0AA0 |
| **TM240 ATAM Unprotected Neutral** | | | |
| 15 | 3VA5195-4EF41-0AA0 | 3VA5195-5EF41-0AA0 | 3VA5195-6EF41-0AA0 |
| 20 | 3VA5120-4EF41-0AA0 | 3VA5120-5EF41-0AA0 | 3VA5120-6EF41-0AA0 |
| 30 | 3VA5130-4EF41-0AA0 | 3VA5130-5EF41-0AA0 | 3VA5130-6EF41-0AA0 |
| 40 | 3VA5140-4EF41-0AA0 | 3VA5140-5EF41-0AA0 | 3VA5140-6EF41-0AA0 |
| 50 | 3VA5150-4EF41-0AA0 | 3VA5150-5EF41-0AA0 | 3VA5150-6EF41-0AA0 |
| 60 | 3VA5160-4EF41-0AA0 | 3VA5160-5EF41-0AA0 | 3VA5160-6EF41-0AA0 |
| 70 | 3VA5170-4EF41-0AA0 | 3VA5170-5EF41-0AA0 | 3VA5170-6EF41-0AA0 |
| 80 | 3VA5180-4EF41-0AA0 | 3VA5180-5EF41-0AA0 | 3VA5180-6EF41-0AA0 |
| 100 | 3VA5110-4EF41-0AA0 | 3VA5110-5EF41-0AA0 | 3VA5110-6EF41-0AA0 |
| **TM240 ATAM 100% Neutral** | | | |
| 100 | 3VA5110-4GF41-0AA0 | 3VA5110-5GF41-0AA0 | 3VA5110-6GF41-0AA0 |

**3VA51 125A 4-Pole**

## Trip Settings for 3VA51

| TM210 - FTFM | | |
|---|---|---|
| $I_n$ (A) | $I_r$ (A) | $I_i$ (A) |
| 15 | 15 | 300 |
| 20 | 20 | 300 |
| 25 | 25 | 300 |
| 30 | 30 | 300 |
| 35 | 35 | 350 |
| 40 | 40 | 400 |
| 45 | 45 | 450 |
| 50 | 50 | 500 |
| 60 | 60 | 600 |
| 70 | 70 | 700 |
| 80 | 80 | 800 |
| 90 | 90 | 900 |
| 100 | 100 | 1000 |
| 110 | 110 | 1100 |
| 125 | 125 | 1250 |

| TM230 - FTAM | | | | | | | |
|---|---|---|---|---|---|---|---|
| $I_n$ (A) | $I_r$ (A) | $I_i$ (A) | | | | | |
| 15 | 15 | 150 | 180 | 210 | 240 | 270 | 300 |
| 20 | 20 | 150 | 180 | 210 | 240 | 270 | 300 |
| 25 | 25 | 150 | 180 | 210 | 240 | 270 | 300 |
| 30 | 30 | 150 | 180 | 210 | 240 | 270 | 300 |
| 35 | 35 | 175 | 210 | 245 | 280 | 315 | 350 |
| 40 | 40 | 200 | 240 | 280 | 320 | 360 | 400 |
| 45 | 45 | 225 | 270 | 315 | 360 | 405 | 450 |
| 50 | 50 | 250 | 300 | 350 | 400 | 450 | 500 |
| 60 | 60 | 300 | 360 | 420 | 480 | 540 | 600 |
| 70 | 70 | 350 | 420 | 490 | 560 | 630 | 700 |
| 80 | 80 | 400 | 480 | 560 | 640 | 720 | 800 |
| 90 | 90 | 450 | 540 | 630 | 720 | 810 | 900 |
| 100 | 100 | 500 | 600 | 700 | 800 | 900 | 1000 |
| 110 | 110 | 550 | 660 | 770 | 880 | 990 | 1100 |
| 125 | 125 | 625 | 750 | 875 | 1000 | 1125 | 1250 |

| TM240 - ATAM | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $I_n$ (A) | $I_r$ (A) 90% | $I_r$ (A) 80% | $I_i$ (A) | | | | | |
| 15 | 14 | 12 | 150 | 180 | 210 | 240 | 270 | 300 |
| 20 | 18 | 16 | 150 | 180 | 210 | 240 | 270 | 300 |
| 30 | 27 | 24 | 150 | 180 | 210 | 240 | 270 | 300 |
| 40 | 36 | 32 | 200 | 240 | 280 | 320 | 360 | 400 |
| 50 | 45 | 40 | 250 | 300 | 350 | 400 | 450 | 500 |
| 60 | 54 | 48 | 300 | 360 | 420 | 480 | 540 | 600 |
| 70 | 63 | 56 | 350 | 420 | 490 | 560 | 630 | 700 |
| 80 | 72 | 64 | 400 | 480 | 560 | 640 | 720 | 800 |
| 100 | 90 | 80 | 500 | 600 | 700 | 800 | 900 | 1000 |

## Connectors for 75C Wire for 3VA51

| Type | Min. cable size | Max. cable size | Catalog No. (kit of 3 lugs) | Catalog No. (kit of 4 lugs) |
|---|---|---|---|---|
| Steel wrap around (Cu cable only), 1 cable lugs | AWG 14 | 3/0 | **3VA9133-0JA11** | **3VA9134-0JA11** |
| Aluminum body lug small (Cu/Al cable), 1 cable lug①③ | AWG 14 | AWG 8 | **3VA9133-0JB10** | **3VA9134-0JB10** |
| Aluminum body lug (Cu/Al cable), 1 cable lugs②③ | AWG 8 | 3/0 | **3VA9133-0JB11** | **3VA9134-0JB11** |
| Aluminum body lug small with control wire tap (Cu/Al cable), 1 cable lug① | AWG 14 | AWG 8 | **3VA9133-0JG10** | **3VA9134-0JG10** |
| Aluminum body lug with control wire tap (Cu/Al cable), 1 cable lugs② | AWG 8 | 3/0 | **3VA9133-0JG11** | **3VA9134-0JG11** |
| Aluminum body lug large (Cu/Al cable), 1 cable lugs with 1 extended terminal cover | AWG 4 | 300 kcmil | **3VA9133-0JJ12** | **3VA9134-0JJ12** |
| Aluminum body lug large with control wire tap (Cu/Al cable), 1 cable lug and 1 extended terminal cover | AWG 4 | 300 kcmil | **3VA9133-0JC12** | |
| Distribution lug, 6 cables (Cu/Al cable), 1 cable lugs with 1 extended terminal cover | AWG 14 | AWG 2 | **3VA9133-0JF60** | **3VA9134-0JF60** |
| Copper body lug small (Cu cable only), 1 cable lugs① | AWG 14 | AWG 8 | **3VA9133-0JD10** | **3VA9134-0JD10** |
| Copper body lug (Cu cable only), 1 cable lugs② | AWG 8 | 2/0 | **3VA9133-0JD11** | **3VA9134-0JD11** |
| Copper body lug small with control wire tap (Cu cable only), 1 cable lugs① | AWG 14 | AWG 8 | **3VA9133-0JK10** | **3VA9134-0JK10** |
| Copper body lug with control wire tap (Cu cable only), 1 cable lugs② | AWG 8 | 2/0 | **3VA9133-0JK11** | **3VA9134-0JK11** |

| Internal accessories configuration | | 3VA4/3VA5 125 A 1 in 2-pole /2-pole | 3VA5 125 A 3 & 4-pole |
|---|---|---|---|
| Slot No.: | | 23 22 21 | 23 22 21 11 12 13 |
| **Auxiliary switch** | **Type** | | |
| Auxiliary switch | AUX_HQ | x x x | x x x x x x |
| | AUX_HQ_el | x x x | x x x x x x |
| | AUX_HP | x | x x |
| Leading changeover switch | LCS_HQ | x | x x |
| | LCS_HQ_el | | x |
| | LCS_HP | | x |
| **Alarm switch** | **Type** | | |
| Trip alarm switch | TAS_HQ | x x | x x x x |
| | TAS_HQ_el | x x | x x x x |
| | TAS_HP | x | x x |
| Short circuit alarm switch | SAS_HQ | | |
| | SAS_HQ_el | | |
| **Auxiliary release** | **Type** | | |
| Shunt trip flexible | STF | x | x |
| Shunt trip left | STL | x | x |
| | STL_el | | |
| Residual current release | RCR | | |
| Undervoltage release | UVR | x | x |
| Universal release | UNI | x | x |
| **Other** | | | |
| Cylinder lock (type Ronis) | | | x |

① Use these lugs on 15A to 40A breakers.
② Use these lugs on 45A to 125A breakers.
③ Standard lug installed at the factory when breaker ordered with a "6" in the 12th position.

# 3VA61 150A Electronic Trip Circuit Breakers

## Selection

3VA61
150A 3-Pole

### Ordering Information

The numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA92430QA00), change the 12th digit of the catalog number to "2" (required to install a breaker in a panelboard or switchboard that has a provision). (For example, a 35KA @480VAC, 40A, 3-pole, 3VA61 with nut keepers is catalog number 3VA6140-5HL3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 40A, 3-pole, 3VA61 with lugs is catalog number 3VA6140-5HL3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

All 3VA61 electronic trip circuit breakers are available with 100% ratings. To order, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 40A, 3-pole, 100% rated 3VA61 is catalog number 3VA6140-5HL31-**2**AA0). Requires the use of rated lugs — see lug table below.

**Note:** 100% option not available for E-interrupting class breakers.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C. They are UL listed for reverse feed applications.

## 3VA61 150A Frame 3-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MDAE) Catalog Number | H-Interrupting Class (HDAE) Catalog Number | C-Interrupting Class (CDAE) Catalog Number | L-Interrupting Class (LDAE) Catalog Number | E-Interrupting Class (EDAE) Catalog Number |
|---|---|---|---|---|---|
| **ETU320 LI with dials** | | | | | |
| 40 | 3VA6140-5HL31-0AA0 | 3VA6140-6HL31-0AA0 | 3VA6140-7HL31-0AA0 | 3VA6140-8HL31-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0HL31-0AA0 |
| 100 | 3VA6110-5HL31-0AA0 | 3VA6110-6HL31-0AA0 | 3VA6110-7HL31-0AA0 | 3VA6110-8HL31-0AA0 | 3VA6110-0HL31-0AA0 |
| 150 | 3VA6115-5HL31-0AA0 | 3VA6115-6HL31-0AA0 | 3VA6115-7HL31-0AA0 | 3VA6115-8HL31-0AA0 | 3VA6115-0HL31-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 40 | 3VA6140-5HM31-0AA0 | 3VA6140-6HM31-0AA0 | 3VA6140-7HM31-0AA0 | 3VA6140-8HM31-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0HM31-0AA0 |
| 100 | 3VA6110-5HM31-0AA0 | 3VA6110-6HM31-0AA0 | 3VA6110-7HM31-0AA0 | 3VA6110-8HM31-0AA0 | 3VA6110-0HM31-0AA0 |
| 150 | 3VA6115-5HM31-0AA0 | 3VA6115-6HM31-0AA0 | 3VA6115-7HM31-0AA0 | 3VA6115-8HM31-0AA0 | 3VA6115-0HM31-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 40 | 3VA6140-5HN31-0AA0 | 3VA6140-6HN31-0AA0 | 3VA6140-7HN31-0AA0 | 3VA6140-8HN31-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0HN31-0AA0 |
| 100 | 3VA6110-5HN31-0AA0 | 3VA6110-6HN31-0AA0 | 3VA6110-7HN31-0AA0 | 3VA6110-8HN31-0AA0 | 3VA6110-0HN31-0AA0 |
| 150 | 3VA6115-5HN31-0AA0 | 3VA6115-6HN31-0AA0 | 3VA6115-7HN31-0AA0 | 3VA6115-8HN31-0AA0 | 3VA6115-0HN31-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 40 | 3VA6140-5JP31-0AA0 | 3VA6140-6JP31-0AA0 | 3VA6140-7JP31-0AA0 | 3VA6140-8JP31-0AA0 | — |
| 100 | 3VA6110-5JP31-0AA0 | 3VA6110-6JP31-0AA0 | 3VA6110-7JP31-0AA0 | 3VA6110-8JP31-0AA0 | — |
| 150 | 3VA6115-5JP31-0AA0 | 3VA6115-6JP31-0AA0 | 3VA6115-7JP31-0AA0 | 3VA6115-8JP31-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 40 | 3VA6140-5JT31-0AA0 | 3VA6140-6JT31-0AA0 | 3VA6140-7JT31-0AA0 | 3VA6140-8JT31-0AA0 | — |
| 100 | 3VA6110-5JT31-0AA0 | 3VA6110-6JT31-0AA0 | 3VA6110-7JT31-0AA0 | 3VA6110-8JT31-0AA0 | — |
| 150 | 3VA6115-5JT31-0AA0 | 3VA6115-6JT31-0AA0 | 3VA6115-7JT31-0AA0 | 3VA6115-8JT31-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 40 | 3VA6140-5JQ31-0AA0 | 3VA6140-6JQ31-0AA0 | 3VA6140-7JQ31-0AA0 | 3VA6140-8JQ31-0AA0 | — |
| 100 | 3VA6110-5JQ31-0AA0 | 3VA6110-6JQ31-0AA0 | 3VA6110-7JQ31-0AA0 | 3VA6110-8JQ31-0AA0 | — |
| 150 | 3VA6115-5JQ31-0AA0 | 3VA6115-6JQ31-0AA0 | 3VA6115-7JQ31-0AA0 | 3VA6115-8JQ31-0AA0 | — |
| **ETU820 LI LCD with Metering** | | | | | |
| 40 | 3VA6140-5KL31-0AA0 | 3VA6140-6KL31-0AA0 | 3VA6140-7KL31-0AA0 | 3VA6140-8KL31-0AA0 | — |
| 100 | 3VA6110-5KL31-0AA0 | 3VA6110-6KL31-0AA0 | 3VA6110-7KL31-0AA0 | 3VA6110-8KL31-0AA0 | — |
| 150 | 3VA6115-5KL31-0AA0 | 3VA6115-6KL31-0AA0 | 3VA6115-7KL31-0AA0 | 3VA6115-8KL31-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KM31-0AA0 | 3VA6140-6KM31-0AA0 | 3VA6140-7KM31-0AA0 | 3VA6140-8KM31-0AA0 | — |
| 100 | 3VA6110-5KM31-0AA0 | 3VA6110-6KM31-0AA0 | 3VA6110-7KM31-0AA0 | 3VA6110-8KM31-0AA0 | — |
| 150 | 3VA6115-5KM31-0AA0 | 3VA6115-6KM31-0AA0 | 3VA6115-7KM31-0AA0 | 3VA6115-8KM31-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KP31-0AA0 | 3VA6140-6KP31-0AA0 | 3VA6140-7KP31-0AA0 | 3VA6140-8KP31-0AA0 | — |
| 100 | 3VA6110-5KP31-0AA0 | 3VA6110-6KP31-0AA0 | 3VA6110-7KP31-0AA0 | 3VA6110-8KP31-0AA0 | — |
| 150 | 3VA6115-5KP31-0AA0 | 3VA6115-6KP31-0AA0 | 3VA6115-7KP31-0AA0 | 3VA6115-8KP31-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KT31-0AA0 | 3VA6140-6KT31-0AA0 | 3VA6140-7KT31-0AA0 | 3VA6140-8KT31-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0KT31-0AA0 |
| 100 | 3VA6110-5KT31-0AA0 | 3VA6110-6KT31-0AA0 | 3VA6110-7KT31-0AA0 | 3VA6110-8KT31-0AA0 | 3VA6110-0KT31-0AA0 |
| 150 | 3VA6115-5KT31-0AA0 | 3VA6115-6KT31-0AA0 | 3VA6115-7KT31-0AA0 | 3VA6115-8KT31-0AA0 | 3VA6115-0KT31-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KQ31-0AA0 | 3VA6140-6KQ31-0AA0 | 3VA6140-7KQ31-0AA0 | 3VA6140-8KQ31-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0KQ31-0AA0 |
| 100 | 3VA6110-5KQ31-0AA0 | 3VA6110-6KQ31-0AA0 | 3VA6110-7KQ31-0AA0 | 3VA6110-8KQ31-0AA0 | 3VA6110-0KQ31-0AA0 |
| 150 | 3VA6115-5KQ31-0AA0 | 3VA6115-6KQ31-0AA0 | 3VA6115-7KQ31-0AA0 | 3VA6115-8KQ31-0AA0 | 3VA6115-0KQ31-0AA0 |

# 3VA61 150A Electronic Trip Circuit Breakers

## Selection

3VA61
150A 4-Pole

## 3VA61 150A Frame 4-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MDAE) Catalog Number | H-Interrupting Class (HDAE) Catalog Number | C-Interrupting Class (CDAE) Catalog Number | L-Interrupting Class (LDAE) Catalog Number | E-Interrupting Class (EDAE) Catalog Number |
|---|---|---|---|---|---|
| **ETU320 LI with dials** | | | | | |
| 40 | 3VA6140-5HL41-0AA0 | 3VA6140-6HL41-0AA0 | 3VA6140-7HL41-0AA0 | 3VA6140-8HL41-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0HL41-0AA0 |
| 100 | 3VA6110-5HL41-0AA0 | 3VA6110-6HL41-0AA0 | 3VA6110-7HL41-0AA0 | 3VA6110-8HL41-0AA0 | 3VA6110-0HL41-0AA0 |
| 150 | 3VA6115-5HL41-0AA0 | 3VA6115-6HL41-0AA0 | 3VA6115-7HL41-0AA0 | 3VA6115-8HL41-0AA0 | 3VA6115-0HL41-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 40 | 3VA6140-5HM41-0AA0 | 3VA6140-6HM41-0AA0 | 3VA6140-7HM41-0AA0 | 3VA6140-8HM41-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0HM41-0AA0 |
| 100 | 3VA6110-5HM41-0AA0 | 3VA6110-6HM41-0AA0 | 3VA6110-7HM41-0AA0 | 3VA6110-8HM41-0AA0 | 3VA6110-0HM41-0AA0 |
| 150 | 3VA6115-5HM41-0AA0 | 3VA6115-6HM41-0AA0 | 3VA6115-7HM41-0AA0 | 3VA6115-8HM41-0AA0 | 3VA6115-0HM41-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 40 | 3VA6140-5HN41-0AA0 | 3VA6140-6HN41-0AA0 | 3VA6140-7HN41-0AA0 | 3VA6140-8HN41-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0HN41-0AA0 |
| 100 | 3VA6110-5HN41-0AA0 | 3VA6110-6HN41-0AA0 | 3VA6110-7HN41-0AA0 | 3VA6110-8HN41-0AA0 | 3VA6110-0HN41-0AA0 |
| 150 | 3VA6115-5HN41-0AA0 | 3VA6115-6HN41-0AA0 | 3VA6115-7HN41-0AA0 | 3VA6115-8HN41-0AA0 | 3VA6115-0HN41-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 40 | 3VA6140-5JP41-0AA0 | 3VA6140-6JP41-0AA0 | 3VA6140-7JP41-0AA0 | 3VA6140-8JP41-0AA0 | — |
| 100 | 3VA6110-5JP41-0AA0 | 3VA6110-6JP41-0AA0 | 3VA6110-7JP41-0AA0 | 3VA6110-8JP41-0AA0 | — |
| 150 | 3VA6115-5JP41-0AA0 | 3VA6115-6JP41-0AA0 | 3VA6115-7JP41-0AA0 | 3VA6115-8JP41-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 40 | 3VA6140-5JT41-0AA0 | 3VA6140-6JT41-0AA0 | 3VA6140-7JT41-0AA0 | 3VA6140-8JT41-0AA0 | — |
| 100 | 3VA6110-5JT41-0AA0 | 3VA6110-6JT41-0AA0 | 3VA6110-7JT41-0AA0 | 3VA6110-8JT41-0AA0 | — |
| 150 | 3VA6115-5JT41-0AA0 | 3VA6115-6JT41-0AA0 | 3VA6115-7JT41-0AA0 | 3VA6115-8JT41-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 40 | 3VA6140-5JQ41-0AA0 | 3VA6140-6JQ41-0AA0 | 3VA6140-7JQ41-0AA0 | 3VA6140-8JQ41-0AA0 | — |
| 100 | 3VA6110-5JQ41-0AA0 | 3VA6110-6JQ41-0AA0 | 3VA6110-7JQ41-0AA0 | 3VA6110-8JQ41-0AA0 | — |
| 150 | 3VA6115-5JQ41-0AA0 | 3VA6115-6JQ41-0AA0 | 3VA6115-7JQ41-0AA0 | 3VA6115-8JQ41-0AA0 | — |
| **ETU820 LI LCD with Metering** | | | | | |
| 40 | 3VA6140-5KL41-0AA0 | 3VA6140-6KL41-0AA0 | 3VA6140-7KL41-0AA0 | 3VA6140-8KL41-0AA0 | — |
| 100 | 3VA6110-5KL41-0AA0 | 3VA6110-6KL41-0AA0 | 3VA6110-7KL41-0AA0 | 3VA6110-8KL41-0AA0 | — |
| 150 | 3VA6115-5KL41-0AA0 | 3VA6115-6KL41-0AA0 | 3VA6115-7KL41-0AA0 | 3VA6115-8KL41-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KM41-0AA0 | 3VA6140-6KM41-0AA0 | 3VA6140-7KM41-0AA0 | 3VA6140-8KM41-0AA0 | — |
| 100 | 3VA6110-5KM41-0AA0 | 3VA6110-6KM41-0AA0 | 3VA6110-7KM41-0AA0 | 3VA6110-8KM41-0AA0 | — |
| 150 | 3VA6115-5KM41-0AA0 | 3VA6115-6KM41-0AA0 | 3VA6115-7KM41-0AA0 | 3VA6115-8KM41-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KP41-0AA0 | 3VA6140-6KP41-0AA0 | 3VA6140-7KP41-0AA0 | 3VA6140-8KP41-0AA0 | — |
| 100 | 3VA6110-5KP41-0AA0 | 3VA6110-6KP41-0AA0 | 3VA6110-7KP41-0AA0 | 3VA6110-8KP41-0AA0 | — |
| 150 | 3VA6115-5KP41-0AA0 | 3VA6115-6KP41-0AA0 | 3VA6115-7KP41-0AA0 | 3VA6115-8KP41-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KT41-0AA0 | 3VA6140-6KT41-0AA0 | 3VA6140-7KT41-0AA0 | 3VA6140-8KT41-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0KT41-0AA0 |
| 100 | 3VA6110-5KT41-0AA0 | 3VA6110-6KT41-0AA0 | 3VA6110-7KT41-0AA0 | 3VA6110-8KT41-0AA0 | 3VA6110-0KT41-0AA0 |
| 150 | 3VA6115-5KT41-0AA0 | 3VA6115-6KT41-0AA0 | 3VA6115-7KT41-0AA0 | 3VA6115-8KT41-0AA0 | 3VA6115-0KT41-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 40 | 3VA6140-5KQ41-0AA0 | 3VA6140-6KQ41-0AA0 | 3VA6140-7KQ41-0AA0 | 3VA6140-8KQ41-0AA0 | — |
| 60 | — | — | — | — | 3VA6160-0KQ41-0AA0 |
| 100 | 3VA6110-5KQ41-0AA0 | 3VA6110-6KQ41-0AA0 | 3VA6110-7KQ41-0AA0 | 3VA6110-8KQ41-0AA0 | 3VA6110-0KQ41-0AA0 |
| 150 | 3VA6115-5KQ41-0AA0 | 3VA6115-6KQ41-0AA0 | 3VA6115-7KQ41-0AA0 | 3VA6115-8KQ41-0AA0 | 3VA6115-0KQ41-0AA0 |

## Connectors for 75C wire for 3VA61

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 3 lugs) | Part Number (kit of 4 lugs) |
|---|---|---|---|---|
| Steel Wrap around (Cu cable only) single cable lugs② | AWG 10 | 3/0 | **3VA9143-0JA12** | **3VA9144-0JA12** |
| | AWG 4 | 350 kcmil | **3VA9243-0JA12** | **3VA9244-0JA12** |
| Aluminum Body Lug (Cu/Al cable) single cable lugs① | AWG 14 | 1/0 | **3VA9143-0JB11** | **3VA9144-0JB11** |
| | AWG 6 | 350 kcmil | **3VA9243-0JB12**④ | **3VA9244-0JB12**④ |
| Aluminum body lug with control wire tap (Cu/Al cable) single cable lugs① | AWG 14 | 1/0 | **3VA9143-0JG11**③ | **3VA9144-0JG11**③ |
| | AWG 6 | 350 kcmil | **3VA9243-0JG12** | **3VA9244-0JG12** |
| Aluminum body lug large (Cu/Al cable) single cable lugs and 1 ext'd terminal cover① | AWG 2 | 350 kcmil | **3VA9243-0JJ13** | **3VA9244-0JJ13** |
| Aluminum body lug large with control wire tap (Cu/Al cable) single cable lugs and 1 extended terminal cover① | AWG 2 | 350 kcmil | **3VA9243-0JC13** | **3VA9244-0JC13** |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 extended terminal cover① | AWG 4 | 300 kcmil | **3VA9243-0JJ22** | **3VA9244-0JJ22** |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover① | AWG 4 | 300 kcmil | **3VA9243-0JC22** | **3VA9244-0JC22** |
| Distribution lug, 6 Cables (Cu/Al cable) with 1 extended terminal cover② | AWG 14 | AWG 2 | **3VA9243-0JF60** | **3VA9244-0JF60** |
| Copper body lug (Cu cable only) single cable lugs kit of 3 single lugs① | AWG 14 | 1/0 | **3VA9143-0JD11** | **3VA9144-0JD11** |
| | AWG 6 | 350 kcmil | **3VA9243-0JD12** | **3VA9244-0JD12** |
| Copper body lug (Cu cable only) with control wire tap single cable lugs① | AWG 14 | 1/0 | **3VA9143-0JK11**③ | **3VA9144-0JK11**③ |
| | AWG 6 | 350 kcmil | **3VA9243-0JK12** | **3VA9244-0JK12** |

## Interrupting Ratings for 3VA61

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MDAE | 100 | 35 | 35 | 18 | 18 |
| H | HDAE | 100 | 65 | 65 | 22 | 22 |
| C | CDAE | 200 | 100 | 100 | 35 | 35 |
| L | LDAE | 200 | 150 | 150 | 50 | 50 |
| E | EDAE | — | 200 | 200 | 100 | 100 |

## Enclosures (3-pole only)

| Nema Type | Catalog Number |
|---|---|
| 1 surface | **3VAE250N1S** |
| 1 flush | **3VAE250N1F** |
| 3R | **3VAE250N3R** |
| 12 | **3VAE250N12** |
| 4X (304) | **3VAE250N4X** |
| 4X (316) | **3VAE250N4X316** |
| Neutral | **N250X** |
| 200% Neutral | **N2250X** |

## Dimensions / Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA61 | 3 | 4.1 (105) | 7.8 (198) | 3.4 (86) | 5.5 | 2.5 |
| 3VA61 | 4 | 5.5 (140) | 7.8 (198) | 3.4 (86) | 7.1 | 3.2 |

① Meets requirements for 100% rated breakers up to 150A.
② Meets requirements for 100% rated breakers up to 100A.
③ Limited to 150A including the control wire tap.
④ Standard lug installed at the factory when breaker ordered with a "6" in the 12th position.

## Trip Settings for 3VA61

ETU320-LI, ETU330-LIG, ETU350-LSI

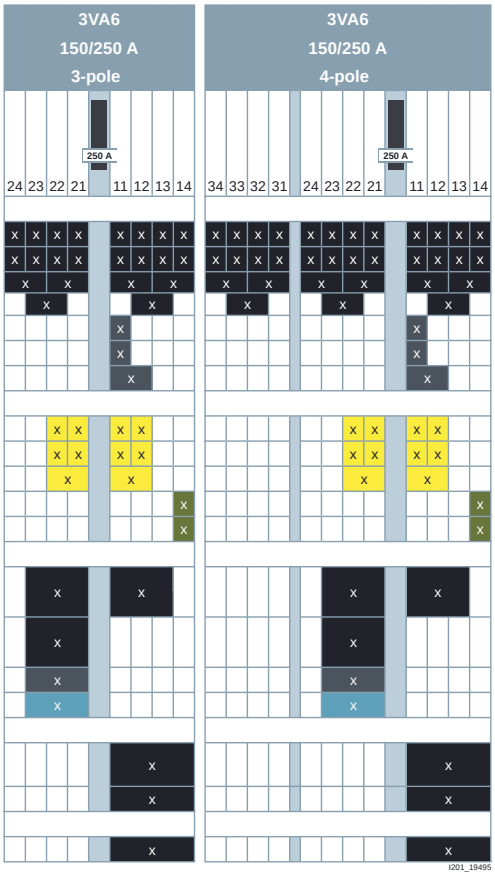
| Continuous Amperage | LI, LIG, LSI | | | LSI | | LIG | LI, LIG, LSI 4P only |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I)① | $I_{sd}$= xIr (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $I_N$=x$I_r$ (Amp) |
| 40 | 15 - 40 | 0.5 - 17 | 60-480 | 1.5 - 10 | 0.08 - 0.4 | 15 - 40 | 1 / OFF |
| 60 | 24 - 60 | 0.5 - 17 | 90 - 720 | 1.5 - 10 | | 15 - 60 | 1 / OFF |
| 100 | 40 - 100 | 0.5 - 17 | 150 - 1200 | 1.5 - 10 | | 20 - 100 | 0.5 - 1 / OFF |
| 150 | 60 - 150 | 0.5 - 17 | 225 - 1500③ | 1.5 - 10 | | 30 - 150 | 0.5 - 1 / OFF |

ETU550-LSI, ETU556 LSI(A), ETU560-LSIG, ETU820-LI, ETU830-LIG, ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

| Continuous Amperage | LI, LIG, LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LIG, LSIG, LSI(G) | | LSI 3P with External CT | LI, LIG, LSI, LSIG, LSI(G) 4P only |
|---|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L)② | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (G) | $I_N$=x$I_r$ (Amp) | $I_N$ (Amp) |
| 40 | 15 - 40 | 0.5 - 25 | 60-480 | 24 - 400 | 0.05 - 0.5 | 15 - 40 | 0.05 - 0.8 | 15 - 64 / OFF | 15 - 64 / OFF |
| 60 | 24 - 60 | 0.5 - 25 | 90 - 750 | 36 - 600 | | 15 - 60 | | 24 - 96 / OFF | 24 - 96 / OFF |
| 100 | 40 - 100 | 0.5 - 25 | 150-1200 | 60 - 1000 | | 20 - 100 | | 20 - 160 / OFF | 20 - 150 / OFF |
| 150 | 60 - 150 | 0.5 - 20④ | 225-1500 | 90 - 1500 | | 30 - 150 | | 30 - 240 / OFF | 30 - 150 / OFF |

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

| **Internal accessories**<br>**Optional equipment** | Slot No.: |
|---|---|
| **Auxiliary switch** | **Type** |
| Auxiliary switch | AUX_HQ |
| | AUX_HQ_el |
| | AUX_HP |
| Leading changeover switch | LCS_HQ |
| | LCS_HQ_el |
| | LCS_HP |
| **Alarm switch** | **Type** |
| Trip alarm switch | TAS_HQ |
| | TAS_HQ_el |
| | TAS_HP |
| Electrical alarm switch | EAS_HQ |
| | EAS_HQ_el |
| **Auxiliary release** | **Type** |
| Shunt trip flexible | STF |
| Shunt trip left | STL |
| Undervoltage release | UVR |
| Universal release | UNI |
| **ETU/communication** | **Type** |
| Communication module Breaker data server | COM060 |
| 24 V module | |
| **Other** | |
| Cylinder lock (type Ronis) | |




See page 17/60 for internal accessory part numbers.

① $I_i$ for ETU350 is fixed at the maximum level shown in table.
② Adjustable in steps of 1A.
③ E-Interrupting Class breakers : $I_i$ 225 - 1800
④ E-Interrupting Class breakers with ETU 856 and 860 $t_{Id}$ 0.5 - 25

# 3VA52 250A Thermal-magnetic Trip Circuit Breakers

## Selection

### 3VA52 250 A, 2-Pole in 3-Pole Frame Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MFAS) Catalog Number | H-Interrupting Class (HFAS) Catalog Number | C-Interrupting Class (CFAS) Catalog Number |
|---|---|---|---|
| | **TM210 FTFM** | | |
| 40 | **3VA5240-5ED61-0AA0** | **3VA5240-6ED61-0AA0** | **3VA5240-7ED61-0AA0** |
| 45 | **3VA5245-5ED61-0AA0** | **3VA5245-6ED61-0AA0** | **3VA5245-7ED61-0AA0** |
| 50 | **3VA5250-5ED61-0AA0** | **3VA5250-6ED61-0AA0** | **3VA5250-7ED61-0AA0** |
| 60 | **3VA5260-5ED61-0AA0** | **3VA5260-6ED61-0AA0** | **3VA5260-7ED61-0AA0** |
| 70 | **3VA5270-5ED61-0AA0** | **3VA5270-6ED61-0AA0** | **3VA5270-7ED61-0AA0** |
| 80 | **3VA5280-5ED61-0AA0** | **3VA5280-6ED61-0AA0** | **3VA5280-7ED61-0AA0** |
| 90 | **3VA5290-5ED61-0AA0** | **3VA5290-6ED61-0AA0** | **3VA5290-7ED61-0AA0** |
| 100 | **3VA5210-5ED61-0AA0** | **3VA5210-6ED61-0AA0** | **3VA5210-7ED61-0AA0** |
| 110 | **3VA5211-5ED61-0AA0** | **3VA5211-6ED61-0AA0** | **3VA5211-7ED61-0AA0** |
| 125 | **3VA5212-5ED61-0AA0** | **3VA5212-6ED61-0AA0** | **3VA5212-7ED61-0AA0** |
| 150 | **3VA5215-5ED61-0AA0** | **3VA5215-6ED61-0AA0** | **3VA5215-7ED61-0AA0** |
| 175 | **3VA5217-5ED61-0AA0** | **3VA5217-6ED61-0AA0** | **3VA5217-7ED61-0AA0** |
| 200 | **3VA5220-5ED61-0AA0** | **3VA5220-6ED61-0AA0** | **3VA5220-7ED61-0AA0** |
| 225 | **3VA5222-5ED61-0AA0** | **3VA5222-6ED61-0AA0** | **3VA5222-7ED61-0AA0** |
| 250 | **3VA5225-5ED61-0AA0** | **3VA5225-6ED61-0AA0** | **3VA5225-7ED61-0AA0** |
| | **TM230 FTAM** | | |
| 70 | **3VA5270-5EC61-0AA0** | **3VA5270-6EC61-0AA0** | **3VA5270-7EC61-0AA0** |
| 80 | **3VA5280-5EC61-0AA0** | **3VA5280-6EC61-0AA0** | **3VA5280-7EC61-0AA0** |
| 90 | **3VA5290-5EC61-0AA0** | **3VA5290-6EC61-0AA0** | **3VA5290-7EC61-0AA0** |
| 100 | **3VA5210-5EC61-0AA0** | **3VA5210-6EC61-0AA0** | **3VA5210-7EC61-0AA0** |
| 110 | **3VA5211-5EC61-0AA0** | **3VA5211-6EC61-0AA0** | **3VA5211-7EC61-0AA0** |
| 125 | **3VA5212-5EC61-0AA0** | **3VA5212-6EC61-0AA0** | **3VA5212-7EC61-0AA0** |
| 150 | **3VA5215-5EC61-0AA0** | **3VA5215-6EC61-0AA0** | **3VA5215-7EC61-0AA0** |
| 175 | **3VA5217-5EC61-0AA0** | **3VA5217-6EC61-0AA0** | **3VA5217-7EC61-0AA0** |
| 200 | **3VA5220-5EC61-0AA0** | **3VA5220-6EC61-0AA0** | **3VA5220-7EC61-0AA0** |
| 225 | **3VA5222-5EC61-0AA0** | **3VA5222-6EC61-0AA0** | **3VA5222-7EC61-0AA0** |
| 250 | **3VA5225-5EC61-0AA0** | **3VA5225-6EC61-0AA0** | **3VA5225-7EC61-0AA0** |

### Dimensions

### Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA52 | 2(3-) pole | 4.1 (105) | 7.3 (185) | 3.3 (83) | 4.1 | 1.9 |
| 3VA52 | 3-pole | 4.1 (105) | 7.3 (185) | 3.3 (83) | 4.5 | 2.1 |

### Enclosures (3-pole only)

| Nema Type | Catalog Number |
|---|---|
| 1 surface | **3VAE250N1S** |
| 1 flush | **3VAE250N1F** |
| 3R | **3VAE250N3R** |
| 12 | **3VAE250N12** |
| 4X (304) | **3VAE250N4X** |
| 4X (316) | **3VAE250N4X316** |
| Neutral | **N250X** |
| 200% Neutral | **N2250X** |

**3VA52 250A 3-Pole**

### Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers, change the 12th digit of the catalog number to "2". (For example, a 35KA @480VAC, 40A, 3-pole, 3VA52 with nut keepers would be catalog number 3VA5240-5ED3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 40A, 3-pole, 3VA51 with lugs would be catalog number 3VA5240- 5ED3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

**Note:** Factory installed nut keepers and lugs are only available for 3 Pole breakers.

3VA52 are available with 100% ratings (3VA52 3 and 4 pole and up to 225 amp only (250A with 100% ratings can be purchased in the 400A frame) . For 100% rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 40A, 3-pole, 100% rated 3VA52 would be catalog number 3VA5240-5ED31-**2**AA0). Requires the use of rated lugs — see lug table below.

For NAVAL-rated thermal-magnetic trip circuit breakers (3VA52 3 pole only), change the 13th digit of the catalog number to the number "1". (For example, a 35KA @480VAC, 40A, 3-pole, NAVAL rated 3VA51 would be catalog number 3VA5240-5ED31-**1**AA0)

All 3VA52 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

# 3VA52 250A Thermal-magnetic Trip Circuit Breakers



## 3VA52 250 A Frame, 3-Pole Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MFAS) | H-Interrupting Class (HFAS) | C-Interrupting Class (CFAS) |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| | **TM210 FTFM①** | | |
| 40 | **3VA5240-5ED31-0AA0** | **3VA5240-6ED31-0AA0** | **3VA5240-7ED31-0AA0** |
| 45 | **3VA5245-5ED31-0AA0** | **3VA5245-6ED31-0AA0** | **3VA5245-7ED31-0AA0** |
| 50 | **3VA5250-5ED31-0AA0** | **3VA5250-6ED31-0AA0** | **3VA5250-7ED31-0AA0** |
| 60 | **3VA5260-5ED31-0AA0** | **3VA5260-6ED31-0AA0** | **3VA5260-7ED31-0AA0** |
| 70 | **3VA5270-5ED31-0AA0** | **3VA5270-6ED31-0AA0** | **3VA5270-7ED31-0AA0** |
| 80 | **3VA5280-5ED31-0AA0** | **3VA5280-6ED31-0AA0** | **3VA5280-7ED31-0AA0** |
| 90 | **3VA5290-5ED31-0AA0** | **3VA5290-6ED31-0AA0** | **3VA5290-7ED31-0AA0** |
| 100 | **3VA5210-5ED31-0AA0** | **3VA5210-6ED31-0AA0** | **3VA5210-7ED31-0AA0** |
| 110 | **3VA5211-5ED31-0AA0** | **3VA5211-6ED31-0AA0** | **3VA5211-7ED31-0AA0** |
| 125 | **3VA5212-5ED31-0AA0** | **3VA5212-6ED31-0AA0** | **3VA5212-7ED31-0AA0** |
| 150 | **3VA5215-5ED31-0AA0** | **3VA5215-6ED31-0AA0** | **3VA5215-7ED31-0AA0** |
| 175 | **3VA5217-5ED31-0AA0** | **3VA5217-6ED31-0AA0** | **3VA5217-7ED31-0AA0** |
| 200 | **3VA5220-5ED31-0AA0** | **3VA5220-6ED31-0AA0** | **3VA5220-7ED31-0AA0** |
| 225 | **3VA5222-5ED31-0AA0** | **3VA5222-6ED31-0AA0** | **3VA5222-7ED31-0AA0** |
| 250 | **3VA5225-5ED31-0AA0** | **3VA5225-6ED31-0AA0** | **3VA5225-7ED31-0AA0** |
| | **TM230 FTAM①** | | |
| 70 | **3VA5270-5EC31-0AA0** | **3VA5270-6EC31-0AA0** | **3VA5270-7EC31-0AA0** |
| 80 | **3VA5280-5EC31-0AA0** | **3VA5280-6EC31-0AA0** | **3VA5280-7EC31-0AA0** |
| 90 | **3VA5290-5EC31-0AA0** | **3VA5290-6EC31-0AA0** | **3VA5290-7EC31-0AA0** |
| 100 | **3VA5210-5EC31-0AA0** | **3VA5210-6EC31-0AA0** | **3VA5210-7EC31-0AA0** |
| 110 | **3VA5211-5EC31-0AA0** | **3VA5211-6EC31-0AA0** | **3VA5211-7EC31-0AA0** |
| 125 | **3VA5212-5EC31-0AA0** | **3VA5212-6EC31-0AA0** | **3VA5212-7EC31-0AA0** |
| 150 | **3VA5215-5EC31-0AA0** | **3VA5215-6EC31-0AA0** | **3VA5215-7EC31-0AA0** |
| 175 | **3VA5217-5EC31-0AA0** | **3VA5217-6EC31-0AA0** | **3VA5217-7EC31-0AA0** |
| 200 | **3VA5220-5EC31-0AA0** | **3VA5220-6EC31-0AA0** | **3VA5220-7EC31-0AA0** |
| 225 | **3VA5222-5EC31-0AA0** | **3VA5222-6EC31-0AA0** | **3VA5222-7EC31-0AA0** |
| 250 | **3VA5225-5EC31-0AA0** | **3VA5225-6EC31-0AA0** | **3VA5225-7EC31-0AA0** |
| | **TM240 ATAM** | | |
| 70 | **3VA5270-5EF31-0AA0** | **3VA5270-6EF31-0AA0** | **3VA5270-7EF31-0AA0** |
| 80 | **3VA5280-5EF31-0AA0** | **3VA5280-6EF31-0AA0** | **3VA5280-7EF31-0AA0** |
| 100 | **3VA5210-5EF31-0AA0** | **3VA5210-6EF31-0AA0** | **3VA5210-7EF31-0AA0** |
| 125 | **3VA5212-5EF31-0AA0** | **3VA5212-6EF31-0AA0** | **3VA5212-7EF31-0AA0** |
| 150 | **3VA5215-5EF31-0AA0** | **3VA5215-6EF31-0AA0** | **3VA5215-7EF31-0AA0** |
| 175 | **3VA5217-5EF31-0AA0** | **3VA5217-6EF31-0AA0** | **3VA5217-7EF31-0AA0** |
| 200 | **3VA5220-5EF31-0AA0** | **3VA5220-6EF31-0AA0** | **3VA5220-7EF31-0AA0** |
| 250 | **3VA5225-5EF31-0AA0** | **3VA5225-6EF31-0AA0** | **3VA5225-7EF31-0AA0** |

## Enclosures (3-pole only)

| Nema Type | Catalog Number |
|---|---|
| 1 surface | **3VAE250N1S** |
| 1 flush | **3VAE250N1F** |
| 3R | **3VAE250N3R** |
| 12 | **3VAE250N12** |
| 4X (304) | **3VAE250N4X** |
| 4X (316) | **3VAE250N4X316** |
| Neutral | **N250X** |
| 200% Neutral | **N2250X** |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA52 | 2(3-) pole | 4.1 (105) | 7.3 (185) | 3.3 (83) | 4.1 | 1.9 |
| 3VA52 | 3-pole | 4.1 (105) | 7.3 (185) | 3.3 (83) | 4.5 | 2.1 |

① Available with NAVAL/50C ratings.

# 3VA52 250A Thermal-magnetic Trip Circuit Breakers

## Selection

### 3VA52 250A Frame, 4-pole Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MFAS) Catalog Number | H-Interrupting Class (HFAS) Catalog Number | C-Interrupting Class (CFAS) Catalog Number |
|---|---|---|---|
| | | **TM210 FTFM** | |
| 40 | 3VA5240-5ED41-0AA0 | 3VA5240-6ED41-0AA0 | 3VA5240-7ED41-0AA0 |
| 45 | 3VA5245-5ED41-0AA0 | 3VA5245-6ED41-0AA0 | 3VA5245-7ED41-0AA0 |
| 50 | 3VA5250-5ED41-0AA0 | 3VA5250-6ED41-0AA0 | 3VA5250-7ED41-0AA0 |
| 60 | 3VA5260-5ED41-0AA0 | 3VA5260-6ED41-0AA0 | 3VA5260-7ED41-0AA0 |
| 70 | 3VA5270-5ED41-0AA0 | 3VA5270-6ED41-0AA0 | 3VA5270-7ED41-0AA0 |
| 80 | 3VA5280-5ED41-0AA0 | 3VA5280-6ED41-0AA0 | 3VA5280-7ED41-0AA0 |
| 90 | 3VA5290-5ED41-0AA0 | 3VA5290-6ED41-0AA0 | 3VA5290-7ED41-0AA0 |
| 100 | 3VA5210-5ED41-0AA0 | 3VA5210-6ED41-0AA0 | 3VA5210-7ED41-0AA0 |
| 110 | 3VA5211-5ED41-0AA0 | 3VA5211-6ED41-0AA0 | 3VA5211-7ED41-0AA0 |
| 125 | 3VA5212-5ED41-0AA0 | 3VA5212-6ED41-0AA0 | 3VA5212-7ED41-0AA0 |
| 150 | 3VA5215-5ED41-0AA0 | 3VA5215-6ED41-0AA0 | 3VA5215-7ED41-0AA0 |
| 175 | 3VA5217-5ED41-0AA0 | 3VA5217-6ED41-0AA0 | 3VA5217-7ED41-0AA0 |
| 200 | 3VA5220-5ED41-0AA0 | 3VA5220-6ED41-0AA0 | 3VA5220-7ED41-0AA0 |
| 225 | 3VA5222-5ED41-0AA0 | 3VA5222-6ED41-0AA0 | 3VA5222-7ED41-0AA0 |
| 250 | 3VA5225-5ED41-0AA0 | 3VA5225-6ED41-0AA0 | 3VA5225-7ED41-0AA0 |
| | | **TM210 FTFM 100% Neutral** | |
| 90 | 3VA5290-5GD41-0AA0 | 3VA5290-6GD41-0AA0 | 3VA5290-7GD41-0AA0 |
| 100 | 3VA5210-5GD41-0AA0 | 3VA5210-6GD41-0AA0 | 3VA5210-7GD41-0AA0 |
| 110 | 3VA5211-5GD41-0AA0 | 3VA5211-6GD41-0AA0 | 3VA5211-7GD41-0AA0 |
| 125 | 3VA5212-5GD41-0AA0 | 3VA5212-6GD41-0AA0 | 3VA5212-7GD41-0AA0 |
| 150 | 3VA5215-5GD41-0AA0 | 3VA5215-6GD41-0AA0 | 3VA5215-7GD41-0AA0 |
| 175 | 3VA5217-5GD41-0AA0 | 3VA5217-6GD41-0AA0 | 3VA5217-7GD41-0AA0 |
| 200 | 3VA5220-5GD41-0AA0 | 3VA5220-6GD41-0AA0 | 3VA5220-7GD41-0AA0 |
| 225 | 3VA5222-5GD41-0AA0 | 3VA5222-6GD41-0AA0 | 3VA5222-7GD41-0AA0 |
| 250 | 3VA5225-5GD41-0AA0 | 3VA5225-6GD41-0AA0 | 3VA5225-7GD41-0AA0 |
| | | **TM230 FTAM** | |
| 70 | 3VA5270-5EC41-0AA0 | 3VA5270-6EC41-0AA0 | 3VA5270-7EC41-0AA0 |
| 80 | 3VA5280-5EC41-0AA0 | 3VA5280-6EC41-0AA0 | 3VA5280-7EC41-0AA0 |
| 90 | 3VA5290-5EC41-0AA0 | 3VA5290-6EC41-0AA0 | 3VA5290-7EC41-0AA0 |
| 100 | 3VA5210-5EC41-0AA0 | 3VA5210-6EC41-0AA0 | 3VA5210-7EC41-0AA0 |
| 110 | 3VA5211-5EC41-0AA0 | 3VA5211-6EC41-0AA0 | 3VA5211-7EC41-0AA0 |
| 125 | 3VA5212-5EC41-0AA0 | 3VA5212-6EC41-0AA0 | 3VA5212-7EC41-0AA0 |
| 150 | 3VA5215-5EC41-0AA0 | 3VA5215-6EC41-0AA0 | 3VA5215-7EC41-0AA0 |
| 175 | 3VA5217-5EC41-0AA0 | 3VA5217-6EC41-0AA0 | 3VA5217-7EC41-0AA0 |
| 200 | 3VA5220-5EC41-0AA0 | 3VA5220-6EC41-0AA0 | 3VA5220-7EC41-0AA0 |
| 225 | 3VA5222-5EC41-0AA0 | 3VA5222-6EC41-0AA0 | 3VA5222-7EC41-0AA0 |
| 250 | 3VA5225-5EC41-0AA0 | 3VA5225-6EC41-0AA0 | 3VA5225-7EC41-0AA0 |
| | | **TM230 FTAM 100% Neutral** | |
| 90 | 3VA5290-5GC41-0AA0 | 3VA5290-6GC41-0AA0 | 3VA5290-7GC41-0AA0 |
| 100 | 3VA5210-5GC41-0AA0 | 3VA5210-6GC41-0AA0 | 3VA5210-7GC41-0AA0 |
| 110 | 3VA5211-5GC41-0AA0 | 3VA5211-6GC41-0AA0 | 3VA5211-7GC41-0AA0 |
| 125 | 3VA5212-5GC41-0AA0 | 3VA5212-6GC41-0AA0 | 3VA5212-7GC41-0AA0 |
| 150 | 3VA5215-5GC41-0AA0 | 3VA5215-6GC41-0AA0 | 3VA5215-7GC41-0AA0 |
| 175 | 3VA5217-5GC41-0AA0 | 3VA5217-6GC41-0AA0 | 3VA5217-7GC41-0AA0 |
| 200 | 3VA5220-5GC41-0AA0 | 3VA5220-6GC41-0AA0 | 3VA5220-7GC41-0AA0 |
| 225 | 3VA5222-5GC41-0AA0 | 3VA5222-6GC41-0AA0 | 3VA5222-7GC41-0AA0 |
| 250 | 3VA5225-5GC41-0AA0 | 3VA5225-6GC41-0AA0 | 3VA5225-7GC41-0AA0 |
| | | **TM240 ATAM** | |
| 70 | 3VA5270-5EF41-0AA0 | 3VA5270-6EF41-0AA0 | 3VA5270-7EF41-0AA0 |
| 80 | 3VA5280-5EF41-0AA0 | 3VA5280-6EF41-0AA0 | 3VA5280-7EF41-0AA0 |
| 100 | 3VA5210-5EF41-0AA0 | 3VA5210-6EF41-0AA0 | 3VA5210-7EF41-0AA0 |
| 125 | 3VA5212-5EF41-0AA0 | 3VA5212-6EF41-0AA0 | 3VA5212-7EF41-0AA0 |
| 150 | 3VA5215-5EF41-0AA0 | 3VA5215-6EF41-0AA0 | 3VA5215-7EF41-0AA0 |
| 175 | 3VA5217-5EF41-0AA0 | 3VA5217-6EF41-0AA0 | 3VA5217-7EF41-0AA0 |
| 200 | 3VA5220-5EF41-0AA0 | 3VA5220-6EF41-0AA0 | 3VA5220-7EF41-0AA0 |
| 250 | 3VA5225-5EF41-0AA0 | 3VA5225-6EF41-0AA0 | 3VA5225-7EF41-0AA0 |
| | | **TM240 ATAM 100% Neutral** | |
| 100 | 3VA5210-5GF41-0AA0 | 3VA5210-6GF41-0AA0 | 3VA5210-7GF41-0AA0 |
| 125 | 3VA5212-5GF41-0AA0 | 3VA5212-6GF41-0AA0 | 3VA5212-7GF41-0AA0 |
| 150 | 3VA5215-5GF41-0AA0 | 3VA5215-6GF41-0AA0 | 3VA5215-7GF41-0AA0 |
| 175 | 3VA5217-5GF41-0AA0 | 3VA5217-6GF41-0AA0 | 3VA5217-7GF41-0AA0 |
| 200 | 3VA5220-5GF41-0AA0 | 3VA5220-6GF41-0AA0 | 3VA5220-7GF41-0AA0 |
| 250 | 3VA5225-5GF41-0AA0 | 3VA5225-6GF41-0AA0 | 3VA5225-7GF41-0AA0 |

## Interrupting Ratings for 3VA52

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | | | |
| | | 240 | 480Y/277V | 480 | 600Y/347V | 600 | 250 | 500 | 600 (3P) | 750 | 1000 (4P) |
| M | MFAS | 85 | 35 | 35 | 18 | 18 | 50 | 50 | 50 | 50 | 50 |
| H | HFAS | 100 | 65 | 65 | 25 | 25 | 85 | 85 | 85 | 85 | 85 |
| C | CFAS | 200 | 100 | 100 | 35 | 35 | 100 | 100 | 100 | 100 | 100 |

## Trip Settings for 3VA52

| TM210 - FTFM | | |
|---|---|---|
| $I_n$ (A) | $I_r$ (A) | $I_i$ (A) |
| 40 | 40 | 400 |
| 50 | 50 | 500 |
| 60 | 60 | 600 |
| 70 | 70 | 700 |
| 80 | 80 | 800 |
| 90 | 90 | 900 |
| 100 | 100 | 1000 |
| 110 | 110 | 1100 |
| 125 | 125 | 1250 |
| 150 | 150 | 1500 |
| 175 | 175 | 1750 |
| 200 | 200 | 2000 |
| 225 | 225 | 2250 |
| 250 | 250 | 2500 |

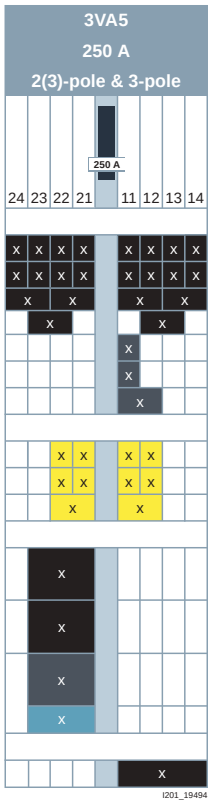
| TM230 - FTAM | | | | | | | |
|---|---|---|---|---|---|---|---|
| $I_n$ (A) | $I_r$ (A) | $I_i$ (A) | | | | | |
| 70 | 70 | 350 | 420 | 490 | 560 | 630 | 700 |
| 80 | 80 | 400 | 480 | 560 | 640 | 720 | 800 |
| 90 | 90 | 450 | 540 | 630 | 720 | 810 | 900 |
| 100 | 100 | 500 | 600 | 700 | 800 | 900 | 1000 |
| 110 | 110 | 550 | 660 | 770 | 880 | 990 | 1100 |
| 125 | 125 | 625 | 750 | 875 | 1000 | 1125 | 1250 |
| 150 | 150 | 750 | 900 | 1050 | 1200 | 1350 | 1500 |
| 175 | 175 | 875 | 1050 | 1225 | 1400 | 1575 | 1750 |
| 200 | 200 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 225 | 225 | 1125 | 1350 | 1575 | 1800 | 2025 | 2250 |
| 250 | 250 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 |

| TM240 - ATAM | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $I_n$ (A) | $I_r$ (A) 90% | $I_r$ (A) 80% | $I_i$ (A) | | | | | |
| 70 | 63 | 56 | 350 | 420 | 490 | 560 | 630 | 700 |
| 80 | 72 | 64 | 400 | 480 | 560 | 640 | 720 | 800 |
| 100 | 90 | 80 | 500 | 600 | 700 | 800 | 900 | 1000 |
| 125 | 113 | 100 | 625 | 750 | 875 | 1000 | 1125 | 1250 |
| 150 | 135 | 120 | 750 | 900 | 1050 | 1200 | 1350 | 1500 |
| 175 | 158 | 140 | 875 | 1050 | 1225 | 1400 | 1575 | 1750 |
| 200 | 180 | 160 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 250 | 225 | 200 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 |

## Connectors for 75C Wire for 3VA52

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 3 lugs) | Part Number (kit of 4 lugs) |
|---|---|---|---|---|
| Steel wrap around (Cu cable only), single cable lugs | AWG 10 | 3/0 | **3VA9233-0JA11** | **3VA9234-0JA11** |
| | AWG 4 | 350 kcmil | **3VA9233-0JA12** | **3VA9234-0JA12** |
| Aluminum body lug (Cu/Al cable), single cable lugs | AWG 14 | 1/0 | **3VA9233-0JB11**② | **3VA9234-0JB11**② |
| | AWG 6 | 350 kcmil | **3VA9233-0JB12**①③ | **3VA9234-0JB12**①③ |
| Aluminum body lug (Cu/Al cable) with control wire tap, single cable lugs | AWG 14 | 1/0 | **3VA9233-0JG11**② | **3VA9234-0JG11**② |
| | AWG 6 | 350 kcmil | **3VA9233-0JG12**③ | **3VA9234-0JG12**③ |
| Aluminum body lug large (Cu/Al cable) single cable lugs with 1 extended terminal cover | AWG 2 | 350 kcmil | **3VA9233-0JJ13**③ | **3VA9234-0JJ13**③ |
| Aluminum body lug large with control wire tap (Cu/Al cable) single cable lugs and 1 extended terminal cover | AWG 2 | 350 kcmil | **3VA9233-0JC13**③ | **3VA9234-0JC13**③ |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | AWG 4 | 300 kcmil | **3VA9233-0JJ22**③ | **3VA9234-0JJ22**③ |
| Distribution lug, 6 Cables (Cu/Al cable) with 1 extended terminal cover | AWG 14 | AWG 2 | **3VA9233-0JF60** | **3VA9234-0JF60** |
| Copper body lug (Cu cable only) single cable lugs | AWG 14 | 1/0 | **3VA9233-0JD11** | **3VA9234-0JD11** |
| | AWG 6 | 350 kcmil | **3VA9233-0JD12**④ | **3VA9234-0JD12**④ |
| Copper body lug with control wire tap (Cu cable only) single cable lugs | AWG 14 | 1/0 | **3VA9233-0JK11** | **3VA9234-0JK11** |
| | AWG 6 | 350 kcmil | **3VA9233-0JK12**④ | **3VA9234-0JK12**④ |

| Internal accessories<br>Optional equipment | | Slot No.: |
|---|---|---|
| **Auxiliary switch** | **Type** | |
| Auxiliary switch | AUX_HQ | |
| | AUX_HQ_el | |
| | AUX_HP | |
| Leading changeover switch | LCS_HQ | |
| | LCS_HQ_el | |
| | LCS_HP | |
| **Alarm switch** | **Type** | |
| Trip alarm switch | TAS_HQ | |
| | TAS_HQ_el | |
| | TAS_HP | |
| **Auxiliary release** | **Type** | |
| Shunt trip flexible | STF | |
| Shunt trip left | STL | |
| Undervoltage release | UVR | |
| Universal release | UNI | |
| **Other** | | |
| Cylinder lock (type Ronis) | | |




See page 17/60 for internal accessory part numbers.

① Standard lug installed at the factory when breaker ordered with a "6" in the 12th position.
② Meets requirements for 100% rated breakers up to 150A.
③ Meets requirements for 100% rated breakers up to 175A.
④ Meets requirements for 100% rated breakers up to 225A, requires the use of 90 degree wire, size to 75 degree ampacity.

# 3VA62 250A Electronic Trip Circuit Breakers

## Selection

3VA62 250A 3-Pole

### Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA92430QA00), change the 12th digit of the catalog number to "2" (required to install a breaker in a panelboard or switchboard that has a provision). (For example, a 35KA @480VAC, 250A, 3-pole, 3VA62 with nut keepers would be catalog number 3VA6225-5HL3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 250A, 3-pole, 3VA62 with lugs would be catalog number 3VA6225-5HL3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

All 3VA62 electronic trip circuit breakers are available with 100% ratings. For 100% rated electronic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 250A, 3-pole, 100% rated 3VA62 would be catalog number 3VA6225-5HL31-**2**AA0). Requires the use of rated lugs — see lug table below.

**Note:** 100% option not available for E-interrupting class breakers.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

All 3VA62 electronic trip circuit breakers are UL listed for reverse feed applications.

## 3VA62 250A Frame 3-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MFAE) | H-Interrupting Class (HFAE) | C-Interrupting Class (CFAE) | L-Interrupting Class (LFAE) | E-Interrupting Class (EFAE) |
|---|---|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| **ETU320 LI with dials** | | | | | |
| 100 | 3VA6210-5HL31-0AA0 | 3VA6210-6HL31-0AA0 | 3VA6210-7HL31-0AA0 | 3VA6210-8HL31-0AA0 | — |
| 250 | 3VA6225-5HL31-0AA0 | 3VA6225-6HL31-0AA0 | 3VA6225-7HL31-0AA0 | 3VA6225-8HL31-0AA0 | 3VA6225-0HL31-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 100 | 3VA6210-5HM31-0AA0 | 3VA6210-6HM31-0AA0 | 3VA6210-7HM31-0AA0 | 3VA6210-8HM31-0AA0 | — |
| 250 | 3VA6225-5HM31-0AA0 | 3VA6225-6HM31-0AA0 | 3VA6225-7HM31-0AA0 | 3VA6225-8HM31-0AA0 | 3VA6225-0HM31-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 100 | 3VA6210-5HN31-0AA0 | 3VA6210-6HN31-0AA0 | 3VA6210-7HN31-0AA0 | 3VA6210-8HN31-0AA0 | — |
| 250 | 3VA6225-5HN31-0AA0 | 3VA6225-6HN31-0AA0 | 3VA6225-7HN31-0AA0 | 3VA6225-8HN31-0AA0 | 3VA6225-0HN31-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 100 | 3VA6210-5JP31-0AA0 | 3VA6210-6JP31-0AA0 | 3VA6210-7JP31-0AA0 | 3VA6210-8JP31-0AA0 | — |
| 250 | 3VA6225-5JP31-0AA0 | 3VA6225-6JP31-0AA0 | 3VA6225-7JP31-0AA0 | 3VA6225-8JP31-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 100 | 3VA6210-5JT31-0AA0 | 3VA6210-6JT31-0AA0 | 3VA6210-7JT31-0AA0 | 3VA6210-8JT31-0AA0 | — |
| 250 | 3VA6225-5JT31-0AA0 | 3VA6225-6JT31-0AA0 | 3VA6225-7JT31-0AA0 | 3VA6225-8JT31-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 100 | 3VA6210-5JQ31-0AA0 | 3VA6210-6JQ31-0AA0 | 3VA6210-7JQ31-0AA0 | 3VA6210-8JQ31-0AA0 | — |
| 250 | 3VA6225-5JQ31-0AA0 | 3VA6225-6JQ31-0AA0 | 3VA6225-7JQ31-0AA0 | 3VA6225-8JQ31-0AA0 | — |
| **ETU820 LI with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KL31-0AA0 | 3VA6210-6KL31-0AA0 | 3VA6210-7KL31-0AA0 | 3VA6210-8KL31-0AA0 | — |
| 250 | 3VA6225-5KL31-0AA0 | 3VA6225-6KL31-0AA0 | 3VA6225-7KL31-0AA0 | 3VA6225-8KL31-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KM31-0AA0 | 3VA6210-6KM31-0AA0 | 3VA6210-7KM31-0AA0 | 3VA6210-8KM31-0AA0 | — |
| 250 | 3VA6225-5KM31-0AA0 | 3VA6225-6KM31-0AA0 | 3VA6225-7KM31-0AA0 | 3VA6225-8KM31-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KP31-0AA0 | 3VA6210-6KP31-0AA0 | 3VA6210-7KP31-0AA0 | 3VA6210-8KP31-0AA0 | — |
| 250 | 3VA6225-5KP31-0AA0 | 3VA6225-6KP31-0AA0 | 3VA6225-7KP31-0AA0 | 3VA6225-8KP31-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KT31-0AA0 | 3VA6210-6KT31-0AA0 | 3VA6210-7KT31-0AA0 | 3VA6210-8KT31-0AA0 | — |
| 250 | 3VA6225-5KT31-0AA0 | 3VA6225-6KT31-0AA0 | 3VA6225-7KT31-0AA0 | 3VA6225-8KT31-0AA0 | 3VA6225-0KT31-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KQ31-0AA0 | 3VA6210-6KQ31-0AA0 | 3VA6210-7KQ31-0AA0 | 3VA6210-8KQ31-0AA0 | — |
| 250 | 3VA6225-5KQ31-0AA0 | 3VA6225-6KQ31-0AA0 | 3VA6225-7KQ31-0AA0 | 3VA6225-8KQ31-0AA0 | 3VA6225-0KQ31-0AA0 |

# 3VA62 250A Electronic Trip Circuit Breakers

3VA62 250A 4-Pole

## 3VA62 250A Frame 4-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MFAE) | H-Interrupting Class (HFAE) | C-Interrupting Class (CFAE) | L-Interrupting Class (LFAE) | E-Interrupting Class (EFAE) |
|---|---|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| **ETU320 LI with dials** | | | | | |
| 100 | 3VA6210-5HL41-0AA0 | 3VA6210-6HL41-0AA0 | 3VA6210-7HL41-0AA0 | 3VA6210-8HL41-0AA0 | — |
| 250 | 3VA6225-5HL41-0AA0 | 3VA6225-6HL41-0AA0 | 3VA6225-7HL41-0AA0 | 3VA6225-8HL41-0AA0 | 3VA6225-0HL41-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 100 | 3VA6210-5HM41-0AA0 | 3VA6210-6HM41-0AA0 | 3VA6210-7HM41-0AA0 | 3VA6210-8HM41-0AA0 | — |
| 250 | 3VA6225-5HM41-0AA0 | 3VA6225-6HM41-0AA0 | 3VA6225-7HM41-0AA0 | 3VA6225-8HM41-0AA0 | 3VA6225-0HM41-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 100 | 3VA6210-5HN41-0AA0 | 3VA6210-6HN41-0AA0 | 3VA6210-7HN41-0AA0 | 3VA6210-8HN41-0AA0 | — |
| 250 | 3VA6225-5HN41-0AA0 | 3VA6225-6HN41-0AA0 | 3VA6225-7HN41-0AA0 | 3VA6225-8HN41-0AA0 | 3VA6225-0HN41-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 100 | 3VA6210-5JP41-0AA0 | 3VA6210-6JP41-0AA0 | 3VA6210-7JP41-0AA0 | 3VA6210-8JP41-0AA0 | — |
| 250 | 3VA6225-5JP41-0AA0 | 3VA6225-6JP41-0AA0 | 3VA6225-7JP41-0AA0 | 3VA6225-8JP41-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 100 | 3VA6210-5JT41-0AA0 | 3VA6210-6JT41-0AA0 | 3VA6210-7JT41-0AA0 | 3VA6210-8JT41-0AA0 | — |
| 250 | 3VA6225-5JT41-0AA0 | 3VA6225-6JT41-0AA0 | 3VA6225-7JT41-0AA0 | 3VA6225-8JT41-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 100 | 3VA6210-5JQ41-0AA0 | 3VA6210-6JQ41-0AA0 | 3VA6210-7JQ41-0AA0 | 3VA6210-8JQ41-0AA0 | — |
| 250 | 3VA6225-5JQ41-0AA0 | 3VA6225-6JQ41-0AA0 | 3VA6225-7JQ41-0AA0 | 3VA6225-8JQ41-0AA0 | — |
| **ETU820 LI with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KL41-0AA0 | 3VA6210-6KL41-0AA0 | 3VA6210-7KL41-0AA0 | 3VA6210-8KL41-0AA0 | — |
| 250 | 3VA6225-5KL41-0AA0 | 3VA6225-6KL41-0AA0 | 3VA6225-7KL41-0AA0 | 3VA6225-8KL41-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KM41-0AA0 | 3VA6210-6KM41-0AA0 | 3VA6210-7KM41-0AA0 | 3VA6210-8KM41-0AA0 | — |
| 250 | 3VA6225-5KM41-0AA0 | 3VA6225-6KM41-0AA0 | 3VA6225-7KM41-0AA0 | 3VA6225-8KM41-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KP41-0AA0 | 3VA6210-6KP41-0AA0 | 3VA6210-7KP41-0AA0 | 3VA6210-8KP41-0AA0 | — |
| 250 | 3VA6225-5KP41-0AA0 | 3VA6225-6KP41-0AA0 | 3VA6225-7KP41-0AA0 | 3VA6225-8KP41-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KT41-0AA0 | 3VA6210-6KT41-0AA0 | 3VA6210-7KT41-0AA0 | 3VA6210-8KT41-0AA0 | — |
| 250 | 3VA6225-5KT41-0AA0 | 3VA6225-6KT41-0AA0 | 3VA6225-7KT41-0AA0 | 3VA6225-8KT41-0AA0 | 3VA6225-0KT41-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 100 | 3VA6210-5KQ41-0AA0 | 3VA6210-6KQ41-0AA0 | 3VA6210-7KQ41-0AA0 | 3VA6210-8KQ41-0AA0 | — |
| 250 | 3VA6225-5KQ41-0AA0 | 3VA6225-6KQ41-0AA0 | 3VA6225-7KQ41-0AA0 | 3VA6225-8KQ41-0AA0 | 3VA6225-0KQ41-0AA0 |

# 3VA62 250A Electronic Trip Circuit Breakers



## Connectors for 75C wire for 3VA62

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 3 lugs) | Part Number (kit of 4 lugs) |
|---|---|---|---|---|
| Steel Wrap around (Cu cable only) single cable lugs | AWG 10 | 3/0 | **3VA9143-0JA12**① | **3VA9144-0JA12**① |
| | AWG 4 | 350 kcmil | **3VA9243-0JA12**① | **3VA9244-0JA12**① |
| Steel Wrap around (Cu cable only) single cable lugs with control wire tap | AWG 10 | 3/0 | **3VA9143-0JH12**① | **3VA9144-0JH12**① |
| | AWG 4 | 350 kcmil | **3VA9243-0JH12**① | **3VA9244-0JH12**① |
| Aluminum Body Lug (Cu/Al cable) single cable lugs | AWG 14 | 1/0 | **3VA9143-0JB11**① | **3VA9144-0JB11**① |
| | AWG 6 | 350 kcmil | **3VA9243-0JB12**①② | **3VA9244-0JB12**①② |
| Aluminum body lug with control wire tap (Cu/Al cable) single cable lugs | AWG 14 | 1/0 | **3VA9143-0JG11**① | **3VA9144-0JG11**① |
| | AWG 6 | 350 kcmil | **3VA9243-0JG12**① | **3VA9244-0JG12**① |
| Aluminum body lug large (Cu/Al cable) single cable lugs and 1 ext'd terminal cover | AWG 2 | 350 kcmil | **3VA9243-0JJ13**① | **3VA9244-0JJ13**① |
| Aluminum body lug large with control wire tap (Cu/Al cable) single cable lugs and 1 extended terminal cover | AWG 2 | 350 kcmil | **3VA9243-0JC13**① | **3VA9244-0JC13**① |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 extended terminal cover | AWG 4 | 300 kcmil | **3VA9243-0JJ22**① | **3VA9244-0JJ22**① |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | AWG 4 | 300 kcmil | **3VA9243-0JC22**① | **3VA9244-0JC22**① |
| Distribution lug, 6 Cables (Cu/Al cable) with 1 extended terminal cover | AWG 14 | AWG 2 | **3VA9243-0JF60**① | **3VA9244-0JF60**① |
| Copper body lug (Cu cable only) single cable lugs | AWG 14 | 1/0 | **3VA9143-0JD11**① | **3VA9144-0JD11**① |
| | AWG 6 | 350 kcmil | **3VA9243-0JD12**②③ | **3VA9244-0JD12**②③ |
| Copper body lug (Cu cable only) with control wire tap single cable lugs | AWG 14 | 1/0 | **3VA9143-0JK11**① | **3VA9144-0JK11**① |
| | AWG 6 | 350 kcmil | **3VA9243-0JK12**③ | **3VA9244-0JK12**③ |

① Meets requirements for 100% rated breakers up to 100A.
② Standard lug installed at the factory when breaker ordered with a "6" in the 12th position.
③ Meets requirements for 100% rated breakers up to 250A, requires the use of 90 degree wire, size to 75 degree ampacity.

## Interrupting Ratings for 3VA62

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MFAE | 100 | 35 | 35 | 18 | 18 |
| H | HFAE | 100 | 65 | 65 | 22 | 22 |
| C | CFAE | 200 | 100 | 100 | 35 | 35 |
| L | LFAE | 200 | 150 | 150 | 50 | 50 |
| E | EFAE | — | 200 | 200 | 100 | 100 |

## Enclosures (3-pole only)

| Nema Type | Catalog Number |
|---|---|
| 1 surface | **3VAE250N1S** |
| 1 flush | **3VAE250N1F** |
| 3R | **3VAE250N3R** |
| 12 | **3VAE250N12** |
| 4X (304) | **3VAE250N4X** |
| 4X (316) | **3VAE250N4X316** |
| Neutral | **N250X** |
| 200% Neutral | **N2250X** |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA62 | 3 | 4.1 (105) | 7.8 (198) | 3.4 (86) | 5.5 | 2.5 |
| 3VA62 | 4 | 5.5 (140) | 7.8 (198) | 3.4 (86) | 7.1 | 3.2 |

## Trip Settings for 3VA62

ETU320-LI, ETU330-LIG, ETU350-LSI

| Continuous Amperage | LI, LIG, LSI | | | LSI | | LIG | LI, LIG, LSI 4P only |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I)① | $I_{sd}$= x$I_r$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $I_N$=x$I_r$ (Amp) |
| 100 | 40 - 100 | 0.5 - 17 | 150-1200 | 1.5 - 10 | 0.08 - 0.4 | 20 - 100 | 0.5 - 1 / OFF |
| 250 | 100 - 250 | 0.5 - 13② | 375-2500 | 1.5 - 10 | | 50 - 250 | 0.5 - 1 / OFF |

ETU550-LSI, ETU556 LSI(A), ETU560-LSIG, ETU820-LI, ETU830-LIG, ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

| Continuous Amperage | LI, LIG, LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LIG, LSIG, LSI(G) | | LSI 3P with External CT | LI, LIG, LSI, LSIG, LSI(G) 4P only |
|---|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L)③ | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (G) | $I_N$=x$I_r$ (Amp) | $I_N$ (Amp) |
| 100 | 40 - 100 | 0.5 - 25 | 150-1200 | 60 - 1000 | 0.05 - 0.5 | 20 - 100 | 0.05 - 0.8 | 20 - 160 / OFF | 20 - 160 / OFF |
| 250 | 100 - 250 | 0.5 - 13② | 375-2500 | 150 - 2500 | | 50 - 250 | | 50 - 400 / OFF | 50 - 250 / OFF |

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual,
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

| Internal accessories / Optional equipment | Slot No.: | 3VA6 150/250 A 3-pole | 3VA6 150/250 A 4-pole |
|---|---|---|---|
| | | 24 23 22 21 250 A 11 12 13 14 | 34 33 32 31 24 23 22 21 250 A 11 12 13 14 |
| **Auxiliary switch** | **Type** | | |
| Auxiliary switch | AUX_HQ | x x x x x x x x | x x x x x x x x x x x x x x x x |
| | AUX_HQ_el | x x x x x x x x | x x x x x x x x x x x x x x x x |
| | AUX_HP | x x x x x x x x | x x x x x x x x x x x x x x x x |
| Leading changeover switch | LCS_HQ | x | x x |
| | LCS_HQ_el | x | x x |
| | LCS_HP | x | x x |
| **Alarm switch** | **Type** | | |
| Trip alarm switch | TAS_HQ | x x x x | x x x x |
| | TAS_HQ_el | x x x x | x x x x |
| | TAS_HP | x x | x x |
| Electrical alarm switch | EAS_HQ | x | x |
| | EAS_HQ_el | x | x |
| **Auxiliary release** | **Type** | | |
| Shunt trip flexible | STF | x x | x x |
| Shunt trip left | STL | x | x |
| Undervoltage release | UVR | x | x |
| Universal release | UNI | x | x |
| **ETU/communication** | **Type** | | |
| Communication module Breaker data server | COM060 | x | x |
| 24 V module | | x | x |
| **Other** | | | |
| Cylinder lock (type Ronis) | | x | x |

I201_19495

See page 17/60 for internal accessory part numbers.

① $I_i$ for ETU350 is fixed at the maximum level shown in table.
② E-Interrupting Class breakers $t_{Id}$ 0.5 - 15.
③ Adjustable in steps of 1A.

# 3VA53 400A Thermal-magnetic Trip Circuit Breakers

## Selection

### 3VA53 400A, 2-Pole in 3-Pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MJAS) Catalog Number | H-Interrupting Class (HJAS) Catalog Number | C-Interrupting Class (CJAS) Catalog Number |
|---|---|---|---|
| | | TM230 FTAM | |
| 200 | 3VA5320-5EC61-0AA0 | 3VA5320-6EC61-0AA0 | 3VA5320-7EC61-0AA0 |
| 225 | 3VA5322-5EC61-0AA0 | 3VA5322-6EC61-0AA0 | 3VA5322-7EC61-0AA0 |
| 250 | 3VA5325-5EC61-0AA0 | 3VA5325-6EC61-0AA0 | 3VA5325-7EC61-0AA0 |
| 300 | 3VA5330-5EC61-0AA0 | 3VA5330-6EC61-0AA0 | 3VA5330-7EC61-0AA0 |
| 350 | 3VA5335-5EC61-0AA0 | 3VA5335-6EC61-0AA0 | 3VA5335-7EC61-0AA0 |
| 400 | 3VA5340-5EC61-0AA0 | 3VA5340-6EC61-0AA0 | 3VA5340-7EC61-0AA0 |

### 3VA53 400A Frame, 3-Pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MJAS) Catalog Number | H-Interrupting Class (HJAS) Catalog Number | C-Interrupting Class (CJAS) Catalog Number |
|---|---|---|---|
| | | TM230 FTAM① | |
| 200 | 3VA5320-5EC31-0AA0 | 3VA5320-6EC31-0AA0 | 3VA5320-7EC31-0AA0 |
| 225 | 3VA5322-5EC31-0AA0 | 3VA5322-6EC31-0AA0 | 3VA5322-7EC31-0AA0 |
| 250 | 3VA5325-5EC31-0AA0 | 3VA5325-6EC31-0AA0 | 3VA5325-7EC31-0AA0 |
| 300 | 3VA5330-5EC31-0AA0 | 3VA5330-6EC31-0AA0 | 3VA5330-7EC31-0AA0 |
| 350 | 3VA5335-5EC31-0AA0 | 3VA5335-6EC31-0AA0 | 3VA5335-7EC31-0AA0 |
| 400 | 3VA5340-5EC31-0AA0 | 3VA5340-6EC31-0AA0 | 3VA5340-7EC31-0AA0 |
| | | TM240 ATAM | |
| 200 | 3VA5320-5EF31-0AA0 | 3VA5320-6EF31-0AA0 | 3VA5320-7EF31-0AA0 |
| 225 | 3VA5322-5EF31-0AA0 | 3VA5322-6EF31-0AA0 | 3VA5322-7EF31-0AA0 |
| 250 | 3VA5325-5EF31-0AA0 | 3VA5325-6EF31-0AA0 | 3VA5325-7EF31-0AA0 |
| 300 | 3VA5330-5EF31-0AA0 | 3VA5330-6EF31-0AA0 | 3VA5330-7EF31-0AA0 |
| 350 | 3VA5335-5EF31-0AA0 | 3VA5335-6EF31-0AA0 | 3VA5335-7EF31-0AA0 |
| 400 | 3VA5340-5EF31-0AA0 | 3VA5340-6EF31-0AA0 | 3VA5340-7EF31-0AA0 |

### Trip Settings for 3VA53

TM230 - FTAM

| $I_n$ (Amp) | $I_r$(Amp) | $I_i$ (Amp) | | | | | |
|---|---|---|---|---|---|---|---|
| 200 | 200 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 225 | 225 | 1125 | 1350 | 1575 | 1800 | 2025 | 2250 |
| 250 | 250 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 |
| 300 | 300 | 1500 | 1800 | 2100 | 2400 | 2700 | 3000 |
| 350 | 350 | 1750 | 2100 | 2450 | 2800 | 3150 | 3500 |
| 400 | 400 | 2000 | 2400 | 2800 | 3200 | 3600 | 4000 |

TM240 - ATAM

| $I_n$ (Amp) | $I_r$(Amp) 90% | $I_r$(Amp) 80% | $I_i$ (Amp) | | | | | |
|---|---|---|---|---|---|---|---|---|
| 200 | 180 | 160 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 225 | 203 | 180 | 1125 | 1350 | 1575 | 1800 | 2025 | 2250 |
| 250 | 225 | 200 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 |
| 300 | 270 | 240 | 1500 | 1800 | 2100 | 2400 | 2700 | 3000 |
| 350 | 315 | 280 | 1750 | 2100 | 2450 | 2800 | 3150 | 3500 |
| 400 | 360 | 320 | 2000 | 2400 | 2800 | 3200 | 3600 | 4000 |

① Available with NAVAL/50C ratings.

**3VA53 400A 3-Pole**

### Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA94730QA00), change the 12th digit of the catalog number to "2" (required to install a breaker in a panelboard or switchboard that has a provision). (For example, a 35KA @480VAC, 400A, 3-pole, 3VA53 with nut keepers would be catalog number 3VA5340-5EC3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 400A, 3-pole, 3VA53 with lugs would be catalog number 3VA5340-5EC3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

**Note:** Factory installed nut keepers and lugs are only available for 3 Pole breakers.

For NAVAL-rated thermal-magnetic trip circuit breakers (3 pole only), change the 13th digit of the catalog number to the number "1". (For example, a 35KA @480VAC, 400A, 3-pole, NAVAL rated 3VA53 would be catalog number 3VA5340-5EC31-**1**AA0)

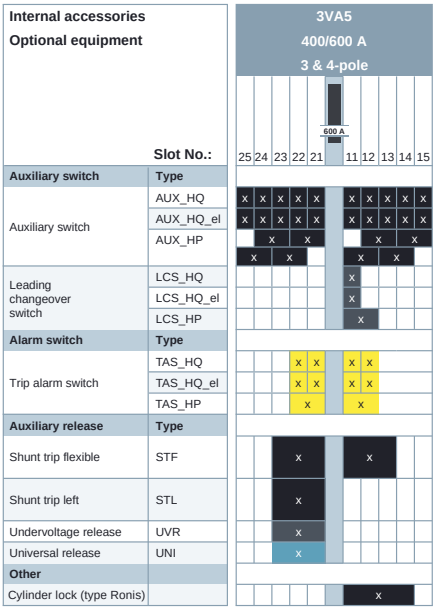
3VA53 are available with 100% ratings (3 and 4 pole only). For 100% rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 400A, 3-pole, 100% rated 3VA53 would be catalog number 3VA5340-5EC31-**2**AA0). Requires the use of rated lugs — see lug table below.

All 3VA53 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

## 3VA53 400A Frame, 4-Pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MJAS) Catalog Number | H-Interrupting Class (HJAS) Catalog Number | C-Interrupting Class (CJAS) Catalog Number |
|---|---|---|---|
| **TM230 FTAM Unprotected Neutral** | | | |
| 200 | 3VA5320-5EC41-0AA0 | 3VA5320-6EC41-0AA0 | 3VA5320-7EC41-0AA0 |
| 225 | 3VA5322-5EC41-0AA0 | 3VA5322-6EC41-0AA0 | 3VA5322-7EC41-0AA0 |
| 250 | 3VA5325-5EC41-0AA0 | 3VA5325-6EC41-0AA0 | 3VA5325-7EC41-0AA0 |
| 300 | 3VA5330-5EC41-0AA0 | 3VA5330-6EC41-0AA0 | 3VA5330-7EC41-0AA0 |
| 350 | 3VA5335-5EC41-0AA0 | 3VA5335-6EC41-0AA0 | 3VA5335-7EC41-0AA0 |
| 400 | 3VA5340-5EC41-0AA0 | 3VA5340-6EC41-0AA0 | 3VA5340-7EC41-0AA0 |
| **TM240 ATAM Unprotected Neutral** | | | |
| 200 | 3VA5320-5EF41-0AA0 | 3VA5320-6EF41-0AA0 | 3VA5320-7EF41-0AA0 |
| 225 | 3VA5322-5EF41-0AA0 | 3VA5322-6EF41-0AA0 | 3VA5322-7EF41-0AA0 |
| 250 | 3VA5325-5EF41-0AA0 | 3VA5325-6EF41-0AA0 | 3VA5325-7EF41-0AA0 |
| 300 | 3VA5330-5EF41-0AA0 | 3VA5330-6EF41-0AA0 | 3VA5330-7EF41-0AA0 |
| 350 | 3VA5335-5EF41-0AA0 | 3VA5335-6EF41-0AA0 | 3VA5335-7EF41-0AA0 |
| 400 | 3VA5340-5EF41-0AA0 | 3VA5340-6EF41-0AA0 | 3VA5340-7EF41-0AA0 |
| **TM230 FTAM 100% Neutral** | | | |
| 200 | 3VA5320-5GC41-0AA0 | 3VA5320-6GC41-0AA0 | 3VA5320-7GC41-0AA0 |
| 225 | 3VA5322-5GC41-0AA0 | 3VA5322-6GC41-0AA0 | 3VA5322-7GC41-0AA0 |
| 250 | 3VA5325-5GC41-0AA0 | 3VA5325-6GC41-0AA0 | 3VA5325-7GC41-0AA0 |
| 300 | 3VA5330-5GC41-0AA0 | 3VA5330-6GC41-0AA0 | 3VA5330-7GC41-0AA0 |
| 350 | 3VA5335-5GC41-0AA0 | 3VA5335-6GC41-0AA0 | 3VA5335-7GC41-0AA0 |
| 400 | 3VA5340-5GC41-0AA0 | 3VA5340-6GC41-0AA0 | 3VA5340-7GC41-0AA0 |
| **TM240 ATAM 100% Neutral** | | | |
| 200 | 3VA5320-5GF41-0AA0 | 3VA5320-6GF41-0AA0 | 3VA5320-7GF41-0AA0 |
| 225 | 3VA5322-5GF41-0AA0 | 3VA5322-6GF41-0AA0 | 3VA5322-7GF41-0AA0 |
| 250 | 3VA5325-5GF41-0AA0 | 3VA5325-6GF41-0AA0 | 3VA5325-7GF41-0AA0 |
| 300 | 3VA5330-5GF41-0AA0 | 3VA5330-6GF41-0AA0 | 3VA5330-7GF41-0AA0 |
| 350 | 3VA5335-5GF41-0AA0 | 3VA5335-6GF41-0AA0 | 3VA5335-7GF41-0AA0 |
| 400 | 3VA5340-5GF41-0AA0 | 3VA5340-6GF41-0AA0 | 3VA5340-7GF41-0AA0 |

**3VA53 400A 4-Pole**




## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA53 | 3 | 5.4 (137) | 9.8 (249) | 5.4 (137) | 11.5 | 5.2 |
| 3VA53 | 4 | 7.2 (183) | 9.8 (249) | 5.4 (137) | 15.0 | 6.8 |

## Interrupting Ratings for 3VA53

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | | | |
| | | 240 | 480Y/ 277V | 480 | 600Y/ 347V | 600 | 250 (2P) | 600 (3P) | 750 (3P) | 750 (4P) | 1000 (4P) |
| M | MJAS | 85 | 35 | 35 | 18 | 18 | 50 | 50 | 10 | 50 | 10 |
| H | HJAS | 100 | 65 | 65 | 25 | 25 | 85 | 85 | 10 | 85 | 10 |
| C | CJAS | 200 | 100 | 100 | 35 | 35 | 100 | 100 | 10 | 100 | 10 |

# 3VA63 400A Electronic Trip Circuit Breakers

## Selection

3VA63 400A 3-Pole

### Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA94730QA00), change the 12th digit of the catalog number to "2" (required to install a breaker in a panelboard or switchboard that has a provision). (For example, a 35KA @480VAC, 400A, 3-pole, 3VA63 with nut keepers would be catalog number 3VA6340-5HL3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 400A, 3-pole, 3VA63 with lugs would be catalog number 3VA6340-5HL3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

**Note:** Factory installed nut keepers and lugs are only available for 3 Pole breakers.

3VA63 electronic trip circuit breakers are available with 100% ratings (up to 250A only in this frame – 400A with 100% ratings can be purchased in the 600A frame). For 100% rated electronic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 250A, 3-pole, 100% rated 3VA63 would be catalog number 3VA6325-5HL31-**2**AA0). Requires the use of rated lugs — see lug table below.

**Note:** 100% option not available for E-interrupting class breakers.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

All 3VA63 electronic trip circuit breakers are UL listed for reverse feed applications.

## 3VA63 400A Frame 3-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MJAE) | H-Interrupting Class (HJAE) | C-Interrupting Class (CJAE) | L-Interrupting Class (LJAE) | E-Interrupting Class (EJAE) |
|---|---|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| **ETU320 LI with dials** | | | | | |
| 250 | 3VA6325-5HL31-0AA0 | 3VA6325-6HL31-0AA0 | 3VA6325-7HL31-0AA0 | 3VA6325-8HL31-0AA0 | 3VA6325-0HL31-0AA0 |
| 400 | 3VA6340-5HL31-0AA0 | 3VA6340-6HL31-0AA0 | 3VA6340-7HL31-0AA0 | 3VA6340-8HL31-0AA0 | 3VA6340-0HL31-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 250 | 3VA6325-5HM31-0AA0 | 3VA6325-6HM31-0AA0 | 3VA6325-7HM31-0AA0 | 3VA6325-8HM31-0AA0 | 3VA6325-0HM31-0AA0 |
| 400 | 3VA6340-5HM31-0AA0 | 3VA6340-6HM31-0AA0 | 3VA6340-7HM31-0AA0 | 3VA6340-8HM31-0AA0 | 3VA6340-0HM31-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 250 | 3VA6325-5HN31-0AA0 | 3VA6325-6HN31-0AA0 | 3VA6325-7HN31-0AA0 | 3VA6325-8HN31-0AA0 | 3VA6325-0HN31-0AA0 |
| 400 | 3VA6340-5HN31-0AA0 | 3VA6340-6HN31-0AA0 | 3VA6340-7HN31-0AA0 | 3VA6340-8HN31-0AA0 | 3VA6340-0HN31-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 250 | 3VA6325-5JP31-0AA0 | 3VA6325-6JP31-0AA0 | 3VA6325-7JP31-0AA0 | 3VA6325-8JP31-0AA0 | — |
| 400 | 3VA6340-5JP31-0AA0 | 3VA6340-6JP31-0AA0 | 3VA6340-7JP31-0AA0 | 3VA6340-8JP31-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 250 | 3VA6325-5JT31-0AA0 | 3VA6325-6JT31-0AA0 | 3VA6325-7JT31-0AA0 | 3VA6325-8JT31-0AA0 | — |
| 400 | 3VA6340-5JT31-0AA0 | 3VA6340-6JT31-0AA0 | 3VA6340-7JT31-0AA0 | 3VA6340-8JT31-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 250 | 3VA6325-5JQ31-0AA0 | 3VA6325-6JQ31-0AA0 | 3VA6325-7JQ31-0AA0 | 3VA6325-8JQ31-0AA0 | — |
| 400 | 3VA6340-5JQ31-0AA0 | 3VA6340-6JQ31-0AA0 | 3VA6340-7JQ31-0AA0 | 3VA6340-8JQ31-0AA0 | — |
| **ETU820 LI with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KL31-0AA0 | 3VA6325-6KL31-0AA0 | 3VA6325-7KL31-0AA0 | 3VA6325-8KL31-0AA0 | — |
| 400 | 3VA6340-5KL31-0AA0 | 3VA6340-6KL31-0AA0 | 3VA6340-7KL31-0AA0 | 3VA6340-8KL31-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KM31-0AA0 | 3VA6325-6KM31-0AA0 | 3VA6325-7KM31-0AA0 | 3VA6325-8KM31-0AA0 | — |
| 400 | 3VA6340-5KM31-0AA0 | 3VA6340-6KM31-0AA0 | 3VA6340-7KM31-0AA0 | 3VA6340-8KM31-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KP31-0AA0 | 3VA6325-6KP31-0AA0 | 3VA6325-7KP31-0AA0 | 3VA6325-8KP31-0AA0 | — |
| 400 | 3VA6340-5KP31-0AA0 | 3VA6340-6KP31-0AA0 | 3VA6340-7KP31-0AA0 | 3VA6340-8KP31-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KT31-0AA0 | 3VA6325-6KT31-0AA0 | 3VA6325-7KT31-0AA0 | 3VA6325-8KT31-0AA0 | 3VA6325-0KT31-0AA0 |
| 400 | 3VA6340-5KT31-0AA0 | 3VA6340-6KT31-0AA0 | 3VA6340-7KT31-0AA0 | 3VA6340-8KT31-0AA0 | 3VA6340-0KT31-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KQ31-0AA0 | 3VA6325-6KQ31-0AA0 | 3VA6325-7KQ31-0AA0 | 3VA6325-8KQ31-0AA0 | 3VA6325-0KQ31-0AA0 |
| 400 | 3VA6340-5KQ31-0AA0 | 3VA6340-6KQ31-0AA0 | 3VA6340-7KQ31-0AA0 | 3VA6340-8KQ31-0AA0 | 3VA6340-0KQ31-0AA0 |

# 3VA63 400A Electronic Trip Circuit Breakers

3VA63 400A 4-Pole

## Interrupting Ratings for 3VA63

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MJAE | 100 | 35 | 35 | 18 | 18 |
| H | HJAE | 100 | 65 | 65 | 22 | 22 |
| C | CJAE | 200 | 100 | 100 | 35 | 35 |
| L | LJAE | 200 | 150 | 150 | 50 | 50 |
| E | EJAE | — | 200 | 200 | 100 | 100 |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA63 | 3 | 5.4 (137) | 9.8 (249) | 5.4 (137) | 11.0 | 5.2 |
| 3VA63 | 4 | 7.2 (183) | 9.8 (249) | 5.4 (137) | 15.0 | 6.8 |

## 3VA63 400A Frame 4-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MJAE) Catalog Number | H-Interrupting Class (HJAE) Catalog Number | C-Interrupting Class (CJAE) Catalog Number | L-Interrupting Class (LJAE) Catalog Number | E-Interrupting Class (EJAE) Catalog Number |
|---|---|---|---|---|---|
| **ETU320 LI with dials** | | | | | |
| 250 | 3VA6325-5HL41-0AA0 | 3VA6325-6HL41-0AA0 | 3VA6325-7HL41-0AA0 | 3VA6325-8HL41-0AA0 | 3VA6325-0HL31-0AA0 |
| 400 | 3VA6340-5HL41-0AA0 | 3VA6340-6HL41-0AA0 | 3VA6340-7HL41-0AA0 | 3VA6340-8HL41-0AA0 | 3VA6340-0HL31-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 250 | 3VA6325-5HM41-0AA0 | 3VA6325-6HM41-0AA0 | 3VA6325-7HM41-0AA0 | 3VA6325-8HM41-0AA0 | 3VA6325-0HM31-0AA0 |
| 400 | 3VA6340-5HM41-0AA0 | 3VA6340-6HM41-0AA0 | 3VA6340-7HM41-0AA0 | 3VA6340-8HM41-0AA0 | 3VA6340-0HM31-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 250 | 3VA6325-5HN41-0AA0 | 3VA6325-6HN41-0AA0 | 3VA6325-7HN41-0AA0 | 3VA6325-8HN41-0AA0 | 3VA6325-0HN31-0AA0 |
| 400 | 3VA6340-5HN41-0AA0 | 3VA6340-6HN41-0AA0 | 3VA6340-7HN41-0AA0 | 3VA6340-8HN41-0AA0 | 3VA6340-0HN31-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 250 | 3VA6325-5JP41-0AA0 | 3VA6325-6JP41-0AA0 | 3VA6325-7JP41-0AA0 | 3VA6325-8JP41-0AA0 | — |
| 400 | 3VA6340-5JP41-0AA0 | 3VA6340-6JP41-0AA0 | 3VA6340-7JP41-0AA0 | 3VA6340-8JP41-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 250 | 3VA6325-5JT41-0AA0 | 3VA6325-6JT41-0AA0 | 3VA6325-7JT41-0AA0 | 3VA6325-8JT41-0AA0 | — |
| 400 | 3VA6340-5JT41-0AA0 | 3VA6340-6JT41-0AA0 | 3VA6340-7JT41-0AA0 | 3VA6340-8JT41-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 250 | 3VA6325-5JQ41-0AA0 | 3VA6325-6JQ41-0AA0 | 3VA6325-7JQ41-0AA0 | 3VA6325-8JQ41-0AA0 | — |
| 400 | 3VA6340-5JQ41-0AA0 | 3VA6340-6JQ41-0AA0 | 3VA6340-7JQ41-0AA0 | 3VA6340-8JQ41-0AA0 | — |
| **ETU820 LI with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KL41-0AA0 | 3VA6325-6KL41-0AA0 | 3VA6325-7KL41-0AA0 | 3VA6325-8KL41-0AA0 | — |
| 400 | 3VA6340-5KL41-0AA0 | 3VA6340-6KL41-0AA0 | 3VA6340-7KL41-0AA0 | 3VA6340-8KL41-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KM41-0AA0 | 3VA6325-6KM41-0AA0 | 3VA6325-7KM41-0AA0 | 3VA6325-8KM41-0AA0 | — |
| 400 | 3VA6340-5KM41-0AA0 | 3VA6340-6KM41-0AA0 | 3VA6340-7KM41-0AA0 | 3VA6340-8KM41-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KP41-0AA0 | 3VA6325-6KP41-0AA0 | 3VA6325-7KP41-0AA0 | 3VA6325-8KP41-0AA0 | — |
| 400 | 3VA6340-5KP41-0AA0 | 3VA6340-6KP41-0AA0 | 3VA6340-7KP41-0AA0 | 3VA6340-8KP41-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KT41-0AA0 | 3VA6325-6KT41-0AA0 | 3VA6325-7KT41-0AA0 | 3VA6325-8KT41-0AA0 | 3VA6325-0KT31-0AA0 |
| 400 | 3VA6340-5KT41-0AA0 | 3VA6340-6KT41-0AA0 | 3VA6340-7KT41-0AA0 | 3VA6340-8KT41-0AA0 | 3VA6340-0KT31-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 250 | 3VA6325-5KQ41-0AA0 | 3VA6325-6KQ41-0AA0 | 3VA6325-7KQ41-0AA0 | 3VA6325-8KQ41-0AA0 | 3VA6325-0KQ31-0AA0 |
| 400 | 3VA6340-5KQ41-0AA0 | 3VA6340-6KQ41-0AA0 | 3VA6340-7KQ41-0AA0 | 3VA6340-8KQ41-0AA0 | 3VA6340-0KQ31-0AA0 |

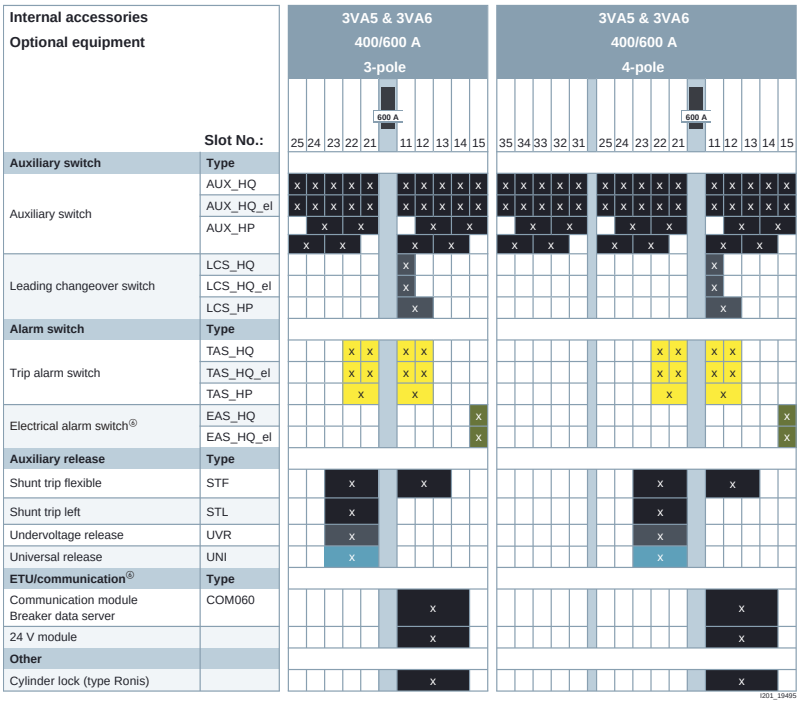
## Connections for 75C wire for 3VA53 and 3VA63

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 3 lugs) | Part Number (kit of 4 lugs) |
|---|---|---|---|---|
| Steel wrap around (Cu cable only) single cable lugs | 1/0 | 500 kcmil | 3VA9473-0JA13① | 3VA9474-0JA13① |
| Steel wrap around (Cu cable only) single cable lugs with control wire tap | 1/0 | 500 kcmil | 3VA9473-0JH13① | 3VA9474-0JH13① |
| Aluminum body lug (Cu/Al cable) single cable lugs | AWG 1 | 600 kcmil | 3VA9373-0JB13①⑤ | 3VA9374-0JB13①⑤ |
| Aluminum body lug with control wire tap (Cu/Al cable) single cable lugs | AWG 1 | 600 kcmil | 3VA9373-0JG13① | 3VA9374-0JG13① |
| Copper body lug (Cu cable only) single cable lugs | AWG 1 | 600 kcmil | 3VA9373-0JD13①③ | 3VA9374-0JD13①③ |
| Copper body lug (Cu cable only) with control wire tap single cable lugs | AWG 1 | 600 kcmil | 3VA9373-0JK13①③ | 3VA9374-0JK13①③ |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 extended terminal cover | 2/0 | 600 kcmil | 3VA9473-0JJ23①② | 3VA9474-0JJ23①② |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 intermediate terminal cover | 250 kcmil or 2× 250 kcmil | 750 kcmil | 3VA9373-0JJ24①③ | 3VA9374-0JJ24①③ |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 2/0 | 600 kcmil | 3VA9473-0JC23①② | 3VA9474-0JC23①② |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 intermediate terminal cover | 250 kcmil or 2× 250 kcmil | 750 kcmil | 3VA9373-0JC24①③ | 3VA9374-0JC24①③ |
| Distribution lug, 6 Cables (Cu/Al cable) with 1 extended terminal cover | AWG 14 | 2 AWG | 3VA9373-0JF60① | 3VA9374-0JF60① |
| Copper body lug, 2 cables (Cu cable only) with 1 extended terminal cover | 2/0 | 600 kcmil | 3VA9473-0JE23①④ | 3VA9474-0JE23①④ |
| Copper body lug, 2 cables (Cu cable only) with control wire tap and 1 extended terminal cover | 2/0 | 600 kcmil | 3VA9473-0JL23①④ | 3VA9474-0JL23①④ |

① 3VA63 Meets requirements for 100% rated breakers up to 250A.
② 3VA53 Meets requirements for 100% rated breakers up to 300A.
③ 3VA53 Meets requirements for 100% rated breakers up to 400A, requires the use of 90 degree wire, size to 75 degree ampacity.
④ 3VA53 Meets requirements for 100% rated breakers up to 350A, requires the use of 90 degree wire, size to 75 degree ampacity.
⑤ Standard lug installed at the factory when breaker ordered with a "6" in the 12th position.

## Enclosures for 3VA53 and 3VA63 (3-pole only)

| NEMA Type | Catalog Number |
|---|---|
| 1 Surface | 3VAE6001S |
| 1 Flush | 3VAE6001F |
| 3R | 3VAE6003R |
| 12 | 3VAE60012 |
| 4X (304) | 3VAE6004X |
| 4X (316) | 3VAE6004X316 |
| Neutral | HN656ACB |
| 200% Neutral | HN678ACB |




⑥ These accessories are for electronic trip breakers only.

See page 17/60 for internal accessory part numbers.

## Trip Settings for 3VA63

### ETU320-LI, ETU330-LIG, ETU350-LSI

| Continuous Amperage | LI, LIG, LSI | | | LSI | | LIG | LI, LIG, LSI 4P only |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I)⑦ | $I_{sd}$= x$I_r$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $I_N$=x$I_r$ (Amp) |
| 250 | 100 - 250 | 0.5 - 17 | 375-3000 | 1.5 - 10 | 0.08 - 0.4 | 50 - 250 | 0.5 - 1 / OFF |
| 400 | 150 - 400 | 0.5 - 17 | 600-4000⑧ | 1.5 - 10 | | 80 - 400 | 0.5 - 1 / OFF |

### ETU550-LSI, ETU556 LSI(A), ETU560-LSIG, ETU820-LI, ETU830-LIG, ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

| Continuous Amperage | LI, LIG, LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LIG, LSIG, LSI(G) | | LSI 3P with External CT | LI, LIG, LSI, LSIG, LSI(G) 4P only |
|---|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L)⑨ | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (G) | $I_N$=x$I_r$ (Amp) | $I_N$ (Amp) |
| 250 | 100 - 250 | 0.5 - 25 | 375-3000 | 150 - 2500 | 0.05 - 0.5 | 50 - 250 | 0.05 - 0.8 | 50 - 400 / OFF | 50 - 400 / OFF |
| 400 | 150 - 400 | 0.5 - 17⑩ | 600-4000⑧ | 240 - 4000 | | 80 - 400 | | 80 - 640 / OFF | 80 - 400 / OFF |

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual
https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers

⑦ $I_i$ for ETU350 is fixed at the maximum level shown in table.
⑧ E-Interrupting Class breakers $I_i$ 600 - 4800.
⑨ Adjustable in steps of 1A.
⑩ E-Interrupting Class breakers with ETU 856 and 860 $t_{Id}$ 0.5 - 25.

# 3VA54 600A Thermal-magnetic Trip Circuit Breakers

## Selection

### 3VA54 600A, 2-Pole in 3-Pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MLAS) Catalog Number | H-Interrupting Class (HLAS) Catalog Number | C-Interrupting Class (CLAS) Catalog Number |
|---|---|---|---|
| | **TM230 FTAM** | | |
| 450 | 3VA5445-5EC61-0AA0 | 3VA5445-6EC61-0AA0 | 3VA5445-7EC61-0AA0 |
| 500 | 3VA5450-5EC61-0AA0 | 3VA5450-6EC61-0AA0 | 3VA5450-7EC61-0AA0 |
| 600 | 3VA5460-5EC61-0AA0 | 3VA5460-6EC61-0AA0 | 3VA5460-7EC61-0AA0 |

### 3VA54 600A Frame, 3-Pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MLAS) Catalog Number | H-Interrupting Class (HLAS) Catalog Number | C-Interrupting Class (CLAS) Catalog Number |
|---|---|---|---|
| | **TM230 FTAM①** | | |
| 450 | 3VA5445-5EC31-0AA0 | 3VA5445-6EC31-0AA0 | 3VA5445-7EC31-0AA0 |
| 500 | 3VA5450-5EC31-0AA0 | 3VA5450-6EC31-0AA0 | 3VA5450-7EC31-0AA0 |
| 600 | 3VA5460-5EC31-0AA0 | 3VA5460-6EC31-0AA0 | 3VA5460-7EC31-0AA0 |
| | **TM240 ATAM** | | |
| 450 | 3VA5445-5EF31-0AA0 | 3VA5445-6EF31-0AA0 | 3VA5445-7EF31-0AA0 |
| 500 | 3VA5450-5EF31-0AA0 | 3VA5450-6EF31-0AA0 | 3VA5450-7EF31-0AA0 |
| 600 | 3VA5460-5EF31-0AA0 | 3VA5460-6EF31-0AA0 | 3VA5460-7EF31-0AA0 |

### 3VA54 600A Frame, 4-Pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MLAS) Catalog Number | H-Interrupting Class (HLAS) Catalog Number | C-Interrupting Class (CLAS) Catalog Number |
|---|---|---|---|
| | **TM230 FTAM Unprotected Neutral** | | |
| 450 | 3VA5445-5EC41-0AA0 | 3VA5445-6EC41-0AA0 | 3VA5445-7EC41-0AA0 |
| 500 | 3VA5450-5EC41-0AA0 | 3VA5450-6EC41-0AA0 | 3VA5450-7EC41-0AA0 |
| 600 | 3VA5460-5EC41-0AA0 | 3VA5460-6EC41-0AA0 | 3VA5460-7EC41-0AA0 |
| | **TM240 ATAM Unprotected Neutral** | | |
| 450 | 3VA5445-5EF41-0AA0 | 3VA5445-6EF41-0AA0 | 3VA5445-7EF41-0AA0 |
| 500 | 3VA5450-5EF41-0AA0 | 3VA5450-6EF41-0AA0 | 3VA5450-7EF41-0AA0 |
| 600 | 3VA5460-5EF41-0AA0 | 3VA5460-6EF41-0AA0 | 3VA5460-7EF41-0AA0 |
| | **TM230 FTAM 100% Neutral** | | |
| 450 | 3VA5445-5GC41-0AA0 | 3VA5445-6GC41-0AA0 | 3VA5445-7GC41-0AA0 |
| 500 | 3VA5450-5GC41-0AA0 | 3VA5450-6GC41-0AA0 | 3VA5450-7GC41-0AA0 |
| 600 | 3VA5460-5GC41-0AA0 | 3VA5460-6GC41-0AA0 | 3VA5460-7GC41-0AA0 |
| | **TM240 ATAM 100% Neutral** | | |
| 450 | 3VA5445-5GF41-0AA0 | 3VA5445-6GF41-0AA0 | 3VA5445-7GF41-0AA0 |
| 500 | 3VA5450-5GF41-0AA0 | 3VA5450-6GF41-0AA0 | 3VA5450-7GF41-0AA0 |
| 600 | 3VA5460-5GF41-0AA0 | 3VA5460-6GF41-0AA0 | 3VA5460-7GF41-0AA0 |

### Dimensions

### Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA54 | 3 | 5.4 (137) | 9.8 (249) | 5.4 (137) | 11.5 | 5.2 |
| 3VA54 | 4 | 7.2 (183) | 9.8 (249) | 5.4 (137) | 15.0 | 6.8 |

### Interrupting Ratings for 3VA54

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | | | |
| | | 240 | 480Y/ 277V | 480 | 600Y/ 347V | 600 | 250 (2P) | 600 (3P) | 750 (3P) | 750 (4P) | 1000 (4P) |
| M | MLAS | 85 | 35 | 35 | 18 | 18 | 50 | 50 | 10 | 50 | 10 |
| H | HLAS | 100 | 65 | 65 | 25 | 25 | 85 | 85 | 10 | 85 | 10 |
| C | CLAS | 200 | 100 | 100 | 35 | 35 | 100 | 100 | 10 | 100 | 10 |

### Trip Settings for 3VA54

TM230 - FTAM

| $I_n$ (A) | $I_r$(A) | $I_i$ (A) | | | | | |
|---|---|---|---|---|---|---|---|
| 450 | 450 | 2250 | 2700 | 3150 | 3600 | 4050 | 4500 |
| 500 | 500 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 |
| 600 | 600 | 3000 | 3600 | 4200 | 4800 | 5400 | 6000 |

TM240 - ATAM

| $I_n$ (A) | $I_r$(A) 90% | $I_r$(A) 80% | $I_i$ (A) | | | | | |
|---|---|---|---|---|---|---|---|---|
| 450 | 405 | 360 | 2250 | 2700 | 3150 | 3600 | 4050 | 4500 |
| 500 | 450 | 400 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 |
| 600 | 540 | 480 | 3000 | 3600 | 4200 | 4800 | 5400 | 6000 |

① Available with NAVAL/50C ratings.

3VA54 600A 3-Pole

3VA54 600A 4-Pole

### Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA94730QA00), change the 12th digit of the catalog number to "2" (required to install a breaker in a panelboard or switchboard that has a provision). (For example, a 35KA @480VAC, 600A, 3-pole, 3VA54 with nut keepers would be catalog number 3VA5460-5EC3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 600A, 3-pole, 3VA54 with lugs would be catalog number 3VA5460-5EC3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

**Note:** Factory installed nut keepers and lugs are only available for 3 Pole breakers.

For NAVAL-rated thermal-magnetic trip circuit breakers (3 pole only), change the 13th digit of the catalog number to the number "1". (For example, a 35KA @480VAC, 600A, 3-pole, NAVAL rated 3VA54 would be catalog number 3VA5460-5EC31-**1**AA0)

All 3VA54 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

# 3VA64 600A Electronic Trip Circuit Breakers

## Selection

3VA64 600A 3-Pole

### Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers without lugs.

For factory installed nut keepers (3VA94730QA00), change the 12th digit of the catalog number to "2" (required to install a breaker in a panelboard or switchboard that has a provision). (For example, a 35KA @480VAC, 600A, 3-pole, 3VA64 with nut keepers would be catalog number 3VA6460-5HL3**2**-0AA0).

For factory installed standard line and load lugs, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 600A, 3-pole, 3VA64 with lugs would be catalog number 3VA6460-5HL3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

**Note:** Factory installed nut keepers and lugs are only available for 3 Pole breakers.

3VA64 electronic trip circuit breakers are available with 100% ratings (up to 400A only in this frame – 600A with 100% ratings can be purchased in the 800A frame). For 100% rated electronic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 400A, 3-pole, 100% rated 3VA64 would be catalog number 3VA6440-5HL31-**2**AA0). Requires the use of rated lugs — see lug table below.

**Note:** 100% option not available for E-interrupting class breakers.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

All 3VA64 electronic trip circuit breakers are UL listed for reverse feed applications.

## 3VA64 600A Frame 3-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MLAE) Catalog Number | H-Interrupting Class (HLAE) Catalog Number | C-Interrupting Class (CLAE) Catalog Number | L-Interrupting Class (LLAE) Catalog Number | E-Interrupting Class (ELAE) Catalog Number |
|---|---|---|---|---|---|
| **ETU320 LI with dials** | | | | | |
| 400 | 3VA6440-5HL31-0AA0 | 3VA6440-6HL31-0AA0 | 3VA6440-7HL31-0AA0 | 3VA6440-8HL31-0AA0 | — |
| 600 | 3VA6460-5HL31-0AA0 | 3VA6460-6HL31-0AA0 | 3VA6460-7HL31-0AA0 | 3VA6460-8HL31-0AA0 | 3VA6460-0HL31-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 400 | 3VA6440-5HM31-0AA0 | 3VA6440-6HM31-0AA0 | 3VA6440-7HM31-0AA0 | 3VA6440-8HM31-0AA0 | — |
| 600 | 3VA6460-5HM31-0AA0 | 3VA6460-6HM31-0AA0 | 3VA6460-7HM31-0AA0 | 3VA6460-8HM31-0AA0 | 3VA6460-0HM31-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 400 | 3VA6440-5HN31-0AA0 | 3VA6440-6HN31-0AA0 | 3VA6440-7HN31-0AA0 | 3VA6440-8HN31-0AA0 | — |
| 600 | 3VA6460-5HN31-0AA0 | 3VA6460-6HN31-0AA0 | 3VA6460-7HN31-0AA0 | 3VA6460-8HN31-0AA0 | 3VA6460-0HN31-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 400 | 3VA6440-5JP31-0AA0 | 3VA6440-6JP31-0AA0 | 3VA6440-7JP31-0AA0 | 3VA6440-8JP31-0AA0 | — |
| 600 | 3VA6460-5JP31-0AA0 | 3VA6460-6JP31-0AA0 | 3VA6460-7JP31-0AA0 | 3VA6460-8JP31-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 400 | 3VA6440-5JT31-0AA0 | 3VA6440-6JT31-0AA0 | 3VA6440-7JT31-0AA0 | 3VA6440-8JT31-0AA0 | — |
| 600 | 3VA6460-5JT31-0AA0 | 3VA6460-6JT31-0AA0 | 3VA6460-7JT31-0AA0 | 3VA6460-8JT31-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 400 | 3VA6440-5JQ31-0AA0 | 3VA6440-6JQ31-0AA0 | 3VA6440-7JQ31-0AA0 | 3VA6440-8JQ31-0AA0 | — |
| 600 | 3VA6460-5JQ31-0AA0 | 3VA6460-6JQ31-0AA0 | 3VA6460-7JQ31-0AA0 | 3VA6460-8JQ31-0AA0 | — |
| **ETU820 LI with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KL31-0AA0 | 3VA6440-6KL31-0AA0 | 3VA6440-7KL31-0AA0 | 3VA6440-8KL31-0AA0 | — |
| 600 | 3VA6460-5KL31-0AA0 | 3VA6460-6KL31-0AA0 | 3VA6460-7KL31-0AA0 | 3VA6460-8KL31-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KM31-0AA0 | 3VA6440-6KM31-0AA0 | 3VA6440-7KM31-0AA0 | 3VA6440-8KM31-0AA0 | — |
| 600 | 3VA6460-5KM31-0AA0 | 3VA6460-6KM31-0AA0 | 3VA6460-7KM31-0AA0 | 3VA6460-8KM31-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KP31-0AA0 | 3VA6440-6KP31-0AA0 | 3VA6440-7KP31-0AA0 | 3VA6440-8KP31-0AA0 | — |
| 600 | 3VA6460-5KP31-0AA0 | 3VA6460-6KP31-0AA0 | 3VA6460-7KP31-0AA0 | 3VA6460-8KP31-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KT31-0AA0 | 3VA6440-6KT31-0AA0 | 3VA6440-7KT31-0AA0 | 3VA6440-8KT31-0AA0 | — |
| 600 | 3VA6460-5KT31-0AA0 | 3VA6460-6KT31-0AA0 | 3VA6460-7KT31-0AA0 | 3VA6460-8KT31-0AA0 | 3VA6460-0KT31-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KQ31-0AA0 | 3VA6440-6KQ31-0AA0 | 3VA6440-7KQ31-0AA0 | 3VA6440-8KQ31-0AA0 | — |
| 600 | 3VA6460-5KQ31-0AA0 | 3VA6460-6KQ31-0AA0 | 3VA6460-7KQ31-0AA0 | 3VA6460-8KQ31-0AA0 | 3VA6460-0KQ31-0AA0 |

# 3VA64 600A Electronic Trip Circuit Breakers

3VA64 600A 4-Pole

## Interrupting Ratings for 3VA64

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MLAE | 100 | 35 | 35 | 18 | 18 |
| H | HLAE | 100 | 65 | 65 | 22 | 22 |
| C | CLAE | 200 | 100 | 100 | 35 | 35 |
| L | LLAE | 200 | 150 | 150 | 50 | 50 |
| E | ELAE | — | 200 | 200 | 100 | 100 |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA64 | 3 | 5.4 (137) | 9.8 (249) | 5.4 (137) | 11.0 | 5.2 |
| 3VA64 | 4 | 7.2 (183) | 9.8 (249) | 5.4 (137) | 15.0 | 6.8 |

## 3VA64 600A Frame 4-Pole Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MLAE) Catalog Number | H-Interrupting Class (HLAE) Catalog Number | C-Interrupting Class (CLAE) Catalog Number | L-Interrupting Class (LLAE) Catalog Number | E-Interrupting Class (ELAE) Catalog Number |
|---|---|---|---|---|---|
| **ETU320 LI with dials** | | | | | |
| 400 | 3VA6440-5HL41-0AA0 | 3VA6440-6HL41-0AA0 | 3VA6440-7HL41-0AA0 | 3VA6440-8HL41-0AA0 | — |
| 600 | 3VA6460-5HL41-0AA0 | 3VA6460-6HL41-0AA0 | 3VA6460-7HL41-0AA0 | 3VA6460-8HL41-0AA0 | 3VA6460-0HL41-0AA0 |
| **ETU330 LIG with dials** | | | | | |
| 400 | 3VA6440-5HM41-0AA0 | 3VA6440-6HM41-0AA0 | 3VA6440-7HM41-0AA0 | 3VA6440-8HM41-0AA0 | — |
| 600 | 3VA6460-5HM41-0AA0 | 3VA6460-6HM41-0AA0 | 3VA6460-7HM41-0AA0 | 3VA6460-8HM41-0AA0 | 3VA6460-0HM41-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | | | |
| 400 | 3VA6440-5HN41-0AA0 | 3VA6440-6HN41-0AA0 | 3VA6440-7HN41-0AA0 | 3VA6440-8HN41-0AA0 | — |
| 600 | 3VA6460-5HN41-0AA0 | 3VA6460-6HN41-0AA0 | 3VA6460-7HN41-0AA0 | 3VA6460-8HN41-0AA0 | 3VA6460-0HN41-0AA0 |
| **ETU550 LSI with LCD** | | | | | |
| 400 | 3VA6440-5JP41-0AA0 | 3VA6440-6JP41-0AA0 | 3VA6440-7JP41-0AA0 | 3VA6440-8JP41-0AA0 | — |
| 600 | 3VA6460-5JP41-0AA0 | 3VA6460-6JP41-0AA0 | 3VA6460-7JP41-0AA0 | 3VA6460-8JP41-0AA0 | — |
| **ETU556 LSI(G Alarm) with LCD** | | | | | |
| 400 | 3VA6440-5JT41-0AA0 | 3VA6440-6JT41-0AA0 | 3VA6440-7JT41-0AA0 | 3VA6440-8JT41-0AA0 | — |
| 600 | 3VA6460-5JT41-0AA0 | 3VA6460-6JT41-0AA0 | 3VA6460-7JT41-0AA0 | 3VA6460-8JT41-0AA0 | — |
| **ETU560 LSIG with LCD** | | | | | |
| 400 | 3VA6440-5JQ41-0AA0 | 3VA6440-6JQ41-0AA0 | 3VA6440-7JQ41-0AA0 | 3VA6440-8JQ41-0AA0 | — |
| 600 | 3VA6460-5JQ41-0AA0 | 3VA6460-6JQ41-0AA0 | 3VA6460-7JQ41-0AA0 | 3VA6460-8JQ41-0AA0 | — |
| **ETU820 LI with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KL41-0AA0 | 3VA6440-6KL41-0AA0 | 3VA6440-7KL41-0AA0 | 3VA6440-8KL41-0AA0 | — |
| 600 | 3VA6460-5KL41-0AA0 | 3VA6460-6KL41-0AA0 | 3VA6460-7KL41-0AA0 | 3VA6460-8KL41-0AA0 | — |
| **ETU830 LIG with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KM41-0AA0 | 3VA6440-6KM41-0AA0 | 3VA6440-7KM41-0AA0 | 3VA6440-8KM41-0AA0 | — |
| 600 | 3VA6460-5KM41-0AA0 | 3VA6460-6KM41-0AA0 | 3VA6460-7KM41-0AA0 | 3VA6460-8KM41-0AA0 | — |
| **ETU850 LSI with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KP41-0AA0 | 3VA6440-6KP41-0AA0 | 3VA6440-7KP41-0AA0 | 3VA6440-8KP41-0AA0 | — |
| 600 | 3VA6460-5KP41-0AA0 | 3VA6460-6KP41-0AA0 | 3VA6460-7KP41-0AA0 | 3VA6460-8KP41-0AA0 | — |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KT41-0AA0 | 3VA6440-6KT41-0AA0 | 3VA6440-7KT41-0AA0 | 3VA6440-8KT41-0AA0 | — |
| 600 | 3VA6460-5KT41-0AA0 | 3VA6460-6KT41-0AA0 | 3VA6460-7KT41-0AA0 | 3VA6460-8KT41-0AA0 | 3VA6460-0KT41-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | | | |
| 400 | 3VA6440-5KQ41-0AA0 | 3VA6440-6KQ41-0AA0 | 3VA6440-7KQ41-0AA0 | 3VA6440-8KQ41-0AA0 | — |
| 600 | 3VA6460-5KQ41-0AA0 | 3VA6460-6KQ41-0AA0 | 3VA6460-7KQ41-0AA0 | 3VA6460-8KQ41-0AA0 | 3VA6460-0KQ41-0AA0 |

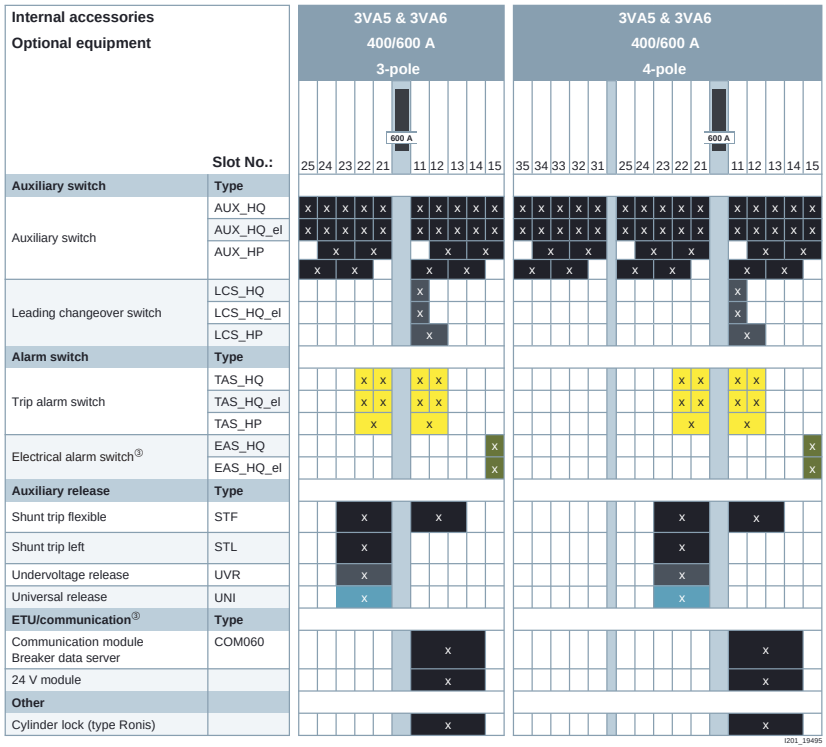
## Connections for 75C wire for 3VA54 and 3VA64

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 3 lugs) | Part Number (kit of 4 lugs) |
|---|---|---|---|---|
| Steel Wrap around (Cu cable only) single cable lugs | 1/0 | 500 kcmil | **3VA9473-0JA13** | **3VA9474-0JA13** |
| Steel Wrap around (Cu cable only) single cable lugs with control wire tap | 1/0 | 500 kcmil | **3VA9473-0JH13** | **3VA9474-0JH13** |
| Aluminum Body Lug (Cu/Al cable) single cable lugs | AWG 1 | 600 kcmil | **3VA9373-0JB13** | **3VA9374-0JB13** |
| Aluminum body lug with control wire tap (Cu/Al cable) single cable lugs | AWG 1 | 600 kcmil | **3VA9373-0JG13** | **3VA9374-0JG13** |
| Copper body lug (Cu cable only) single cable lugs | AWG 1 | 600 kcmil | **3VA9373-0JD13**①⑦ | **3VA9374-0JD13**①⑦ |
| Copper body lug (Cu cable only) with control wire tap single cable lugs | AWG 1 | 600 kcmil | **3VA9373-0JK13**① | **3VA9374-0JK13**① |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 extended terminal cover | 2/0 | 600 kcmil | **3VA9473-0JJ23**⑥ | **3VA9474-0JJ23**⑥ |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 intermediate terminal cover | 250 kcmil or 2× 250 kcmil | 750 kcmil | **3VA9373-0JJ24**① | **3VA9374-0JJ24**① |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 2/0 | 600 kcmil | **3VA9473-0JC23** | **3VA9474-0JC23** |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 intermediate terminal cover | 250 kcmil or 2× 250 kcmil | 750 kcmil | **3VA9373-0JC24**① | **3VA9374-0JC24**① |
| Distribution lug, 6 Cables (Cu/Al cable) with 1 extended terminal cover | AWG 14 | 2 AWG | **3VA9373-0JF60** | **3VA9374-0JF60** |
| Copper body lug, 2 cables (Cu cable only) with 1 extended terminal cover | 2/0 | 600 kcmil | **3VA9473-0JE23**② | **3VA9474-0JE23**② |
| Copper body lug, 2 cables (Cu cable only) with control wire tap and 1 extended terminal cover | 2/0 | 600 kcmil | **3VA9473-0JL23**② | **3VA9474-0JL23**② |

① 3VA64 Meets the requirement for 100% rated breakers up to 400A.
② 3VA64 Meets requirement for 100% rated breakers up to 400A, requires the use of 90 degree wire.
⑥ Standard lug installed at the factory when breaker ordered with a "6" in the 12th position.
⑦ Standard lug installed at the factory on 400A 100% rated breaker when ordered with a "6" in the 12th position.

## Enclosures for 3VA54 and 3VA64 (3-pole only)

| NEMA Type | Catalog Number |
|---|---|
| 1 Surface | **3VAE6001S** |
| 1 Flush | **3VAE6001F** |
| 3R | **3VAE6003R** |
| 12 | **3VAE60012** |
| 4X (304) | **3VAE6004X** |
| 4X (316) | **3VAE6004X316** |
| Neutral | **HN656ACB** |
| 200% Neutral | **HN678ACB** |




## Trip Settings for 3VA64

### ETU320-LI, ETU330-LIG, ETU350-LSI

| Continuous Amperage | LI, LIG, LSI | | | LSI | | LIG | LI, LIG, LSI 4P only |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I)④ | $I_{sd}$= x$I_r$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $I_N$=x$I_r$ (Amp) |
| 400 | 150 - 400 | 0.5 - 17 | 600-4800 | 1.5 - 10 | 0.08 - 0.4 | 80 - 400 | 0.5 - 1 / OFF |
| 600 | 250 - 600 | 0.5 - 15 | 900-5400 | 1.5 - 9 | | 120 - 600 | 0.5 - 1 / OFF |

④ $I_i$ for ETU350 is fixed at the maximum level shown in table.

③ These accessories are for electronic trip breakers only.

See page 17/60 for internal accessory part numbers.

### ETU550-LSI, ETU556 LSI(A), ETU560-LSIG, ETU820-LI, ETU830-LIG, ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

| Continuous Amperage | LI, LIG, LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LIG, LSIG, LSI(G) | | LSI 3P with External CT | LI, LIG, LSI, LSIG, LSI(G) 4P only |
|---|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L)⑤ | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (G) | $I_N$=x$I_r$ (Amp) | $I_N$ (Amp) |
| 400 | 150 - 400 | 0.5 - 25 | 600-4800 | 240 - 4000 | 0.05 - 0.5 | 80 - 400 | 0.05 - 0.8 | 80 - 640 / OFF | 80 - 600 / OFF |
| 600 | 250 - 600 | 0.5 - 15 | 900-5400 | 360 - 5400 | | 120 - 600 | | 120 - 960 / OFF | 120 - 600 / OFF |

⑤ Adjustable in steps of 1A.

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

# 3VA55 800A Thermal-Magnetic Circuit Breakers



## 3VA55 800A, 2-pole in 3-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MMAS) | H-Interrupting Class (HMAS) | C-Interrupting Class (CMAS) |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| | TM230 FTAM | | |
| 600 | 3VA5560-5EC62-0AA0 | 3VA5560-6EC62-0AA0 | 3VA5560-7EC62-0AA0 |
| 700 | 3VA5570-5EC62-0AA0 | 3VA5570-6EC62-0AA0 | 3VA5570-7EC62-0AA0 |
| 800 | 3VA5580-5EC62-0AA0 | 3VA5580-6EC62-0AA0 | 3VA5580-7EC62-0AA0 |

## 3VA55 800A, 3-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MMAS) | H-Interrupting Class (HMAS) | C-Interrupting Class (CMAS) |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| | TM230 FTAM① | | |
| 600 | 3VA5560-5EC32-0AA0 | 3VA5560-6EC32-0AA0 | 3VA5560-7EC32-0AA0 |
| 700 | 3VA5570-5EC32-0AA0 | 3VA5570-6EC32-0AA0 | 3VA5570-7EC32-0AA0 |
| 800 | 3VA5580-5EC32-0AA0 | 3VA5580-6EC32-0AA0 | 3VA5580-7EC32-0AA0 |

## 3VA55 800A, 4-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MMAS) | H-Interrupting Class (HMAS) | C-Interrupting Class (CMAS) |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| | TM230 FTAM Unprotected Neutral | | |
| 600 | 3VA5560-5EC42-0AA0 | 3VA5560-6EC42-0AA0 | 3VA5560-7EC42-0AA0 |
| 700 | 3VA5570-5EC42-0AA0 | 3VA5570-6EC42-0AA0 | 3VA5570-7EC42-0AA0 |
| 800 | 3VA5580-5EC42-0AA0 | 3VA5580-6EC42-0AA0 | 3VA5580-7EC42-0AA0 |
| | TM230 FTAM 100% Neutral | | |
| 600 | 3VA5560-5GC42-0AA0 | 3VA5560-6GC42-0AA0 | 3VA5560-7GC42-0AA0 |
| 700 | 3VA5570-5GC42-0AA0 | 3VA5570-6GC42-0AA0 | 3VA5570-7GC42-0AA0 |
| 800 | 3VA5580-5GC42-0AA0 | 3VA5580-6GC42-0AA0 | 3VA5580-7GC42-0AA0 |

## Dimensions — Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA55 | 2(3) | 8.3 (210) | 12.5 (318) | 5.8 (147) | 29.3 | 13.3 |
| 3VA55 | 3 | 8.3 (210) | 12.5 (318) | 5.8 (147) | 29.4 | 13.4 |
| 3VA55 | 4 | 11.1 (280) | 12.5 (318) | 5.8 (147) | 37.4 | 17.0 |

## Interrupting Ratings for 3VA55

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | | | |
| | | 240 | 480Y/ 277V | 480 | 600Y/ 347V | 600 | 250 (2P) | 600 (3P) | 750 (3P) | 750 (4P) | 1000 (4P) |
| M | MMAS | 85 | 35 | 35 | 18 | 18 | 50 | 50 | 50 | 50 | 18 |
| H | HMAS | 100 | 65 | 65 | 25 | 25 | 85 | 85 | 85 | 85 | 25 |
| C | CMAS | 200 | 100 | 100 | 50 | 50 | 100 | 100 | 100 | 100 | 50 |

## Trip Settings for 3VA55

TM230 - FTAM

| $I_n$ (Amp) | $I_r$(Amp) | $I_i$ (Amp) | | | | | |
|---|---|---|---|---|---|---|---|
| 600 | 600 | 3000 | 3600 | 4200 | 4800 | 5400 | 6000 |
| 700 | 700 | 3500 | 4200 | 4900 | 5600 | 6300 | 7000 |
| 800 | 800 | 4000 | 4800 | 5600 | 6400 | 7200 | 8000 |

① Available with NAVAL/50C ratings.

3VA55 800A 3-Pole

3VA55 800A 4-Pole

## Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers with nutkeepers on both line and load ends..

To include standard line and load lugs, shipped with the breaker for field installation, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 800A, 3-pole, 3VA55 with lugs would be catalog number 3VA5580-5EC3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

For NAVAL-rated (3-pole only) thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "1". (For example, a 35KA @480VAC, 800A, 3-pole, NAVAL rated 3VA55 would be catalog number 3VA5580-5EC32-**1**AA0)

3VA55 are available with 100% rating (only 3 and 4 pole). For 100% rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 800A, 3-pole, 100% rated 3VA55 would be catalog number 3VA5580-5EC32-**2**AA0). Requires the use of rated lugs.

All 3VA55 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

# 3VA65 800A Electronic Trip Circuit Breakers

**3VA65 800A 3-Pole**

## Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers with nutkeepers on both line and load ends.

To include standard line and load lugs, shipped with the breaker for field installation, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 800A, 3-pole, 3VA65 with lugs would be catalog number 3VA6580-5HL3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

3VA65 electronic trip circuit breakers are available with 100% ratings. For 100% rated electronic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 600A, 3-pole, 100% rated 3VA65 would be catalog number 3VA6560-5HL32-**2**AA0). Requires the use of rated lugs — see lug table below.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

All 3VA65 electronic trip circuit breakers are UL listed for reverse feed applications.

## 3VA65 800A, 3-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MMAE) Catalog Number | H-Interrupting Class (HMAE) Catalog Number | C-Interrupting Class (CMAE) Catalog Number |
|---|---|---|---|
| **ETU320 LI with dials** | | | |
| 600 | 3VA6560-5HL32-0AA0 | 3VA6560-6HL32-0AA0 | 3VA6560-7HL32-0AA0 |
| 800 | 3VA6580-5HL32-0AA0 | 3VA6580-6HL32-0AA0 | 3VA6580-7HL32-0AA0 |
| **ETU330 LIG with dials** | | | |
| 600 | 3VA6560-5HM32-0AA0 | 3VA6560-6HM32-0AA0 | 3VA6560-7HM32-0AA0 |
| 800 | 3VA6580-5HM32-0AA0 | 3VA6580-6HM32-0AA0 | 3VA6580-7HM32-0AA0 |
| **ETU350 LSI with dials – fixed instantaneous** | | | |
| 600 | 3VA6560-5HN32-0AA0 | 3VA6560-6HN32-0AA0 | 3VA6560-7HN32-0AA0 |
| 800 | 3VA6580-5HN32-0AA0 | 3VA6580-6HN32-0AA0 | 3VA6580-7HN32-0AA0 |
| **ETU550 LSI with LCD** | | | |
| 600 | 3VA6560-5JP32-0AA0 | 3VA6560-6JP32-0AA0 | 3VA6560-7JP32-0AA0 |
| 800 | 3VA6580-5JP32-0AA0 | 3VA6580-6JP32-0AA0 | 3VA6580-7JP32-0AA0 |
| **ETU556 LSI(G Alarm) with LCD** | | | |
| 600 | 3VA6560-5JT32-0AA0 | 3VA6560-6JT32-0AA0 | 3VA6560-7JT32-0AA0 |
| 800 | 3VA6580-5JT32-0AA0 | 3VA6580-6JT32-0AA0 | 3VA6580-7JT32-0AA0 |
| **ETU560 LSIG with LCD** | | | |
| 600 | 3VA6560-5JQ32-0AA0 | 3VA6560-6JQ32-0AA0 | 3VA6560-7JQ32-0AA0 |
| 800 | 3VA6580-5JQ32-0AA0 | 3VA6580-6JQ32-0AA0 | 3VA6580-7JQ32-0AA0 |
| **ETU820 LI with LCD and Metering** | | | |
| 600 | 3VA6560-5KL32-0AA0 | 3VA6560-6KL32-0AA0 | 3VA6560-7KL32-0AA0 |
| 800 | 3VA6580-5KL32-0AA0 | 3VA6580-6KL32-0AA0 | 3VA6580-7KL32-0AA0 |
| **ETU856 LSI(G Alarm) with LCD and Metering** | | | |
| 600 | 3VA6560-5KT32-0AA0 | 3VA6560-6KT32-0AA0 | 3VA6560-7KT32-0AA0 |
| 800 | 3VA6580-5KT32-0AA0 | 3VA6580-6KT32-0AA0 | 3VA6580-7KT32-0AA0 |
| **ETU860 LSIG with LCD and Metering** | | | |
| 600 | 3VA6560-5KQ32-0AA0 | 3VA6560-6KQ32-0AA0 | 3VA6560-7KQ32-0AA0 |
| 800 | 3VA6580-5KQ32-0AA0 | 3VA6580-6KQ32-0AA0 | 3VA6580-7KQ32-0AA0 |

## Enclosures for 3VA55, 3VA65, 3VA66 (3-pole only)

| NEMA Type | Catalog Number |
|---|---|
| 1 Surface | **3VAE8001S** |
| 1 Flush | **3VAE8001F** |
| 3R | **3VAE8003R** |
| 12 | **3VAE80012** |
| 4X (304) | **3VAE8004X** |
| 4X (316) | **3VAE8004X316** |
| Neutral | **HN656ACB** |
| 200% Neutral | **HN678ACB** |

# 3VA65 800A Electronic Trip Circuit Breakers

## Selection

3VA65 800A 4-Pole

## Interrupting Ratings for 3VA65

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MMAE | 100 | 35 | 35 | 25 | 25 |
| H | HMAE | 150 | 65 | 65 | 35 | 35 |
| C | CMAE | 200 | 100 | 100 | 50 | 50 |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA65 | 3 | 8.3 (210) | 12.5 (318) | 5.8 (147) | 29.4 | 13.4 |
| 3VA65 | 4 | 11.1 (280) | 12.5 (318) | 5.8 (147) | 37.4 | 17.0 |

## 3VA65 800A, 4-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MMAE) Catalog Number | H-Interrupting Class (HMAE) Catalog Number | C-Interrupting Class (CMAE) Catalog Number |
|---|---|---|---|
| | | **ETU320 LI with dials** | |
| 600 | 3VA6560-5HL42-0AA0 | 3VA6560-6HL42-0AA0 | 3VA6560-7HL42-0AA0 |
| 800 | 3VA6580-5HL42-0AA0 | 3VA6580-6HL42-0AA0 | 3VA6580-7HL42-0AA0 |
| | | **ETU330 LIG with dials** | |
| 600 | 3VA6560-5HM42-0AA0 | 3VA6560-6HM42-0AA0 | 3VA6560-7HM42-0AA0 |
| 800 | 3VA6580-5HM42-0AA0 | 3VA6580-6HM42-0AA0 | 3VA6580-7HM42-0AA0 |
| | | **ETU350 LSI with dials – fixed instantaneous** | |
| 600 | 3VA6560-5HN42-0AA0 | 3VA6560-6HN42-0AA0 | 3VA6560-7HN42-0AA0 |
| 800 | 3VA6580-5HN42-0AA0 | 3VA6580-6HN42-0AA0 | 3VA6580-7HN42-0AA0 |
| | | **ETU550 LSI with LCD** | |
| 600 | 3VA6560-5JP42-0AA0 | 3VA6560-6JP42-0AA0 | 3VA6560-7JP42-0AA0 |
| 800 | 3VA6580-5JP42-0AA0 | 3VA6580-6JP42-0AA0 | 3VA6580-7JP42-0AA0 |
| | | **ETU556 LSI(G Alarm) with LCD** | |
| 600 | 3VA6560-5JT42-0AA0 | 3VA6560-6JT42-0AA0 | 3VA6560-7JT42-0AA0 |
| 800 | 3VA6580-5JT42-0AA0 | 3VA6580-6JT42-0AA0 | 3VA6580-7JT42-0AA0 |
| | | **ETU560 LSIG with LCD** | |
| 600 | 3VA6560-5JQ42-0AA0 | 3VA6560-6JQ42-0AA0 | 3VA6560-7JQ42-0AA0 |
| 800 | 3VA6580-5JQ42-0AA0 | 3VA6580-6JQ42-0AA0 | 3VA6580-7JQ42-0AA0 |
| | | **ETU820 LI with LCD and Metering** | |
| 600 | 3VA6560-5KL42-0AA0 | 3VA6560-6KL42-0AA0 | 3VA6560-7KL42-0AA0 |
| 800 | 3VA6580-5KL42-0AA0 | 3VA6580-6KL42-0AA0 | 3VA6580-7KL42-0AA0 |
| | | **ETU856 LSI(G Alarm) with LCD and Metering** | |
| 600 | 3VA6560-5KT42-0AA0 | 3VA6560-6KT42-0AA0 | 3VA6560-7KT42-0AA0 |
| 800 | 3VA6580-5KT42-0AA0 | 3VA6580-6KT42-0AA0 | 3VA6580-7KT42-0AA0 |
| | | **ETU860 LSIG with LCD and Metering** | |
| 600 | 3VA6560-5KQ42-0AA0 | 3VA6560-6KQ42-0AA0 | 3VA6560-7KQ42-0AA0 |
| 800 | 3VA6580-5KQ42-0AA0 | 3VA6580-6KQ42-0AA0 | 3VA6580-7KQ42-0AA0 |

## Connections for 75C wire for 3VA55, 3VA65 and 3VA66

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 3 lugs) | Part Number (kit of 4 lugs) |
|---|---|---|---|---|
| Aluminum body lug, 2 cables (Cu/Al cable) | 4/0 | 600 kcmil | **3VA9573-0JB23**①④ | **3VA9574-0JB23**①④ |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap | 4/0 | 600 kcmil | **3VA9573-0JG23**① | **3VA9574-0JG23**① |
| Aluminum body lug, 2 cables (Cu/Al cable) with 1 extended terminal cover | 400 kcmil | 750 kcmil | **3VA9673-0JJ24**②⑥ | **3VA9674-0JJ24**②⑥ |
| Aluminum body lug, 2 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 400 kcmil | 750 kcmil | **3VA9673-0JC24**②⑥ | **3VA9674-0JC24**②⑥ |
| Aluminum body lug, 3 cables (Cu/Al cable) | 4/0 | 400 kcmil | **3VA9673-0JB32**① | **3VA9674-0JB32**① |
| Aluminum body lug, 3 cables (Cu/Al cable) with control wire tap | 4/0 | 400 kcmil | **3VA9673-0JG32**① | **3VA9674-0JG32**① |
| Aluminum body lug, 3 cables (Cu/Al cable) with 1 extended terminal cover | 500 kcmil | 750 kcmil | **3VA9673-0JJ34**③ | **3VA9674-0JJ34**③ |
| Aluminum body lug, 3 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 500 kcmil | 750 kcmil | **3VA9673-0JC34**③ | **3VA9674-0JC34**③ |
| Aluminum body lug, 4 cables (Cu/Al cable) with 1 extended terminal cover | 4/0 | 500 kcmil | **3VA9673-0JJ43**③⑤ | **3VA9674-0JJ43**③⑤ |
| Aluminum body lug, 4 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 4/0 | 500 kcmil | **3VA9673-0JC43**③ | **3VA9674-0JC43**③ |
| Aluminum body lug, 4 cables (Cu/Al cable) with 1 extended terminal cover | 4/0 | 600 kcmil | **3VA9673-0JJ44**③ | **3VA9674-0JJ44**③ |
| Aluminum body lug, 4 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 4/0 | 600 kcmil | **3VA9673-0JC44**③ | **3VA9674-0JC44**③ |
| Copper body lug, 3 cables (Cu/Al cable) with control wire tap | 4/0 | 400 kcmil | **3VA9673-0JK32**③ | **3VA9674-0JK32**③ |
| Copper body lug, 4 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 4/0 | 500 kcmil | **3VA9673-0JL43**③ | **3VA9674-0JL43**③ |

① 3VA55 and 3VA65 Meets requirements for 100% rated breakers up to 600A.
② 3VA55 Meets requirements for 100% rated breakers up to 700A, requires the use of 90 degree wire, size to 75 degree ampacity.
③ 3VA55 and 3VA65 Meets requirements for 100% rated breakers up to 800A, requires the use of 90 degree wire, size to 75 degree ampacity.
④ Standard lug for the 600A and 700A 3VA55 and the 600A 3VA65 will be installed at the factory when the breaker is ordered with a "6" in the 12th position.
⑤ Standard lug for the 800A 3VA55/65 and the 1000A 3VA66 will ship with the breaker from the factory for field installation when the breaker is ordered with a "6" in the 12th position.
⑥ 3VA65 Meets requirements for 100% rated breakers up to 600A.

## Trip Settings for 3VA55

### TM230 - FTAM

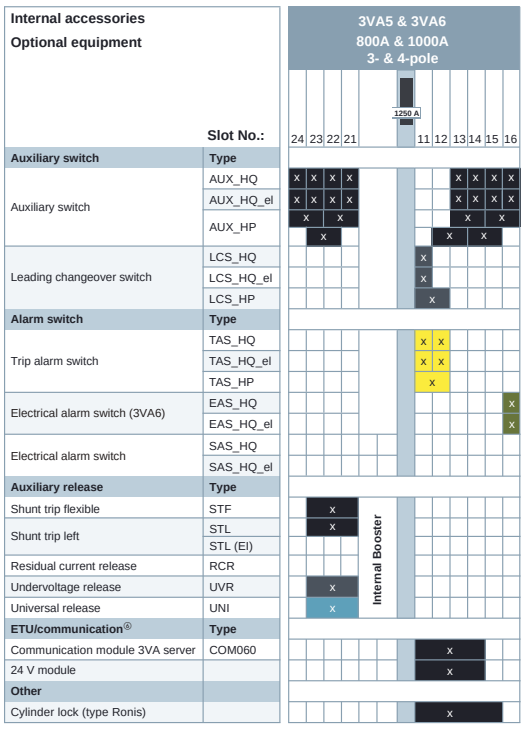
| $I_n$ (Amp) | $I_r$(Amp) | $I_i$ (Amp) | | | | | |
|---|---|---|---|---|---|---|---|
| 600 | 600 | 3000 | 3600 | 4200 | 4800 | 5400 | 6000 |
| 700 | 700 | 3500 | 4200 | 4900 | 5600 | 6300 | 7000 |
| 800 | 800 | 4000 | 4800 | 5600 | 6400 | 7200 | 8000 |

## Trip Settings for 3VA65 and 3VA66

### ETU320-LI, ETU330-LIG, ETU350-LSI

| Cont. Amp | LI, LIG, LSI | | | LSI | | LIG | LI, LIG, LSI 4P only |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{ld}$ (sec) (L) | $I_i$ (Amp) (I)⑦ | $I_{sd}$= x$I_r$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $I_N$=x$I_r$ (Amp) |
| 600 | 240 - 600 | 0.5 - 17 | 900 - 7200 | 1.5 - 12 | 0 - 0.4 | 120 - 600 | 0.2 - 1.0 |
| 800 | 320 - 800 | 0.5 - 17 | 1200 - 8000 | 1.5 - 10 | 0 - 0.4 | 160 - 800 | 0.2 - 1.0 |
| 1000 | 400 - 1000 | 0.5 - 17 | 1500 - 10000 | 1.5 - 10 | 0 - 0.4 | 200 - 1000 | 0.2 - 1.0 |

⑦ $I_i$ for ETU350 is fixed at the maximum level shown in table




⑥ These accessories are for electronic trip breakers only.

### ETU550-LSI, ETU556 LSI(A), ETU560-LSIG, ETU820-LI, ETU856 LSI(A), ETU860-LSIG

| Cont. Amp | LI, LIG, LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LIG, LSIG, LSI(G) | | LSI 3P with External CT | LI, LIG, LSI, LSIG, LSI(G) 4P only |
|---|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L)⑧ | $t_{ld}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (G) | $I_N$=x$I_r$ (Amp) | $I_N$ (Amp) |
| 600 | 240 - 600 | 0.5 - 25 | 900 - 7200 | 360 - 7200 | 0.05 - 0.5 | 120 - 600 | 0.05 - 0.8 | 120 - 960 | 120 - 600 |
| 800 | 320 - 800 | 0.5 - 25 | 1200 - 8000 | 480 - 8000 | 0.05 - 0.5 | 160 - 800 | 0.05 - 0.8 | 160 - 1280 | 160 - 800 |
| 1000 | 400 - 1000 | 0.5 - 25 | 1500 - 10000 | 600 - 10000 | 0.05 - 0.5 | 200 - 1000 | 0.05 - 0.8 | 200 - 1600 | 200 - 1000 |

⑧ Adjustable in steps of 1A.

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

# 3VA66 1000A Electronic Trip Circuit Breakers

3VA66 1000A 3-Pole

## Ordering Information

The catalog numbers listed here are for complete, non-interchangeable trip circuit breakers with nutkeepers on both line and load ends.

To include standard line and load lugs, shipped with the breaker for field installation, change the 12th digit to "6" (standard lugs are identified in the lug table and footnotes in this section of the SpeedFax). (For example, a 35KA @480VAC, 1000A, 3-pole, 3VA66 with lugs would be catalog number 3VA6610-5HL3**6**-0AA0). Alternate connectors can be ordered separately for field installation.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

All 3VA66 electronic trip circuit breakers are UL listed for reverse feed applications.

## 3VA66 1000A, 3-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MMNAE) Catalog Number | H-Interrupting Class (HMNAE) Catalog Number | C-Interrupting Class (CMNAE) Catalog Number |
|---|---|---|---|
| | | **ETU320 LI with dials** | |
| 1000 | **3VA6610-5HL32-0AA0** | **3VA6610-6HL32-0AA0** | **3VA6610-7HL32-0AA0** |
| | | **ETU330 LIG with dials** | |
| 1000 | **3VA6610-5HM32-0AA0** | **3VA6610-6HM32-0AA0** | **3VA6610-7HM32-0AA0** |
| | | **ETU350 LSI with dials – fixed instantaneous** | |
| 1000 | **3VA6610-5HN32-0AA0** | **3VA6610-6HN32-0AA0** | **3VA6610-7HN32-0AA0** |
| | | **ETU550 LSI with LCD** | |
| 1000 | **3VA6610-5JP32-0AA0** | **3VA6610-6JP32-0AA0** | **3VA6610-7JP32-0AA0** |
| | | **ETU556 LSI(G Alarm) with LCD** | |
| 1000 | **3VA6610-5JT32-0AA0** | **3VA6610-6JT32-0AA0** | **3VA6610-7JT32-0AA0** |
| | | **ETU560 LSIG with LCD** | |
| 1000 | **3VA6610-5JQ32-0AA0** | **3VA6610-6JQ32-0AA0** | **3VA6610-7JQ32-0AA0** |
| | | **ETU820 LI with LCD and Metering** | |
| 1000 | **3VA6610-5KL32-0AA0** | **3VA6610-6KL32-0AA0** | **3VA6610-7KL32-0AA0** |
| | | **ETU856 LSI(G Alarm) with LCD and Metering** | |
| 1000 | **3VA6610-5KT32-0AA0** | **3VA6610-6KT32-0AA0** | **3VA6610-7KT32-0AA0** |
| | | **ETU860 LSIG with LCD and Metering** | |
| 1000 | **3VA6610-5KQ32-0AA0** | **3VA6610-6KQ32-0AA0** | **3VA6610-7KQ32-0AA0** |

# 3VA66 1000A Electronic Trip Circuit Breakers

## Selection

3VA66 1000A 4-Pole

### Interrupting Ratings for 3VA66

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MMNAE | 100 | 35 | 35 | 25 | 25 |
| H | HMNAE | 150 | 65 | 65 | 35 | 35 |
| C | CMNAE | 200 | 100 | 100 | 50 | 50 |

### Dimensions / Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA66 | 3 | 8.3 (210) | 12.5 (318) | 5.8 (147) | 29.4 | 13.4 |
| 3VA66 | 4 | 11.1 (280) | 12.5 (318) | 5.8 (147) | 37.4 | 17.0 |

### 3VA66 1000A, 4-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MMNAE) Catalog Number | H-Interrupting Class (HMNAE) Catalog Number | C-Interrupting Class (CMNAE) Catalog Number |
|---|---|---|---|
| | | **ETU320 LI with dials** | |
| 1000 | **3VA6610-5HL42-0AA0** | **3VA6610-6HL42-0AA0** | **3VA6610-7HL42-0AA0** |
| | | **ETU330 LIG with dials** | |
| 1000 | **3VA6610-5HM42-0AA0** | **3VA6610-6HM42-0AA0** | **3VA6610-7HM42-0AA0** |
| | | **ETU350 LSI with dials – fixed instantaneous** | |
| 1000 | **3VA6610-5HN42-0AA0** | **3VA6610-6HN42-0AA0** | **3VA6610-7HN42-0AA0** |
| | | **ETU550 LSI with LCD** | |
| 1000 | **3VA6610-5JP42-0AA0** | **3VA6610-6JP42-0AA0** | **3VA6610-7JP42-0AA0** |
| | | **ETU556 LSI(G Alarm) with LCD** | |
| 1000 | **3VA6610-5JT42-0AA0** | **3VA6610-6JT42-0AA0** | **3VA6610-7JT42-0AA0** |
| | | **ETU560 LSIG with LCD** | |
| 1000 | **3VA6610-5JQ42-0AA0** | **3VA6610-6JQ42-0AA0** | **3VA6610-7JQ42-0AA0** |
| | | **ETU820 LI with LCD and Metering** | |
| 1000 | **3VA6610-5KL42-0AA0** | **3VA6610-6KL42-0AA0** | **3VA6610-7KL42-0AA0** |
| | | **ETU856 LSI(G Alarm) with LCD and Metering** | |
| 1000 | **3VA6610-5KT42-0AA0** | **3VA6610-6KT42-0AA0** | **3VA6610-7KT42-0AA0** |
| | | **ETU860 LSIG with LCD and Metering** | |
| 1000 | **3VA6610-5KQ42-0AA0** | **3VA6610-6KQ42-0AA0** | **3VA6610-7KQ42-0AA0** |

# 3VA57 1200A Thermal-Magnetic Trip Circuit Breakers

## Selection

### 3VA57 1200A, 2-pole in 3-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MNAS) | H-Interrupting Class (HNAS) | C-Interrupting Class (CNAS) |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| | TM230 FTAM[1] | | |
| 800 | 3VA5780-5EC61-0AA0 | 3VA5780-6EC61-0AA0 | 3VA5780-7EC61-0AA0 |
| 900 | 3VA5790-5EC61-0AA0 | 3VA5790-6EC61-0AA0 | 3VA5790-7EC61-0AA0 |
| 1000 | 3VA5710-5EC61-0AA0 | 3VA5710-6EC61-0AA0 | 3VA5710-7EC61-0AA0 |
| 1200 | 3VA5712-5EC61-0AA0 | 3VA5712-6EC61-0AA0 | 3VA5712-7EC61-0AA0 |

### 3VA57 1200A, 3-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MNAS) | H-Interrupting Class (HNAS) | C-Interrupting Class (CNAS) |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| | TM230 FTAM[1] | | |
| 800 | 3VA5780-5EC31-0AA0 | 3VA5780-6EC31-0AA0 | 3VA5780-7EC31-0AA0 |
| 900 | 3VA5790-5EC31-0AA0 | 3VA5790-6EC31-0AA0 | 3VA5790-7EC31-0AA0 |
| 1000 | 3VA5710-5EC31-0AA0 | 3VA5710-6EC31-0AA0 | 3VA5710-7EC31-0AA0 |
| 1200 | 3VA5712-5EC31-0AA0 | 3VA5712-6EC31-0AA0 | 3VA5712-7EC31-0AA0 |

3VA57 1200A 3-Pole

### Dimensions

### Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA57 | 2(3) | 9.0 (229) | 16.0 (406) | 6.0 (152) | 55.1 | 25.0 |
| 3VA57 | 3 | 9.0 (229) | 16.0 (406) | 6.0 (152) | 55.1 | 25.0 |

### Interrupting Ratings for 3VA57

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | |
| | | 240 | 480Y/ 277V | 480 | 600Y/ 347V | 600 | 250 (2P) | 600 (3P) | 750 (3P) |
| M | MNAS | 85 | 35 | 35 | 25 | 25 | 50 | 50 | 50 |
| H | HNAS | 100 | 65 | 65 | 35 | 35 | 85 | 85 | 85 |
| C | CNAS | 200 | 100 | 100 | 65 | 65 | 100 | 100 | 100 |

### 3VA57/67 Enclosures (3 pole only)

| NEMA Type | Catalog Number |
|---|---|
| 1 Surface | 3VAE1200N1 |
| 3R | 3VA12003R |
| Neutral | HN68A |

### Ordering Information

The catalog numbers listed here are for complete, non-interchangable trip circuit breakers without lugs. Order required lugs or connection technology separately for field installation.

All 3VA57 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

For NAVAL rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "1". (For example, a 35KA@480VAC, 1200A, 3-pole, rated 3VA57 would be catalog number 3VA5712-5EC31-**1**AA0)

All 3VA57 thermal-magnetic trip circuit breakers can be ordered 100% rated. For 100% rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA@480VAC, 1200A, 3-pole, rated 3VA57 would be catalog number 3VA5712-5EC31-**2**AA0)

[1] Available with NAVAL/50C ratings.

# 3VA67 1200A Electronic Trip Circuit Breakers

## Selection

3VA67 1200A 3-Pole

### Ordering Information

The catalog numbers listed below are for complete, non-interchangable trip circuit breakers without lugs.

All 3VA67 electronict trip circuit breakers are UL listed for reverse feed applications.

3VA67 electronic trip circuit breakers are available with 100% ratings. For 100% rated electronic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 1200A, 3-pole, 100% rated 3VA67 would be catalog number 3VA6712-5HL31-**2**AA0). See lug table below.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

## 3VA67 1200A, 3-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MNAE) Catalog Number | H-Interrupting Class (HNAE) Catalog Number | C-Interrupting Class (CNAE) Catalog Number |
|---|---|---|---|
| | | **ETU320 LI with dials** | |
| 800 | **3VA6780-5HL31-0AA0** | **3VA6780-6HL31-0AA0** | **3VA6780-7HL31-0AA0** |
| 1000 | **3VA6710-5HL31-0AA0** | **3VA6710-6HL31-0AA0** | **3VA6710-7HL31-0AA0** |
| 1200 | **3VA6712-5HL31-0AA0** | **3VA6712-6HL31-0AA0** | **3VA6712-7HL31-0AA0** |
| | | **ETU330 LIG with dials** | |
| 800 | **3VA6780-5HM31-0AA0** | **3VA6780-6HM31-0AA0** | **3VA6780-7HM31-0AA0** |
| 1000 | **3VA6710-5HM31-0AA0** | **3VA6710-6HM31-0AA0** | **3VA6710-7HM31-0AA0** |
| 1200 | **3VA6712-5HM31-0AA0** | **3VA6712-6HM31-0AA0** | **3VA6712-7HM31-0AA0** |
| | | **ETU350 LSI with dials – fixed instantaneous** | |
| 800 | **3VA6780-5HN31-0AA0** | **3VA6780-6HN31-0AA0** | **3VA6780-7HN31-0AA0** |
| 1000 | **3VA6710-5HN31-0AA0** | **3VA6710-6HN31-0AA0** | **3VA6710-7HN31-0AA0** |
| 1200 | **3VA6712-5HN31-0AA0** | **3VA6712-6HN31-0AA0** | **3VA6712-7HN31-0AA0** |
| | | **ETU360 LSIG with dials** | |
| 800 | **3VA6780-5HQ31-0AA0** | **3VA6780-6HQ31-0AA0** | **3VA6780-7HQ31-0AA0** |
| 1000 | **3VA6710-5HQ31-0AA0** | **3VA6710-6HQ31-0AA0** | **3VA6710-7HQ31-0AA0** |
| 1200 | **3VA6712-5HQ31-0AA0** | **3VA6712-6HQ31-0AA0** | **3VA6712-7HQ31-0AA0** |
| | | **ETU850 LSI with LCD and Metering** | |
| 800 | **3VA6780-5KP31-0AA0** | **3VA6780-6KP31-0AA0** | **3VA6780-7KP31-0AA0** |
| 1000 | **3VA6710-5KP31-0AA0** | **3VA6710-6KP31-0AA0** | **3VA6710-7KP31-0AA0** |
| 1200 | **3VA6712-5KP31-0AA0** | **3VA6712-6KP31-0AA0** | **3VA6712-7KP31-0AA0** |
| | | **ETU856 LSI(G Alarm) with LCD and Metering** | |
| 800 | **3VA6780-5KT31-0AA0** | **3VA6780-6KT31-0AA0** | **3VA6780-7KT31-0AA0** |
| 1000 | **3VA6710-5KT31-0AA0** | **3VA6710-6KT31-0AA0** | **3VA6710-7KT31-0AA0** |
| 1200 | **3VA6712-5KT31-0AA0** | **3VA6712-6KT31-0AA0** | **3VA6712-7KT31-0AA0** |
| | | **ETU860 LSIG with LCD and Metering** | |
| 800 | **3VA6780-5KQ31-0AA0** | **3VA6780-6KQ31-0AA0** | **3VA6780-7KQ31-0AA0** |
| 1000 | **3VA6710-5KQ31-0AA0** | **3VA6710-6KQ31-0AA0** | **3VA6710-7KQ31-0AA0** |
| 1200 | **3VA6712-5KQ31-0AA0** | **3VA6712-6KQ31-0AA0** | **3VA6712-7KQ31-0AA0** |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA67 | 3 | 9.0 (229) | 16.0 (406) | 6.0 (152) | 55.1 | 25.0 |

## Interrupting Ratings for 3VA67

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MNAE | 85 | 35 | 35 | 25 | 25 |
| H | HNAE | 100 | 65 | 65 | 35 | 35 |
| C | CNAE | 200 | 100 | 100 | 65 | 65 |

## Trip Settings for 3VA67

### ETU320-LI, ETU330-LIG, ETU350-LSI

| Cont. Amp | LI, LIG, LSI, LSIG | | | LSI, LSIG | | LIG, LSIG | |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{Id}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$= xIr (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (sec) (S) |
| 800 | 315–800 | 2.5 - 30 | 1200–9600 | 1.5 - 10 | 0 - 0.4 | 160–800 | 0.1 / 0.3 |
| 1000 | 400–1000 | 2.5 - 30 | 1500–12000 | 1.5 - 10 | 0 - 0.4 | 200–1000 | |
| 1200 | 500–1200 | 2.5 - 30 | 1800–12000 | 1.5 - 10 | 0 - 0.4 | 240–1200 | |

## 3VA57/67 Enclosures (3 pole only)

| NEMA Type | Catalog Number |
|---|---|
| 1 Surface | **3VAE1200N1** |
| 3R | **3VA12003R** |
| Neutral | **HN68A** |

### ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

| Cont. Amp | LSI, LSI(G), LSIG | | | LSI, LSI(G), LSIG | | LSI(G), LSIG | | LSI 3P with External CT |
|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{Id}$ (sec) (L) | $I_i$ (Amp)① (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (sec) (S) | $I_N$=x$I_r$ (Amp) |
| 800 | 315–800 | 2.5 - 30 | 1200–9600 | 0.6 - 10 | 0.05 - 0.5 | 160–800 | 0.05 - 0.8 | 160–1280 |
| 1000 | 400–1000 | 2.5 - 30 | 1500–12000 | 0.6 - 10 | 0.05 - 0.5 | 200–1000 | | 200–1600 |
| 1200 | 500–1200 | 2.5 - 30 | 1800–12000 | 0.6 - 10 | 0.05 - 0.5 | 240–1200 | | 240–1920 |

① $I_i$ for ETU350 is fixed at the maximum level shown in table.

## Connections for 75C wire for 3VA57 and 3VA67

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 2 lugs) | Part Number (kit of 3 lugs) | Mount Lugs to Essential Parts |
|---|---|---|---|---|---|
| TA6.1 Aluminum body lug, 3 cables (Cu/Al cable) with 1 extended terminal cover | 500 kcmil | 750 kcmil | **3VA9772-0JJ34**② | **3VA9773-0JJ34**② | |
| TA6.2 Aluminum body lug, 4 cables (Cu/Al cable) with 1 extended terminal cover | 1/0 | 500 kcmil | **3VA9772-0JJ43** | **3VA9773-0JJ43** | |
| TA6.2 Aluminum body lug with CVT, 4 cables (Cu/Al cable) with control wire tap and 1 extended terminal cover | 1/0 | 500 kcmil | — | **3VA9773-0JC43** | |
| TA6.3 Aluminum body lug, 4 cables (Cu/Al cable) with 1 extended terminal cover, 100% rated | 1/0 | 500 kcmil | — | **3VA9773-0JM43**② | |
| TC6.2 Copper body lug (Cu cable only) 4 cable lugs | 1/0 | 500 kcmil | — | **3VA9773-0JE43**② | |
| TA7.1 Aluminum body lug, 6 cables (Cu/Al cable) for lug mounting assembly | 1/0 | 750 kcmil | — | **3VA9773-0JJ64**②③ | **3VA9873-0WL00** |
| CL1.7 Compression lug, 12 pcs, 4 per phase line or load (Cu/Al cable),with extended terminal cover | 1/0 | 500 kcmil | — | **3VA9773-0QK01** | |

② Meets requirements for 100% rated breakers up to 1200A, requires the use of 90 degree wire, size to 75 degree ampacity.
③ Lugs Require Attachment to 3VA9873-0WL00 LMAP (Sold Separately).

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

# Internal Accessories[1]

## Auxiliary and Alarm Switches (Form C –> 1 NO and 1 NC)

| Switch Type | Width | AC 50/ 60 Hz | DC | Catalog Number |
|---|---|---|---|---|
| Auxiliary Switch (AUX) HQ | 1 slot | 240V | 250V | **3VA9978-0AA12** |
| | | 24V | 24V | **3VA9978-0AA23** |
| Auxiliary Switch (AUX) HP | 2 slots | 600V | 250V | **3VA9978-0AA11** |
| Trip/Bell Alarm Switch (TAS) HQ | 1 slot | 240V | 250V | **3VA9978-0AB12** |
| | | 24V | 24V | **3VA9978-0AB13** |
| Trip/Bell Alarm Switch (TAS) HP | 2 slots | 600V | 250V | **3VA9978-0AB11** |

## Shunt Trips

| Type | VAC 50/60 Hz | VDC | Catalog Number (3 slots) |
|---|---|---|---|
| Shunt Trip Left (STL) | 380 ... 600 | — | **3VA9978-0BL20** |
| | — | 12 | **3VA9978-0BL10** |
| | 24 | 24 ... 30 | **3V9978-0BL30** |
| | 48 ... 60 | 48 ... 60 | **3VA9978-0BL31** |
| | 110 ... 127 | 110 ... 127 | **3VA9978-0BL32** |
| | 208 ... 277 | 220 ... 250 | **3VA9978-0BL33** |
| Shunt Trip Flexible (STF)[2] | 24 | — | **3VA9978-0BA20** |
| | 48 ... 60 | — | **3VA9978-0BA21** |
| | 110 ... 127 | — | **3VA9978-0BA22** |
| | 208 ... 277 | — | **3VA9978-0BA23** |
| | 380 ... 500 | — | **3VA9978-0BA24** |
| | 600 | — | **3VA9978-0BA25** |

## Undervoltage Release

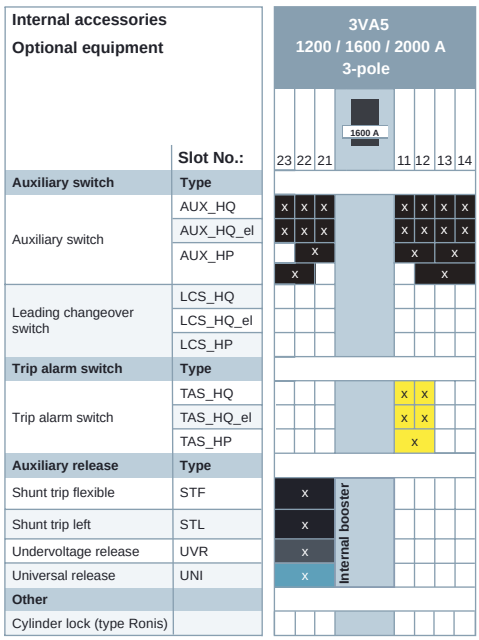
| | | | |
|---|---|---|---|
| Undervoltage Release (UVR) | — | 12 | **3VA9978-0BB10** |
| | — | 24 | **3VA9978-0BB11** |
| | — | 48 | **3VA9978-0BB12** |
| | — | 125 ... 127 | **3VA9978-0BB14** |
| | — | 250 | **3VA9978-0BB16** |
| | 24 | — | **3VA9978-0BB20** |
| | 120 ... 127 | — | **3VA9978-0BB24** |
| | 208 ... 230 | — | **3VA9978-0BB25** |
| | 440 ... 480 | — | **3VA9978-0BB27** |

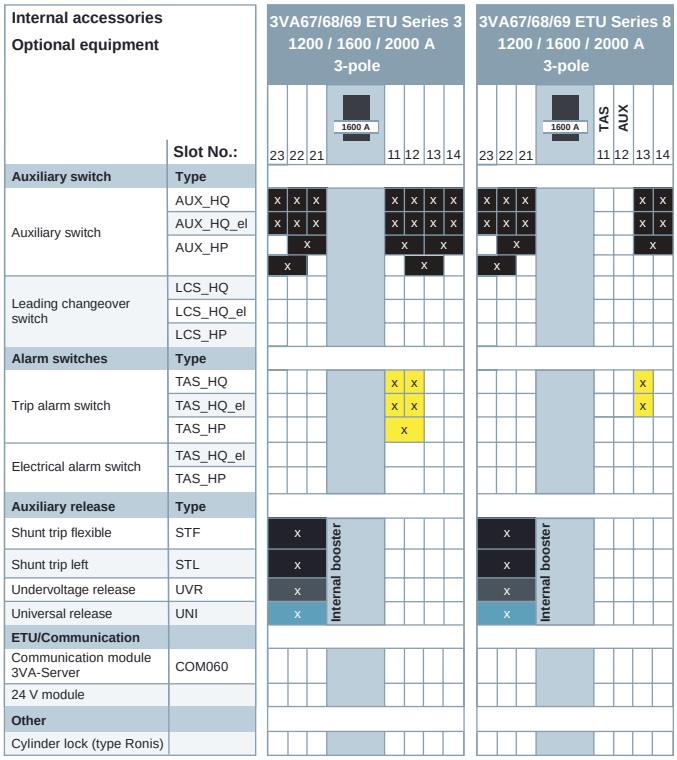
## Universal Release (Undervoltage and Shunt trip)

| | | | |
|---|---|---|---|
| Universal Release (UNI) | — | 12 | **3VA9978-0BD11** |
| | — | 24 | **3VA9978-0BD12** |
| | — | 48 | **3VA9978-0BD13** |

## Time-delay Device for Undervoltage Release

| Type | VAC 50/60 Hz | VDC | Delay Time | Catalog Number |
|---|---|---|---|---|
| Time-delay Device (mounted external to circuit breaker) | 230 | 230 | Fixed – 100ms min. | **3VA9978-0BF22** |
| | — | 24 | Fixed – 100ms min. | **3VA9978-0BF23** |




[1] Refer to pages 17/89 and 17/90 for internal accessory electrical requirements.

[2] Shunt trip flexible can be used in the left pocket of the 3VA5 breakers. They can be used in the left or right pocket of the 3VA6 breakers.

# 3VA58 1600A Thermal-Magnetic Trip Circuit Breakers



## 3VA58 1600A, 3-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MPAS) Catalog Number | H-Interrupting Class (HPAS) Catalog Number | C-Interrupting Class (CPAS) Catalog Number |
|---|---|---|---|
| | | TM230 FTAM | |
| 1400 | 3VA5814-5EC31-0AA0 | 3VA5814-6EC31-0AA0 | 3VA5814-7EC31-0AA0 |
| 1600 | 3VA5816-5EC31-0AA0 | 3VA5816-6EC31-0AA0 | 3VA5816-7EC31-0AA0 |

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA58 | 3 | 9.0 (229) | 16.0 (406) | 6.0 (152) | 69.0 | 31.3 |

## Mounting Arrangement (Required for Cable Connections)

Bus connections require either "3VA9873-0QB00" or "3VA9873-0QH00"

| Description | Catalog Number |
|---|---|
| Mounting Base for front connection | 3VA9873-0WM00 |
| Mounting Base for rear connection | 3VA9873-0WN00 |
| Lug Mounting Assembly | 3VA9873-0WL00 |

## Interrupting Ratings for 3VA58

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | |
| | | 240 | 480Y/ 277V | 480 | 600Y/ 347V | 600 | 250 (2P) | 600 (3P) | 750 (3P) |
| M | MPAS | 85 | 35 | 35 | 25 | 25 | 50 | 50 | 50 |
| H | HPAS | 100 | 65 | 65 | 35 | 35 | 85 | 85 | 85 |
| C | CPAS | 200 | 100 | 100 | 65 | 65 | 100 | 100 | 100 |

**3VA58 1600A 3-Pole**

### Ordering Information

The catalog numbers listed here are for 3VA58 1600A thermal-magnetic trip circuit breakers only. Order required mounting arrangement and necessary terminal connections as separate items.

All 3VA58 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

For NAVAL rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "1". (For example, a 35KA@480VAC, 1600A, 3-pole, rated 3VA58 would be catalog number 3VA5816-5EC31-**1**AA0).

All 3VA58 thermal-magnetic trip circuit breakers can be ordered 100% rated. For 100% rated thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA@480VAC, 1600A, 3-pole, rated 3VA58 would be catalog number 3VA5816-5EC31-**2**AA0).

# 3VA68 1600A Electronic Trip Circuit Breakers

## Selection

3VA68 1600A 3-Pole

### Ordering Information

The catalog numbers listed below are for 3VA68 1600A Electronic trip circuit breakers only. Order required mounting arrangement and necessary terminal connectors as separate items.

All 3VA68 electronict trip circuit breakers are UL listed for reverse feed applications.

3VA68 electronic trip circuit breakers are available with 100% ratings. For 100% rated electronic trip circuit breakers, change the 13th digit of the catalog number to the number "2". (For example, a 35KA @480VAC, 1600A, 3-pole, 100% rated 3VA68 would be catalog number 3VA6816-5HL31-**2**AA0) Requires the use of copper lugs — see lug table below.

All 3VA6 circuit breakers are certified to UL 489 Supplement SB, are marked "Naval", and are suitable for use at 50C.

## 3VA68 1600A, 3-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MPAE) Catalog Number | H-Interrupting Class (HPAE) Catalog Number | C-Interrupting Class (CPAE) Catalog Number |
|---|---|---|---|
| | | **ETU320 LI with dials** | |
| 1600 | **3VA6816-5HL31-0AA0** | **3VA6816-6HL31-0AA0** | **3VA6816-7HL31-0AA0** |
| | | **ETU330 LIG with dials** | |
| 1600 | **3VA6816-5HM31-0AA0** | **3VA6816-6HM31-0AA0** | **3VA6816-7HM31-0AA0** |
| | | **ETU350 LSI with dials – fixed instantaneous** | |
| 1600 | **3VA6816-5HN31-0AA0** | **3VA6816-6HN31-0AA0** | **3VA6816-7HN31-0AA0** |
| | | **ETU360 LSIG with dials** | |
| 1600 | **3VA6816-5HQ31-0AA0** | **3VA6816-6HQ31-0AA0** | **3VA6816-7HQ31-0AA0** |
| | | **ETU850 LSI with LCD and Metering** | |
| 1600 | **3VA6816-5KP31-0AA0** | **3VA6816-6KP31-0AA0** | **3VA6816-7KP31-0AA0** |
| | | **ETU856 LSI (G Alarm) with LCD and Metering** | |
| 1600 | **3VA6816-5KT31-0AA0** | **3VA6816-6KT31-0AA0** | **3VA6816-7KT31-0AA0** |
| | | **ETU860 LSIG with LCD and Metering** | |
| 1600 | **3VA6816-5KQ31-0AA0** | **3VA6816-6KQ31-0AA0** | **3VA6816-7KQ31-0AA0** |



## Mounting Arrangement (Required for Cable Connections)

Bus connections require either "3VA9873-0QB00" or "3VA9873-0QH00"

| Description | Catalog Number |
|---|---|
| Mounting Base for front connection | **3VA9873-0WM00** |
| Mounting Base for rear connection | **3VA9873-0WN00** |
| Lug Mounting Assembly | **3VA9873-0WL00** |

## Dimensions Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA68 | 3 | 9.0 (229) | 16.0 (406) | 6.0 (152) | 69.0 | 31.3 |

## Interrupting Ratings for 3VA68

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MPAE | 85 | 35 | 35 | 25 | 25 |
| H | HPAE | 100 | 65 | 65 | 35 | 35 |
| C | CPAE | 200 | 100 | 100 | 65 | 65 |

## Connections for 75C wire for 3VA58 and 3VA68

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 1 lug) | Part Number (kit of 3 lugs) | Mount Lugs to Essential Parts |
|---|---|---|---|---|---|
| TA7.2 Aluminum body lug, 4 cables (Cu/Al cable) for mounting base front connection | 600 kcmil | 750 kcmil | **3VA9771-0JJ44**③④ | — | **3VA9873-0WM00 + 3VA9872-0WA00** |
| TA7.2 Aluminum body lug, 4 cables (Cu/Al cable) for mounting base rear connection | 600 kcmil | 750 kcmil | **3VA9771-0JJ44**③⑤ | — | **3VA9873-0WN00** |
| TA7.3 Aluminum body lug, 5 cables (Cu/Al cable) for mounting base front connection | 300 kcmil | 600 kcmil | **3VA9771-0JJ53**③④ | — | **3VA9873-0WM00 + 3VA9872-0WA00** |
| TA7.3 Aluminum body lug, 5 cables (Cu/Al cable) for mounting base rear connection | 300 kcmil | 600 kcmil | **3VA9771-0JJ53**③⑤ | — | **3VA9873-0WN00** |
| TA7.4 Aluminum body lug, 6 cables (Cu/Al cable) for mounting base front connection | 300 kcmil | 600 kcmil | **3VA9871-0JJ63**③④ | — | **3VA9873-0WM00 + 3VA9872-0WA00** |
| TC7.3 Copper body lug, 5 cables (Cu cable only) for mounting base front connection | 300 kcmil | 600 kcmil | **3VA9871-0JE53**①③④ | — | **3VA9873-0WM00 + 3VA9872-0WA00** |
| TC7.3 Copper body lug, 5 cables (Cu cable only) for mounting base rear connection | 300 kcmil | 600 kcmil | **3VA9871-0JE53**①③⑤ | — | **3VA9873-0WN00** |
| TA7.1 Aluminum body lug, 6 cables (Cu/Al cable) for lug mounting assembly | 1/0 | 750 kcmil | — | **3VA9773-0JJ64**①② | **3VA9873-0WL00** |

① Meets requirements for 100% rated breakers up to 1600A, requires the use of 90 degree wire, size to 75 degree ampacity.
② Lugs Require Attachment to 3VA9873-0WL00 LMAP (Sold Separately).
③ Part Number is for kit of 1 lug. Requires customer to purchase Qty. of 3x (kit of 1 lug).
④ Mounting Base Front Connection Requires Lugs to be installed on 3VA9873-0WM00 MBFC (Sold Separately) + 3VA9872-0WA00 Phase Barriers (Sold Separately).
⑤ Mounting Base Rear Connection Requires Lugs to be installed on 3VA9873-0WN00 MBRC (Sold Separately).

## Trip Settings for 3VA68

### ETU320-LI, ETU330-LIG, ETU350-LSI, ETU360-LSIG

| Cont. Amp | LI, LIG, LSI, LSIG | | | LSI, LSIG | | LIG, LSIG | |
|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{ld}$ (sec) (L) | $I_i$ (Amp)⑥ (I) | $I_{sd}$= xIr (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (sec) (S) |
| 1600 | 600–1600 | 2.5 - 30 | 2400–12000 | 1.5–10 | 0 - 0.4 | 250–1600 | 0.1 / 0.3 |

⑥ $I_i$ for ETU350 is fixed at the maximum level shown in table.

### ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

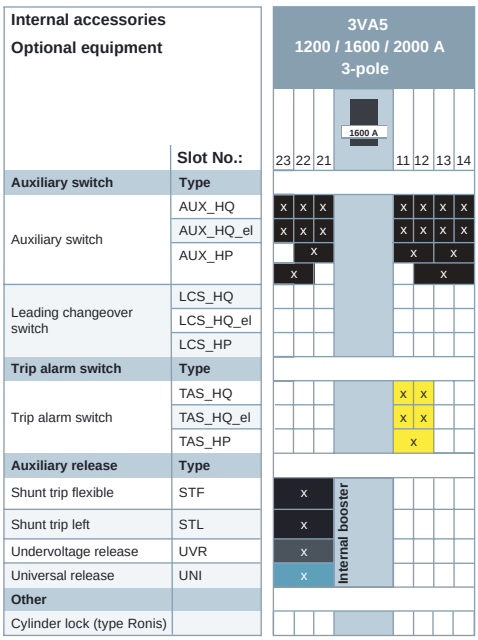
| Cont. Amp | LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LSIG, LSI(G) | | LSI 3P with External CT |
|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{ld}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (sec) (S) | $I_N$=x$I_r$ (Amp) |
| 1600 | 600–1600 | 2.5 - 30 | 2400–12000 | 0.6–10 | 0.05 - 0.5 | 320–1600 | 0.05-0.8 | 320–2560 |

For specific trip settings refer to the Electronic Trip Unit section of the 3VA Systems Manual
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

# Internal Accessories[1]

## Auxiliary and Alarm Switches (Form C –> 1 NO and 1 NC)

| Switch Type | Width | AC 50/ 60 Hz | DC | Catalog Number |
|---|---|---|---|---|
| Auxiliary Switch (AUX) HQ | 1 slot | 240V | 250V | **3VA9978-0AA12** |
| | | 24V | 24V | **3VA9978-0AA23** |
| Auxiliary Switch (AUX) HP | 2 slots | 600V | 250V | **3VA9978-0AA11** |
| Trip/Bell Alarm Switch (TAS) HQ | 1 slot | 240V | 250V | **3VA9978-0AB12** |
| | | 24V | 24V | **3VA9978-0AB13** |
| Trip/Bell Alarm Switch (TAS) HP | 2 slots | 600V | 250V | **3VA9978-0AB11** |




## Shunt Trips

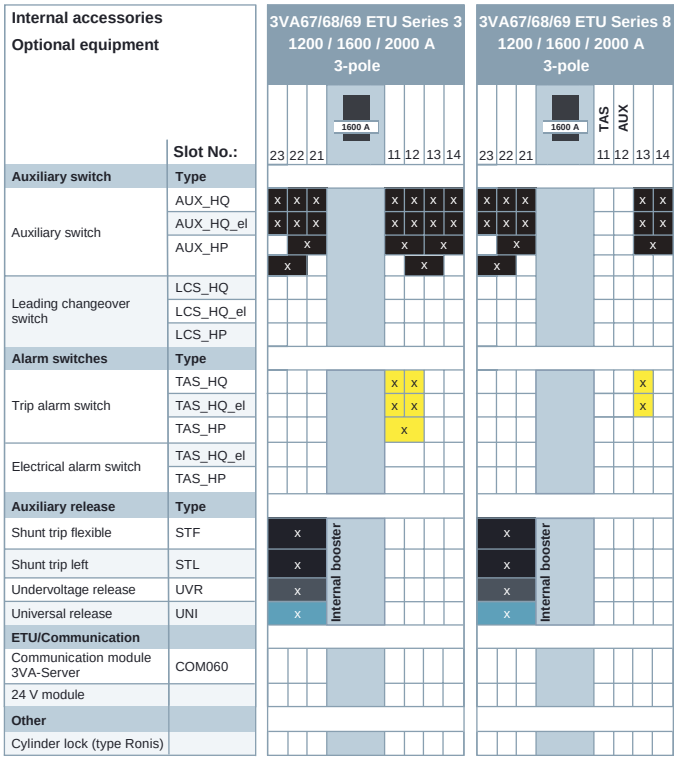
| Type | VAC 50/60 Hz | VDC | Catalog Number (3 slots) |
|---|---|---|---|
| Shunt Trip Left (STL) | 380 ... 600 | — | **3VA9978-0BL20** |
| | — | 12 | **3VA9978-0BL10** |
| | 24 | 24 ... 30 | **3V9978-0BL30** |
| | 48 ... 60 | 48 ... 60 | **3VA9978-0BL31** |
| | 110 ... 127 | 110 ... 127 | **3VA9978-0BL32** |
| | 208 ... 277 | 220 ... 250 | **3VA9978-0BL33** |
| Shunt Trip Flexible (STF)[2] | 24 | — | **3VA9978-0BA20** |
| | 48 ... 60 | — | **3VA9978-0BA21** |
| | 110 ... 127 | — | **3VA9978-0BA22** |
| | 208 ... 277 | — | **3VA9978-0BA23** |
| | 380 ... 500 | — | **3VA9978-0BA24** |
| | 600 | — | **3VA9978-0BA25** |

## Undervoltage Release

| | | | |
|---|---|---|---|
| Undervoltage Release (UVR) | — | 12 | **3VA9978-0BB10** |
| | — | 24 | **3VA9978-0BB11** |
| | — | 48 | **3VA9978-0BB12** |
| | — | 125 ... 127 | **3VA9978-0BB14** |
| | — | 250 | **3VA9978-0BB16** |
| | 24 | — | **3VA9978-0BB20** |
| | 120 ... 127 | — | **3VA9978-0BB24** |
| | 208 ... 230 | — | **3VA9978-0BB25** |
| | 440 ... 480 | — | **3VA9978-0BB27** |

## Universal Release (Undervoltage and Shunt trip)

| | | | |
|---|---|---|---|
| Universal Release (UNI) | — | 12 | **3VA9978-0BD11** |
| | — | 24 | **3VA9978-0BD12** |
| | — | 48 | **3VA9978-0BD13** |




## Time-delay Device for Undervoltage Release

| Type | VAC 50/60 Hz | VDC | Delay Time | Catalog Number |
|---|---|---|---|---|
| Time-delay Device (mounted external to circuit breaker) | 230 | 230 | Fixed – 100ms min. | **3VA9978-0BF22** |
| | — | 24 | Fixed – 100ms min. | **3VA9978-0BF23** |

[1] Refer to pages 17/89 and 17/90 for internal accessory electrical requirements.

[2] Shunt trip flexible can be used in the left pocket of the 3VA5 breakers. They can be used in the left or right pocket of the 3VA6 breakers.

# 3VA59 2000A Thermal-Magnetic Trip Circuit Breakers



## 3VA59 2000A, 3-pole Frame, Thermal-Magnetic Trip Unit

| Cont. Ampere Rating | M-Interrupting Class (MRAS) Catalog Number | H-Interrupting Class (HRAS) Catalog Number | C-Interrupting Class (CRAS) Catalog Number |
|---|---|---|---|
| | | TM230 FTAM | |
| 1800 | 3VA5918-5EC31-0AA0 | 3VA5918-6EC31-0AA0 | 3VA5918-7EC31-0AA0 |
| 2000 | 3VA5920-5EC31-0AA0 | 3VA5920-6EC31-0AA0 | 3VA5920-7EC31-0AA0 |

3VA59 2000A 3-Pole

## Dimensions

## Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA59 | 3 | 9.0 (229) | 16.0 (406) | 6.0 (152) | 69.0 | 31.3 |

## Mounting Arrangement (Required)

| Description | Catalog Number |
|---|---|
| Mounting Base for front connection | 3VA9873-0WM00 |
| Mounting Base for rear connection | 3VA9873-0WN00 |

## Interrupting Ratings for 3VA59

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Volts AC (50/60 Hz) | | | | | Volts DC | | |
| | | 240 | 480Y/ 277V | 480 | 600Y/ 347V | 600 | 250 (2P) | 600 (3P) | 750 (3P) |
| M | MRAS | 85 | 35 | 35 | 25 | 25 | 50 | 50 | 50 |
| H | HRAS | 100 | 65 | 65 | 35 | 35 | 85 | 85 | 85 |
| C | CRAS | 200 | 100 | 100 | 65 | 65 | 100 | 100 | 100 |

## Ordering Information

The catalog numbers listed here are for 3VA59 2000A thermal-magnetic trip circuit breakers only. Order required mounting base assembly and necessary terminal connections as separate items.

All 3VA59 thermal-magnetic trip circuit breakers are UL listed for reverse feed applications.

For NAVAL rated (3-pole only) thermal-magnetic trip circuit breakers, change the 13th digit of the catalog number to the number "1". (For example, a 35KA@480VAC, 2000A, 3-pole, rated 3VA59 would be catalog number 3VA5920-5EC31-**1**AA0)

# 3VA69 2000A Electronic Trip Circuit Breakers



## 3VA69 2000A, 3-pole Frame, Electronic Trip Unit

| Continuous Ampere | M-Interrupting Class (MRAE) Catalog Number | H-Interrupting Class (HRAE) Catalog Number | C-Interrupting Class (CRAE) Catalog Number |
|---|---|---|---|
| **ETU850 LSI with LCD and Metering** | | | |
| 2000 | **3VA6920-5KP31-0AA0** | **3VA6920-6KP31-0AA0** | **3VA6920-7KP31-0AA0** |
| **ETU856 LSI (G Alarm) with LCD and Metering** | | | |
| 2000 | **3VA6920-5KT31-0AA0** | **3VA6920-6KT31-0AA0** | **3VA6920-7KT31-0AA0** |
| **ETU860 LSIG with LCD and Metering** | | | |
| 2000 | **3VA6920-5KQ31-0AA0** | **3VA6920-6KQ31-0AA0** | **3VA6920-7KQ31-0AA0** |

**3VA69 2000A 3-Pole**

## Mounting Arrangement (Required)

| Description | Catalog Number |
|---|---|
| Mounting Base for front connection | **3VA9873-0WM00** |
| Mounting Base for rear connection | **3VA9873-0WN00** |

## Dimensions / Shipping Weight

| Breaker | Poles | W in. (mm) | H in. (mm) | D in. (mm) | lbs. | kg |
|---|---|---|---|---|---|---|
| 3VA69 | 3 | 9.0 (229) | 16.0 (406) | 6.0 (152) | 69.0 | 31.3 |

## Interrupting Ratings for 3VA69

| Interrupting Class | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480Y/277V | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|---|
| M | MRAE | 85 | 35 | 35 | 25 | 25 |
| H | HRAE | 100 | 65 | 65 | 35 | 35 |
| C | CRAE | 200 | 100 | 100 | 65 | 65 |

## Ordering Information

The catalog numbers listed below are for 3VA69 2000A Electronic trip circuit breakers only. Order required mounting base assembly and necessary terminal connectors as separate items.

All 3VA69 electronict trip circuit breakers are UL listed for reverse feed applications.



ETU850-LSI, ETU856 LSI(A), ETU860-LSIG

| Cont. Amp | LSI, LSIG, LSI(G) | | | LSI, LSIG, LSI(G) | | LSIG, LSI(G) | | LSI 3P with External CT |
|---|---|---|---|---|---|---|---|---|
| $I_n$ (Amp) | $I_r$(Amp) (L) | $t_{ld}$ (sec) (L) | $I_i$ (Amp) (I) | $I_{sd}$ (Amp) (S) | $t_{sd}$ (sec) (S) | $I_g$ (Amp) (G) | $t_g$ (sec) (S) | $I_N=xI_r$ (Amp) |
| 2000 | 800–2000 | 2.5 - 30 | 3000–12000 | 0.6–10 | 0.05 - 0.5 | 400–2000 | 0.05–0.8 | 400–3200 |

## Connections for 75C wire for 3VA59 and 3VA69

| Type | Minimum cable size | Maximum cable size | Part Number (kit of 1 lugs) | Mount Lugs to Essential Parts |
|---|---|---|---|---|
| TA7.4 Aluminum body lug, 6 cables (Cu/Al cable) for mounting base front connection, only for UL applications | 300 kcmil | 600 kcmil | **3VA9871-0JJ63**①② | **3VA9873-0WM00 + 3VA9872-0WA00** |
| TC7.3 Copper body lug, 5 cables (Cu cable only) for mounting base front connection, only for UL applications | 300 kcmil | 600 kcmil | **3VA9871-0JE53**①② | **3VA9873-0WM00 + 3VA9872-0WA00** |
| TC7.3 Copper body lug, 5 cables (Cu cable only) for mounting base rear connection, only for UL applications | 300 kcmil | 600 kcmil | **3VA9871-0JE53**①③ | **3VA9873-0WN00** |

① Part Number is for kit of 1 lug. Requires customer to purchase Qty. of 3x (kit of 1 lug).
② Mounting Base Front Connection Requires Lugs to be installed on 3VA9873-0WM00 MBFC (Sold Separately) + 3VA9872-0WA00 Phase Barriers (Sold Separately).
③ Mounting Base Rear Connection Requires Lugs to be installed on 3VA9873-0WN00 MBRC (Sold Separately).

# Internal Accessories[1]

## Auxiliary and Alarm Switches (Form C –> 1 NO and 1 NC)

| Switch Type | Width | AC 50/ 60 Hz | DC | Catalog Number |
|---|---|---|---|---|
| Auxiliary Switch (AUX) HQ | 1 slot | 240V | 250V | **3VA9978-0AA12** |
| | | 24V | 24V | **3VA9978-0AA23** |
| Auxiliary Switch (AUX) HP | 2 slots | 600V | 250V | **3VA9978-0AA11** |
| Trip/Bell Alarm Switch (TAS) HQ | 1 slot | 240V | 250V | **3VA9978-0AB12** |
| | | 24V | 24V | **3VA9978-0AB13** |
| Trip/Bell Alarm Switch (TAS) HP | 2 slots | 600V | 250V | **3VA9978-0AB11** |

## Shunt Trips

| Type | VAC 50/60 Hz | VDC | Catalog Number (3 slots) |
|---|---|---|---|
| Shunt Trip Left (STL) | 380 ... 600 | — | **3VA9978-0BL20** |
| | — | 12 | **3VA9978-0BL10** |
| | 24 | 24 ... 30 | **3V9978-0BL30** |
| | 48 ... 60 | 48 ... 60 | **3VA9978-0BL31** |
| | 110 ... 127 | 110 ... 127 | **3VA9978-0BL32** |
| | 208 ... 277 | 220 ... 250 | **3VA9978-0BL33** |
| Shunt Trip Flexible (STF)[2] | 24 | — | **3VA9978-0BA20** |
| | 48 ... 60 | — | **3VA9978-0BA21** |
| | 110 ... 127 | — | **3VA9978-0BA22** |
| | 208 ... 277 | — | **3VA9978-0BA23** |
| | 380 ... 500 | — | **3VA9978-0BA24** |
| | 600 | — | **3VA9978-0BA25** |

## Undervoltage Release

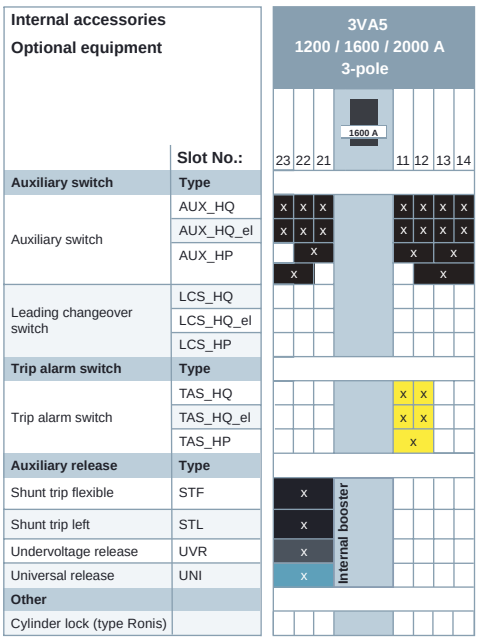
| | | | |
|---|---|---|---|
| Undervoltage Release (UVR) | — | 12 | **3VA9978-0BB10** |
| | — | 24 | **3VA9978-0BB11** |
| | — | 48 | **3VA9978-0BB12** |
| | — | 125 ... 127 | **3VA9978-0BB14** |
| | — | 250 | **3VA9978-0BB16** |
| | 24 | — | **3VA9978-0BB20** |
| | 120 ... 127 | — | **3VA9978-0BB24** |
| | 208 ... 230 | — | **3VA9978-0BB25** |
| | 440 ... 480 | — | **3VA9978-0BB27** |

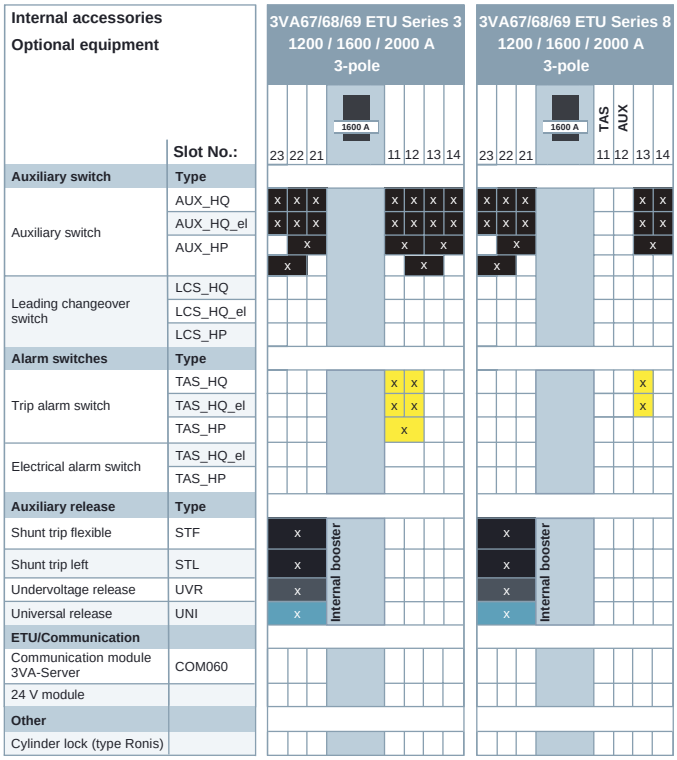
## Universal Release (Undervoltage and Shunt trip)

| | | | |
|---|---|---|---|
| Universal Release (UNI) | — | 12 | **3VA9978-0BD11** |
| | — | 24 | **3VA9978-0BD12** |
| | — | 48 | **3VA9978-0BD13** |

## Time-delay Device for Undervoltage Release

| Type | VAC 50/60 Hz | VDC | Delay Time | Catalog Number |
|---|---|---|---|---|
| Time-delay Device (mounted external to circuit breaker) | 230 | 230 | Fixed – 100ms min. | **3VA9978-0BF22** |
| | — | 24 | Fixed – 100ms min. | **3VA9978-0BF23** |




[1] Refer to pages 17/89 and 17/90 for internal accessory electrical requirements.

[2] Shunt trip flexible can be used in the left pocket of the 3VA5 breakers. They can be used in the left or right pocket of the 3VA6 breakers.

# 3VA Molded Case Switch and Motor Circuit Protector



## Ordering Information

Breaking capacity (the SCCR rating) is the maximum permissible short circuit current at the installation location of the MCS in combination with an appropriate overload protective device.

For factory installed nut keepers for molded case switches and motor circuit protectors, change the 12th digit of the catalog number to "2" (required for panelboard or switchboard installation).

For factory installed standard lugs, change the 12th digit to "6" (standard lugs are identified in the lug table in the accessory section of the SpeedFax). Alternate connection technology need to be ordered separately for field installation.

**Note:** Factory installed nut keepers and lugs are only available for 3 Pole breakers.

**Magnetic switch**

**Electronic Trip Unit switch**

## Molded Case Switch Magnetic

| Frame (Breaker Type) | Max. Amp Rating | 2-Pole | 3-Pole | Short-Circuit Current Rating (AC) | | | Short-Circuit Current Rating (DC) | | | | Instantaneous short circuit protection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Catalog Number | Catalog Number | 240V | 480V | 600V | 125V | 250V② | 500V③ | 600V③ | |
| 3VA51 (HEAS) | 100 | **3VA5110-1BB21-0AA0** | **3VA5110-1BB31-0AA0** | 150k | 65k | 25k① | 30k | 100k | 100k | — | 1600 A |

| | | Catalog Number | Catalog Number | 240V | 480V | 600V | 250V | 500V② | 600V③ | 750V③ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3VA52 (HFAS) | 150 | **3VA5215-0BB61-0AA0** | **3VA5215-0BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | — | 85k | 2400 A |
| | 250 | **3VA5225-0BB61-0AA0** | **3VA5225-0BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | — | 85k | 2500 A |
| 3VA53 (HJAS) | 400 | **3VA5340-0BB61-0AA0** | **3VA5340-0BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | 85k | 10k | 6000 A |
| 3VA54 (HLAS) | 600 | **3VA5460-0BB61-0AA0** | **3VA5460-0BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | 85k | 10k | 6000 A |
| 3VA55 (HMAS) | 800 | **3VA5580-0BB62-0AA0** | **3VA5580-0BB32-0AA0** | 100k | 65k | 25k | 85k | 85k | 85k | 85k | 8000 A |
| 3VA57 (HNAS) | 1000 | **3VA5710-6BB61-0AA0** | **3VA5710-6BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | 85k | 85k | 12000 A |
| | 1200 | **3VA5712-6BB61-0AA0** | **3VA5712-6BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | 85k | 85k | 12000 A |
| 3VA58 (HPAS) | 1600 | — | **3VA5816-6BB31-0AA0** | 100k | 65k | 25k | 85k | 85k | 85k | 85k | 12000 A |
| 3VA59 (HRAS) | 2000 | — | **3VA5920-6BB31-0AA0** | 100k | 65k | 25k | — | — | — | — | 12000 A |

| Frame (Breaker Type) | Max. Amp Rating | 2-Pole | 3-Pole | Short-Circuit Current Rating (AC) | | | Short-Circuit Current Rating (DC) | | | | Instantaneous short circuit protection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Catalog Number | Catalog Number | 240V | 480V | 600V | 250V | 500V② | 600V③ | 750V③ | |
| 3VA52 (CFAS) | 100 | **3VA5210-1BB61-0AA0** | **3VA5210-1BB31-0AA0** | 200k | 100k | 35k | 100k | 100k | — | 100k | 2500 A |
| | 150 | **3VA5215-1BB61-0AA0** | **3VA5215-1BB31-0AA0** | 200k | 100k | 35k | 100k | 100k | — | 100k | 2400 A |
| | 250 | **3VA5225-1BB61-0AA0** | **3VA5225-1BB31-0AA0** | 200k | 100k | 35k | 100k | 100k | — | 100k | 2500 A |
| 3VA53 (CJAS) | 400 | **3VA5340-1BB61-0AA0** | **3VA5340-1BB31-0AA0** | 200k | 100k | 35k | 100k | 100k | 100k | 10k | 6000 A |
| 3VA54 (CLAS) | 600 | **3VA5460-1BB61-0AA0** | **3VA5460-1BB31-0AA0** | 200k | 100k | 35k | 100k | 100k | 100k | 10k | 6000 A |
| 3VA55 (CMAS) | 800 | **3VA5580-1BB62-0AA0** | **3VA5580-1BB32-0AA0** | 100k | 100k | 50k | 100k | 100k | 100k | 100k | 8000 A |
| 3VA57 (CNAS) | 1000 | **3VA5710-7BB61-0AA0** | **3VA5710-7BB31-0AA0** | 200k | 100k | 65k | 100k | 100k | 100k | 100k | 12000 A |
| | 1200 | **3VA5712-7BB61-0AA0** | **3VA5712-7BB31-0AA0** | 200k | 100k | 65k | 100k | 100k | 100k | 100k | 12000 A |
| 3VA58 (CPAS) | 1600 | — | **3VA5816-7BB31-0AA0** | 200k | 100k | 65k | 100k | 100k | 100k | 100k | 12000 A |
| 3VA59 (CRAS) | 2000 | — | **3VA5920-7BB31-0AA0** | 200k | 100k | 65k | — | — | — | — | 12000 A |

## Molded Case Switch Electronic

| Frame (Breaker Type) | Max. Ampere Rating | 2-Pole | 3-Pole | Short-Circuit Current Rating | | | Instantaneous short circuit protection |
|---|---|---|---|---|---|---|---|
| | | Catalog Number | Catalog Number | 240V | 480V | 600V | |
| 3VA63 (CJAE) | 400 | — | **3VA6340-1BB31-0AA0** | 200k | 100k | 35k | 5600 A |
| 3VA64 (CLAE) | 600 | — | **3VA6460-1BB31-0AA0** | 200k | 100k | 35k | 5400 A |

① Rated at 600 Y/347 V AC.

② Two poles in series.

③ Three poles in series.

# 3VA Molded Case Switch and Motor Circuit Protector



## Motor circuit protector TM120M AM③

| Frame (Breaker Type) | Maximum Ampere Rating | 3-Pole Catalog Number | Instantaneous short circuit protection |
|---|---|---|---|
| 3VA51 (HEAP) | 1 | **3VA5181-1MU31-0AA0** | 3 ... 7 |
| | | **3VA5181-1MH31-0AA0** | 5 ... 12 |
| | 2 | **3VA5102-1MU31-0AA0** | 6 ... 14 |
| | | **3VA5102-1MH31-0AA0** | 10 ... 24 |
| | 3 | **3VA5103-1MU31-0AA0** | 9 ... 21 |
| | | **3VA5103-1MH31-0AA0** | 15 ... 36 |
| | 5 | **3VA5105-1MU31-0AA0** | 15 ... 35 |
| | | **3VA5105-1MH31-0AA0** | 25 ... 60 |
| | 7 | **3VA5107-1MU31-0AA0** | 21 ... 49 |
| | | **3VA5107-1MH31-0AA0** | 35 ... 84 |
| | 10 | **3VA5191-1MU31-0AA0** | 30 ... 70 |
| | | **3VA5191-1MH31-0AA0** | 50 ... 120 |
| | 15 | **3VA5195-1MU31-0AA0** | 45 ... 105 |
| | | **3VA5195-1MH31-0AA0** | 75 ... 180 |
| | 25 | **3VA5125-1MU31-0AA0** | 75 ... 175 |
| | | **3VA5125-1MH31-0AA0** | 125 ... 300 |
| | 30 | **3VA5130-1MU31-0AA0** | 90 ... 210 |
| | | **3VA5130-1MH31-0AA0** | 150 ... 360 |
| | 40 | **3VA5140-1MU31-0AA0** | 120 ... 280 |
| | | **3VA5140-1MH31-0AA0** | 200 ... 480 |
| | 50 | **3VA5150-1MU31-0AA0** | 150 ... 350 |
| | | **3VA5150-1MH31-0AA0** | 250 ... 600 |
| | 70 | **3VA5170-1MU31-0AA0** | 210 ... 490 |
| | | **3VA5170-1MH31-0AA0** | 350 ... 840 |
| | 80 | **3VA5180-1MU31-0AA0** | 240 ... 560 |
| | | **3VA5180-1MH31-0AA0** | 400 ... 960 |
| | 90 | **3VA5190-1MU31-0AA0** | 270 ... 630 |
| | | **3VA5190-1MH31-0AA0** | 450 ... 1080 |
| | 100 | **3VA5110-1MU31-0AA0** | 300 ... 700 |
| | | **3VA5110-1MH31-0AA0** | 500 ... 1200 |
| | 110 | **3VA5111-1MU31-0AA0** | 330 ... 770 |
| | | **3VA5111-1MH31-0AA0** | 550 ... 1320 |
| | 125 | **3VA5112-1MU31-0AA0** | 375 ... 875 |
| | | **3VA5112-1MH31-0AA0** | 625 ... 1500 |
| 3VA52 (HFAP) | 150 | **3VA5215-0MU31-0AA0** | 450 ... 900 |
| | | **3VA5215-0MH31-0AA0** | 900 ... 1800 |
| | 200 | **3VA5220-0MU31-0AA0** | 600 ... 1200 |
| | | **3VA5220-0MH31-0AA0** | 1200 ... 2400 |
| | 250 | **3VA5225-0MU31-0AA0** | 750 ... 900 |
| | | **3VA5225-0MH31-0AA0** | 1250 ... 2500 |
| 3VA53 (HJAP) | 250 | **3VA5325-0MU31-0AA0** | 750 ... 1500 |
| | | **3VA5325-0MH31-0AA0** | 1500 ... 3000 |

## Motor circuit protector TM120M AM②

| Frame (Breaker Type) | Maximum Ampere Rating | 3-Pole Catalog Number | Instantaneous short circuit protection |
|---|---|---|---|
| 3VA54 (HLAP | 400 | **3VA5440-0MU31-0AA0** | 750 ... 1500 |
| | | **3VA5440-0MH31-0AA0** | 1200 ... 2400 |
| | 500 | **3VA5450-0MU31-0AA0** | 1500 ... 3000 |
| | | **3VA5450-0MH31-0AA0** | 3000 ... 6000 |
| | 600 | **3VA5460-0MU31-0AA0** | 1800 ... 3600 |
| | | **3VA5460-0MH31-0AA0** | 3000 ... 6000 |
| 3VA55 (HMAP) | 600 | **3VA5560-0MH32-0AA0** | 4800 ... 9600 |
| | 800 | **3VA5580-0MH32-0AA0** | 4800 ... 9600 |
| 3VA52 (CFAP) | 150 | **3VA5215-1MU31-0AA0** | 450 ... 900 |
| | | **3VA5215-1MH31-0AA0** | 900 ... 1800 |
| | 200 | **3VA5220-1MU31-0AA0** | 600 ... 1200 |
| | | **3VA5220-1MH31-0AA0** | 1200 ... 2400 |
| | 250 | **3VA5225-1MH31-0AA0** | 750 ... 900 |
| | | **3VA5225-1MU31-0AA0** | 1250 ... 2500 |
| 3VA53 (CJAP) | 250 | **3VA5325-1MU31-0AA0** | 750 ... 1500 |
| | | **3VA5325-1MH31-0AA0** | 1500 ... 3000 |
| 3VA54 (CLAP) | 400 | **3VA5440-1MU31-0AA0** | 750 ... 1500 |
| | | **3VA5440-1MH31-0AA0** | 2400 ... 4800 |
| | 500 | **3VA5450-1MU31-0AA0** | 1500 ... 3000 |
| | | **3VA5450-1MH31-0AA0** | 3000 ... 6000 |
| | 600 | **3VA5460-1MU31-0AA0** | 1500 ... 3000 |
| | | **3VA5460-1MH31-0AA0** | 3000 ... 6000 |
| 3VA55 (CMAP) | 600 | **3VA5560-1MH32-0AA0** | 4800 ... 9600 |
| | 800 | **3VA5580-1MH32-0AA0** | 4800 ... 9600 |

## Motor circuit protector ETU310M②

| | | | |
|---|---|---|---|
| 3VA61 (CDAR) | 25 | **3VA6125-1MS31-0AA0** | 75 ... 375 |
| | 30 | **3VA6130-1MS31-0AA0** | 90 ... 450 |
| | 40 | **3VA6140-1MS31-0AA0** | 120 ... 600 |
| | 50 | **3VA6150-1MS31-0AA0** | 150 ... 750 |
| | 70 | **3VA6170-1MS31-0AA0** | 210 ... 1050 |
| | 80 | **3VA6180-1MS31-0AA0** | 240 ... 1200 |
| | 90 | **3VA6190-1MS31-0AA0** | 270 ... 1350 |
| | 100 | **3VA6110-1MS31-0AA0** | 300 ... 1500 |
| 3VA62 (CFAR-Y) | 110 | **3VA6211-1MS31-0AA0** | 330 ... 1650 |
| | 125 | **3VA6212-1MS31-0AA0** | 375 ... 1875 |
| | 150 | **3VA6215-1MS31-0AA0** | 450 ... 2250 |
| | 200 | **3VA6220-1MS31-0AA0** | 600 ... 2400 |
| 3VA63 (CJAR) | 200 | **3VA6320-1MS31-0AA0** | 600 ... 3000 |
| | 250 | **3VA6325-1MS31-0AA0** | 750 ... 3750 |
| 3VA64 (CLAR) | 400 | **3VA6440-1MS31-0AA0** | 1200 ... 5200 |
| | 500 | **3VA6450-1MS31-0AA0** | 1500 ... 6000 |
| 3VA65 (CMAR) | 800 | **3VA6580-1MS32-0AA0** | 2400 ... 12000 |

## Interrupting Ratings

| Frame | Breaker Type | RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz) 240 | 480 | 600Y/347V | 600 |
|---|---|---|---|---|---|
| 3VA51 | HEAP | 150 | 65 | 25 | — |
| 3VA52 | HFAP | 100 | 65 | 25 | 25 |
| | CFAP | 200 | 100 | 35 | 35 |
| 3VA53 | HJAP | 100 | 65 | 25 | 25 |
| | CHAP | 200 | 100 | 35 | 35 |
| 3VA54 | HLAP | 100 | 65 | 25 | 25 |
| | CLAP | 200 | 100 | 35 | 35 |
| 3VA55 | HMAP | 100 | 65 | 25 | — |
| | CMAP | 200 | 100 | 50 | — |
| 3VA61 | CDAR | 200 | 100 | 35 | 35 |
| 3VA62 | CFAR | 200 | 100 | 35 | 35 |
| 3VA63 | CJAR | 200 | 100 | 35 | 35 |
| 3VA64 | CLAR | 200 | 100 | 35 | 35 |
| 3VA65 | CMAR | 200 | 100 | 42 | — |

**Motor Circuit Protector**

① Rated at 600 Y/347 V AC.
② SCCR is 100kA at 480 V. SCCR rating is the maximum permissible short circuit current of the MCP in combination with an appropriate overload protection device.
③ SCCR is 65kA at 480 V. SCCR rating is the maximum permissible short circuit current of the MCP in combination with an appropriate overload protection device.

## Internal Accessories[3]

### Auxiliary and Alarm Switches (Form C –> 1 NO and 1 NC)

| Switch Type | Width | AC 50/ 60 Hz | DC | Catalog Number |
|---|---|---|---|---|
| Auxiliary Switch (AUX) HQ[4] | 1 slot | 24 … 300V | 24 … 250V | 3VA9978-0AA12 |
| Leading Changeover Switch (LCS) HQ[4] | | | | 3VA9978-0AA22 |
| Trip/Bell Alarm Switch (TAS) HQ[4] | | | | 3VA9978-0AB12 |
| Electronic Alarm (EAS) HQ[1][4] | | | | 3VA9978-0AB22 |
| Auxiliary Switch (AUX) HP[5] | 2 slots | 24 … 600V | 24 … 250V | 3VA9978-0AA11 |
| Leading Changeover Switch (LCS) HP[5] | | | | 3VA9978-0AA21 |
| Trip/Bell Alarm Switch (TAS) HP[5] | | | | 3VA9978-0AB11 |
| Electronic Alarm (EAS) HP[1][5] | | | | — |
| Auxiliary Switch (AUX) HQ[4] electronic | 1 slot | 24 | 24 | 3VA9978-0AA13 |
| Leading Changeover Switch (LCS) HQ[4] electronic | | | | 3VA9978-0AA23 |
| Trip/Bell Alarm Switch (TAS) HQ[4] electronic | | | | 3VA9978-0AB13 |
| Electronic Alarm (EAS) HQ[4] electronic[1] | | | | 3VA9978-0AB23 |

### Shunt Trips

| Type | VAC 50/60 Hz | VDC | Catalog Number (3 slots) |
|---|---|---|---|
| Shunt Trip Left (STL) | 380 ... 600 | — | 3VA9978-0BL20 |
| | — | 12 | 3VA9978-0BL10 |
| | 24 | 24 ... 30 | 3VA9978-0BL30 |
| | 48 ... 60 | 48 ... 60 | 3VA9978-0BL31 |
| | 110 ... 127 | 110 ... 127 | 3VA9978-0BL32 |
| | 208 ... 277 | 220 ... 250 | 3VA9978-0BL33 |
| Shunt Trip Flexible (STF)[2] | 24 | — | 3VA9978-0BA20 |
| | 48 ... 60 | — | 3VA9978-0BA21 |
| | 110 ... 127 | — | 3VA9978-0BA22 |
| | 208 ... 277 | — | 3VA9978-0BA23 |
| | 380 ... 500 | — | 3VA9978-0BA24 |
| | 600 | — | 3VA9978-0BA25 |

### Undervoltage Release

| | | | |
|---|---|---|---|
| Undervoltage Release (UVR) | — | 12 | 3VA9978-0BB10 |
| | — | 24 | 3VA9978-0BB11 |
| | — | 48 | 3VA9978-0BB12 |
| | — | 125 ... 127 | 3VA9978-0BB14 |
| | — | 250 | 3VA9978-0BB16 |
| | 24 | — | 3VA9978-0BB20 |
| | 120 ... 127 | — | 3VA9978-0BB24 |
| | 208 ... 230 | — | 3VA9978-0BB25 |
| | 440 ... 480 | — | 3VA9978-0BB27 |

### Universal Release (Undervoltage and Shunt trip)

| | | | |
|---|---|---|---|
| Universal Release (UNI) | — | 12 | 3VA9978-0BD11 |
| | — | 24 | 3VA9978-0BD12 |
| | — | 48 | 3VA9978-0BD13 |

### Time-delay Device for Undervoltage Release

| Type | VAC 50/60 Hz | VDC | Delay Time | Catalog Number |
|---|---|---|---|---|
| Time-delay Device (mounted external to circuit breaker) | 230 | 230 | Fixed – 100ms minimum | 3VA9978-0BF22 |
| | — | 24 | Fixed – 100ms minimum | 3VA9978-0BF23 |

**Auxiliary switches and alarm switches HQ**

**Auxiliary switches and alarm switches HP**

**Shunt trip left STL**

**Undervoltage releases UVR**

**Universal release UNI**

**Time-delay device for undervoltage releases**

① Use only with 3VA6.
② Shunt trip flexible can be used in the left pocket of the 3VA5 breakers. They can be used in the left or right pocket of the 3VA6 breakers.
③ Refer to pages 17/89 and 17/90 for internal accessory electrical requirements.
④ HQ: One conductor per contact point, max. 300 V AC, max. 6 A
⑤ HP: Two conductors per contact point possible (two screw terminals support one internal contact point), max. 600 V; max. 10 A

## Front Mounted Rotary Operator

| | Type | Color | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A-2000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|
| Degree of protection NEMA 1 | Standard without illumination kit | Gray | √ | — | — | — | — | — | 3VA9137-0EK11 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK11 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK11 |
| | | | — | — | — | — | √ | — | 3VA9677-0EK11 |
| | | | — | — | — | — | — | √ | 3VA9877-0EK11 |
| | Standard with illumination kit | Gray | √ | — | — | — | — | — | 3VA9137-0EK13 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK13 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK13 |
| | EMERGENCY-OFF without illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0EK15 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK15 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK15 |
| | | | — | — | — | — | √ | — | 3VA9677-0EK15 |
| | | | — | — | — | — | — | √ | 3VA9877-0EK15 |
| | EMERGENCY-OFF with illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0EK17 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK17 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK17 |
| | Standard with door opening function① | Gray | √ | — | — | — | — | — | 3VA9137-0EK21 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK21 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK21 |
| | | | — | — | — | — | √ | — | 3VA9677-0EK21 |
| | Standard with door opening function①, with illumination kit | Gray | √ | — | — | — | — | — | 3VA9137-0EK23 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK23 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK23 |
| | EMERGENCY-OFF with door opening function① | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0EK25 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK25 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK25 |
| | | | — | — | — | — | √ | — | 3VA9677-0EK25 |
| | EMERGENCY-OFF with door opening function①, with illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0EK27 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK27 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK27 |
| | Standard with door opening function① | Gray | √ | — | — | — | — | — | 3VA9137-0EK31 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK31 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK31 |
| | | | — | — | — | — | √ | — | 3VA9677-0EK31 |
| | Standard with door opening function①, with illumination kit | Gray | √ | — | — | — | — | — | 3VA9137-0EK33 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK33 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK33 |
| | EMERGENCY-OFF with door opening function① | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0EK35 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK35 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK35 |
| | | | — | — | — | — | √ | — | 3VA9677-0EK35 |
| | EMERGENCY-OFF with door opening function①, with illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0EK37 |
| | | | — | √ | √ | — | — | — | 3VA9277-0EK37 |
| | | | — | — | — | √ | — | — | 3VA9447-0EK37 |

① Door interlocked even in the off position unless button is pressed on the front mounted operators.

# 3VA Manual Operators

## Selection

### Door Mounted Rotary Operator①②

| | Type | Color | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A - 2000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|
| Degree of protection Type 1, 12, 3R and 4X | Standard | Gray | √ | — | — | — | — | — | 3VA9137-0FK21 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK21 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK21 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK21 |
| | | | — | — | — | — | — | √ | 3VA9877-0FK21 |
| | Standard with illumination kit | Gray | √ | — | — | — | — | — | 3VA9137-0FK23 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK23 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK23 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK23 |
| | EMERGENCY-OFF without illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0FK25 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK25 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK25 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK25 |
| | | | — | — | — | — | — | √ | 3VA9877-0FK25 |
| | EMERGENCY-OFF with illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0FK27 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK27 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK27 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK27 |
| | Standard with door opening function③ | Gray | √ | — | — | — | — | — | 3VA9137-0FK31 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK31 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK31 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK31 |
| | Standard with door opening function③, with illumination kit | Gray | √ | — | — | — | — | — | 3VA9137-0FK33 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK33 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK33 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK33 |
| | EMERGENCY-OFF with door opening function③ | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0FK35 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK35 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK35 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK35 |
| | EMERGENCY-OFF with door opening function③, with illumination kit | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0FK37 |
| | | | — | √ | √ | — | — | — | 3VA9277-0FK37 |
| | | | — | — | — | √ | — | — | 3VA9447-0FK37 |
| | | | — | — | — | — | √ | — | 3VA9677-0FK37 |
| NFPA-79 Supplementary Handles | Standard | Gray | √ | — | — | — | — | — | 3VA9137-0GC01 |
| | | | — | √ | √ | — | — | — | 3VA9477-0GC01 |
| | | | — | — | — | √ | — | — | 3VA9477-0GC11 |
| | | | — | — | — | — | √ | — | 3VA9677-0GC01 |
| | | | — | — | — | — | — | √ | 3VA9877-0GC01 |
| | EMERGENCY-OFF | Yellow-Red | √ | — | — | — | — | — | 3VA9137-0GC05 |
| | | | — | √ | √ | — | — | — | 3VA9477-0GC05 |
| | | | — | — | — | √ | — | — | 3VA9477-0GC15 |
| | | | — | — | — | — | √ | — | 3VA9677-0GC05 |
| | | | — | — | — | — | — | √ | 3VA9877-0GC05 |

① Lockable with up to three padlock hasps.

② All door mounted rotary operators include the tolerance compensation feature.

③ Door interlocked even in the OFF position unless handle is in the "Reset / Door-Open" position on the door mounted operators.

# 3VA Manual Operators

## Selection

### Side Mounted Rotary Operator①

| | Type | Color | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|
| <br>▪ Without mounting plate<br>▪ Rotary operator with shaft 300 mm<br>▪ Handle with masking plate 75 x 75 mm<br>▪ Degree of protection Type 1, 12, 3R, 4X | Standard | Gray | √ | — | — | — | — | 3VA9137-0PK11 |
| | | | — | √ | √ | — | — | 3VA9277-0PK11 |
| | Standard with illumination kit | Gray | √ | — | — | — | — | 3VA9137-0PK13 |
| | | | — | √ | √ | — | — | 3VA9277-0PK13 |
| | EMERGENCY-OFF | Yellow-Red | √ | — | — | — | — | 3VA9137-0PK15 |
| | | | — | √ | √ | — | — | 3VA9277-0PK15 |
| | EMERGENCY-OFF with illumination kit | Yellow-Red | √ | — | — | — | — | 3VA9137-0PK17 |
| | | | — | √ | √ | — | — | 3VA9277-0PK17 |
| <br>▪ With mounting plate<br>▪ Rotary operator with short shaft<br>▪ Handle with masking plate 75 x 75 mm<br>▪ Degree of protection Type 1, 12, 3R, 4X | Standard with mounting plate | Gray | √ | — | — | — | — | 3VA9137-0PK51 |
| | | | — | √ | √ | — | — | 3VA9277-0PK51 |
| | Standard with mounting plate, with illumination kit | Gray | √ | — | — | — | — | 3VA9137-0PK53 |
| | | | — | √ | √ | — | — | 3VA9277-0PK53 |
| | EMERGENCY-OFF with mounting plate | Yellow-Red | √ | — | — | — | — | 3VA9137-0PK55 |
| | | | — | √ | √ | — | — | 3VA9277-0PK55 |
| | EMERGENCY-OFF with mounting plate, with illumination kit | Yellow-Red | √ | — | — | — | — | 3VA9137-0PK57 |
| | | | — | √ | √ | — | — | 3VA9277-0PK57 |
| <br>Side Mounted Rotary Operator Door Interlock | Standard for use with the side wall mounted rotary operators<br>▪ Without mounting plate | Gray | √ | — | — | — | — | 3VA9177-0VF40 |
| | | | — | √ | √ | — | — | 3VA9277-0VF40 |

① Lockable with up to three padlock hasps.

# 3VA Manual Operators

## Selection

### Breaker Operator

| | Type | Color | 3VA5 125A | 3VA5 250A | 3VA6 150A–250A | 3VA5 3VA6 400A–600A | 3VA5 3VA6 800A–1000A | 3VA5 3VA6 1200A–2000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|
| 3VA9277-0GK00 3VA9677-0GK00 | Without handle, without shaft adapter | Gray | √ | — | — | — | — | — | 3VA9137-0GK00 |
| | | | — | √ | √ | — | — | — | 3VA9277-0GK00 |
| | | | — | — | — | √ | — | — | 3VA9447-0GK00 |
| | Without handle, with shaft adapter | Gray | — | — | — | — | √ | — | 3VA9677-0GK00 |
| | | | — | — | — | — | — | √ | 3VA9877-0GK00 |

### Handles with Masking Plate (Purchase breaker operator, shaft and shaft adapter separately)

| | Type | Color | Tolerance Compen-sation | Door Open Function | 3VA5 125A | 3VA5 250A | 3VA6 150A–250A | 3VA5 3VA6 400A–600A | 3VA5 3VA6 800A–1000A | 3VA5 3VA6 1200A–2000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ▪ Degree of protection Type 1, 12, 3R and 4X | Standard | Gray | Without | Without | √ | √ | √ | — | — | — | 8UD1721-0AB11 |
| | | | With | Without | √ | √ | √ | — | — | — | 8UD1721-0AB21 |
| | | | Without | Without | — | — | — | √ | — | — | 8UD1731-0AB11 |
| | | | With | Without | — | — | — | √ | — | — | 8UD1731-0AB21 |
| | | | Without | With | √ | √ | √ | — | — | — | 8UD1721-0AC11 |
| | | | With | With | √ | √ | √ | — | — | — | 8UD1721-0AC21 |
| | | | Without | With | — | — | — | √ | — | — | 8UD1731-0AC11 |
| | | | With | With | — | — | — | √ | — | — | 8UD1731-0AC21 |
| | | | Without | With | — | — | — | — | √ | √ | 8UD1741-0AB11 |
| | | | With | With | — | — | — | — | √ | √ | 8UD1741-0AB21 |
| | Emergency | Yellow-Red | Without | Without | √ | √ | √ | — | — | — | 8UD1721-0AB15 |
| | | | With | Without | √ | √ | √ | — | — | — | 8UD1721-0AB25 |
| | | | Without | Without | — | — | — | √ | — | — | 8UD1731-0AB15 |
| | | | With | Without | — | — | — | √ | — | — | 8UD1731-0AB25 |
| | | | Without | With | √ | √ | √ | — | — | — | 8UD1721-0AC15 |
| | | | With | With | √ | √ | √ | — | — | — | 8UD1721-0AC25 |
| | | | Without | With | — | — | — | √ | — | — | 8UD1731-0AC15 |
| | | | With | With | — | — | — | √ | — | — | 8UD1731-0AC25 |
| | | | Without | With | — | — | — | — | √ | √ | 8UD1741-0AB15 |
| | | | With | With | — | — | — | — | √ | √ | 8UD1741-0AB25 |

### Metal Rotary Handles (Purchase breaker operator, shaft and shaft adapter separately)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ▪ Large, degree of protection Type 1, 3, 3R, 12 | Metal | Black | — | With | √ | √ | √ | √ | √ | √ | RHOH |
| ▪ Large, degree of protection Type 4, 4X | Metal | Stainless | — | With | √ | √ | √ | √ | √ | √ | RHOH4 |
| ▪ Compact, degree of protection Type 1,3,3R,12 | Compact | Black | — | With | √ | √ | √ | √ | — | — | RHOHC |
| ▪ Compact, degree of protection Type 4, 4X | Compact | Stainless | — | With | √ | √ | √ | √ | — | — | RHOH4C |
| ▪ Long, degree of protection 1,3,3R,12 | Emergency | Red | — | With | √ | √ | √ | √ | √ | √ | RHVPEMH |
| ▪ Compact, degree of protection 1,3,3R,12 | Emergency | Red | — | With | √ | √ | √ | √ | — | — | RHVMEMH |

For additional information for selecting handle and breaker operator combinations
**https://support.industry.siemens.com/cs/document/109758561/manual-3va-ul-iec-molded-case-circuit-breakers**

# 3VA Manual Operators

## Selection

### Pistol Grip Handles (Purchase breaker operator, shaft and shaft adapter separately)

| | Degree of Protection | Handle Type | Color | Tolerance Compen-sation | Door Open Function | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type 1,3R,12 | Plastic | Gray | — | With | √ | √ | √ | √ | — | **3VA9477-0FH11** |
| | Type 4X | Plastic (metal padlock hasp) | Gray | — | With | √ | √ | √ | √ | — | **3VA9477-0FH41** |
| | Type 1,3R,12 | Emergency | Red | — | With | √ | √ | √ | √ | — | **3VA9477-0FH15** |
| | Type 4X | Emergency (metal padlock hasp) | Red | — | With | √ | √ | √ | √ | — | **3VA9477-0FH45** |

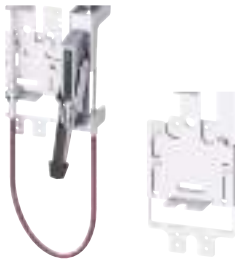
### Door Mounted Rotary Operator Accessories

| | Type | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A–2000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|
| | 8 mm Shaft 300 mm/12 in long for 8UD plastic handles (Fixing bracket optional) | √ | √ | √ | √ | — | — | **8UD1900-2WA00** |
| | 8 mm Shaft 600 mm/24 in long for 8UD plastic handles (Fixing bracket required) | √ | √ | √ | √ | — | — | **8UD1900-2WB00** |
| | 12 mm Shaft 300 mm/12 in long for 8UD plastic handles | — | — | — | — | √ | √ | **8UD1900-4WA00** |
| | 12 mm Shaft 600 mm/24 in long for 8UD plastic handles | — | — | — | — | √ | √ | **8UD1900-4WB00** |
| | 8 mm Shaft 300 mm/12 in long for metal handles (Fixing bracket optional) | √ | √ | √ | √ | — | — | **3VA9477-0GF20** |
| | 8 mm Shaft 600 mm/24 in long for metal handles (Fixing bracket required) | √ | √ | √ | √ | — | — | **3VA9477-0GF21** |
| | 12 mm Shaft 300/12 in mm long for metal handles (Fixing bracket optional) | — | — | — | — | √ | √ | **3VA9877-0GF22** |
| | 12 mm Shaft 600 mm/24 in long for metal handles (Fixing bracket required) | — | — | — | — | √ | √ | **3VA9877-0GF23** |
| | 8 mm Shaft 300/12 in mm long for pistol grip handles (Fixing bracket optional) | √ | √ | √ | √ | — | — | **3VA9477-0GF10** |
| | 8 mm Shaft 600 mm long/24 in for pistol grip handles (Fixing bracket required) | √ | √ | √ | √ | — | — | **3VA9477-0GF11** |
| | Adapter for 8 mm Shaft for door mounted operator | √ | √ | √ | √ | — | — | **8UD1900-2DA00** |
| | Adapter for 12 mm Shaft for door mounted operator | — | — | — | — | √ | √ | **8UD1900-4DA00** |
| | Fixing bracket for Shaft | √ | — | — | — | — | — | **3VA9137-0GA80** |
| | | — | √ | √ | √ | — | — | **3VA9477-0GA80** |
| | Fixing bracket for 12 mm x 12 mm shaft | — | — | — | — | √ | — | **3VA9677-0GA80** |
| | | — | — | — | — | — | √ | **3VA9877-0GA80** |
| | Variable depth adapter 8 x 8 mm | √ | √ | √ | √ | — | — | **3VA9487-0GB10** |
| | Door Coupling 8 mm x 8 mm (for 8UD plastic handles) | √ | √ | √ | — | — | — | **8UD1900-2HA00** |
| | Door coupling 12 mm x 12 mm (for 8UD plastic handles) | — | — | — | √ | √ | √ | **8UD1900-4HA00** |
| | Mounting tolerance compensation 8 x 8 mm (for 8UD plastic handles) | √ | √ | √ | √ | — | — | **8UD1900-2GA00** |
| | Mounting tolerance compensation 12 mm x 12 mm (for 8UD plastic handles) | — | — | — | — | √ | √ | **8UD1900-4GA00** |

## General Accessories for Manual Operators

| | Type | Details | | Part Number |
|---|---|---|---|---|
| | Labeling plate for manual operators | — | | 3VA9087-0SX10 |
| | Illumination kit for manual operators 24 V DC voltage | For Molded Case Circuit Breakers | | |
| | | 3VA5, 125...250 A | Front mounted rotary operators | 8UD1900-0KA10 |
| | | 3VA6, 150...600 A | | 8UD1900-0KA20 |
| | | 3VA5, 3VA6, 125...600 A | Door mounted rotary operators | 8UD1900-0KA20 |
| | | 3VA5, 3VA6, 800..1000A | | 8UD1900-0KA30 |
| | Cylinder Lock (type Kaba)<br>▪ For 8UD plastic door mounted rotary operators (in masking plate)<br>▪ Standard masking plate | Key 1 | | 8UD1900-0MB01 |
| | | Key 2 | | 8UD1900-0NB01 |
| | | Key 3 | | 8UD1900-0PB01 |
| | | Key 4 | | 8UD1900-0QB01 |
| | Cylinder Lock (type Kaba)①<br>▪ For 8UD plastic door mounted rotary operators (in masking plate)<br>▪ Standard masking plate | Key 1 | | 8UD1900-0MC01 |
| | | Key 2 | | 8UD1900-0NC01 |
| | | Key 3 | | 8UD1900-0PC01 |
| | | Key 4 | | 8UD1900-0QC01 |
| | Cylinder Lock (type Kaba)<br>▪ For 8UD plastic door mounted rotary operators (in masking plate)<br>▪ EMERGENCY-OFF masking plate | Key 1 | | 8UD1900-0MB05 |
| | | Key 2 | | 8UD1900-0NB05 |
| | | Key 3 | | 8UD1900-0PB05 |
| | | Key 4 | | 8UD1900-0QB05 |
| | Cylinder Lock (type Kaba)①<br>▪ For 8UD plastic door mounted rotary operators (in masking plate)<br>▪ EMERGENCY-OFF masking plate | Key 1 | | 8UD1900-0MC05 |
| | | Key 2 | | 8UD1900-0NC05 |
| | | Key 3 | | 8UD1900-0PC05 |
| | | Key 4 | | 8UD1900-0QC05 |
| | Cylinder Lock (type Ronis)<br>▪ includes 2 keys<br>▪ for locking or interlocking<br>▪ installation in all rotary operators w/ shaft stub | Key 1 | | 3VA9980-0VL10 |
| | | Key 3 | | 3VA9980-0VL30 |
| | | Key 4 | | 3VA9980-0VL40 |
| | Cylinder lock adapter for 8UD rotary operator<br>▪ to mount in rotary operator | | | 3VA9980-0LF20 |
| | Cylinder lock adaptor for front mounted rotary operator 3VA9677-0EK.. and door mounted rotary operator 3VA9677-0FK.. 3VA55/3VA65/3VA66 | | | 3VA9670-0LF20 |

## Max Flex Operator

| | Type | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A 1600A 2000A | Catalog Number |
|---|---|---|---|---|---|---|---|---|
|  **Complete kit and spare mechanism** | Complete Kit<br>▪ Operating mechanism<br>▪ Plastic handle, NEMA 1/12, black=OFF, green=ON<br>▪ Bowden Cable 36 inches (0.9m) long | √ | — | — | — | — | — | **3VA9137-0CK12** |
| | | — | √ | √ | — | — | — | **3VA9277-0CK12** |
| | | — | — | — | √ | — | — | **3VA9477-0CK12** |
| | Complete Kit<br>▪ Operating mechanism<br>▪ Steel handle, epoxy coated NEMA 1/3R/12, black=OFF, red=ON,<br>▪ Bowden Cable 36 inches (0.9m) long The 800/1000/1200/1600/2000A kit comes with a 48" (1.2m) cable | √ | — | — | — | — | — | **3VA9137-0CK72** |
| | | — | √ | √ | — | — | — | **3VA9277-0CK72** |
| | | — | — | — | √ | — | — | **3VA9477-0CK72** |
| | | — | — | — | — | √ | — | **3VA9677-0CK72** |
| | | — | — | — | — | — | √ | **3VA9877-0CK72** |
| | Operating Mechanism (spare)<br>▪ Operating mechanism<br>▪ Screws<br>▪ Hex nut<br>▪ Spring<br>▪ Spring adjuster | √ | — | — | — | — | — | **3VA9137-0CB10** |
| | | — | √ | √ | — | — | — | **3VA9277-0CB10** |
| | | — | — | — | √ | — | — | **3VA9477-0CB10** |
| | | — | — | — | — | √ | — | **3VA9677-0CB10** |
| | | — | — | — | — | — | √ | **3VA9877-0CB10** |
| | Handle - Plastic, NEMA 1/12, black = OFF, green = ON | √ | √ | √ | √ | — | — | **3VA9977-0CH12** |
| | Handle - Steel, Epoxy coated, NEMA 1/3R/12, black = OFF, red = ON | √ | √ | √ | √ | — | — | **3VA9977-0CH72** |
| | | — | — | — | — | √ | √ | **3VA9877-0CH72** |
| | Handle - Steel, Epoxy coated, NEMA 1/3R/12, black = OFF, black = ON | √ | √ | √ | √ | — | — | **3VA9977-0CH74** |
| | | — | — | — | — | √ | √ | **3VA9877-0CH74** |
| | Handle - Steel, chrome-plated, NEMA 4/4X, black = OFF, red = ON | √ | √ | √ | √ | — | — | **3VA9977-0CH82** |
| | Handle - Steel, chrome-plated, NEMA 4/4X, black = OFF, black = ON | √ | √ | √ | √ | — | — | **3VA9977-0CH84** |
| | Handle - Stainless steel, NEMA 4, 4X, red = ON, black =OFF | — | — | — | — | √ | √ | **3VA9877-0CH82** |
| | Bowden Cable, 36 inches (0.9m) | √ | √ | √ | — | — | — | **3VA9278-0CC10** |
| | Bowden Cable, 48 inches (1.2m) | √ | √ | √ | — | — | — | **3VA9278-0CC20** |
| | Bowden Cable, 60 inches (1.5m) | √ | √ | √ | — | — | — | **3VA9278-0CC30** |
| | Bowden Cable, 72 inches (1.8m) | √ | √ | √ | — | — | — | **3VA9278-0CC40** |
| | Bowden Cable, 84 inches (2.1m) | √ | √ | √ | — | — | — | **3VA9278-0CC50** |
| | Bowden Cable, 96 inches (2.4m) | √ | √ | √ | — | — | — | **3VA9278-0CC60** |
| | Bowden Cable, 120 inches (3.0m) | √ | √ | √ | — | — | — | **3VA9278-0CC70** |
| | Bowden Cable, 144 inches (3.6m) | √ | √ | √ | — | — | — | **3VA9278-0CC80** |
| | Bowden Cable, 36 inches (0.9m) | — | — | — | √ | — | — | **3VA9578-0CC10** |
| | Bowden Cable, 48 inches (1.2m) | — | — | — | √ | — | — | **3VA9578-0CC20** |
| | Bowden Cable, 60 inches (1.5m) | — | — | — | √ | — | — | **3VA9578-0CC30** |
| | Bowden Cable, 72 inches (1.8m) | — | — | — | √ | — | — | **3VA9578-0CC40** |
| | Bowden Cable, 84 inches (2.1m) | — | — | — | √ | — | — | **3VA9578-0CC50** |
| | Bowden Cable, 96 inches (2.4m) | — | — | — | √ | — | — | **3VA9578-0CC60** |
| | Bowden Cable, 120 inches (3.0m) | — | — | — | √ | — | — | **3VA9578-0CC70** |
| | Bowden Cable, 144 inches (3.6m) | — | — | — | √ | — | — | **3VA9578-0CC80** |
| | Bowden Cable, 48 inches (1.2m) | — | — | — | — | √ | √ | **3VA9877-0CC20** |
| | Bowden Cable, 60 inches (1.5m) | — | — | — | — | √ | √ | **3VA9877-0CC30** |
| | Bowden Cable, 72 inches (1.8m) | — | — | — | — | √ | √ | **3VA9877-0CC40** |
| | Bowden Cable, 96 inches (2.4m) | — | — | — | — | √ | √ | **3VA9877-0CC60** |
| | Bowden Cable, 120 inches (3.0m) | — | — | — | — | √ | √ | **3VA9877-0CC70** |
| | Bowden Cable, 144 inches (3.6m) | — | — | — | — | √ | √ | **3VA9877-0CC80** |
| | MaxFlex Auxiliary switch (leading from On to Off)<br>▪ 1 CO | √ | √ | √ | √ | √ | √ | **3VA9478-0CX10** |
| | MaxFlex Auxiliary switch (leading from On to Off)<br>▪ 2 CO | √ | √ | √ | √ | √ | √ | **3VA9478-0CX20** |

## Variable depth flange mounted operator kit

| | Type | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | Catalog Number |
|---|---|---|---|---|---|---|
| | Complete kit comprising:<br>▪ Switching mechanism adjustable depth 200mm to 400mm<br>▪ Epoxy coated steel handle, NEMA 1/3R/12, black = OFF, red = ON | √ | — | — | — | 3VA9138-0DK72 |
| | | — | √ | √ | — | 3VA9278-0DK72 |
| | | — | — | — | √ | 3VA9478-0DK72 |
| | Complete kit comprising:<br>▪ Switching mechanism adjustable depth 200mm to 400mm<br>▪ Stainless steel handle, chrome-plated NEMA 4/4X, black=OFF, red=ON | √ | — | — | — | 3VA9138-0DK82 |
| | | — | √ | √ | — | 3VA9278-0DK82 |
| | | — | — | — | √ | 3VA9478-0DK82 |
| | Complete kit comprising:<br>▪ Swithching mechanism adjustable depth 200mm to 400mm<br>▪ Handle stainless steel, chrome-plated NEMA 4/4X, black=OFF, black=ON | √ | — | — | — | 3VA9138-0DK84 |
| | | — | √ | √ | — | 3VA9278-0DK84 |
| | | — | — | — | √ | 3VA9478-0DK84 |

## Motor Operators①

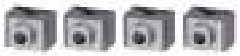
| | Type | 3VA5 125 A | 3VA5 250 A | 3VA6 150 A 250 A | 3VA5 3VA6 400A 600A | Part Number |
|---|---|---|---|---|---|---|
| | **Motor Operator without Stored Energy Feature** | | | | | |
| | 24 ... 60 V DC | √ | — | — | — | 3VA9137-0HA10 |
| | | — | √ | √ | — | 3VA9277-0HA10 |
| | | — | — | — | √ | 3VA9447-0HA10 |
| | 110 ... 230 V AC<br>110 ... 250 V DC | √ | — | — | — | 3VA9137-0HA20 |
| | | — | √ | √ | — | 3VA9277-0HA20 |
| | | — | — | — | √ | 3VA9447-0HA20 |
| | **Motor Operator with Stored Energy Feature** | | | | | |
| | 24 V DC | — | √ | √ | — | 3VA9277-0HC10 |
| | | — | — | — | √ | 3VA9447-0HC10 |
| | 42 ... 60 V AC/DC | — | √ | √ | — | 3VA9277-0HC20 |
| | | — | — | — | √ | 3VA9447-0HC20 |
| | 110 ... 230 V AC / 110 ... 250 V DC | — | √ | √ | — | 3VA9277-0HC30 |
| | | — | — | — | √ | 3VA9447-0HC30 |
| | **Motor Operator with Stored Energy Feature with Communication** | | | | | |
| | 24 V DC | — | √ | √ | — | 3VA9277-0HC15 |
| | | — | — | — | √ | 3VA9447-0HC15 |
| | 110 ... 230 V AC / 110 ... 250 V DC | — | √ | √ | — | 3VA9277-0HC35 |
| | | — | — | — | √ | 3VA9447-0HC35 |

① Lockable with up to three padlock hasps.

## Box Terminals

| | Type | Minimum cable cross-section (standard) Class B | Maximum cable cross-section (standard) Class B | For molded case circuit breakers/rated current | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | |
| | Steel wrap-around lug (Cu cable only) kit of 3 single lugs | AWG 14 | 3/0 | √ | — | — | — | — | **3VA9133-0JA11** |
| | | AWG 10 | 3/0 | — | √ | — | — | — | **3VA9233-0JA11** |
| | | AWG 4 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JA12** |
| | | AWG 10 | 3/0 | — | — | √ | — | — | **3VA9143-0JA12** |
| | | AWG 4 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JA12** |
| | | 1/0 | 500 kcmil | — | — | — | √ | — | **3VA9473-0JA13** |
| | Steel wrap-around lug (Cu cable only) kit of 4 single lugs | AWG 14 | 3/0 | √ | — | — | — | — | **3VA9134-0JA11** |
| | | AWG 10 | 3/0 | — | √ | — | — | — | **3VA9234-0JA11** |
| | | AWG 4 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JA12** |
| | | AWG 10 | 3/0 | — | — | √ | — | — | **3VA9144-0JA12** |
| | | AWG 4 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JA12** |
| | | 1/0 | 500 kcmil | — | — | — | √ | — | **3VA9474-0JA13** |
| | Steel wrap-around lug with control wire tap (Cu cable only) kit of 3 single lugs | AWG 10 | 3/0 | — | √ | — | — | — | **3VA9233-0JH11** |
| | | AWG 4 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JH12** |
| | | AWG 10 | 3/0 | — | — | √ | — | — | **3VA9143-0JH12** |
| | | AWG 4 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JH12** |
| | | 1/0 | 500 kcmil | — | — | — | √ | — | **3VA9473-0JH13** |
| | Steel wrap-around lug with control wire tap (Cu cable only) kit of 4 single lugs | AWG 10 | 3/0 | — | √ | — | — | — | **3VA9234-0JH11** |
| | | AWG 4 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JH12** |
| | | AWG 10 | 3/0 | — | — | √ | — | — | **3VA9144-0JH12** |
| | | AWG 4 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JH12** |
| | | 1/0 | 500 kcmil | — | — | — | √ | — | **3VA9474-0JH13** |

## Aluminum Wire Connectors

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Aluminum body lug small (Cu/Al cable) kit of 3 single lugs | AWG 14 | AWG 8 | √ | — | — | — | — | **3VA9133-0JB10**③⑤ |
|  | Aluminum body lug small (Cu/Al cable) kit of 4 single lugs | AWG 14 | AWG 8 | √ | — | — | — | — | **3VA9134-0JB10**③⑤ |
| | Aluminum body lug small with control wire tap (Cu/Al cable) | AWG 14 | AWG 8 | √ | — | — | — | — | **3VA9133-0JG10**③ |
| | Aluminum body lug small with control wire tap (Cu/Al cable) | AWG 14 | AWG 8 | √ | — | — | — | — | **3VA9134-0JG10**③ |
| | Aluminum body lug (Cu/Al cable) kit of 3 single lugs | AWG 8 | 3/0 | √ | — | — | — | — | **3VA9133-0JB11**④⑤ |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9233-0JB11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JB12**②⑤ |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9143-0JB11**② |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JB12**⑤ |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9373-0JB13**①⑤ |
| | Aluminum body lug (Cu/Al cable) kit of 4 single lugs | AWG 8 | 3/0 | √ | — | — | — | — | **3VA9134-0JB11**④⑤ |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9234-0JB11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JB12**⑤ |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9144-0JB11**② |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JB12**②⑤ |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9374-0JB13**①⑤ |
| | Aluminum body lug with control wire tap (Cu/Al cable) kit of 3 single lugs | AWG 8 | 3/0 | √ | — | — | — | — | **3VA9133-0JG11**④ |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9233-0JG11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JG12** |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9143-0JG11**② |
| | | AWG 6 | 350 kcmill | — | — | √ | — | — | **3VA9243-0JG12**② |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9373-0JG13**① |
| | Aluminum body lug with control wire tap (Cu/Al cable) kit of 4 single lugs | AWG 8 | 3/0 | √ | — | — | — | — | **3VA9134-0JG11**④ |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9234-0JG11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JG12** |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9144-0JG11**② |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JG12**② |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9374-0JG13**① |
| | Aluminum body lug two cables (Cu/Al cable) kit of 3 single lugs | 4/0 | 600 kcmil | — | — | — | — | √ | **3VA9573-0JB23**⑥ |

① This conductor is ampere-rated at 380A with copper wire and 310A with aluminum wire.
② Meets requirements of 100% rated breakers up to 150A.
③ Use these lugs on 15A to 40A breakers.
④ Use these lugs on 45A to 125A breakers.

## Aluminum Wire Connectors (cont.)

| | Type | Minimum cable cross-section (standard) Class B | Maximum cable cross-section (standard) Class B | For molded case circuit breakers/rated current | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | |
| | Aluminum body lug two cables (Cu/Al cable) kit of 4 single lugs | 4/0 | 600 kcmil | — | — | — | — | √ | **3VA9574-0JB23**② |
| | Aluminum body lug two cables with control wire tap (Cu/Al cable) kit of 3 single lugs | 4/0 | 600 kcmil | — | — | — | — | √ | **3VA9673-0JG32** |
| | Aluminum body lug two cables with control wire tap (Cu/Al cable) kit of 4 single lugs | 4/0 | 600 kcmil | — | — | — | — | √ | **3VA9674-0JG32** |
| 3 lug kit pictured | Aluminum body lug three cables (Cu/Al cable) kit of 3 single lugs | 4/0 | 400 kcmil | — | — | — | — | √ | **3VA9673-0JB32** |
| | Aluminum body lug three cables (Cu/Al cable) kit of 4 single lugs | 4/0 | 400 kcmil | — | — | — | — | √ | **3VA9674-0JB32** |
| 4 lug kit pictured | Aluminum body lug three cables with control wire tap (Cu/Al cable) kit of 3 single lugs | 4/0 | 400 kcmil | — | — | — | — | √ | **3VA9673-0JG32** |
| | Aluminum body lug three cables with control wire tap (Cu/Al cable) kit of 4 single lugs | 4/0 | 400 kcmil | — | — | — | — | √ | **3VA9674-0JG32** |

## Aluminum Wire Connectors and Terminal Covers

| Type | Description | Min. cable cross-section (std.) Class B | Max. cable cross-section (std.) Class B | For molded case circuit breakers/ rated current | | | | | Part Number | Terminal Cover with Probe Holes Part Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | | |
| Aluminum body lug large (Cu/Al cable) 2 lug 3 lug 4 lug | Kit of 2 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | √ | — | — | — | — | **3VA9132-0JJ12** | |
| | Kit of 3 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | √ | — | — | — | — | **3VA9133-0JJ12** | |
| | | AWG 2 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JJ13** | |
| | | AWG 2 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JJ13**① | |
| | Kit of 4 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | √ | — | — | — | — | **3VA9134-0JJ12** | |
| | | AWG 2 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JJ13** | |
| | | AWG 2 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JJ13**① | |
| Aluminum body lug large with control wire tap (Cu/Al cable) 2 lug 3 lug 4 lug | Kit of 2 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | √ | — | — | — | — | **3VA9132-0JC12** | |
| | Kit of 3 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | √ | — | — | — | — | **3VA9133-0JC12** | **3VA9133-0JC18** |
| | | AWG 2 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JC13** | **3VA9233-0JC18** |
| | | AWG 2 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JC13**① | **3VA9243-0JC18** |
| | Kit of 4 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | √ | — | — | — | — | **3VA9134-0JC12** | |
| | | AWG 2 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JC13** | |
| | | AWG 2 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JC13**① | |
| Aluminum body lug, 2 Cables (Cu/Al cable) 3 lug 4 lug | Kit of 3 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | — | √ | — | — | — | **3VA9233-0JJ22** | |
| | | AWG 4 | 300 kcmil | — | — | √ | — | — | **3VA9243-0JJ22**① | |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9473-0JJ23** | |
| | Kit of 4 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | — | √ | — | — | — | **3VA9234-0JJ22** | |
| | | AWG 4 | 300 kcmil | — | — | √ | — | — | **3VA9244-0JJ22**① | |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9474-0JJ23** | |

① Meets requirements of 100% rated breakers up to 250A.

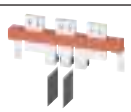
② Standard lug installed at the factory on 600/700A 3VA55 and 600A 3VA65 breakers when the breaker is ordered with "6" in the 12th position of the catalog number.

## Aluminum Wire Connectors and Terminal Covers (cont.)

| Type | Description | Min. cable cross-section (std.) Class B | Max. cable cross-section (std.) Class B | For molded case circuit breakers/ rated current | | | | | Part Number | Terminal Cover with Probe Holes Part Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | | |
| Aluminum body lug, 2 Cables with control wire tap (Cu/Al cable) 3 lug 4 lug | Kit of 3 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | — | √ | — | — | | 3VA9233-0JC22 | 3VA9233-0JC28 |
| | | AWG 4 | 300 kcmil | — | — | √ | — | | 3VA9243-0JC22① | 3VA9243-0JC28 |
| | | 2/0 | 600 kcmil | — | — | — | √ | | 3VA9473-0JC23 | 3VA9473-0JC28 |
| | Kit of 4 single lugs and 1 extended terminal cover | AWG 4 | 300 kcmil | — | √ | — | — | | 3VA9234-0JC22 | |
| | | AWG 4 | 300 kcmil | — | — | √ | — | | 3VA9244-0JC22① | |
| | | 2/0 | 600 kcmil | — | — | — | √ | | 3VA9474-0JC23 | |
| Aluminum body lug two cables (Cu/Al cable) 3 lug kit pictured | Kit of 3 single lugs and 1 extended terminal cover | 400 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9673-0JJ24 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 400 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9674-0JJ24 | |
| Aluminum body lug two cables with control wire tap (Cu/Al cable) 3 kit lug pictured | Kit of 3 single lugs and 1 extended terminal cover | 400 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9673-0JC24 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 400 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9674-0JC24 | |
| Aluminum body lug three cables (Cu/Al cable) | Kit of 3 single lugs and 1 extended terminal cover | 500 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9673-0JJ34 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 500 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9674-0JJ34 | |
| Aluminum body lug three cables with control wire tap (Cu/Al cable) | Kit of 3 single lugs and 1 extended terminal cover | 500 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9673-0JC34 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 500 kcmil | 750 kcmil | — | — | — | — | √ | 3VA9674-0JC34 | |
| Aluminum body lug four cables (Cu/Al cable) 4 lug kit pictured | Kit of 3 single lugs and 1 extended terminal cover | 4/0 | 500 kcmil | — | — | — | — | √ | 3VA9673-0JJ43④ | |
| | Kit of 4 single lugs and 1 extended terminal cover | 4/0 | 500 kcmil | — | — | — | — | √ | 3VA9674-0JJ43④ | |
| Aluminum body lug four cables with control wire tap (Cu/Al cable) 4 lug kit pictured | Kit of 3 single lugs and 1 extended terminal cover | 4/0 | 500 kcmil | — | — | — | — | √ | 3VA9673-0JC43 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 4/0 | 500 kcmil | — | — | — | — | √ | 3VA9674-0JC43 | |
| Aluminum body lug four cables (Cu/Al cable) | Kit of 3 single lugs and 1 extended terminal cover | 4/0 | 600 kcmil | — | — | — | — | √ | 3VA9673-0JJ44 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 4/0 | 600 kcmil | — | — | — | — | √ | 3VA9674-0JJ44 | |
| Aluminum body lug four cables with control wire tap (Cu/Al cable) | Kit of 3 single lugs and 1 extended terminal cover | 4/0 | 600 kcmil | — | — | — | — | √ | 3VA9673-0JC44 | |
| | Kit of 4 single lugs and 1 extended terminal cover | 4/0 | 600 kcmil | — | — | — | — | √ | 3VA9674-0JC44 | |
| Distribution lug, 6 Cables (Cu/Al cable) 2 lug 3 lug 4 lug | Kit of 2 single lugs and 1 extended terminal cover | AWG 14 | AWG 2 | √ | — | — | — | | 3VA9132-0JF60 | |
| | Kit of 3 single lugs and 1 extended terminal cover | AWG 14 | AWG 2 | √ | — | — | — | | 3VA9133-0JF60 | 3VA9133-0JF68 |
| | | | AWG 2 | — | √ | — | — | | 3VA9233-0JF60 | 3VA9233-0JF68 |
| | | | AWG 2 | — | — | √ | — | | 3VA9243-0JF60② | 3VA9243-0JF68 |
| | | | AWG 2 | — | — | — | √ | | 3VA9373-0JF60③ | 3VA9373-0JF68 |
| | Kit of 4 single lugs and 1 extended terminal cover | AWG 14 | AWG 2 | √ | — | — | — | | 3VA9134-0JF60 | |
| | | | AWG 2 | — | √ | — | — | | 3VA9234-0JF60 | |
| | | | AWG 2 | — | — | √ | — | | 3VA9244-0JF60② | |
| | | | AWG 2 | — | — | — | √ | | 3VA9374-0JF60③ | |

① Meets requirements of 100% rated breakers up to 250A.
② Meets requirements of 100% rated breakers up to 100A.
③ Meets requirements of 100% rated breakers up to 100A.
④ Standard lug shipped from the factory with the breaker for field installation on 800A 3VA55 and 800/1000A 3VA65 and 3VA66 when the breaker is ordered with a "6" in the 12th position of the catalog number.

## Aluminum & Copper Wire Connectors and Terminal Covers (cont.)

| | Description | LUG Material | Number of Wires, per pole | UL 486A - 486B Cu/AL stranded | Min cable cross-section (std.) Class B | Max cable cross-section (std.) Class B | For molded case circuit breakers/rated current | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 3VA57 3VA67 1200A | 3VA58 3VA68 1600A | 3VA59 3VA69 2000A | |
| | Kit of 2 single lugs and 1 extended terminal cover | Aluminum body | 3-Conductor | Cu/Al cable | 500 kcmil | 750 kcmil | √ | — | — | **3VA9772-0JJ34**⑤ |
| | Kit of 3 single lugs and 1 extended terminal cover | Aluminum body | 3-Conductor | Cu/Al cable | 500 kcmil | 750 kcmil | √ | — | — | **3VA9773-0JJ34**⑤ |
| | Kit of 2 single lugs and 1 extended terminal cover | Aluminum body | 4-Conductor | Cu/Al cable | 1/0 | 500 kcmil | √ | — | — | **3VA9772-0JJ43** |
| | Kit of 3 single lugs and 1 extended terminal cover | Aluminum body | 4-Conductor | Cu/Al cable | 1/0 | 500 kcmil | √ | — | — | **3VA9773-0JJ43** |
| | Kit of 3 single lugs with control wire tap and 1 extended terminal cover | Aluminum body | 4-Conductor with control wire tap | Cu/Al cable | 1/0 | 500 kcmil | √ | — | — | **3VA9773-0JC43** |
| | Kit of 3 single lugs and 1 extended terminal cover | Aluminum body | 4-Conductor | Cu/Al cable | 1/0 | 500 kcmil | √ | — | — | **3VA9773-0JM43**⑤ |
| | Kit of 1 single lug | Aluminum body | 4-Conductor | Cu/Al cable | 600 kcmil | 750 kcmil | — | √ | — | **3VA9771-0JJ44**①③ |
| | Kit of 1 single lug | Aluminum body | 5-Conductor | Cu cable only | 300 kcmil | 600 kcmil | — | √ | — | **3VA9771-0JJ53**①③ |
| | Kit of 1 single lug | Aluminum body | 6-Conductor | Cu/Al cable | 300 kcmil | 600 kcmil | — | √ | √ | **3VA9871-0JJ63**③④ |
| | Kit of 3 single lugs | Aluminum body | 6-Conductor | Cu/Al cable | 1/0 | 750 kcmil | √ | √ | — | **3VA9773-0JJ64**②⑤ |
| | Kit of 3 single lugs and 1 extended terminal cover | Copper body | 4-Conductor | Cu cable only | 1/0 | 500 kcmil | √ | — | — | **3VA9773-0JE43**⑤ |
| | Kit of 1 single lug | Copper body | 5-Conductor | Cu/Al cable | 300 kcmil | 600 kcmil | — | √ | √ | **3VA9871-0JE53**①③④ |
| | MBFC = Mounting base: Front connection | MBFC Requires the use of Essential Parts Sold Separately: 3x Single lugs + 1x 3VA9872-0WA00 kit of 2 Phase barriers. | | | | | — | √ | √ | **3VA9873-0WM00** |
| | MBRC = Mounting base: Rear connection | MBRC Requires the use of Essential Parts Sold Separately: 3x Single lugs | | | | | — | √ | √ | **3VA9873-0WN00** |
|  | LMAP = Lug mounting assembly (Essential Part 3VA9773-0JJ64 Sold Separately) | Aluminum body | 6-Conductor | Cu/Al cable | 1/0 | 750 kcmil | √ | √ | — | **3VA9873-0WL00**② |
| | Kit of 12 Compression lugs and | Aluminum body | 4-Conductor | Cu/Al cable | N/A | 500 kcmil | √ | — | — | **3VA9773-0QK01** |

① Lug Kit Require Attachment to Essential Parts: mounting base MBFC or MBRC (Sold Separately).
② 3VA9773-0JJ64 Lugs Require Attachment to 3VA9873-0WL00 LMAP (Sold Separately).
③ Part Number is for kit of 1 lug. Requires customer to purchase Qty. of 3x (kit of 1 lug).
④ Lugs Require Attachment to Essential Parts MBFC (Sold Separately).
⑤ Meets requirements for 100% rated breakers, requires the use of 90 degree wire, size to 75 degree ampacity.

## Copper Wire Connectors

| | Type | Minimum cable cross-section (standard) Class B | Maximum cable cross-section (standard) Class B | For molded case circuit breakers/ rated current | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | |
| | Copper body lug, small (Cu cable only) Kit of 3 single lugs | AWG 14 | AWG 8 | √ | — | — | — | — | **3VA9133-0JD10**① |
| | Copper body lug (Cu cable only) Kit of 3 single lugs | AWG 8 | 2/0 | √ | — | — | — | — | **3VA9133-0JD11**② |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9233-0JD11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JD12** |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9143-0JD11** |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JD12**③ |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9373-0JD13**④ |
| | Copper body lug, small (Cu cable only) Kit of 4 single lugs | AWG 14 | AWG 8 | √ | | — | — | — | **3VA9134-0JD10**① |
| | Copper body lug (Cu cable only) kit of 4 single lugs | AWG 8 | 2/0 | √ | — | — | — | — | **3VA9134-0JD11**② |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9234-0JD11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JD12** |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9144-0JD11** |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JD12**③ |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9374-0JD13**④ |
| | Copper body lug, three cables (Cu cable) Kit of 3 single lugs | 4/0 | 400 kcmil | — | — | — | — | √ | **3VA9673-0JD32** |
| | Copper body lug, three cables (Cu cable) Kit of 4 single lugs | 4/0 | 400 kcmil | — | — | — | — | √ | **3VA9674-0JD32** |
| | Copper body lug, small with control wire tap (Cu cable only) Kit of 3 single lugs | AWG 14 | AWG 8 | √ | | — | — | — | **3VA9133-0JK10**① |
| | Copper body lug with control wire tap (Cu cable only) Kit of 3 single lugs | AWG 8 | 2/0 | √ | — | — | — | — | **3VA9133-0JK11**② |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9233-0JK11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9233-0JK12** |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9143-0JK11** |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9243-0JK12** |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9373-0JK13** |
| | Copper body lug, small with control wire tap (Cu cable only) Kit of 4 single lugs | AWG 14 | AWG 8 | √ | | — | — | — | **3VA9134-0JK10**① |
| | Copper body lug with control wire tap (Cu cable only) Kit of 4 single lugs | AWG 8 | 2/0 | √ | — | — | — | — | **3VA9134-0JK11**② |
| | | AWG 14 | 1/0 | — | √ | — | — | — | **3VA9234-0JK11** |
| | | AWG 6 | 350 kcmil | — | √ | — | — | — | **3VA9234-0JK12** |
| | | AWG 14 | 1/0 | — | — | √ | — | — | **3VA9144-0JK11** |
| | | AWG 6 | 350 kcmil | — | — | √ | — | — | **3VA9244-0JK12** |
| | | 2/0 | 600 kcmil | — | — | — | √ | — | **3VA9374-0JK13** |
| | Copper body lug, three cables with control wire tap (Cu cable) Kit of 3 single lugs | 400 kcmil | 600 kcmil | — | — | — | — | √ | **3VA9673-0JK32** |
| | Copper body lug, three cables with control wire tap (Cu cable) Kit of 4 single lugs | 400 kcmil | 600 kcmil | — | — | — | — | √ | **3VA9674-0JK32** |

① Use these lugs on 15A to 40A breakers.
② Use these lugs on 45A to 125A breakers.

③ Standard lug installed at the factory on 100% rated 250A 3VA62 breakers when ordered with a "6" in the 12th position of the catalog number.

④ Standard lug installed at the factory on 100% rated 400A 3VA64 breakers when ordered with a "6" in the 12th position of the catalog number.

## Copper Wire Connectors (cont.)

| | Type | Minimum cable cross-section (standard) Class B | Maximum cable cross-section (standard) Class B | For molded case circuit breakers/ rated current | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | |
| | Copper body lug, 2 Cables (Cu cable only) Kit of 3 single lugs and 1 extended terminal cover | 2/0 | 600 kcmil | — | — | — | √ | — | 3VA9473-0JE23 |
| | Copper body lug 2 Cables (Cu cable only) Kit of 4 single lugs and 1 extended terminal cover | 2/0 | 600 kcmil | — | — | — | √ | — | 3VA9474-0JE23 |
| | Copper body lug, four cables (Cu cable) Kit of 3 single lugs and 1 extended terminal cover | 4/0 | 500 kcmil | — | — | — | — | √ | 3VA9673-0JL43 |
| | Copper body lug, four cables (Cu cable) Kit of 4 single lugs and 1 extended terminal cover | 4/0 | 500 kcmil | — | — | — | — | √ | 3VA9674-0JL43 |

## Nut Keeper Kits

| | Type | Maximum terminal width | Maximum terminal thickness | For molded case circuit breakers/ rated current | | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A 1600A | |
| | Nut keeper kit kit of 3 single lugs | 17 mm / 0.7 inch | 6.5 mm /0.25 inch | √ | — | — | — | — | — | 3VA9133-0QA00 |
| | | 25 mm / 1 inch | 8 mm / 0.3 inch | — | √ | — | — | — | — | 3VA9233-0QA00 |
| | | 25 mm / 1 inch | 8 mm / 0.3 inch | — | — | √ | — | — | — | 3VA9243-0QA00 |
| | | 35 mm / 1.4 inch | 10 mm / 0.4 inch | — | — | — | √ | — | — | 3VA9473-0QA00 |
| | Nut keeper kit kit of 4 single lugs | 17 mm / 0.7 inch | 6.5 mm /0.25 inch | √ | — | — | — | — | — | 3VA9134-0QA00 |
| | | 25 mm / 1 inch | 8 mm / 0.3 inch | — | √ | — | — | — | — | 3VA9234-0QA00 |
| | | 25 mm / 1 inch | 8 mm / 0.3 inch | — | — | √ | — | — | — | 3VA9244-0QA00 |
| | | 35 mm / 1.4 inch | 10 mm / 0.4 inch | — | — | — | √ | — | — | 3VA9474-0QA00 |
| 3 lug kit pictured | Nut keeper kit kit of 3 single lug and terminal covers | 50 mm / 2.0 inch | 30 mm / 1.18 inch | — | — | — | — | √ | — | 3VA9673-0QA00 |
| | Nut keeper kit kit of 4 single lug and terminal covers | 50 mm / 2.0 inch | 30 mm / 1.18 inch | — | — | — | — | √ | — | 3VA9674-0QA00 |
| | Metric Nut Keeper Kit kit of 3 single lugs | 50 mm/1.96 inch | 15…20 mm / 0.6…0.8 inch | — | — | — | — | — | √ | 3VA9803-0QA00① |
| | SAE Nut Keeper Kit kit of 3 single lugs | 50 mm / 2.0 inch | 15…20 mm / 0.6…0.8 inch | — | — | — | — | — | √ | 3VA9873-0QA00① |

① Nut keeper kit is for 1200A breakers only.

## Bus Connector Extensions

| | Type | Maximum terminal width | Maximum terminal thickness | For molded case circuit breakers/rated current | | | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A | 3VA5 3VA6 1600A | |
| | Front bus connectors, extended 1 single connector | 22 mm / 0.9 inch | 8 mm / 0.3 inch | √ | — | — | — | — | — | — | **3VA9131-0QB00** |
| | Front bus connectors, extended kit of 3 single connectors, 2 phase barriers, and 1 insulating plate | 22 mm / 0.9 inch | 8 mm / 0.3 inch | √ | — | — | — | — | — | — | **3VA9133-0QB00** |
| | Front bus connectors extended kit of 4 single connectors, 3 phase barriers, and 1 insulating plate | 22 mm / 0.9 inch | 8 mm / 0.3 inch | √ | — | — | — | — | — | — | **3VA9134-0QB00** |
| | Front bus connectors extended kit of 3 single connectors and 1 insulating plate | 32 mm / 1.3 inch | 10 mm / 0.4 inch | — | √ | √ | — | — | — | — | **3VA9273-0QB00** |
| | | 40 mm / 1.6 inch | 12.5 mm / 0.5 inch | — | — | — | √ | — | — | — | **3VA9473-0QB00** |
| | | 50.8 mm / 2.0 inch | 30 mm / 1.18 inch | — | — | — | — | √ | — | — | **3VA9673-0QB00** |
| | Front bus connectors extended kit of 4 single connectors and 1 insulating plate | 32 mm / 1.3 inch | 10 mm / 0.4 inch | — | √ | √ | — | — | — | — | **3VA9274-0QB00** |
| | | 40 mm / 1.6 inch | 12.5 mm / 0.5 inch | — | — | — | √ | — | — | — | **3VA9474-0QB00** |
| | | 50.8 mm / 2.0 inch | 30 mm / 1.18 inch | — | — | — | — | √ | — | — | **3VA9674-0QB00** |
| | Front bus connectors offset kit of 3 single connectors. 1 insulating plate Distance between pole centers: 400/600 A = 70 mm / 2.76 inches | 60 mm / 2.4 inch | 12.5 mm / 0.5 inch | — | — | — | √ | — | — | — | **3VA9473-0QC00** |
| | | 80 mm / 3.15 inch | 30 mm / 1.18 inch | — | — | — | — | √ | — | — | **3VA9673-0QC00** |
| | Front bus connectors offset kit of 4 single connectors, 1 insulating plate, Distance between pole centers: 400/600 A = 70 mm / 2.76 inches | 60 mm / 2.4 inch | 12.5 mm / 0.5 inch | — | — | — | √ | — | — | — | **3VA9474-0QC00** |
| | | 80 mm / 3.15 inch | 30 mm / 1.18 inch | — | — | — | — | √ | — | — | **3VA9674-0QC00** |
| | Front bus connectors offset kit of 3 single terminals 2 phase barriers<br>▪ For mounting onto the circuit breaker<br>▪ For mounting on plug-in and withdrawable units | 60 mm / 2.4 inch | 12.5 mm / 0.5 inch | — | — | — | — | — | √ | — | **3VA9603-0QC00**① |
| | Front bus connectors kit of 3 single connectors and 1 terminal cover Note: The bent connection brackets shown in the picture must be provided by the customer. Dimensions can be found in the manual. | | | — | — | — | — | — | √ | √ | **3VA9873-0QB00** |
| | Front bus connectors, for 100% rated MCCB kit of 3 single connectors and 1 terminal cover Note: The bent connection brackets shown in the picture must be provided by the customer. Dimensions can be found in the manual. | | | — | — | — | — | — | √ | √ | **3VA9873-0QH00** |

① IEC only.

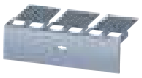
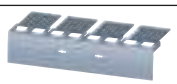
## Rear connection studs flat

| | Type | For molded case circuit breakers/ rated current | | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|
| | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A | |
| | Rear connection studs flat kit of 2 short flat studs and 1 long flat stud | √ | — | — | — | — | — | 3VA9133-0QE00 |
| | | — | √ | — | — | — | — | 3VA9233-0QE00 |
| | | — | — | √ | — | — | — | 3VA9243-0QE00 |
| | | — | — | — | √ | — | — | 3VA9473-0QE00 |
| | Rear connection studs flat kit of 2 short flat studs and 2 long flat studs | √ | — | — | — | — | — | 3VA9134-0QE00 |
| | | — | √ | — | — | — | — | 3VA9234-0QE00 |
| | | — | — | √ | — | — | — | 3VA9244-0QE00 |
| | | — | — | — | √ | — | — | 3VA9474-0QE00 |
| | Rear connection studs flat 1 short flat stud | √ | — | — | — | — | — | 3VA9131-0QE10 |
| | | — | √ | — | — | — | — | 3VA9231-0QE10 |
| | | — | — | √ | — | — | — | 3VA9241-0QE10 |
| | | — | — | — | √ | — | — | 3VA9471-0QE10 |
| | Rear connection studs flat 1 long flat stud | √ | — | — | — | — | — | 3VA9131-0QE20 |
| | | — | √ | — | — | — | — | 3VA9231-0QE20 |
| | | — | — | √ | — | — | — | 3VA9241-0QE20 |
| | | — | — | — | √ | — | — | 3VA9471-0QE20 |
| | Rear connectors vertical 1 pole, 1 rear connector | — | — | — | — | — | √ | 3VA9773-0QE10 |
| | Rear connectors vertical 3 pole, 3 rear connectors | | | | | | √ | 3VA9773-0QE00 |

## Rear connection studs round

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rear connection studs round kit of 1 long round stud and 2 short round studs | √ | — | — | — | — | — | 3VA9133-0QF00 |
| | | — | √ | — | — | — | — | 3VA9233-0QF00 |
| | | — | — | √ | — | — | — | 3VA9243-0QF00 |
| | | — | — | — | √ | — | — | 3VA9473-0QF00 |
| | Rear connection studs round kit of 2 long round studs and 2 short round studs | √ | — | — | — | — | — | 3VA9134-0QF00 |
| | | — | √ | — | — | — | — | 3VA9234-0QF00 |
| | | — | — | √ | — | — | — | 3VA9244-0QF00 |
| | | — | — | — | √ | — | — | 3VA9474-0QF00 |
| | Rear connection studs round 1 short round studs | √ | — | — | — | — | — | 3VA9131-0QF10 |
| | | — | √ | — | — | — | — | 3VA9231-0QF10 |
| | | — | — | √ | — | — | — | 3VA9241-0QF10 |
| | | — | — | — | √ | — | — | 3VA9471-0QF10 |
| | Rear connection studs round 1 long round stud | √ | — | — | — | — | — | 3VA9131-0QF20 |
| | | — | √ | — | — | — | — | 3VA9231-0QF20 |
| | | — | — | √ | — | — | — | 3VA9241-0QF20 |
| | | — | — | — | √ | — | — | 3VA9471-0QF20 |
| | Rear horizontal bus connections, 3-pole, 3VA65 and 3VA66 | — | — | — | — | √ | — | 3VA9673-0QE60 |
| | Rear horizontal bus connections, 4-pole, 3VA65 and 3VA66 | — | — | — | — | √ | — | 3VA9674-0QE60 |
| | Rear vertical bus connections, 3-pole, 3VA65 and 3VA66 | — | — | — | — | √ | — | 3VA9673-0QE00 |
| | Rear vertical bus connections, 4-pole, 3VA65 and 3VA66 | — | — | — | — | √ | — | 3VA9674-0QE00 |

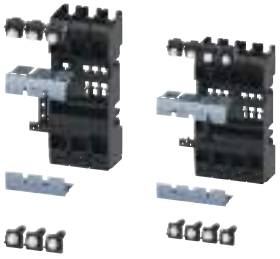
## Phase barriers, terminal covers, and insulating plates

| | Type | For molded case circuit breakers/ rated current | | | | | | | | Part Number | Terminal Cover with Probe Holes Part Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A | 3VA5 3VA6 1600A | 3VA5 3VA6 2000A | | |
| | Phase barriers kit of 2 phase barriers | √ | — | — | — | — | — | — | — | 3VA9132-0WA00 | |
| | | — | √ | √ | — | — | — | — | — | 3VA9272-0WA00 | |
| | | — | — | — | √ | — | — | — | — | 3VA9472-0WA00 | |
| | | — | — | — | — | √ | — | — | — | 3VA9672-0WA00 | |
| | | — | — | — | — | — | √ | √ | √ | 3VA9872-0WA00 | |
| | Terminal cover for 1-pole breakers | √ | — | — | — | — | — | — | — | 3VA9131-0WD10 | |
| | Terminal cover for 2-pole breakers | √ | — | — | — | — | — | — | — | 3VA9131-0WD20 | |
|  | Terminal cover for 3-pole breakers | √ | — | — | — | — | — | — | — | 3VA9131-0WD30 | 3VA9131-0WD31 |
| | | — | √ | √ | — | — | — | — | — | 3VA9271-0WD30 | 3VA9271-0WD31 |
| | | — | — | — | √ | — | — | — | — | 3VA9471-0WD30 | 3VA9471-0WD31 |
| | | — | — | — | — | √ | — | — | — | 3VA9671-0WD30 | |
| | | — | — | — | — | — | √ | √ | √ | 3VA9871-0WD30 | |
|  | Terminal cover for 4-pole breakers | √ | — | — | — | — | — | — | — | 3VA9131-0WD40 | |
| | | — | — | √ | — | — | — | — | — | 3VA9271-0WD40 | |
| | | — | — | — | √ | — | — | — | — | 3VA9471-0WD40 | |
| | | — | — | — | — | √ | — | — | — | 3VA9671-0WD40 | |
| | Terminal cover intermediate for 3-pole breakers | — | — | — | — | √ | — | — | — | 3VA9671-0WE30 | |
| | Terminal cover intermediate for 4-pole breakers | — | — | — | — | √ | — | — | — | 3VA9671-0WE40 | |
| | Terminal cover extended for 2-pole breakers | √ | — | — | — | — | — | — | — | 3VA9131-0WF20 | |
| | Terminal cover extended for 3-pole breakers | √ | — | — | — | — | — | — | — | 3VA9131-0WF30 | 3VA9131-0WF31 |
| | | — | √ | √ | — | — | — | — | — | 3VA9271-0WF30 | 3VA9271-0WF31 |
| | | — | — | — | √ | — | — | — | — | 3VA9471-0WF30 | 3VA9471-0WF31 |
| | | — | — | — | — | √ | — | — | — | 3VA9671-0WF30 | |
| | Terminal cover extended for 4-pole breakers | √ | — | — | — | — | | | | 3VA9131-0WF40 | |
| | | — | √ | √ | — | — | | | | 3VA9271-0WF40 | |
| | | — | — | — | √ | — | | | | 3VA9471-0WF40 | |
| | | — | — | — | — | √ | | | | 3VA9671-0WF40 | |
| | Terminal cover offset for 3-pole breakers | — | — | — | √ | — | | | | 3VA9471-0WG30 | |
| | Terminal cover offset for 4-pole breakers | — | — | — | √ | — | | | | 3VA9471-0WG40 | |
| | Terminal cover extended for 3-pole breakers | — | — | — | — | — | √ | — | — | 3VA9771-0WP30 | |
| | | — | — | — | — | — | √ | √ | — | 3VA9871-0WP30 | |
| | | — | — | — | — | — | √ | √ | — | 3VA9871-0WF30 | |

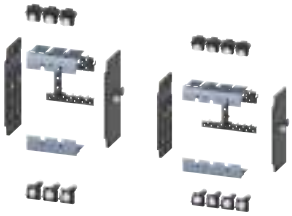
## Phase barriers, terminal covers, and insulating plates

| | Type | For molded case circuit breakers / rated current | | | | Part Number |
|---|---|---|---|---|---|---|
| | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | |
| | Rear insulating plate extended for 2-pole breakers | √ | — | — | — | **3VA9131-0WJ20** |
| | Rear insulating plate extended for 3-pole breakers | √ | — | — | — | **3VA9131-0WJ30** |
| | | — | √ | √ | — | **3VA9271-0WJ30** |
| | | — | — | — | √ | **3VA9471-0WJ30** |
| | Rear insulating plate extended for 4-pole breakers | √ | — | — | — | **3VA9131-0WJ40** |
| | | — | — | √ | — | **3VA9271-0WJ40** |
| | | — | — | — | √ | **3VA9471-0WJ40** |
| | Rear insulating plate offset for 3-pole breakers | — | — | — | √ | **3VA9471-0WK30** |
| | Rear insulating plate offset for 4-pole breakers | — | — | — | √ | **3VA9471-0WK40** |
| | Control wire tap for busbar (for fixed mounting) | — | √ | √ | — | **3VA9270-0WC00** |
| | | — | — | — | √ | **3VA9470-0WC00** |

## Plug-in socket

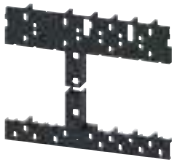
| | Type | For molded case circuit breakers / rated current | | | Part Number |
|---|---|---|---|---|---|
| | | 3VA61/62 150A/250A | 3VA63 400A | 3VA64 600A | |
|  3 pole 4 pole | Plug-in unit, 3-pole, complete kit<br>Consists of: Plug-in socket, Plug-in unit, conversion kit, Mounting screw kit | √ | — | — | **3VA9143-0KP00** |
| | | — | √ | — | **3VA9343-0KP00** |
| | | — | — | √ | **3VA9443-0KP00** |
| | Plug-in unit, 4-pole, complete kit<br>Consists of: Plug-in socket, Plug-in unit, conversion kit, Mounting screw kit | √ | — | — | **3VA9144-0KP00** |
| | | — | √ | — | **3VA9344-0KP00** |
| | | — | — | √ | **3VA9444-0KP00** |
| 3 pole 4 pole | Plug-in unit, 3-pole, conversion kit<br>Consists of: Screw-fastened terminal covers for molded case circuit breakers, Plug-in contacts, Cable cage, Autotrip plunger | √ | — | — | **3VA9143-0KP10** |
| | | — | √ | √ | **3VA9343-0KP10** |
| | Plug-in unit, 4-pole, conversion kit<br>Consists of: Screw-fastened terminal covers for molded case circuit breakers, Plug-in contacts, Cable cage, Autotrip plunger | √ | — | — | **3VA9144-0KP10** |
| | | — | √ | √ | **3VA9344-0KP10** |

## Draw-out units

| | Type | For molded case circuit breakers / rated current | | | Part Number |
|---|---|---|---|---|---|
| | | 3VA61/62 150A/250A | 3VA63 400A | 3VA64 600A | |
| | Draw-out unit, 3-pole, complete kit<br>Consists of: Draw-out socket, Draw-out unit, conversion kit, Mounting screw kit | √ | — | — | **3VA9143-0KD00** |
| | | — | √ | — | **3VA9343-0KD00** |
| | | — | — | √ | **3VA9443-0KD00** |
| | Draw-out unit, 4-pole, complete kit<br>Consists of: Draw-out socket, Draw-out unit, conversion kit, Mounting screw kit | √ | — | — | **3VA9144-0KD00** |
| | | — | √ | — | **3VA9344-0KD00** |
| | | — | — | √ | **3VA9444-0KD00** |
|  3 pole 4 pole | Draw-out unit, 3-pole, conversion kit<br>Consists of: Screw-fastened terminal covers, Side wall, Plug-in contacts, Cable cage, Autotrip plunger | √ | — | — | **3VA9143-0KD10** |
| | | — | √ | √ | **3VA9343-0KD10** |
| | Draw-out unit, 4-pole, conversion kit<br>Consists of: Screw-fastened terminal covers, Side wall, Plug-in contacts, Cable cage, Autotrip plunger | √ | — | — | **3VA9144-0KD10** |
| | | — | √ | √ | **3VA9344-0KD10** |

Note: Crank handle for the drawout unit must be ordered seperately.

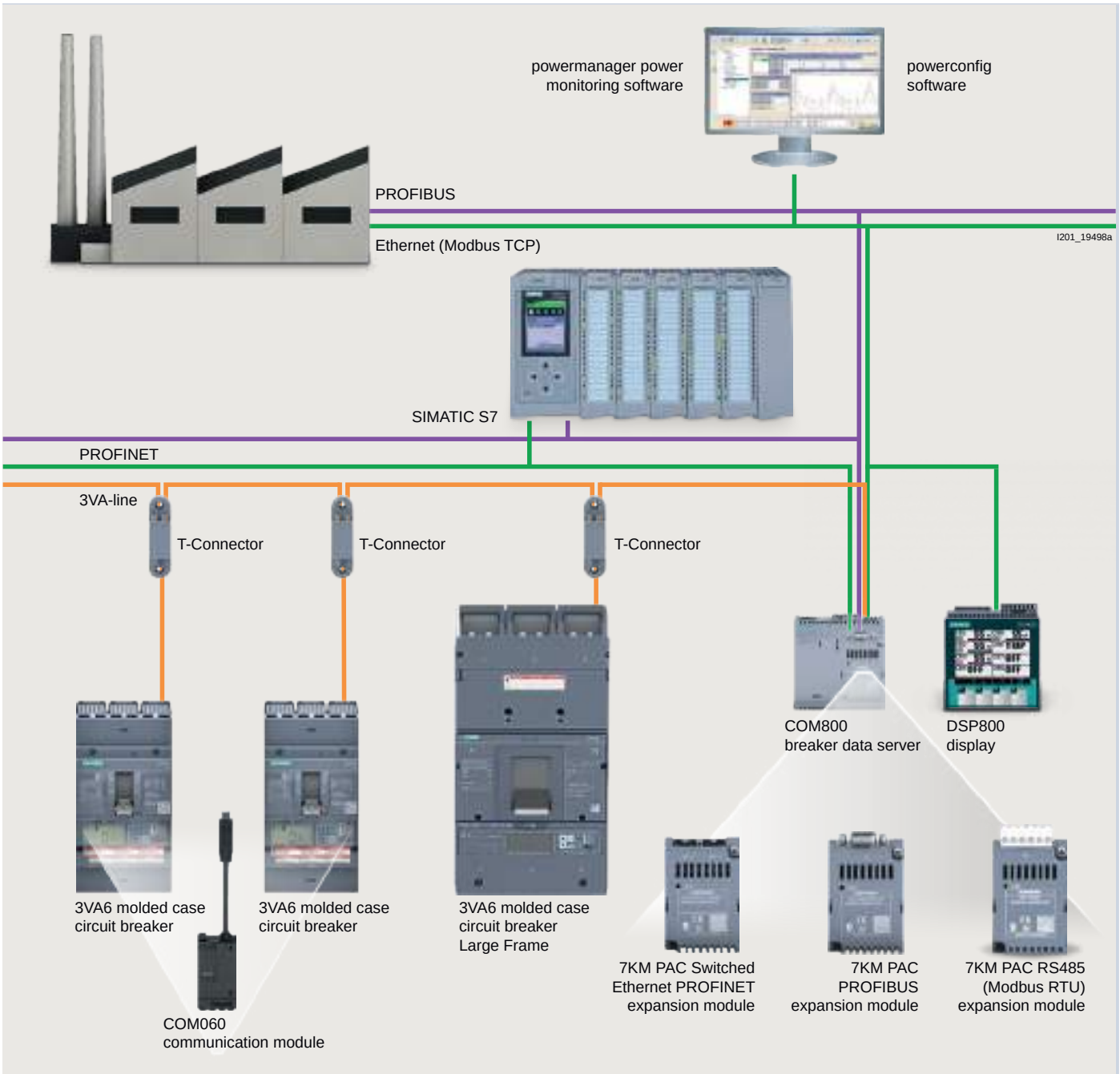
## Accessories

| | Type | For molded case circuit breakers / rated current | | Part Number |
|---|---|---|---|---|
| | | 3VA61/62 150A/250A | 3VA63/64 400A/600A | |
|  | Cable cage for plug-in/draw-out unit 3-/4-pole (spare part) Cable duct for routing of the required cables from the internal acc. on the back of the breaker. | √ | — | 3VA9167-0KB02 |
| | | — | √ | 3VA9367-0KB02 |
| | Door feedthrough | √ | — | 3VA9147-0KT00 |
| | | — | √ | 3VA9347-0KT00 |
| | Autotrip plunger Plug-in unit | √ | — | 3VA9267-0KP81 |
| | | — | √ | 3VA9457-0KP81 |
| | Autotrip plunger Draw-out unit | √ | — | 3VA9267-0KD81 |
| | | — | √ | 3VA9457-0KD81 |
| | Terminal cover for plug-in/draw-out unit, 3-pole (spare part) To provide circuit breaker touch protection, for mounting on the molded case cicuit breaker | √ | — | 3VA9143-0KB01 |
| | | — | √ | 3VA9343-0KB01 |
| | Terminal cover for plug-in/draw-out unit, 4-pole (spare part) To provide circuit breaker touch protection, for mounting on the molded case cicuit breaker | √ | — | 3VA9144-0KB01 |
| | | — | √ | 3VA9344-0KB01 |
| | Crank handle for draw-out unit Insulated, including crank holder | | | 3VA9987-0KD81 |

## Other Accessories

| | Type | Part Number |
|---|---|---|
| | Communication link for draw-out unit<br>Consists of: Cable kit with 3 special position signaling switches, connecting cable 3VA9987-0KC10 | **3VA9977-0KC00** |
| | Position signaling switches<br>For draw-out unit | **3VA9977-0KB00** |
| | Spare connecting cable<br>To connect the position signaling switches for communication with the COM060 | **3VA9987-0KC10** |
| | Auxiliary circuit connector<br>▪ For draw-out units | **3VA9977-0KD80** |
| | Auxiliary circuit connector<br>▪ For plug-in units | **3VA9977-0KP80** |
| | Cylinder lock (type Ronis)<br>▪ Includes a lock with 2 keys<br>▪ For locking<br>▪ For installation in all rotary operators with shaft stub<br>▪ For mounting in the adapter kit for the accessories component | **3VA9980-0VL10**<br>**3VA9980-0VL30**<br>**3VA9980-0VL40** |
| | Cylinder locks (type RONIS)<br>▪ For 3VA9877-0EK1 front mounted rotary operators<br>▪ For 3VA877-0FK2 door mounted rotary operators | **3VA9870-0VL10** |
| | Cylinder lock adapter for draw-out unit<br>▪ For fitting a cylinder lock in the right-hand side wall of the draw-out unit<br>▪ To prevent unauthorized withdrawl or insertion of the circuit breaker;<br>▪ Circuit breaker can be locked in the CONNECT, TEST, or DISCONNECT position | **3VA9970-0LF40** |
| | Auxiliary switches<br>▪ For 3VA9877-0EK1. front mounted rotary operators and<br>▪ For 3VA877-0FK2 door mounted rotary operators<br>1× leading to "ON“ | **3VA9877-0GX31** |
| | 2× leading to "ON" | **3VA9877-0GX32** |
| | 1× leading to "OFF" | **3VA9877-0GX41** |
| | 2× leading to "OFF" | **3VA9877-0GX42** |

## Communications overview



# 3VA Communication and Testing/Commissioning Devices

## Selection

### Modules

| | Type | For molded case circuit breakers / rated current | | Part Number |
|---|---|---|---|---|
| | | 3VA61/62 150A/250 A | 3VA63/64/65/66 400A/600A 800A/1000A | |
| | 24 V Module<br>▪ 24 V DC<br>▪ For mounting in the right-hand accessories compartment of the 3VA6<br>▪ Optional energy supply for the ETU, also includes contiunous operation of the ETU display and the metering function of the ETU 8-series | √ | — | **3VA9177-0TB50** |
| | | — | √ | **3VA9377-0TB50** |
| | COM060 communication module<br>▪ For mounting in the right-hand accessories compartment of the 3VA6 molded case circuit breaker (including ETU power supply)<br>▪ Communication with the COM800/COM100 breaker data server via the 3VA-line<br>▪ Including a T-Connector | √ | — | **3VA9177-0TB10** |
| | | — | √ | **3VA9377-0TB10** |
| | Spare SLC adapter COM060,<br>24 V module accessory for:<br>▪ 3VA61/62 100/150/250 | √ | — | **3VA9187-0TB60** |
| | Spare SLC adapter COM060,<br>24 V module accessory for:<br>▪ 3VA63/64 400/600 | — | √ | **3VA9387-0TB60** |

### Breaker data server

| | Type | Part Number |
|---|---|---|
| | COM800 breaker data server<br>▪ 2 terminating resistors<br>▪ Central communication module for connecting up to eight 3VA6 molded case circuit breakers via the 3VA-line<br>▪ Ethernet 10/100 Mbit/s interface<br>▪ Communication via Ethernet (Modbus TCP)<br>▪ Module slot for plugging on an optional PROFIBUS DP, PROFINET or RS485 module | **3VA9977-0TA10** |
| | COM100 breaker data server<br>▪ 2 terminating resistors<br>▪ Central communication module for connecting one 3VA6 molded case circuit breaker<br>▪ Ethernet 10/100 Mbit/s interface<br>▪ Communication via Ethernet (Modbus TCP)<br>▪ Module slot for plugging on an optional PROFIBUS DP, PROFINET or RS485 module | **3VA9977-0TA20** |
| | 7KM PAC PROFIBUS DP expansion module<br>▪ The 7KM PAC PROFIBUS DP expansion module is used for connecting the COM800/COM100 breaker data server, and the 3VA molded case circuit breakers conneccted to it, to PROFIBUS DPV1<br>▪ The 7KM PAC PROFIBUS DP expansion module provides the status and measured quantities of the 3VA molded case circuit breaker for the PROFIBUS DP master. It receives information (e.g. commands) from the PROFIBUS DP master, and forwards this information to the 3VA molded case circuit breaker | **7KM9300-0AB01-0AA0** |
| | 7KM PAC Switched Ethernet PROFINET expansion module<br>▪ The 7KM PAC Switched Ethernet PROFINET expansion module is used to connect the COM800/COM100 breaker data server, and the connected 3VA molded case circuit breaker, to PROFINET via two Ethernet interfaces<br>▪ The 7KM PAC Switched Ethernet PROFINET expansion module provides the status and measured quantities of the 3VA molded case circuit breaker to PROFINET via the PROFINET IO, PROFIenergy and Modbus TCP protocols | **7KM9300-0AE01-0AA0** |
| | 7KM PAC RS485 Modbus RTU expansion module<br>▪ The 7KM PAC RS485 Modbus expansion module is used to connect the COM800/COM100 breaker data server, and the 3VA molded case circuit breaker connected to it, to Modbus RTU<br>▪ The 7KM PAC RS485 Modbus expansion module provides the status and measured quantities of the 3VA molded case circuit breaker for the Modbus RTU master. It receives information (e.g. commands) from the Modbus RTU master, and forwards this information to the 3VA molded case circuit breaker | **7KM9300-0AM00-0AA0** |

# 3VA Communication and Testing/Commissioning Devices



## Accessories for Communication

| | Type | Part Number |
|---|---|---|
| | T-Connector<br>▪ Spare part<br>▪ Provides spur line feeder to COM060 and loops to the nextcircuit breaker<br>▪ Includes a connection adapter for mounting on the 3VA6 breaker enclosure | **3VA9987-0TG10** |
| | DIN rail adapter<br>For snapping the T-Connector onto a DIN rail | **3VA9987-0TG11** |
| | Preassembled T-Connector-to-T-Connector or<br>T-Connector-to-COM800/ COM100 connecting cable<br>▪ 0.4 m long | **3VA9987-0TC10** |
| | ▪ 1 m long | **3VA9987-0TC20** |
| | ▪ 2 m long | **3VA9987-0TC30** |
| | ▪ 4 m long | **3VA9987-0TC40** |
| | Preassembled connecting cable for extending the<br>COM060-to-T-Connector spur line connection<br>▪ 0.4 m long | **3VA9987-0TF20** |
| | ▪ 0.8 m long | **3VA9987-0TF10** |
| | Additional bus terminating resistors | **3VA9987-0TE10** |
| | Voltage tap to external N conductor<br>Cable for connecting the neutral point for the metering function of the<br>8-Series ETU, length 1.5 m | **3VA9987-0UC10** |
| | External current transformer. Connection of an external current transformer for the<br>N conductor for 3-pole 3VA6 molded case circuit breakers for 3-series①, 5-series, and<br>8-series ETUs, including connecting cable<br>▪ 3VA61 | **3VA9077-0NA10** |
| | ▪ 3VA62 | **3VA9177-0NA10** |
| | ▪ 3VA63/64 | **3VA9377-0NA10** |
| | ▪ 3VA65/66/67 | **3VA9677-0NA10** |
| | ▪ 3VA68/69 | **3VA9877-0NA10** |
| | DSP800 display<br>▪ For displaying the status, measured values and parameters of up to 8<br>3VA6 molded cases circuit breakers<br>▪ Connection to the COM800/COM100 via Ethernet for displaying information<br>of the COM800/COM100 and the connected 3VA6 molded case circuit breaker | **3VA9977-0TD10** |
| | EFB300<br>▪ External function box for connection to the ETU of the 3VA6 molded case circuit breaker<br>▪ 4 digital outputs for information output, 1 digital input<br>▪ ZSI functionality<br>▪ S0 interface<br>▪ Including cable 1.5 m in length | **3VA9977-0UA10** |
| | Connecting cable for EFB300 and MMB300. Spare part<br>▪ 1.5 m long | **3VA9987-0UB10** |
| | ▪ 3.0 m long | **3VA9987-0UB20** |
| | ▪ 3.0 m long for 3VA with EFB and RCD820 | **3VA9987-0UB30** |

## Test devices

| | Type | Part Number |
|---|---|---|
| | TD300<br>▪ Connection to the front interface of the ETU<br>▪ Test device for activating the ETU and triggering a test trip | **3VA9977-0MA10** |
| | TD500<br>▪ Connection to the front interface of the ETU<br>▪ Initiation of various test trips (LSING)<br>▪ USB interface for connection of a PC using powerconfig<br>▪ ETU parameterization<br>▪ Including external power supply unit with adapter for Europe, UL and GB<br>▪ Including connecting cable to the 3VA6 molded case circuit breaker | **3VA9977-0MB10** |
| | Spare part: External power supply for TD500<br>110 ... 240 V AC | **3VA9987-0MX10** |
| | Spare part: Cable for connecting to the TD500 to the 3VA6 molded case circuit breaker | **3VA9977-0MY10** |

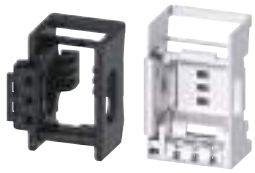
## Maintenance Mode Box

| | | |
|---|---|---|
| | MMB300<br>▪ Realization of the NEC 240.87 (Arc Energy Reduction) -> personal protection during maintenance work<br>▪ Switch into maintenance mode by changing the I- and G-protection to the lowest possible value through an external signal (e.g. door contact)<br>▪ Available for all 3VA6 circuit breakers with electronic trip unit<br>▪ Daisy chain up to 8 circuit breakers equipped with MMB300<br>▪ Additional digital output (D01) for ETU signals available<br>▪ Capable of DIN rail mounting<br>▪ Includes cable 1.5m in length | **3VA9977-0UF10** |

# 3VA Accessories for Locking, Blocking and Interlocking

## Selection

### Locking, Blocking, & Interlocking

| | Type | For molded case circuit breakers/ rated current | | | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|---|
| | | 3VA4 125A | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A 2000A | |
|  3VA51 | Blocking device for the handle | — | √ | — | — | — | — | — | 3VA9038-0LB10 |
| | | — | — | √ | √ | √ | — | — | 3VA9378-0LB10 |
| | | — | — | — | — | — | — | √ | 3VA9877-0LB10 |
| 3VA5/3VA6 3VA4 | Padlock device for the handle | — | √ | — | — | — | — | — | 3VA9037-0LB11 |
| | | √ | — | — | — | — | — | — | 3VA9038-0LB11 |
| | | — | — | √ | √ | — | — | — | 3VA9138-0LB11 |
| | | — | — | — | — | √ | — | — | 3VA9338-0LB11 |
| | | — | — | — | — | — | √ | — | 3VA9578-0LB10 |
| | | — | — | — | — | — | — | √ | 3VA9877-0LB11 |
| 2 pole 3 pole | 3VA4 Handle tie & padlock 2-inch | √ | — | — | — | — | — | — | 3VA9032-0LB20 |
| | 3VA4 Handle tie & padlock 3-inch | √ | — | — | — | — | — | — | 3VA9033-0LB20 |
| | Adapter kit for mounting the cylinder lock (type Ronis) in the accessories compartment of the molded case circuit breaker Comprising 2 cylinder lock casings (one for locking and one for interlocking) and the appropriate mounting module<br>▪ To implement an interlock or a lock: select suitable cylinder lock(s)<br>▪ For an interlock: select the same cylinder lock number | — | √ | — | — | — | — | — | 3VA9137-0LF10 |
| | | — | — | √ | — | — | — | — | 3VA9237-0LF10 |
| | | — | — | — | √ | — | — | — | 3VA9147-0LF10 |
| | | — | — | — | — | √ | — | — | 3VA9347-0LF10 |
| | | — | — | — | — | — | √ | — | 3VA9577-0LF10 |
| | Cylinder lock (type Ronis)<br>▪ Includes a lock with 2 keys<br>▪ For locking or interlocking<br>▪ For installation in all rotary operators with shaft stub<br>▪ For mounting in the adapter kit for the accessories compartment | | | | | | | — | |
| | ▪ Key 1 (lock number 1) | — | √ | √ | √ | √ | √ | — | 3VA9980-0VL10 |
| | ▪ Key 3 (lock number 3) | — | √ | √ | √ | √ | √ | — | 3VA9980-0VL30 |
| | ▪ Key 4 (lock number 4) | — | √ | √ | √ | √ | √ | — | 3VA9980-0VL40 |
| | Sliding bar<br>Complete kit for interlocking 2 circuit breakers<br>▪ The article number must be ordered 2X to implement an interlock between 3 breakers of the same size | — | √ | — | — | — | — | — | 3VA9138-0VF30 |
| | | — | — | √ | — | — | — | — | 3VA9238-0VF30 |
| | | — | — | — | √ | — | — | — | 3VA9148-0VF30 |
| | | — | — | — | — | √ | — | — | 3VA9348-0VF30 |
| | Module for handle interlock using a bowden cable<br>▪ A separate handle interlock module is required for each switching device<br>▪ A Bowden cable must be ordered separately | — | √ | — | — | — | — | — | 3VA9137-0VF10 |
| | | — | — | √ | — | — | — | — | 3VA9237-0VF10 |
| | | — | — | — | √ | — | — | — | 3VA9147-0VF10 |
| | | — | — | — | — | √ | — | — | 3VA9347-0VF10 |
| | | — | — | — | — | — | √ | — | 3VA9577-0VF10 |
| | | — | — | — | — | — | — | √ | 3VA9877-0VF10 |
| | Rear interlock with rod<br>Complete Kit<br>▪ Mounting frames are not included in scope of supply | — | √ | √ | √ | √ | — | — | 3VA9078-0VM10 |

# 3VA Accessories for Locking, Blocking and Interlocking



## Locking, Blocking, & Interlocking

| | Type | For molded case circuit breakers/rated current | | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|
| | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A 2000A | |
| | Rear interlock with rod<br>Complete Kit<br>▪ Mounting frames are included in scope of supply | — | — | — | — | √ | — | 3VA9578-0VM10 |
| | Rear interlock with rod<br>Complete Kit for plug-in/draw-out unit<br>▪ Mounting frames are not included in scope of supply | √ | √ | √ | √ | — | — | 3VA9078-0VM30 |
| | Rear interlock with rod<br>Complete Kit for Circuit breaker, fixed-mounted | — | — | — | — | — | √ | 3VA9873-0VM10 |
|  | Bowden cable<br>▪ Length 0.6 m | √ | √ | √ | √ | √ | — | 3VA9980-0VC10 |
| | ▪ Length 1.0 m | √ | √ | √ | √ | √ | — | 3VA9980-0VC20 |
| | ▪ Length 1.5 m | √ | √ | √ | √ | √ | — | 3VA9980-0VC30 |
|  | Mounting frame for rear interlock with rod①②<br>Required for the complete mounting frame kit:<br>▪ Profile poles | √ | √ | √ | √ | — | — | 3VA9078-0VK10 |
| | ▪ Mounting Plates | √ | — | — | — | — | — | 3VA9138-0VK20 |
| | | — | √ | — | — | — | — | 3VA9238-0VK20 |
| | | — | — | √ | — | — | — | 3VA9248-0VK20 |
| | | — | — | — | √ | — | — | 3VA9448-0VK20 |

## Cover frame for door cut-out

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Cover frame for door cut-out for molded case circuit breaker<br>▪ 3-pole, door cut-out without trip unit | √ | — | — | — | — | — | 3VA9033-0SB10 |
| | | — | √ | √ | — | — | — | 3VA9143-0SB10 |
| | | — | — | — | √ | — | — | 3VA9373-0SB10 |
| | | — | — | — | — | √ | — | 3VA9583-0SB10 |
| | | — | — | — | — | — | √ | 3VA9877-0SB10 |
| | Cover frame for door cut-out for molded case circuit breaker<br>▪ 3-pole, door cut-out with trip unit | √ | — | — | — | — | — | 3VA9033-0SB20 |
| | | — | √ | — | — | — | — | 3VA9233-0SB20 |
| | | — | — | √ | — | — | — | 3VA9143-0SB20 |
| | | — | — | — | √ | — | — | 3VA9343-0SB20 |
| | | — | — | — | — | √ | — | 3VA9583-0SB20 |
| | | — | — | — | — | — | √ | 3VA9877-0SB20 |
| | ▪ 3-pole, door cut-out with trip unit and connection area | — | — | — | — | — | √ | 3VA9877-0SB60 |
| | Cover frame for door cut-out for molded case circuit breaker<br>▪ 4-pole, door cut-out without trip unit | √ | — | — | — | — | — | 3VA9034-0SB10 |
| | | — | √ | √ | — | — | — | 3VA9144-0SB10 |
| | | — | — | — | √ | — | — | 3VA9374-0SB10 |
| | | — | — | — | — | √ | — | 3VA9584-0SB10 |
| | Cover frame for door cut-out for molded case circuit breaker<br>▪ 4-pole, door cut-out with trip unit | √ | — | — | — | — | — | 3VA9034-0SB20 |
| | | — | √ | — | — | — | — | 3VA9234-0SB20 |
| | | — | — | √ | — | — | — | 3VA9144-0SB20 |
| | | — | — | — | √ | — | — | 3VA9344-0SB20 |
| | | — | — | — | — | √ | — | 3VA9584-0SB20 |
| | Cover frame for door cut-out for MO320 motor operators | √ | — | — | — | — | — | 3VA9033-0SB10 |
| | | — | √ | √ | — | — | — | 3VA9237-0SB30 |
| | | — | — | — | √ | — | — | 3VA9377-0SB30 |
| | Cover frame for door cut-out for front mounted rotary operators | √ | — | — | — | — | — | 3VA9033-0SB10 |
| | | — | √ | √ | — | — | — | 3VA9143-0SB10 |
| | | — | — | — | √ | — | — | 3VA9373-0SB10 |
| | Cover frame for door cut-out for front mounted rotary operator with door interlock | — | — | — | √ | — | — | 3VA9377-0SB30 |
| | | — | — | — | — | √ | — | 3VA9583-0SB50 |
| | | — | — | — | — | — | √ | 3VA9877-0SB30 |
| | Cover frame for door cut-out for door feedthrough | — | √ | √ | — | — | — | 3VA9233-0SB20 |
| | | — | — | — | √ | — | — | 3VA9333-0SB20 |
| | Labeling plate for cover frame | | | | | | | 3VA9087-0SX10 |

① 2 mounting plates are required. They are screwed onto the profile rail that can be ordered above. Different breakers can be mutually interlocked.

② Breakers with plug-in unit can be mounted on the mounting plates, but the profile rails cannot be used.

## Other accessories

| | Type | For molded case circuit breakers/rated current | | | | | | Part Number |
|---|---|---|---|---|---|---|---|---|
| | | 3VA5 125A | 3VA5 250A | 3VA6 150A 250A | 3VA5 3VA6 400A 600A | 3VA5 3VA6 800A 1000A | 3VA5 3VA6 1200A 2000A | |
| | Busbar adapter system with 60 mm busbar center-to-center spacing 3-pole | √ | — | — | — | — | — | 8US1211-4SS00① |
| | | — | √ | √ | — | — | — | 8US1213-4AP03② |
| | | — | — | — | √ | — | — | 8US1213-4AH04② |
| | Busbar adapter system with 60 mm busbar center to center spacing, bottom connection, 3-pole<br><br>Busbar adapter designed for 3VA breaker used as a main | √ | — | — | — | — | — | 8US1215-4SS00 |
| | Metric mounting screw kit<br>For fixed mounted breakers 1-pole | √ | — | — | — | — | — | 3VA9151-0SS10 |
| | Metric mounting screw kit (2 pcs)<br>For fixed mounted breakers 2-pole | √ | — | — | — | — | — | 3VA9116-0SS10 |
| | Metric mounting screw kit (4 pcs)<br>For fixed mounted breakers 3-,4-pole | √ | √ | — | — | — | — | 3VA9114-0SS10 |
| | Metric mounting screw kit<br>For fixed mounted breakers 3-pole | √ | √ | √ | — | — | — | 3VA9126-0SS10 |
| | Metric mounting screw kit<br>For fixed mounted breakers 4-pole | √ | √ | √ | — | — | — | 3VA9124-0SS10 |
| | Metric mounting screw kit<br>For fixed mounted breakers 3-,4-pole | — | — | — | √ | — | — | 3VA9328-0SS10 |
| | Metric mounting Screw kit (4pcs)<br>For fixed mounted breakers 3-, 4-pole | — | — | — | — | √ | — | 3VA9517-0SS10 |
| | Metric mounting screw kit (4pcs)<br>For 4-pole breakers and plug-in and draw-out unit | √ | √ | √ | — | — | — | 3VA9124-0SS10 |
| | Metric mounting screw kit (4pcs)<br>For 3-pole breakers | — | — | — | — | — | √ | 3VA9874-0SS10 |
| | SAE mounting screw kit (2 pcs)<br>For fixed mounted breakers 1-pole | √ | — | — | — | — | — | 3VA9151-0SS00 |
| | SAE Mounting screw kit (2 pcs)<br>For fixed mounted breakers 2-,3-pole | √ | — | — | — | — | — | 3VA9156-0SS00 |
| | SAE Mounting screw kit (4 pcs)<br>For fixed mounting breakers 4-pole | √ | — | — | — | — | — | 3VA9154-0SS00 |
| | SAE Mounting screw kit (4 pcs)<br>For fixed mounted breakers 3-,4-pole and 3VA6 150/250 plug-in and draw-out units | — | √ | √ | — | — | — | 3VA9164-0SS00 |
| | SAE Mounting screw kit (2 pcs)<br>For fixed mounted breakers 2-,3-pole | — | √ | √ | — | — | — | 3VA9166-0SS00 |
| | SAE Mounting screw kit (4 pcs)<br>For fixed mounted breakers 2-,3-,4-pole and 3VA6 400/600 plug-in and draw-out units | — | — | — | √ | — | — | 3VA9368-0SS00 |
| | SAE mounting screws (4pcs)<br>For 3-pole breakers | — | — | — | — | — | √ | 3VA9874-0SS00 |
| | Replacement handle extension accessory | — | — | — | √ | — | — | 3VA9487-0SC10 |
| | | — | — | — | — | √ | — | 3VA9987-0SC10 |
| | | — | — | — | — | — | √ | 3VA9877-0SC10 |

① Busbar adapter designed for 3VA breaker used as a feeder.

② Busbar adapter designed for 3VA breaker used as either a main or feeder.

## Auxiliary switches electrical requirements

| | | | | Auxiliary switches and alarm switches HQ | | | | Auxiliary switches and alarm switches HQ_electronic | | | | Auxiliary switches and alarm switches HP | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | AUX | LCS | TAS | EAS | AUX | LCS | TAS | EAS | AUX | LCS | TAS |
| **Rated operational voltage** | | $U_e$ | V AC 50 Hz | 240 | | | | 24 | | | | 600 | | |
| | | | V DC | 250 | | | | 24 | | | | 250 | | |
| **Conventional free-air thermal current** | | $I_{th} = I_e$ | A | 6 | | | | 0.3 | | | | 10 | | |
| **IEC Ratings Listed** | AC-12 | 12 V | A | 6 | | | | 0.3 | | | | 10 | | |
| | | 24 V | A | 6 | | | | 0.3 | | | | 10 | | |
| | | 48 V | A | 6 | | | | -- | | | | 10 | | |
| | | 125 V | A | 6 | | | | -- | | | | 10 | | |
| | | 220/240 V | A | 6 | | | | -- | | | | 10 | | |
| | | 380/440 V | A | -- | | | | -- | | | | 6 | | |
| | | 600 V | A | -- | | | | -- | | | | 2 | | |
| | AC-15 | 12 V | A | 3 | | | | 0.3 | | | | 6 | | |
| | | 2/4 V | A | 3 | | | | 0.3 | | | | 6 | | |
| | | 48 V | A | 3 | | | | -- | | | | 6 | | |
| | | 125 V | A | 3 | | | | -- | | | | 6 | | |
| | | 220/240 V | A | 3 | | | | -- | | | | 6 | | |
| | | 380/440 V | A | -- | | | | -- | | | | 2 | | |
| | | 600 V | A | -- | | | | -- | | | | 0.6 | | |
| | DC-12 | 12 V | A | 6 | | | | 0.1 | | | | 6 | | |
| | | 24 V | A | 4 | | | | 0.1 | | | | 6 | | |
| | | 48 V | A | 2 | | | | -- | | | | 2 | | |
| | | 110 V | A | 0.5 | | | | -- | | | | 0.6 | | |
| | | 250 V | A | 0.25 | | | | -- | | | | 0.3 | | |
| | DC-13 | 12 V | A | 1 | | | | 0.07 | | | | 3 | | |
| | | 24 V | A | 0.8 | | | | 0.07 | | | | 3 | | |
| | | 48 V | A | 0.4 | | | | -- | | | | 0.8 | | |
| | | 110 V | A | 0.2 | | | | -- | | | | 0.2 | | |
| | | 250 V | A | 0.1 | | | | -- | | | | 0.1 | | |
| **Max. rated current (UL)** | Inductive load (0.75-0.8 AC) | 24 V | A | 3 | | | | 0.3 | | | | 6 | | |
| | | 300 V | A | 3 | | | | -- | | | | 6 | | |
| | | 600 V | A | -- | | | | -- | | | | 6 | | |
| | Pilot duty (AC) | 24 V | A | 3 | | | | -- | | | | 6 | | |
| | | 127 V | A | 3 | | | | -- | | | | 6 | | |
| | | 240 V | A | 3 | | | | -- | | | | 3 | | |
| | | 480 V | A | -- | | | | -- | | | | 1.5 | | |
| | | 600 V | A | -- | | | | -- | | | | 1.2 | | |
| | Resistive load (DC) | 24 V | A | 0.25 | | | | 0.1 | | | | 0.3 | | |
| | | 250 V | A | 0.25 | | | | -- | | | | 0.3 | | |
| | Resistive load - pilot duty sequence (DC) | 125 V | A | 0.6 | | | | -- | | | | 0.9 | | |
| | | 250 V | A | 0.3 | | | | -- | | | | 0.55 | | |
| **Minimum load** | | At 24 V DC | mA | 70 | | | | 0.5 | | | | 70 | | |
| | | At 5 V DC | mA | -- | | | | 1 | | | | -- | | |

# 3VA Accessory Electrical Requirements



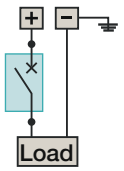
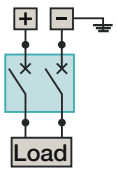
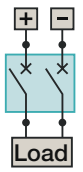
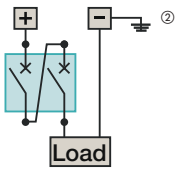
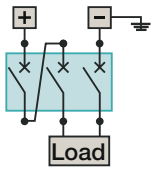
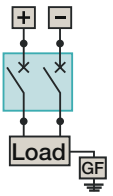
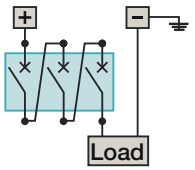
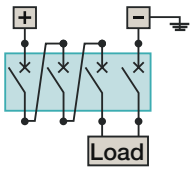
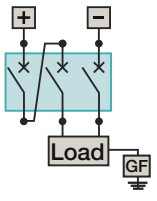
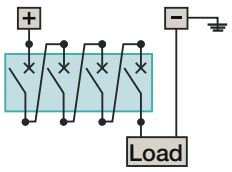
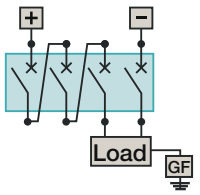
## Shunt trip/undervoltage electrical requirements

| | | | | | Shunt trip left STL | Shunt trip flexible STF | Undervoltage releases UVR | Universal release UNI |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| **Power consumption $U_e$** | 12 | V DC | W | 50 | -- | -- | -- |
| | 24 | 50 V AC/60 Hz | VA | 50 | -- | -- | -- |
| | 24 ... 30 | V DC | W | 7 ... 50 | -- | -- | -- |
| | 48 ... 60 | 50 V AC/60 Hz | VA | 15 ... 20 | -- | -- | -- |
| | 48 ... 60 | V DC | W | 20 ... 30 | -- | -- | -- |
| | 110 ... 127 | 50 V AC/60 Hz | VA | 30 ... 40 | -- | -- | -- |
| | 110 ... 127 | V DC | W | 30 ... 40 | -- | -- | -- |
| | 208 ... 277 | 50 V AC/60 Hz | VA | 16 ... 35 | -- | -- | -- |
| | 220 ... 250 | V DC | W | 28 ... 35 | -- | -- | -- |
| | 380 ... 600 | 50 V AC/60 Hz | VA | 10 ... 30 | -- | -- | -- |
| | 24 | 50 V AC/60 Hz | VA | -- | 300 | -- | -- |
| | 48 ... 60 | 50 V AC/60 Hz | VA | -- | 340 ... 600 | -- | -- |
| | 110 ... 127 | 50 V AC/60 Hz | VA | -- | 500 ... 650 | -- | -- |
| | 208 ... 277 | 50 V AC/60 Hz | VA | -- | 360 ... 650 | -- | -- |
| | 380 ... 500 | 50 V AC/60 Hz | VA | -- | 330 ... 600 | -- | -- |
| | 600 | 50 V AC/60 Hz | VA | -- | 300 | -- | -- |
| | 12 ... 250 | V DC | W | -- | -- | < 2.5 | -- |
| | 24 ... 230 | 50 V AC/60 Hz | VA | -- | -- | < 2 | -- |
| | 380 ... 480 | 50 V AC/60 Hz | VA | -- | -- | < 2.5 | -- |
| | 12 | V DC (Cat II; PELV/SELV) | W | -- | -- | -- | UVR: < 2.5<br>SHT: 20 |
| | 24 | V DC (Cat II; PELV/SELV) | W | -- | -- | -- | UVR: < 2.5<br>SHT: 20 |
| | 48 | V DC (Cat II; PELV/SELV) | W | -- | -- | -- | UVR: < 2.5<br>SHT: 20 |
| **Rated impulse withstand voltage** | | $U_{imp}$ | kV | 6 | | 4 | 0.5 |
| **Making current** | | $I_{max}$ | at V | 1.5 A/24 V AC | 18 A/24 V AC | 5 mA/480 V | 1.5 A/24 V |
| **Maximum tripping time** | | | ms | < 10 | | | |
| **Service life** | Electrical trips | | | 8500 | | | |
| | Mechanical switching cycles of the circuit breaker | | | 25000 | | | |
| **Priority over other control signals** | | | | Given | | | |
| **Degree of protection** | Lid of the accessories compartment closed | | | IP40 | | | |
| | Lid of the accessories compartment open | | | IP 20 | | | |
| **Minimum signal duration** | | | ms | 40 | 40 | -- | 40 |
| **Response voltage shunt trip** | Pick-up (circuit breaker trips) | Us/V | % | 70 ... 110 | | -- | 70 ... 110 |
| **Undervoltage release response voltage** | Pick-up (circuit breaker can be switched on) | Us/V | % | -- | -- | 85 ... 110 | |
| | Pick-up (circuit breaker trips) | Us/V | % | -- | -- | 35 ... 70 | |
| **Tripping frequency** | Trips per hour | | | Unlimited | 120 | Unlimited | |
| **Can be used for electrical interlocking of molded case circuit breakers** | | | | No | No | Yes | |

## Motor operator electrical requirements

| MO320 motor operator | 3VA5<br>125 A | 3VA5<br>250 A | 3VA6<br>150 A/<br>250 A | 3VA5<br>3VA6<br>400 A/<br>600 A |
|---|---|---|---|---|
| Degree of protection | NEMA 1 | | | |
| Rated control supply voltage (operating range of control supply voltage) | 24 V ... 60 V DC (0.85 ... 1.26)<br>110 V ... 230 V AC/<br>110 V ... 250 V DC (0.85 ... 1.1) | | | |
| Rating | 250 W, max. 500 W (60 ms) | | | |
| Make time, typically | < 800 ms | < 1000 ms | | < 1700 ms |
| Break time, typically | < 800 ms | < 1000 ms | | < 1400 ms |

## DC breaking capacity according to UL489

| 3VA51 | | | 3VA52 | | | 3VA53 | | | 3VA54 | | | DC single-pole disconnection | DC all-pole disconnection | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125 A (15- 125 A) | | | 250 A (40 – 250 A) | | | 400 A (200 - 400 A) | | | 600 A (450 – 600 A) | | | Grounded① | Grounded① | Isolated |
| DC breaking capacity acc. UL489 in kA | | | | | | | | | | | | | | |
| S | M | H | M | H | C | M | H | C | M | H | C | | | |
| 125 V | | | 250 V | | | 250 V | | | 250 V | | |  |  |  |
| 14 | 25 | 30 | 50 | 85 | 100 | 50 | 85 | 100 | 50 | 85 | 100 | | | |
| 250 V | | | 500 V | | | 500 V | | | 500 V | | |  |  |  |
| 50 | 85 | 100 | 50 | 85 | 100 | 50 | 85 | 100 | 50 | 85 | 100 | | | |
| 500 V | | | 750 V | | | 600 V | | | 600 V | | |  |  |  |
| | | | | | | 50 | 85 | 100 | 50 | 85 | 100 | | | |
| | | | | | | 750 V | | | 750 V | | | | | |
| 50 | 85 | 100 | 50 | 85 | 100 | 6 | 6 | 10 | 6 | 6 | 10 | | | |
| 600 V | | | 1000 V | | | 750 V | | | 750 V | | |  | — |  |
| | | | | | | 50 | 85 | 100 | 50 | 85 | 100 | | | |
| | | | | | | 1000 V | | | 1000 V | | | | | |
| 50 | 85 | 100 | 50 | 85 | 100 | 6 | 6 | 10 | 6 | 6 | 10 | | | |

Applies to MCCBs in line protection and MCS (if protected by a suitable overcurrent protection device).

With an non-grounded system, all poles must disconnect such that the load is isolated when switched off.

The grounded pole must always be assigned to the individual conducting path, so that in the event of a ground fault there are always 2 conducting paths in series in a circuit with 3-pole molded case circuit breakers, and 3 conducting paths in series in a circuit with 4-pole molded case circuit breakers.

Additional wiring configurations are available on request.

GF ground fault monitoring
① Minus pole grounded
② Also covers 1-pole circuit breaker in 2-pole frame

# Catalog Numbering System



If used on 250A frame and above means non-interchangeable trip breaker with factory assembled frame and trip. Solid state trip and current limiting (S or C in first character) are non-interchangeable only, and the "X" is omitted.

**Trip Unit Type**
□ — Omitted – Thermal-Magnetic
S — Sensitrip® Electronic Trip (obsolete)

**Sentron Series Type/Interrupting Range**
□ — Omitted – Standard Rating
H — High IC Rating
HH — Extra High IC Rating
C — Highest IC Rating and Current Limiting

**Frame Identifier**
E — Type ED
F — Type FD
J — Type JD
L — Type LD
LM — Type LMD
M — Type MD
N — Type ND
P — Type PD
R — Type RD

**Maximum Voltage**
2 — 240 Vac
4 — 480 Vac
6 — 600 Vac

**Number of Poles**
1
2
3
A — used to indicate advanced electronic trip unit with maintenance mode capability (always 3 poles)
B — used to indicate basic electronic trip unit (always 3 poles)

**(Specific Application Type)**
B — Standard 40°C Breaker
M — Calibrated for 50°C Application
F — Frame Only
T — 40°C Trip Unit Only
W — 50°C Trip Unit Only
S — Molded Case Switch
L — Low Instantaneous Range ETI Breaker
A — Standard Range ETI Breaker
H — High Instantaneous Range ETI Breaker

**Maximum Continuous Current Rating**
ED Frame — 015, 020, 025, 030, 035, 040, 045, 050, 060, 070, 080, 090, 100, 110, 125
FD Frame — 070, 080, 090, 100, 110, 125, 150, 175, 200, 225, 250
JD Frame — 200, 225, 250, 300, 350, 400
LD Frame — 250, 300, 350, 400, 450, 500, 600
LMD Frame — 500, 600, 700, 800
MD Frame — 500, 600, 700, 800
ND Frame — 900, 100 (1000A), 120 (1200A)
PD Frame — 120 (1200A), 140 (1400A), 160 (1600A)
RD Frame — 160 (1600A), 180 (1800A), 200 (2000A)

**Suffix**
L — where applicable indicates a breaker shipped with line/loads lugs installed
A — used with a switch to show automatic self protection
Y — 400 Hertz
H — 100% rated
P — Load side lugs only
NAV — Naval Ratings

NOTE:

□ — Position omitted if not used.

## Ordering Instructions

- All ED Frame Sentron circuit breakers are supplied with load side lugs. If line side lugs are required, add "L" suffix to catalog number. Consult Siemens sales office for any addditional charge
- 50°C Calibration, 400HZ - see page 17/128. All ED frame circuit breakers may be reverse connected

## Type ED2⑤

Blue Label

| Continuous Current Rating @ 40°C | 1-Pole<br>120V AC 125V DC<br>Catalog Number | 2-Pole<br>240V AC 125V DC 250V DC<br>Catalog Number | 3-Pole<br>240V AC<br>Catalog Number |
|---|---|---|---|
| 15 | ED21B015④■ | ED22B015 | ED23B015 |
| 20 | ED21B020④■ | ED22B020 | ED23B020 |
| 25 | ED21B025■ | ED22B025■ | ED23B025■ |
| 30 | ED21B030■ | ED22B030 | ED23B030 |
| 35 | ED21B035■ | ED22B035■ | ED23B035■ |
| 40 | ED21B040■ | ED22B040 | ED23B040 |
| 45 | ED21B045■ | ED22B045■ | ED23B045■ |
| 50 | ED21B050■ | ED22B050 | ED23B050 |
| 60 | ED21B060■ | ED22B060 | ED23B060 |
| 70 | ED21B070■ | ED22B070 | ED23B070 |
| 80 | ED21B080■ | ED22B080■ | ED23B080 |
| 90 | ED21B090■ | ED22B090■ | ED23B090■ |
| 100 | ED21B100■ | ED22B100 | ED23B100 |

## Type ED4⑤

Blue Label

| Continuous Current Rating @ 40°C | 1-Pole<br>120V AC 277V AC 125V DC<br>Catalog Number | 2-Pole<br>480V AC 250V DC<br>Catalog Number | 3-Pole<br>480V AC<br>Catalog Number |
|---|---|---|---|
| 15 | ED41B015④ | — | ED43B015 |
| 20 | ED41B020④ | ED42B020 | ED43B020 |
| 25 | ED41B025 | ED42B025 | ED43B025 |
| 30 | ED41B030 | ED42B030 | ED43B030 |
| 35 | ED41B035■ | ED42B035■ | ED43B035 |
| 40 | ED41B040 | ED42B040 | ED43B040 |
| 45 | ED41B045■ | ED42B045■ | ED43B045 |
| 50 | ED41B050 | ED42B050 | ED43B050 |
| 60 | ED41B060 | ED42B060 | ED43B060 |
| 70 | ED41B070 | ED42B070 | ED43B070 |
| 80 | ED41B080■ | ED42B080■ | ED43B080 |
| 90 | ED41B090■ | ED42B090■ | ED43B090 |
| 100 | ED41B100 | ED42B100 | ED43B100 |
| 110 | ED41B110 | ED42B110■ | ED43B110 |
| 125 | — | ED42B125 | ED43B125 |

## Type ED6⑤

Blue Label

| Continuous Current Rating @ 40°C | 1-Pole① 347V AC<br>Catalog Number | 2-Pole 600V AC 250V DC<br>Catalog Number | 3-Pole 600V AC 500V DC<br>Catalog Number | 3-Pole 600V DC<br>Catalog Number |
|---|---|---|---|---|
| 15 | ED61B015 | — | — | ED63D015L |
| 20 | ED61B020 | ED62B020 | ED63B020 | ED63D020L |
| 25 | ED61B025 | ED62B025■ | ED63B025 | ED63D025L |
| 30 | ED61B030 | ED62B030 | ED63B030 | ED63D030L |
| 35 | ED61B035 | — | ED63B035 | ED63D035L |
| 40 | ED61B040 | — | ED63B040 | ED63D040L |
| 45 | ED61B045■ | — | ED63B045 | ED63D045L |
| 50 | ED61B050 | — | ED63B050 | ED63D050L |
| 60 | ED61B060 | — | ED63B060 | ED63D060L |
| 70 | ED61B070■ | — | ED63B070 | — |
| 80 | ED61B080 | — | ED63B080 | — |
| 90 | ED61B090 | — | ED63B090 | — |
| 100 | ED61B100■ | — | ED63B100 | — |
| 110 | — | — | ED63B110 | — |
| 125 | — | — | ED63B125 | — |

**Note:** ED frame circuit breakers qualified to UL 489 Supplement SB "Naval"— See page 17/128 for additional information

■ Built to order. Allow 2–3 weeks for delivery.

①CSA Certified only (Not UL)

②For CED types and all 110–125 ampere ED frames.

③See **Note: A,** page 17/125.

④SWD rated.

⑤HACR rated.

⑥Not for use with HHED6 breakers.

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **ED2, ED4, ED6, HED4, HHED6** | | |
| 1 | 30 | 38 |
| 2 | 10 | 25 |
| 3 | 10 | 38 |
| **CED6** | | |
| 2 | 5 | 20 |
| 3 | 5 | 30 |

## Lugs

| Ampere Rating | No. of Poles | Catalog Number | Wire Range |
|---|---|---|---|
| **Aluminum Body Lugs** | | | |
| All 15–25A | 1, 2, 3 | Line/Load **SA1E025** | #14–#10 Cu<br>#12–#10 Al |
| All 30–100A | 1, 2, 3 | Line Side **LN1E100** | #10–1/0 Cu/Al |
| ED2, 4, 6, HED4 30-60A | 1 | Load Side **LD1E060** | #10–#4 Cu/Al |
| ED2, 4, 6, HED4 70-100A | 1 | Load Side **LD1E100** | #6–#1/0 Cu/Al |
| ED2, 4, 6, HED4, HHED6 30-100A | 2, 3 | Load Side **LN1E100** | #10–1/0 Cu/Al |
| All 110, 125A | 2, 3 | Line/Load **TA1E6125** | #3–3/0 Cu<br>#1–2/0 Al |
| **Copper Body Lugs** | | | |
| All 30–125A | 1, 2, 3 | Line/Load **TC1ED6150**③ | #10–1/0 Cu only |
| **Compression Lugs** | | | |
| All ED, HED, HHED, CED | | **CCE125** | 2/0 |

## Enclosures (Neutral Included)⑥

| Type | Catalog Number |
|---|---|
| 1 (Surface) | **E2N1S** (15–100A) |
| 1 (Flush) | **E2N1F** (15–100A) |
| 3R | **E2N3R** (15–100A) |
| 4–4X | **ED6SS4** (15–125A) |
| 7–9 | **EA** (15–60A) |
| 7–9 | **EB** (70–100A) |
| 12 | **E2N12** (15–100A) |
| 1 (Surface) | **CED6N1S**② |
| 1 (Flush) | **CED6N1F**② |
| 3R | **CED6N3R**② |
| 12 | **CED6N12**② |

Modifications page 17/128
For accessories, please refer to pages 17/95 and 17/132 to 17/137

## Type HED4⑤ — Black Label

| Continuous Current Rating @ 40°C | 1-Pole 277V AC 125V DC | 2-Pole 480V AC 250V DC | 3-Pole 480V AC |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| 15 | HED41B015① | HED42B015 | HED43B015 |
| 20 | HED41B020① | HED42B020 | HED43B020 |
| 25 | HED41B025 | HED42B025■ | HED43B025 |
| 30 | HED41B030 | HED42B030 | HED43B030 |
| 35 | HED41B035■ | HED42B035■ | HED43B035 |
| 40 | HED41B040 | HED42B040 | HED43B040 |
| 45 | HED41B045■ | HED42B045■ | HED43B045 |
| 50 | HED41B050■ | HED42B050 | HED43B050 |
| 60 | HED41B060■ | HED42B060■ | HED43B060 |
| 70 | HED41B070■ | HED42B070■ | HED43B070 |
| 80 | HED41B080■ | HED42B080■ | HED43B080 |
| 90 | HED41B090■ | HED42B090■ | HED43B090 |
| 100 | HED41B100■ | HED42B100■ | HED43B100 |
| 110 | — | HED42B110■ | HED43B110 |
| 125 | — | HED42B125■ | HED43B125 |

FIGURE1 - ED, HED, HHED

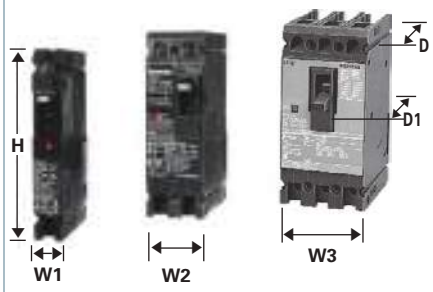
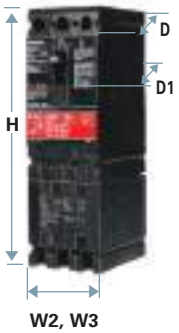



FIGURE 2 - CED (3-Pole shown)




**Fuseless Current Limiting**

## Type HHED6⑤ — Black Label  Type CED6⑤ — Red Label

| Continuous Current Rating @ 40°C | 3-Pole 600V AC | 2-Pole 600V AC, 250V DC | 3-Pole 600V AC, 500V DC② |
|---|---|---|---|
| | Catalog Number⑥ | Catalog Number | Catalog Number |
| 15 | HHED63B015A | CED62B015 | CED63B015 |
| 20 | HHED63B020 | CED62B020■ | CED63B020 |
| 25 | HHED63B025 | — | — |
| 30 | HHED63B030 | CED62B030■ | CED63B030 |
| 35 | HHED63B035 | — | — |
| 40 | HHED63B040 | — | CED63B040 |
| 45 | HHED63B045 | — | — |
| 50 | HHED63B050 | — | CED63B050 |
| 60 | — | CED62B060■ | CED63B060 |
| 70 | — | CED62B070■ | CED63B070 |
| 80 | — | CED62B080■ | CED63B080 |
| 90 | — | CED62B090■ | CED63B090 |
| 100 | — | CED62B100■ | CED63B100 |
| 110 | — | — | CED63B110■ |
| 125 | — | CED62B125■ | CED63B125 |

## Dimensions (in inches)

| Breaker Type | W1 | W2 | W3 | H | D | D1 |
|---|---|---|---|---|---|---|
| Figure 1 ED2, ED4, ED6, HED4, ED6 ETI③ | 1 | 2 | 3 | 6.35 | 3.92 | 4.56 |
| Figure 1 HHED6 | — | 2 | 3 | 6.53 | 3.92 | 4.56 |
| Figure 2 CED6, CED6 ETI③ | — | 2 | 3 | 9.58 | 3.92 | 4.56 |

## Interrupting Ratings

| Breaker Type | UL 489 AIR (File #E10848) RMS Symmetrical Amperes (KA) Volts AC 120 | 240 | 277 | 347 | 480 | 600 | Volts DC 125 | 250 | 500② | 600 | IEC 947-2 Volts AC (50/60Hz) 220/240 Icu | Ics | 380/415 Icu | Ics | 500 Icu | Ics |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ED2 (1-P) | 10 | — | — | — | — | — | 5 | — | — | — | — | — | — | — | — | — |
| ED2 (2, 3-P) | — | 10 | — | — | — | — | — | 5 (2-P) | — | — | — | — | — | — | — | — |
| ED4 (1-P) | 65 | — | 22 | — | — | — | 30 | — | — | — | — | — | — | — | — | — |
| ED4 (2, 3-P) | — | 65 | — | — | 18 | — | — | 30 (2-P) | — | — | — | — | — | — | — | — |
| ED6 (1P) | — | — | — | 30④ | — | — | — | 30 | — | — | — | — | — | — | — | — |
| ED6 (2, 3-P) | — | 65 | — | — | 25 | 18 | — | — | 18 (3-P) | — | 65 | 17 | 35 | 9 | 18 | 5 |
| ED6 (3-P) | — | — | — | — | — | — | — | — | — | 10⑦ | — | — | — | — | — | — |
| HED4 (1-P) (15–30A) | 100 | — | 65 | — | — | — | 30 | — | — | — | — | — | — | — | — | — |
| HED4 (1-P) (35–100A) | 100 | — | 25 | — | — | — | 30 | — | — | — | — | — | — | — | — | — |
| HED4 (2, 3-P) | — | 100 | — | — | 42 | — | — | 30 (2-P) | — | — | — | — | — | — | — | — |
| HHED6 (2, 3-P) | — | 100 | — | — | 65 | 18⑥ | — | — | — | — | — | — | — | — | — | — |
| CED6 (2, 3-P) | — | 200 | — | — | 200 | 100 | — | 50 (2-P) | 30 (3-P) | — | — | — | — | — | — | — |

■ Built to order. Allow 2–3 weeks for delivery.

①SWD rated.

②When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

③ED6-ETI, CED6-ETI, see page 7-158 for ordering information.

④Single Pole 15-30A 30KA @ 347V non-UL. 35-100A 18KA @ 347V non-UL.

⑤HACR rated.

⑥HHED63B015A is rated 18KAIC at 600/347V.

⑦600VDC only applies to ED63D___ breakers

## Accessories for:

**ED 125A Frame**

## Combinations

Available only when ordered together. Only one module can be added to a breaker. Additional accessories, which always attach to the left pole, cannot be added to the combination later. Adds 1 inch pole space.

## Equipment Ground Sensing

A field addable kit containing 30mA or 5 mA ground fault accessory module, current transformer with 24 inch leads, and current transformer mounting equipment. Current transformer to mount in gutter of lighting panel or any control panel. Accessory module operates from separate 120V control power source.

Both 30MA and 5MA devices are equipment protection devices only. Do not use for personnel protection.

**GF01ED60**

## Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch | 1 Shunt Trip 1 Auxiliary Switch and 1 Alarm Switch | 1 Shunt Trip and 1 Alarm Switch | 1 Shunt Trip and 2 Auxiliary Switches |
|---|---|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 24 | | S17ED60 | — | — | — | — |
| 48 | | S18ED60 | — | — | — | — |
| 120 | | S01ED60 | S01ED62A | S01ED62AB | S01ED62B | S01ED62AA |
| 208 | | — | S02ED62A▲ | S02ED62AB▲ | S02ED62B▲ | S02ED62AA▲ |
| 240 | | S03ED60 | S03ED62A | S03ED62AB | S03ED62B▲ | S03ED62AA▲ |
| 277 | | S15ED60▲ | S15ED64A▲ | S15ED64AB▲ | S15ED64B▲ | — |
| 480 | | S04ED60 | S04ED64A▲ | S04ED64AB▲ | S04ED64B▲ | — |
| | 12 | S16ED60▲ | S16ED62A▲ | — | — | — |
| | 24 | S07ED60 | S07ED62A | S07ED62AB▲ | S07ED62B▲ | S07ED62AA▲ |
| | 48 | S09ED60▲ | S09ED62A▲ | S09ED62AB▲ | S09ED62B▲ | S09ED62AA▲ |
| | 125 | S11ED60▲ | S11ED62A▲ | S11ED62AB▲ | S11ED62B▲ | S11ED62AA▲ |
| | 250 | S13ED60▲ | S13ED62A▲ | S13ED62AB▲ | S13ED62B▲ | S13ED62AA▲ |

## Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 1 Auxiliary Switch and 1 Alarm Switch | 1 Undervoltage Trip and 1 Alarm Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01ED60 | U01ED62A | U01ED62AB▲ | U01ED62B▲ | U01ED62AA▲ |
| 208 | | U02ED60▲ | U02ED62A▲ | U02ED62AB▲ | U02ED62B▲ | U02ED62AA▲ |
| 240 | | U03ED60 | U03ED62A▲ | U03ED62AB▲ | U03ED62B▲ | U03ED62AA▲ |
| 277 | | U16ED60▲ | U16ED64A▲ | U16ED64AB▲ | U16ED64B▲ | — |
| 480 | | U06ED60▲ | U06ED64A▲ | U06ED64AB▲ | U06ED64B▲ | — |
| 600 | | U08ED60▲ | — | — | — | — |
| | 24 | U13ED60 | U13ED62A▲ | U13ED62AB▲ | U13ED62B▲ | U13ED62AA▲ |
| | 48 | U14ED60▲ | U14ED62A▲ | U14ED62AB▲ | U14ED62B▲ | U14ED62AA▲ |
| | 125 | U10ED60▲ | U10ED62A▲ | U10ED62AB▲ | U10ED62B▲ | U10ED62AA▲ |
| | 250 | U12ED60▲ | U12ED62A▲ | — | — | U12ED62AA▲ |

## Auxiliary Switch Combinations

| Maximum Voltage | | 1 Auxiliary Switch | 1 Alarm Switch and 1 Auxiliary Switch | 2 Auxiliary Switches | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| 240 | 250 | A01ED62 | A01ED62B | A02ED62 | A02ED62B |
| 480 | | A01ED64 | A01ED64B | — | — |

| Maximum Voltage | | 1 Auxiliary Switch | |
|---|---|---|---|
| AC | DC | Catalog Number | |
| | 24 | A01EDLV | Gold Plated Contacts—for PLC use |

## Alarm Switch Only

| Maximum Voltage | | 1 Alarm Switch |
|---|---|---|
| AC | DC | Catalog Number |
| 240 | 250 | B00ED62 |
| 480 | | B00ED64 |

## Ground Fault Sensing Relay Kit — Equipment Protection Only

| For Use With Breaker Frame | Number of Poles | Description | Catalog Number | |
|---|---|---|---|---|
| | | | 30mA | 5mA |
| CED6, ED2, ED4 ED6, EFC, EFF, HED4, HHED6 | 1, 2, 3 | Basic Kit | GF01ED60 | GF01ED65 |
| | | Basic Kit with Normally Open Bell Alarm | GF01ED60B0 | GF01ED65B0▲ |
| | | Basic Kit with Normally Closed Bell Alarm | GF01ED60BC | GF01ED65BC▲ |

▲ Built to order. Allow 6–8 weeks for delivery.

## Type FXD6-A①⑥

Blue Label

**Non-Interchangeable Trip (Assembled Circuit Breaker – Without Lugs)**

| Continuous Current Rating @ 40°C | 2-Pole Catalog Number | 3-Pole Catalog Number |
|---|---|---|
| 70 | FXD62B070■ | FXD63B070 |
| 80 | FXD62B080■ | FXD63B080 |
| 90 | FXD62B090■ | FXD63B090 |
| 100 | FXD62B100 | FXD63B100 |
| 110 | FXD62B110■ | FXD63B110 |
| 125 | FXD62B125 | FXD63B125 |
| 150 | FXD62B150 | FXD63B150 |
| 175 | FXD62B175 | FXD63B175 |
| 200 | FXD62B200 | FXD63B200 |
| 225 | FXD62B225 | FXD63B225 |
| 250 | FXD62B250 | FXD63B250 |

## Type FD6-A⑥

Blue Label

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
|---|---|---|---|
| **2-Pole 600V AC, 250V DC②** | | | |
| 70 | FD62B070■ | FD62F250 | FD62T070■ |
| 80 | FD62B080■ | | FD62T080■ |
| 90 | FD62B090■ | | FD62T090■ |
| 100 | FD62B100■ | | FD62T100■ |
| 110 | FD62B110■ | | FD62T110■ |
| 125 | FD62B125■ | | FD62T125■ |
| 150 | FD62B150 | | FD62T150 |
| 175 | FD62B175■ | | FD62T175■ |
| 200 | FD62B200 | | FD62T200 |
| 225 | FD62B225■ | | FD62T225■ |
| 250 | FD62B250■ | | FD62T250■ |
| **3-Pole 600V AC, 500V DC③** | | | |
| 70 | FD63B070■ | FD63F250 | FD63T070■ |
| 80 | FD63B080■ | | FD63T080■ |
| 90 | FD63B090■ | | FD63T090■ |
| 100 | FD63B100 | | FD63T100 |
| 110 | FD63B110■ | | FD63T110■ |
| 125 | FD63B125 | | FD63T125 |
| 150 | FD63B150 | | FD63T150 |
| 175 | FD63B175 | | FD63T175 |
| 200 | FD63B200 | | FD63T200 |
| 225 | FD63B225 | | FD63T225 |
| 250 | FD63B250 | | FD63T250 |

## Interrupting Ratings

| Breaker Type | RMS Symmetrical Amperes (KA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UL 489 AIR (File E10848) | | | | | IEC 947-2⑦ | | | | | | |
| | Volts AC (50/60Hz) | | | Volts DC | | Volts AC (50/60Hz) | | | | | | |
| | 240 | 480 | 600 | 250 | 500③ | 220/240 | | 380/415 | | 500 | |
| | | | | | | Icu | Ics | Icu | Ics | Icu | Ics |
| FXD6-A, FD6-A | 65 | 35 | 22 | 30 (2-P) | 18 (3-P) | 65 | 33 | 35 | 18 | — | — |
| HFXD6, HFD6 | 100 | 65 | 25 | 30 (2-P) | 25 (3-P) | 100 | 50 | 65 | 33 | — | — |
| HHFD6, HHFXD6 | 200 | 100 | 25 | — | — | — | — | — | — | — | — |
| CFD6 | 200 | 200 | 100 | 30 (2-P) | 50 (3-P) | — | — | — | — | — | — |

## Instantaneous Adjustment Trip Range

| Breaker Ampere Rating | Nominal Instantaneous Values | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ±20% Tolerance Low | 2 | 3 | 4 | 5 | 6 | 7 | ±20% Tolerance High |
| 70-90 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 |
| 100-110 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 |
| 125-150 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 |
| 175-200 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 |
| 225-250 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 |

**Note:** FD frame qualified to UL489 supplement SB "NAVAL".
See page 17/128 for additional information.

## Ordering Information

**Complete Breaker Unassembled with Lugs**

Prices of FD6, HFD6, and HHFD6 breakers includes frame, trip and both line and load lugs (TA1FD350A). When ordered by these catalog numbers, the customer will receive the frame, trip, and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**

Prices of FXD6, HFXD6, HHFXD6, and CFD6 includes frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA1FD350A) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

**50°C Applications** see page 17/128.

**400 Hz Applications** see page 17/128.

## Lugs For 75°C Wire⑤

| Catalog Number | Wire Range |
|---|---|
| TA1FD350A | #6—350 kcmil Cu<br>#4—350 kcmil Al |
| TC1FD350 | #6—350 kcmil Cu |
| **Compression Lug** | |
| CCF250 | 350 kcmil Cu/Al |

## Enclosures

| Type | Catalog Number |
|---|---|
| 1 | F6N1S(F) |
| 3R | F6N3R |
| 4-4X | FD6SS4 |
| 7-9 | EC2 |
| 12 | F6N12 |
| Neutral④ | N250 |

Modifications page 17/128
For accessories, please refer to pages 17/98 and 17/132 to 17/137

■ Built to order. Allow 2–3 weeks for delivery.

①Type FXD6-A circuit breakers are UL Listed for reverse fed applications.
②2-pole units are 3-pole width.
③When wired as shown on page 17/6, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
④Order neutral as separate item.
⑤See **Note: A**, page 17/125.
⑥HACR rated.
⑦Only applicable to non-interchangeable trip unit types: FXD6A, HFXD6A.

## Type HFD6, Type HFXD6②③④⑤

**Black Label**

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
|---|---|---|---|
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 70 | HFD62B070■ | | FD62T070■ |
| 80 | HFD62B080■ | | FD62T080■ |
| 90 | HFD62B090■ | | FD62T090■ |
| 100 | HFD62B100■ | | FD62T100■ |
| 110 | HFD62B110■ | | FD62T110■ |
| 125 | HFD62B125■ | HFD62F250 | FD62T125■ |
| 150 | HFD62B150■ | | FD62T150■ |
| 175 | HFD62B175■ | | FD62T175■ |
| 200 | HFD62B200■ | | FD62T200■ |
| 225 | HFD62B225■ | | FD62T225■ |
| 250 | HFD62B250■ | | FD62T250■ |
| **3-Pole 600V AC, 500V DC①** | | | |
| 70 | HFD63B070■ | | FD63T070■ |
| 80 | HFD63B080■ | | FD63T080■ |
| 90 | HFD63B090■ | | FD63T090■ |
| 100 | HFD63B100 | | FD63T100 |
| 110 | HFD63B110■ | | FD63T110■ |
| 125 | HFD63B125 | HFD63F250 | FD63T125 |
| 150 | HFD63B150 | | FD63T150 |
| 175 | HFD63B175 | | FD63T175 |
| 200 | HFD63B200 | | FD63T200 |
| 225 | HFD63B225 | | FD63T225 |
| 250 | HFD63B250 | | FD63T250 |

## Type HHFD, HHFXD6②③⑤

**3-Pole 600V AC, Extra High Interrupting**

| | | | |
|---|---|---|---|
| 70 | HHFD63B070■ | | FD63T070■ |
| 80 | HHFD63B080■ | | FD63T080■ |
| 90 | HHFD63B090■ | | FD63T090■ |
| 100 | HHFD63B100 | | FD63T100 |
| 110 | HHFD63B110■ | | FD63T110■ |
| 125 | HHFD63B125 | HHFD63F250 | FD63T125 |
| 150 | HHFD63B150 | | FD63T150 |
| 175 | HHFD63B175 | | FD63T175 |
| 200 | HHFD63B200 | | FD63T200 |
| 225 | HHFD63B225 | | FD63T225 |
| 250 | HHFD63B250 | | FD63T250 |

## Type CFD6-A③⑤

**Fuseless Current Limiting**

**Red Label**

**Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)**

| Continuous Current Rating @ 40°C | 3-Pole 600V AC/500V DC Catalog Number |
|---|---|
| 70 | CFD63B070■ |
| 80 | CFD63B080■ |
| 90 | CFD63B090■ |
| 100 | CFD63B100■ |
| 110 | CFD63B110■ |
| 125 | CFD63B125■ |
| 150 | CFD63B150 |
| 175 | CFD63B175 |
| 200 | CFD63B200 |
| 225 | CFD63B225 |
| 250 | CFD63B250 |

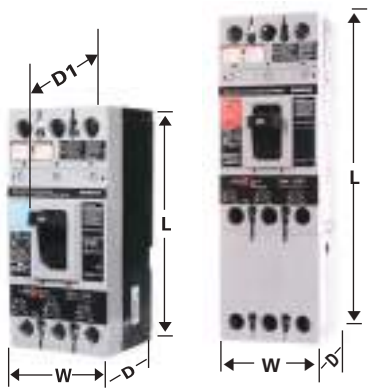



Figure 1 Figure 2

## Dimensions (in inches)

| Breaker Type | W | L | D | D1 (to handle) |
|---|---|---|---|---|
| Figure 1 FXD6-A, FD6-A, HFD6, HFXD6, HHFD6, FD6-ETI④ | 4.50 | 9.50 | 4 | 5.25 |
| Figure 2 CFD6, CFD6-ETI④ | 4.50 | 14.25 | 4 | 5.25 |

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **FD6-A, HFD6, HHFD6, FXD6-A Assembled Circuit Breaker (less connectors)** | | |
| 2 | 1 | 8.6 |
| 3 | 1 | 10 |
| **FD6-A, HFD6, HHFD6 Frame Only** | | |
| 2 | 1 | 7.5 |
| 3 | 1 | 8.7 |
| **FD6 Trip Unit Only** | | |
| 2 | 1 | 1.1 |
| 3 | 1 | 1.3 |
| **CFD6 Assembled Circuit Breaker (less terminals)** | | |
| 3 | 1 | 16 |

■ Built to order. Allow 2–3 weeks for delivery.

① When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

② For non-interchangeable trip 3-pole HFD6 type circuit breaker, change prefix identifier from HFD6 to HFXD6. Price equals frame and trip prices combined, e.g. price of HFXD63B250 equals price of HFD63F250 plus price of FD63T250. Order lugs separately.

③ Type HFXD6, HHFXD6, CFD6 are UL Listed for reverse feed applications.

④ FXD6, ETI, CFD6, ETI — See page 7-158 for ordering information.

⑤ HACR rated.

# Internal Accessories

## Selection

### Accessories:
**for FD, FFC & FFF 250A Frames**

**S01FD60**

### Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip |
|---|---|---|
| AC | DC | Catalog Number |
| 24 | | S17FD60 |
| 120 | | S01FD60 |
| 240 | | S03FD60 |
| 277 | | S15FD60▲ |
| 480 | | S04FD60 |
| 600 | | S06FD60▲ |
| | 12 | S16FD60▲ |
| | 24 | S07FD60 |
| | 48 | S09FD60▲ |
| | 125 | S11FD60 |
| | 250 | S13FD60▲ |

### Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 120 | | U01FD60 | W01FD64 |
| 208 | | U02FD60▲ | W02FD64▲ |
| 240 | | U03FD60 | W03FD64▲ |
| 277 | | U16FD60▲ | W16FD64▲ |
| 480 | | U06FD60▲ | W06FD64▲ |
| | 24 | U13FD60 | W13FD64 |
| | 48 | U14FD60▲ | W14FD64▲ |
| | 125 | U10FD60▲ | W10FD64▲ |

### Auxiliary Switch Combinations

| Voltage | | 1 Auxiliary Switch | 2 Auxiliary Switches |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 240 | | A01FD62 | A02FD62 |
| 480 | | A01FD64 | A02FD64 |
| | 24 | A01FDLV | Gold Plated Contacts - for PLC use |

### Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | B00FD64 | C01FD64 |

▲ Built to order. Allow 6–8 weeks for delivery.

①Auxiliary switch application is for 480V AC maximum.

**Note:** Old F-frame accessories cannot be used in new Sentron line. Likewise, new FD-frame accessories cannot be used on old F-frame circuit breakers.

## Type JXD2-A④

**240V AC, 2-Pole 250V DC Only** — Blue Label

| Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs) | | |
|---|---|---|
| Continuous Current Rating @ 40°C | 2-Pole (3-Pole Width) Catalog Number | 3-Pole Catalog Number |
| 200 | JXD22B200■ | JXD23B200 |
| 225 | JXD22B225■ | JXD23B225 |
| 250 | JXD22B250■ | JXD23B250 |
| 300 | JXD22B300 | JXD23B300 |
| 350 | JXD22B350■ | JXD23B350 |
| 400 | JXD22B400 | JXD23B400 |

## Type JXD6-A①④

**600V AC, 2-Pole 250V DC, 3-Pole 500V DC②** — Blue Label

| Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs) | | |
|---|---|---|
| 200 | JXD62B200■ | JXD63B200 |
| 225 | JXD62B225■ | JXD63B225 |
| 250 | JXD62B250■ | JXD63B250 |
| 300 | JXD62B300 | JXD63B300 |
| 350 | JXD62B350■ | JXD63B350 |
| 400 | JXD62B400 | JXD63B400 |

## Type JD6-A④

Blue Label

| Interchangeable Trip | | | |
|---|---|---|---|
| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 200 | JD62B200■ | JD62F400 | JD62T200■ |
| 225 | JD62B225■ | | JD62T225■ |
| 250 | JD62B250■ | | JD62T250■ |
| 300 | JD62B300■ | | JD62T300■ |
| 350 | JD62B350■ | | JD62T350■ |
| 400 | JD62B400 | | JD62T400 |
| **3-Pole 600V AC, 500V DC②** | | | |
| 200 | JD63B200 | JD63F400 | JD63T200 |
| 225 | JD63B225 | | JD63T225 |
| 250 | JD63B250 | | JD63T250 |
| 300 | JD63B300 | | JD63T300 |
| 350 | JD63B350 | | JD63T350 |
| 400 | JD63B400 | | JD63T400 |

## Interrupting Ratings

| Breaker Type | RMS Symmetrical Amperes (KA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UL 489 AIR (File E10848) | | | | | IEC 947-2⑤ | | | | | |
| | Volts AC (50/60Hz) | | | Volts DC | | Volts AC (50/60Hz) | | | | | |
| | | | | | | 220/240 | | 380/415 | | 500 | |
| | 240 | 480 | 600 | 250 | 500② | Icu | Ics | Icu | Ics | Icu | Ics |
| JXD2-A | 65 | — | — | 30 (2-P) | — | — | — | — | — | — | — |
| JXD6-A, JD6-A | 65 | 35 | 25 | 30 (2-P) | 25 (3-P) | 65 | 33 | 40 | 20 | — | — |
| HJD6-A, HJXD6-A | 100 | 65 | 35 | 30 (2-P) | 35 (3-P) | 100 | 50 | 65 | 33 | — | — |
| HHJD6, HHJXD6 | 200 | 100 | 50 | — | — | — | — | — | — | — | — |
| CJD6-A | 200 | 150 | 100 | 30 (2-P) | 50 (3-P) | — | — | — | — | — | — |

## Instantaneous Adjustment Trip Range

| Breaker Ampere Rating | Nominal Instantaneous Values | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ±20% Tolerance Low | 2 | 3 | 4 | 5 | 6 | 7 | ±20% Tolerance High |
| 200-300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 |
| 350-400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 |

■ Built to order. Allow 2–3 weeks for delivery.

①Type JXD2 and JXD6 circuit breakers are UL Listed for reverse feed applications.

②When wired as shown on page 17/6, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.

③See **Note: A**, page 17/125.

④ HACR rated.

⑤ Only applicable to non-interchangeable trip unit types: JXD6-A, HJXD6-A.

**Note:** JD frame qualified to UL489 supplement B "NAVAL." See page 17/128 for additional information.

## Ordering Information

**Complete Breaker Unassembled with Lugs**

Prices of JD6, HJD6, and HHJD6 breakers include frame, trip and both line and load lugs (TA2J6500). When ordered by these catalog numbers, the customer will receive the frame, trip, and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**

Prices of JXD6, HJXD6, HHJXD6, and CJD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA2J6500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

**100% Rated (3-pole only)**

Types JXD6 and HJXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price.■ 100% rated JD breakers require the use of 90°C Cu cable sized at 75°C ampacity and lugs TC1J6600 or TC2J6500.

**50°C Applications** see page 17/128.

**400Hz Applications** see page 17/128.

## Lugs For 75°C Wire③

| Catalog Number | Cables per Lug | Wire Range |
|---|---|---|
| TA2J6500 | 1, 2<br>2 | #3/0-500 kcmil Cu<br>#4/0-500 kcmil Al |
| TA1L6750 | 1<br>1 | 500-750 kcmil Al<br>500-600 kcmil Cu |
| TC1J6600 | 1 | #3/0-600 kcmil Cu |
| TC2J6500 | 1, 2 | #3/0-500 kcmil Cu |
| **Compression Lug** | | |
| CCL600 | 1 | 500 kcmil Cu/Al |

Modifications page 17/128
For accessories, please refer to pages 17/101 and 17/132 to 17/137

## Type HJD6-A, HJXD6-A②④⑥

Black Label

| Interchangeable Trip | | | |
|---|---|---|---|
| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs | Frame Only | Trip Unit Only |
| | Catalog Number | Catalog Number | Catalog Number |
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 200 | HJD62B200■ | | JD62T200■ |
| 225 | HJD62B225■ | | JD62T225■ |
| 250 | HJD62B250■ | HJD62F400■ | JD62T250■ |
| 300 | HJD62B300■ | | JD62T300■ |
| 350 | HJD62B350■ | | JD62T350■ |
| 400 | HJD62B400■ | | JD62T400 |
| **3-Pole 600V AC, 500V DC①②⑤** | | | |
| 200 | HJD63B200 | | JD63T200 |
| 225 | HJD63B225 | | JD63T225 |
| 250 | HJD63B250 | HJD63F400 | JD63T250 |
| 300 | HJD63B300 | | JD63T300 |
| 350 | HJD63B350 | | JD63T350 |
| 400 | HJD63B400 | | JD63T400 |

## Type HHJD6, HHJXD6②④⑥

Black Label

| 2-Pole 600V AC (3-Pole Width) | | | |
|---|---|---|---|
| 200 | HHJD62B200■ | | JD62T200■ |
| 225 | HHJD62B225■ | | JD62T225■ |
| 250 | HHJD62B250■ | HHJD62F400■ | JD62T250■ |
| 300 | HHJD62B300■ | | JD62T300■ |
| 350 | HHJD62B350■ | | JD62T350■ |
| 400 | HHJD62B400■ | | JD62T400 |
| **3-Pole 600VAC** | | | |
| 200 | HHJD63B200 | | JD63T200 |
| 225 | HHJD63B225 | | JD63T225 |
| 250 | HHJD63B250 | HHJD63F400 | JD63T250 |
| 300 | HHJD63B300 | | JD63T300 |
| 350 | HHJD63B350 | | JD63T350 |
| 400 | HHJD63B400 | | JD63T400 |

## Type CJD6-A ⑤⑥

**Fuseless Current Limiting**

Red Label

| Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs) | | |
|---|---|---|
| Continuous Current Rating @ 40°C | 2-Pole 600V AC/250V DC | 3-Pole 600V AC/500V DC |
| | Catalog Number | Catalog Number |
| 200 | For 2-pole application use outside poles of 3-pole circuit breaker | CJD63B200■ |
| 225 | | CJD63B225■ |
| 250 | | CJD63B250■ |
| 300 | | CJD63B300■ |
| 350 | | CJD63B350■ |
| 400 | | CJD63B400 |

Figure 1 Figure 2

## Dimensions (in inches)

| Breaker Type | W | L | D | To Handle D1 |
|---|---|---|---|---|
| Figure 1 JXD2-A, JXD6-A, JD6-A HJD6-A, HJXD6-A, HHJD6, HJD6, HJXD6, HHJXD6, JXD6-ETI,③ SJD6, SHJD6 | 7.5 | 11 | 4 | 5.44 |
| Figure 2 CJD6, CJD6-ETI,③ SCJD6 | 7.5 | 17.86 | 4 | 5.44 |

## Enclosures (Except SCJD6)

| Type | Catalog Number |
|---|---|
| 1 | J6N1 |
| 3R | J6N3R |
| 12 | J6N12 |
| 4X | LD6SS4 |
| 7, 9 (200-250A) | EC4 |
| 7, 9 (300-400A) | EE |
| Neutral | W60992 |

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **JXD2, JXD6, JD6, HJD6, HHJD6 Assembled Breaker (less terminals)** | | |
| 2 | 1 | 17.5 |
| 3 | 1 | 19.5 |
| **JD6, HJD6, HHJD6 Frame Only** | | |
| 2 | 1 | 14 |
| 3 | 1 | 15.5 |
| **JD6 Trip Unit Only** | | |
| 2 | 1 | 3.5 |
| 3 | 1 | 4 |
| **CJD6 Complete Assembled Breaker (less terminals)** | | |
| 3 | 1 | 31.5 |

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

2-pole units available in 3-pole construction.

① When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

② For non-interchangeable 3-pole HJD6 or HHJD6 type circuit breaker change the prefix identifier to HJXD6 or HHJXD6. Price equals price of frame plus price of trip, e.g. price of HJXD63B400 equals price of HJD63F400 plus price of JD63T400. Order lugs separately.

③ JXD6-ETI, CJD6-ETI see page 7-158 for ordering information.

④ Type HJXD6, HHJXD6 Circuit Breakers are UL listed for reverse fed applications.

⑤ CE applies to non-interchangeable type HJXD6-A only.

⑥ HACR rated.

## Accessories for:

**JD 400A Frame**
**LD 600A Frame**
**LMD 800A Frame**
**SJD 400A Frame**
**SLD 600A Frame**

**S01JLD6**

## Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 24 | | S17JLD6 | — |
| 48 | | S18JLD6▲ | — |
| 120 | | S01JLD6 | S01JLD62A |
| 240 | | S03JLD6 | S03JLD62A |
| 277 | | S15JLD6▲ | S15JLD64A▲ |
| 480 | | S04JLD6 | — |
| | 12 | S16JLD6▲ | S16JLD62A▲ |
| | 24 | S07JLD6 | S07JLD62A |
| | 48 | S09JLD6▲ | S09JLD62A |
| | 125 | S11JLD6 | S11JLD62A▲ |
| | 250 | S13JLD6▲ | S13JLD62A▲ |

## Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01JLD6 | U01JLD62A | U01JLD62AA |
| 208 | | U02JLD6▲ | U02JLD62A▲ | U02JLD62AA▲ |
| 240 | | U03JLD6 | U03JLD62A▲ | U03JLD62AA▲ |
| 480 | | U06JLD6 | U06JLD64A▲ | U06JLD64AA▲ |
| | 24 | U13JLD6 | U13JLD62A | U13JLD62AA |
| | 48 | U14JLD6▲ | U14JLD62A▲ | U14JLD62AA▲ |
| | 125 | U10JLD6▲ | U10JLD62A▲ | U10JLD62AA▲ |

## Auxiliary Switch Combinations

| Maximum Voltage | | 1 Form C | 2 Form C |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | A01JLD64 | A02JLD64 |
| — | 24 | A01JLDLV | A02JLDLV |

## Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | CatalogNumber |
| 480 | 250 | B01JLD64 | A01JLD64B | A02JLD64B |

**Note:** Accessory modules can only be added to right side pole of solid state SJD and SLD frame circuit breakers. No accessories can be added if mechanical interlock is used. All accessories on this page are useable on superseded JD2, JJ6, JL6, HJ6, SJL, LJ6, LL6, HL6 and SLL circuit breakers.

▲ Built to order. Allow 6–8 weeks for delivery.

## Type LXD6-A①④

Blue Label

**Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)**

| Continuous Current Rating @ 40°C | 2-Pole (3-Pole Width) 600V AC 250V DC Catalog Number | 3-Pole 600V AC 500V DC Catalog Number |
|---|---|---|
| 450 | LXD62B450■ | LXD63B450 |
| 500 | LXD62B500■ | LXD63B500 |
| 600 | LXD62B600 | LXD63B600 |

## Type LD6-A④

Blue Label

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
|---|---|---|---|
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 250 | LD62B250■ | LD62F600 | JD62T250■ |
| 300 | LD62B300■ | | JD62T300■ |
| 350 | LD62B350■ | | JD62T350■ |
| 400 | LD62B400 | | JD62T400 |
| 450 | LD62B450■ | | LD62T450■ |
| 500 | LD62B500■ | | LD62T500■ |
| 600 | LD62B600 | | LD62T600 |
| **3-Pole 600V AC, 500V DC②** | | | |
| 250 | LD63B250 | LD63F600 | JD63T250 |
| 300 | LD63B300 | | JD63T300 |
| 350 | LD63B350 | | JD63T350 |
| 400 | LD63B400 | | JD63T400 |
| 450 | LD63B450 | | LD63T450 |
| 500 | LD63B500 | | LD63T500 |
| 600 | LD63B600 | | LD63T600 |

## Interrupting Ratings

| Breaker Type | RMS Symmetrical Amperes (KA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UL 489 AIR (File E10848) | | | | | IEC 947-2⑤ | | | | | | |
| | Volts AC (50/60Hz) | | | Volts DC | | Volts AC (50/60Hz) | | | | | | |
| | 240 | 480 | 600 | 250 | 500③ | 220/240 | | 380/415 | | 500 | |
| | | | | | | (Icu) | (Ics) | (Icu) | (Ics) | (Icu) | (Ics) |
| LD6-A, LXD6-A | 65 | 35 | 25 | 30 (2-P) | 25 (3-P) | 65 | 33 | 40 | 20 | — | — |
| HLD6-A, HLXD6-A | 100 | 65 | 35 | 30 (2-P) | 35 (3-P) | 100 | 50 | 65 | 33 | — | — |
| HHLD6, HHLXD6 | 200 | 100 | 50 | — | — | — | — | — | — | — | — |
| CLD6-A | 200 | 150 | 100 | — | 50 (3-P) | — | — | — | — | — | — |

## Instantaneous Adjustment Trip Range

| Breaker Ampere Rating | Nominal Instantaneous Values ±20% Tolerance Low | 2 | 3 | 4 | 5 | 6 | 7 | ±20% Tolerance High |
|---|---|---|---|---|---|---|---|---|
| 250-300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 |
| 350-450 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 |
| 500-600 | 3000 | 3430 | 3800 | 4290 | 4710 | 5140 | 5570 | 6000 |

■ Built to order. Allow 2–3 weeks for delivery.

①Type LXD6A circuit breakers are UL Listed for reverse fed applications.
②When wired as shown on page 17/6, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
③See **Note: A**, page 17/125.
④HACR rated.
⑤Only applicable to non-interchangeable trip unit types: LXD6, HLXD6.

**Note:** LD frame qualified to UL489 supplement SB "NAVAL". See page 17/128 for additional information.

Modifications page 17/128
For accessories, please refer to pages 17/104 and 17/132 to 17/137

## Ordering Information

**Complete Breaker Unassembled with Lugs**
Prices of LD6, HLD6, and HHLD6 breakers include frame, trip, and both line and load lugs (TA2J6500). When ordered by these catalog numbers, the customer will receive the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**
Prices of LXD6, HLXD6, HHLXD6, and CLD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA2J6500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

**100% Rated (3-pole only)**
Types LXD6 and HLXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% rated LD breakers require the use of 90°C Cu cable sized at 75°C ampacity and lugs TC1J6600 or TC2J6500.

**50°C Applications** see page 17/128.

**400Hz Applications** see page 17/128.

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **LXD6, LD6, HLD6, HHLD6 Assembled Breaker (less terminals)** | | |
| 2 | 1 | 17.5 |
| 3 | 1 | 19.5 |
| **LD6, HLD6, HHLD6 Frame Only** | | |
| 2 | 1 | 14 |
| 3 | 1 | 15.5 |
| **LD6, HHLD6 Trip Unit Only** | | |
| 2 | 1 | 3.5 |
| 3 | 1 | 4 |
| **CLD6 Complete Assembled Breaker (less terminals)** | | |
| 3 | 1 | 31.5 |

## Lugs For 75°C Wire③

| Catalog Number | Cables per Lug | Wire Range |
|---|---|---|
| TA2J6500 | 1, 2<br>2 | #3/0 500 kcmil Cu<br>#4/0 500 kcmil Al |
| TC2J6500 | 2 | #3/0-500 kcmil Cu |
| TA1L6750 | 1<br>1 | 500-750 kcmil Al<br>500-600 kcmil Cu |
| TC1J6600 | 1 | #3/0-600 kcmil Cu |
| **Compression Lug** | | |
| CCL600 | 1 | 500 kcmil Cu/Al |

## Type HLD6-A, HLXD6-A②③⑥

**Black Label**

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
|---|---|---|---|
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 250 | **HLD62B250■** | | **JD62T250■** |
| 300 | **HLD62B300■** | | **JD62T300■** |
| 350 | **HLD62B350■** | | **JD62T350■** |
| 400 | **HLD62B400■** | **HLD62F600■** | **JD62T400** |
| 450 | **HLD62B450■** | | **LD62T450■** |
| 500 | **HLD62B500■** | | **LD62T500■** |
| 600 | **HLD62B600■** | | **LD62T600** |
| **3-Pole 600V AC, 500V DC①⑤** | | | |
| 250 | **HLD63B250** | | **JD63T250** |
| 300 | **HLD63B300** | | **JD63T300** |
| 350 | **HLD63B350** | | **JD63T350** |
| 400 | **HLD63B400** | **HLD63F600** | **JD63T400** |
| 450 | **HLD63B450** | | **LD63T450** |
| 500 | **HLD63B500** | | **LD63T500** |
| 600 | **HLD63B600** | | **LD63T600** |

## Type HHLD6, HHLXD6②③⑥

**Black Label**

**2-Pole 600V AC (3-Pole Width)**

| | | | |
|---|---|---|---|
| 250 | **HHLD62B250■** | | **JD62T250■** |
| 300 | **HHLD62B300■** | | **JD62T300■** |
| 350 | **HHLD62B350■** | | **JD62T350■** |
| 400 | **HHLD62B400■** | **HHLD62F600■** | **JD62T400** |
| 450 | **HHLD62B450■** | | **HHLD62T450■** |
| 500 | **HHLD62B500■** | | **HHLD62T500■** |
| 600 | **HHLD62B600■** | | **HHLD62T600■** |

**3-Pole 600V AC**

| | | | |
|---|---|---|---|
| 250 | **HHLD63B250** | | **JD63T250** |
| 300 | **HHLD63B300** | | **JD63T300** |
| 350 | **HHLD63B350** | | **JD63T350** |
| 400 | **HHLD63B400** | **HHLD63F600** | **JD63T400** |
| 450 | **HHLD63B450■** | | **HHLD63T450■** |
| 500 | **HHLD63B500■** | | **HHLD63T500■** |
| 600 | **HHLD63B600■** | | **HHLD63T600■** |

## Type CLD6-A③⑥

**Fuseless Current Limiting**

**Red Label**

**Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)**

| Continuous Current Rating @ 40°C | 2-Pole 600V AC/250V DC Catalog Number | 3-Pole 600V AC/500V DC Catalog Number |
|---|---|---|
| 450 | For 2-pole application use outside poles of 3-pole circuit breaker | **CLD63B450■** |
| 500 | | **CLD63B500** |
| 600 | | **CLD63B600** |

Figure 1 Figure 2

## Dimensions (in inches)

| Breaker Type | W | L | D | To Handle D1 |
|---|---|---|---|---|
| Figure 1 LXD6-A, LD6-A HLD6-A HHLD6, HHLXD6, LXD6–ETI,④ SLD6, SHLD6 | 7.5 | 11 | 4 | 5.44 |
| Figure 2 CLD6, CLD6-ETI,④ SCLD6 | 7.5 | 17.86 | 4 | 5.44 |

## Enclosures: (except SCLD6)

| Type | Catalog Number |
|---|---|
| 1 | **LD6N1** |
| 3R | **LD6N3R** |
| 12 | **LD6N12** |
| 4X | **LD6SS4** |
| 7,9 | **ED6** |
| Neutral | **W60993** |

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

① When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

② For complete assembled 3-pole HLD6 or HHLD6 type circuit breaker change the prefix identifier HLD6 or HHLD6 to HLXD6 or HHLXD6. Price is sum of frame and trip units prices, e.g. price of HLXD63B400 is the price of HLD63F600 plus the price of LD63T600. Order the terminal connectors separately.

③ Type HLXD6, HHLXD6, & CLD6 Circuit Breakers are UL Listed for reverse feed applications.

④ LXD6-ETI, CLD6-ETI see page 7-158 for ordering information.

⑤ CE Applies to non-interchangeable type HLXD only.

⑥ HACR rated.

# Internal Accessories

## Selection

Accessories for:

**JD 400A Frame**
**LD 600A Frame**
**LMD 800A Frame**
**SJD 400A Frame**
**SLD 600A Frame**

S01JLD6

### Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 24 | | S17JLD6 | — |
| 48 | | S18JLD6▲ | — |
| 120 | | S01JLD6 | S01JLD62A |
| 240 | | S03JLD6 | S03JLD62A |
| 277 | | S15JLD6▲ | S15JLD64A▲ |
| 480 | | S04JLD6 | — |
| | 12 | S16JLD6▲ | S16JLD62A▲ |
| | 24 | S07JLD6 | S07JLD62A |
| | 48 | S09JLD6▲ | S09JLD62A |
| | 125 | S11JLD6 | S11JLD62A▲ |
| | 250 | S13JLD6▲ | S13JLD62A▲ |

### Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01JLD6 | U01JLD62A | U01JLD62AA |
| 208 | | U02JLD6▲ | U02JLD62A▲ | U02JLD62AA▲ |
| 240 | | U03JLD6 | U03JLD62A▲ | U03JLD62AA▲ |
| 480 | | U06JLD6 | U06JLD64A▲ | U06JLD64AA▲ |
| | 24 | U13JLD6 | U13JLD62A | U13JLD62AA |
| | 48 | U14JLD6▲ | U14JLD62A▲ | U14JLD62AA▲ |
| | 125 | U10JLD6▲ | U10JLD62A▲ | U10JLD62AA▲ |

### Auxiliary Switch Combinations

| Maximum Voltage | | 1 Form C | 2 Form C |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | A01JLD64 | A02JLD64 |
| — | 24 | A01JLDLV | A02JLDLV |

### Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | CatalogNumber |
| 480 | 250 | B01JLD64 | A01JLD64B | A02JLD64B |

**Note:** Accessory modules can only be added to right side pole of solid state SJD and SLD frame circuit breakers. No accessories can be added if mechanical interlock is used. All accessories on this page are useable on superseded JD2, JJ6, JL6, HJ6, SJL, LJ6, LL6, HL6 and SLL circuit breakers.

▲ Built to order. Allow 6–8 weeks for delivery.

## Type LMXD6①④ — Blue Label

**Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)**

| Continuous Current Rating @ 40°C | 2-Pole (3-Pole Width) Catalog Number | 3-Pole Catalog Number |
|---|---|---|
| 500 | — | LMXD63B500■ |
| 600 | LMXD62B600■ | LMXD63B600 |
| 700 | LMXD62B700■ | LMXD63B700 |
| 800 | LMXD62B800 | LMXD63B800 |

## Type LMD6④ — Blue Label

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled w/Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
|---|---|---|---|
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 500 | LMD62B500■ | LMD62F800■ | LMD62T500■ |
| 600 | LMD62B600■ | | LMD62T600■ |
| 700 | LMD62B700■ | | LMD62T700■ |
| 800 | LMD62B800■ | | LMD62T800■ |
| **3-Pole 600V AC, 500V DC②** | | | |
| 500 | LMD63B500■ | LMD63F800 | LMD63T500■ |
| 600 | LMD63B600■ | | LMD63T600■ |
| 700 | LMD63B700■ | | LMD63T700■ |
| 800 | LMD63B800 | | LMD63T800 |

## Instantaneous Adjustment Trip Range

| Ampere Rating | Nominal Instantaneous Values | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Low +/- 20% Tolerance | 2 | 3 | 4 | 5 | 6 | 7 | High +/- 20% Tolerance |
| 500-600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 |
| 700-800 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 |

### Ordering Information

**Complete Breaker Unassembled with Lugs**
Prices of LMD6 and HLMD6 breakers include frame, trip, and both line and load lugs (TA3K500). These catalog numbers include the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**
Prices of LMXD6 and HLMXD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA3K500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

**50°C Applications** see page 17/128.

**400Hz Applications** see page 17/128.

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **LMD6, HLMD6, LMXD6, HLMXD6 Complete Breaker (less terminals)** | | |
| 2 | 1 | 53 |
| 3 | 1 | 61.5 |
| **LMD6, HLMD6 Frame Only** | | |
| 2 | 1 | 42.25 |
| 3 | 1 | 46 |
| **LMD6, HLMD6 Trip Unit Only** | | |
| 2 | 1 | 4.5 |
| 3 | 1 | 6.5 |

## Lugs③ for 75°C Wire

| Catalog Number | Cables per Lug | Wire Range |
|---|---|---|
| TA2K500 | 1, 2 | #1-500 kcmil Cu/Al |
| TA3K500 | 1-3 | #1/0-500 kcmil Cu/Al |
| TA2N750 | 1, 2 | 500-750 kcmil Cu/Al |

■ Built to order. Allow 2–3 weeks for delivery.

① LMXD6 circuit breakers are UL Listed for reverse connected applications.

② When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

③ See **Note: A**, page 17/125.

④ HACR rated.

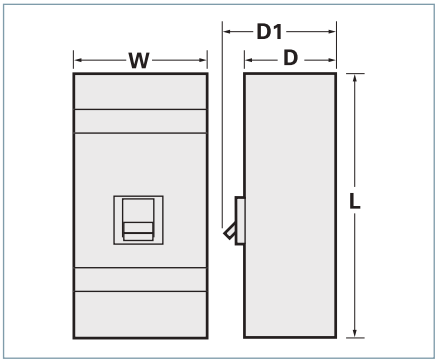
Modifications page 17/128
For accessories, please refer to pages 17/107 and 17/132 to 17/137

## Type HLMXD6①④ Black Label

| Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs) | | |
|---|---|---|
| **Continuous Current Rating @ 40°C** | **2-Pole 600V AC/250V DC** | **3-Pole 600V AC/500V DC** |
| | **Catalog Number** | **Catalog Number** |
| 500 | For 2-pole application use outside poles of 3-pole circuit breaker | **HLMXD63B500■** |
| 600 | | **HLMXD63B600■** |
| 700 | | **HLMXD63B700■** |
| 800 | | **HLMXD63B800** |

## Type HLMD6④ Black Label

| Interchangeable Trip | | | |
|---|---|---|---|
| **Continuous Current Rating @ 40°C** | **Complete Breaker Unassembled** | **Frame Only** | **Trip Unit Only** |
| | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| **2-Pole 600V AC, 250V DC (3-Pole Width)** | | | |
| 500 | **HLMD62B500■** | **HLMD62F800■** | **LMD62T500■** |
| 600 | **HLMD62B600■** | | **LMD62T600■** |
| 700 | **HLMD62B700■** | | **LMD62T700■** |
| 800 | **HLMD62B800■** | | **LMD62T800■** |
| **3-Pole 600V AC, 500V DC③** | | | |
| 500 | **HLMD63B500** | **HLMD63F800** | **LMD63T500■** |
| 600 | **HLMD63B600** | | **LMD63T600■** |
| 700 | **HLMD63B700** | | **LMD63T700■** |
| 800 | **HLMD63B800** | | **LMD63T800** |




## Interrupting Ratings

| Breaker Type | UL 489A IR RMS Symmetrical Amperes (KA) | | | | |
|---|---|---|---|---|---|
| | Volts AC | | | Volts DC | |
| | 240 | 480 | 600 | 250 | 500 |
| LMD6, LMXD6 | 65 | 50 | 25 | 30 (2-P) | 25 (3-P) |
| HLMD6, HLMXD6 | 100 | 65 | 50 | 30 (2-P) | 50 (3-P) |

## Dimensions (in inches)

| Breaker Type | W | L | D | D1 |
|---|---|---|---|---|
| LMD6, LMXD6, HLMD6, HLMXD6 LMXD6-ETI② | 7.5 | 16 | 4.5 | 5.93 |

## Enclosures

| Type | Catalog Number |
|---|---|
| 1 | **LMD1** |
| 3R | **LMD3R** |
| 12 | **LMD12■** |
| Neutral | **W63623** |

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

①HLMXD6 circuit breakers are UL Listed for reverse connection applications.

②LMXD6-ETI, see page 7-158 for catalog information.

③ When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

④ HACR rated.

## Accessories for:

**JD 400A Frame**
**LD 600A Frame**
**LMD 800A Frame**
**SJD 400A Frame**
**SLD 600A Frame**

**S01JLD6**

## Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 24 | | S17JLD6 | — |
| 48 | | S18JLD6▲ | — |
| 120 | | S01JLD6 | S01JLD62A |
| 240 | | S03JLD6 | S03JLD62A |
| 277 | | S15JLD6▲ | S15JLD64A▲ |
| 480 | | S04JLD6 | — |
| | 12 | S16JLD6▲ | S16JLD62A▲ |
| | 24 | S07JLD6 | S07JLD62A |
| | 48 | S09JLD6▲ | S09JLD62A |
| | 125 | S11JLD6 | S11JLD62A▲ |
| | 250 | S13JLD6▲ | S13JLD62A▲ |

## Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01JLD6 | U01JLD62A | U01JLD62AA |
| 208 | | U02JLD6▲ | U02JLD62A▲ | U02JLD62AA▲ |
| 240 | | U03JLD6 | U03JLD62A▲ | U03JLD62AA▲ |
| 480 | | U06JLD6 | U06JLD64A▲ | U06JLD64AA▲ |
| | 24 | U13JLD6 | U13JLD62A | U13JLD62AA |
| | 48 | U14JLD6▲ | U14JLD62A▲ | U14JLD62AA▲ |
| | 125 | U10JLD6▲ | U10JLD62A▲ | U10JLD62AA▲ |

## Auxiliary Switch Combinations

| Maximum Voltage | | 1 Form C | 2 Form C |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | A01JLD64 | A02JLD64 |
| — | 24 | A01JLDLV | A02JLDLV |

## Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | CatalogNumber |
| 480 | 250 | B01JLD64 | A01JLD64B | A02JLD64B |

**Note:** Accessory modules can only be added to right side pole of solid state SJD and SLD frame circuit breakers. No accessories can be added if mechanical interlock is used. All accessories on this page are useable on superseded JD2, JJ6, JL6, HJ6, SJL, LJ6, LL6, HL6 and SLL circuit breakers.

▲ Built to order. Allow 6–8 weeks for delivery.

## Selection

### Type MXD6①⑥ — Blue Label

**Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)**

| Continuous Current Rating @ 40°C | 2-Pole② Catalog Number | 3-Pole Catalog Number |
|---|---|---|
| 600 | MXD62B600■ | MXD63B600 |
| 700 | MXD62B700■ | MXD63B700 |
| 800 | MXD62B800■ | MXD63B800 |

### Type MD6⑥ — Blue Label

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled with Lugs Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number |
|---|---|---|---|
| **2-Pole 600V AC, 250V DC②** | | | |
| 500 | MD62B500■ | MD62F800■ | MD62T500■ |
| 600 | MD62B600■ | | MD62T600■ |
| 700 | MD62B700■ | | MD62T700■ |
| 800 | MD62B800■ | | MD62T800■ |
| **3-Pole 600V AC, 500V DC③** | | | |
| 500 | MD63B500 | MD63F800 | MD63T500 |
| 600 | MD63B600 | | MD63T600 |
| 700 | MD63B700 | | MD63T700 |
| 800 | MD63B800 | | MD63T800 |

### Lugs④

| Catalog Number | Cables Per Lug | Lugs Per Kit | Wire Range |
|---|---|---|---|
| TA2K500 | 1-2 | 1 | #1-500 kcmil Cu/Al |
| TA3K500 | 1-3 | 1 | 1/0-500 kcmil Cu/Al |
| TC2K500 | 1-2 | 1 | #1-500 kcmil Cu |
| **Kits** | | | |
| 2TA2N8750 | 1-2 | 2 | 500-750 kcmil Cu/Al |
| 3TA2N8750 | | 3 | |
| 2TA3N8750 | 1-3 | 2 | 500-750 kcmil Cu/Al |
| 3TA3N8750 | | 3 | |
| 2TA4N8500 | 1-4 | 2 | 250-500 kcmil Cu/Al |
| 3TA4N8500 | | 3 | |
| 2TA4P8500 | 1-4 | 2 | 250-500 kcmil Cu/Al |
| 3TA4P8500 | | 3 | |

### Instantaneous Adjustment Trip Range

| Ampere Rating | Nominal Instantaneous Values | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Low +/- 20% Tolerance | 2 | 3 | 4 | 5 | 6 | 7 | High +/- 20% Tolerance |
| 500 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 |
| 600–800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 |

■ Built to order. Allow 2–3 weeks for delivery.

①MXD6 circuit breakers are UL Listed for reverse connection applications.
②2-pole units available in 3-pole width only.
③ When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.
④ See **Note: A**, page 17/125.
⑤ 80% rated breakers with the CE mark will also be marked in the 100% rated version.
⑥ HACR rated.
**Note:** MD frame qualified to UL489 supplement B "NAVAL". See page 17/128 for additional information.

## Ordering Information

**Complete Breaker Unassembled with Lugs**
Pricing information for MD6 and HMD6 breakers includes frame, trip, and both line and load lugs (TA3K500). When ordered by these catalog numbers, the customer will receive the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**
Prices of MXD6, HMXD6 and CMD6 include frame with non-interchangeable trip units installed only. Order required lugs separately. For line and load lugs (TA3K500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

**100% Rated⑤ 3-Pole Only**
Types MXD6, HMXD6 and CMD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% rated MD breakers require the use of 90°C cable sized at 75°C ampacity and lugs 3TA4P8500 or 3TA2N8750.

**50°C Applications** see page 17/128.

**400Hz Applications** see page 17/128.

### Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **MD6, HMD6, HMXD6, CMD6 Complete Breaker Assembled (less lugs)** | | |
| 2 | 1 | 53 |
| 3 | 1 | 61.5 |
| **MD6, HMD6 Frame Only** | | |
| 2 | 1 | 42.25 |
| 3 | 1 | 46 |
| **MD6, HMD6 Trip Unit Only** | | |
| 2 | 1 | 4.5 |
| 3 | 1 | 6.5 |
| **SMD6 Breaker** | | |
| 3 | 1 | 61.5 |

### Enclosures

| Type | Catalog Number |
|---|---|
| 1 | MND61 |
| 3R | MND63 |
| Neutral | W63623 |

Modifications page 17/128
For accessories, please refer to pages 17/110 and 17/132 to 17/137

## Type HMXD6①⑤ — Black Label

| Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs) | | |
|---|---|---|
| **Continuous Current Rating @ 40°C** | **2-Pole 600V AC/250V DC** | **3-Pole 600V AC/500V DC** |
| | **Catalog Number** | **Catalog Number** |
| 600 | For 2-pole application use outside poles of 3-pole circuit breaker | **HMXD63B600■** |
| 700 | | **HMXD63B700■** |
| 800 | | **HMXD63B800** |

## Type HMD6⑤ — Black Label

| Interchangeable Trip | | | |
|---|---|---|---|
| **Continuous Current Rating @ 40°C** | **Complete Breaker Unassembled w/Lugs** | **Frame Only** | **Trip Unit Only** |
| | **Catalog Number** | **Catalog Number** | **Catalog Number** |
| **2-Pole 600V AC, 250V DC②** | | | |
| 500 | **HMD62B500■** | **HMD62F800■** | **MD62T500■** |
| 600 | **HMD62B600■** | | **MD62T600■** |
| 700 | **HMD62B700■** | | **MD62T700■** |
| 800 | **HMD62B800■** | | **MD62T800■** |
| **3-Pole 600V AC, 500V DC④** | | | |
| 500 | **HMD63B500** | **HMD63F800** | **MD63T500** |
| 600 | **HMD63B600** | | **MD63T600** |
| 700 | **HMD63B700** | | **MD63T700** |
| 800 | **HMD63B800** | | **MD63T800** |

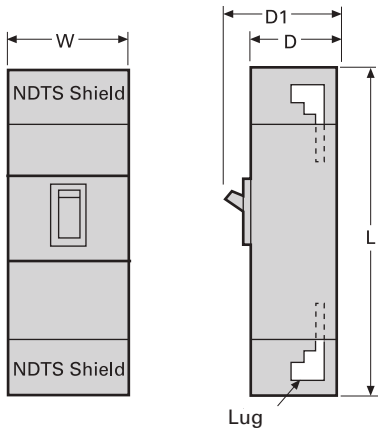
## Type CMD6①⑤

**Fuseless Current Limiting** — Red Label

| Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs) | | |
|---|---|---|
| **Continuous Current Rating @ 40°C** | **2-Pole 600V AC/250V DC** | **3-Pole 600V AC/500V DC** |
| | **Catalog Number** | **Catalog Number** |
| 600 | For 2-pole application use outside poles of 3-pole circuit breaker | **CMD63B600■** |
| 700 | | **CMD63B700■** |
| 800 | | **CMD63B800** |

## Interrupting Ratings

| Breaker Type | UL 489 AIR—File E10848 RMS Symmetrical Amperes (KA) Volts AC 240 | 480 | 600 | Volts DC 250 | 500④ | IEC 947-2 AIR⑥ Volts AC (50/60HZ) 220/240 (Icu) | (Ics) | 380/415 (Icu) | (Ics) | 500 (Icu) | (Ics |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MD6, MXD6 | 65 | 50 | 25 | 30 (2-P) | 25 (3-P) | 65 | 33 | 40 | 20 | — | — |
| HMD6, HMXD6 | 100 | 65 | 50 | 30 (2-P) | 50 (3-P) | 100 | 50 | 65 | 33 | — | — |
| CMD6 | 200 | 100 | 65 | — | 50 (3-P) | — | — | — | — | — | — |




When wire lug shield NDTS is used.

**Note:** NDTS lug shields are required when oversized lugs are used. The kits include the NDTS shield.

## Dimensions (in inches)

| Breaker Type | W | L | D | (To Handle) D1 |
|---|---|---|---|---|
| MD6, MXD6, HMD6, HMXD6, CMD6, MXD6-ETI, CMD6-ETI, SMD6-B, SHMD6-B, and SCMD6-B | 9 | 16 | 6 | 8.25 |
| with lug shields | 9 | 24 | 6 | 8.25 |

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

①HMXD6 and CMD circuit breakers are UL listed for reverse connection applications.
②2-pole units available in 3-pole width only.
③MXD6-ETI, CMD6-ETI see page 17/118 for catalog information.
④When wired as shown on page 17/6, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
⑤HACR rated.
⑥Only applicable to non-interchangeable trip unit types: MXD6, HMXD6

# Internal Accessories

## Selection

### Accessories for:

**MD/SMD 800A Frame**
**ND/SND 1200A Frame**
**PD/SPD 1600A Frame**
**RD 2000A Frame**

**S01MN6**

Accessory modules can mount in either left hand or right hand poles of all circuit breakers, including solid state. Exception: when mechanical interlock is used. Accessories cannot be mounted in left pole.

### Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 120 | | S01MN6 | S01MN64A |
| 208 | | S02MN6▲ | — |
| 240 | | S03MN6 | S03MN64A▲ |
| 277 | | S15MN6▲ | S15MN64A▲ |
| 480 | | S04MN6▲ | S04MN64A▲ |
| 600 | | S06MN6▲ | — |
| | 12 | S16MN6▲ | S16MN64A▲ |
| | 24 | S07MN6 | S07MN64A |
| | 48 | S09MN6▲ | — |
| | 125 | S11MN6 | S11MN64A▲ |
| | 250 | S13MN6▲ | S13MN64A▲ |

### Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01MN6 | U01MN64A | U01MN64AA |
| 208 | | U02MN6▲ | U02MN64A▲ | U02MN64AA▲ |
| 240 | | U03MN6▲ | U03MN64A▲ | U03MN64AA▲ |
| 277 | | U15MN6▲ | U15MN64A▲ | U15MN64AA▲ |
| 480 | | U04MN6▲ | U04MN64A▲ | U04MN64AA▲ |
| 600 | | U06MN6▲ | — | — |
| | 24 | U07MN6 | U07MN64A | U07MN64AA |
| | 48 | U09MN6▲ | U09MN64A▲ | U09MN64AA▲ |
| | 125 | U11MN6▲ | U11MN64A▲ | U11MN64AA▲ |

### Auxiliary Switch Combinations

| Maximum Voltage | | 1 Form C | 2 Form C |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | A01MN64 | A02MN64 |
| — | 24 | A01MNDLV▲ | A02MNDLV▲ |

### Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 480 | 250 | B00MN64 | A01MN64B | A02MN64B |

▲ Built to order. Allow 6–8 weeks for delivery.

## Type NXD6①⑧ — Blue Label

**Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)**

| Continuous Current Rating @ 40°C | 2-Pole 600V AC/250V DC | 3-Pole 600V AC/500V DC |
|---|---|---|
| | Catalog Number | Catalog Number |
| 900 | NXD62B900■ | NXD63B900 |
| 1000 | NXD62B100■ | NXD63B100 |
| 1200 | NXD62B120■ | NXD63B120 |

## Type ND6⑧ — Blue Label

**Interchangeable Trip**

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled with Lugs | Frame Only | Trip Unit Only |
|---|---|---|---|
| | Catalog Number | Catalog Number | Catalog Number |
| **2-Pole 600V AC, 250V DC②** | | | |
| 800 | ND62B800■ | ND62F120 | MD62T800■ |
| 900 | ND62B900■ | | ND62T900■ |
| 1000 | ND62B100■ | | ND62T100■ |
| 1200 | ND62B120 | | ND62T120 |
| **3-Pole 600V AC, 500V DC③** | | | |
| 800 | ND63B800 | ND63F120 | MD63T800 |
| 900 | ND63B900 | | ND63T900 |
| 1000 | ND63B100 | | ND63T100 |
| 1200 | ND63B120 | | ND63T120 |

## Interrupting Ratings

| Breaker Type | RMS Symmetrical Amperes (KA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UL 489 A IR | | | | | IEC 947-2⑨ | | | | | | |
| | Volts AC | | | Volts DC | | Volts AC (50/60HZ) | | | | | | |
| | 240 | 480 | 600 | 250 | 500③ | 220/240 | | 380/415 | | 500 | |
| | | | | | | (Icu) | (Ics) | (Icu) | (Ics) | (Icu) | (Ics) |
| ND6, NXD6 | 65 | 50 | 25 | 30 (2-P) | 25 (3-P) | 65 | 33 | 40 | 20 | — | — |
| HND6, HNXD6 | 100 | 65 | 50 | 30 (2-P) | 50 (3-P) | 100 | 50 | 65 | 33 | — | — |
| CND6 | 200 | 100 | 65 | — | 50 (3-P) | — | — | — | — | — | — |

## Instantaneous Adjustment Trip Range

| Breaker Ampere Rating | Nominal Instantaneous Values | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ±20% Tolerance Low | 2 | 3 | 4 | 5 | 6 | 7 | ±20% Tolerance High |
| 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 |
| 900-1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 |

■ Built to order. Allow 2–3 weeks for delivery.

①NXD6 circuit breakers are UL listed for reverse connection applications.
②2-pole units available in 3-pole width only.
③When wired as shown on page 17/6, this circuit breaker is UL listed and rated for use on 500VDC ungrounded UPS systems only.
④Use 2 – 3TA4P8500 kits for 3-pole, or 2 – 2TA4P8500 kits for 2-pole. Rated for 90° C cable. Use for 100% rated breakers.
⑤Use 2 – 3TA4N8500 for 3-pole or 2 – 2TA4N8500 for 2-pole. Rated for 75°C cable.
⑥See **Note: A**, page 17/125.
⑦80% rated breakers with the CE mark will also be marked in the 100% rated version.
⑧HACR rated.
⑨ Only applicable to non-interchangeable trip unit types: NXD6, HNXD6.

**Note:** ND frame qualified to UL489 supplement B "NAVAL". See page 17/128 for additional information.

## Ordering Information

**Complete Breaker Unassembled with Lugs**
Prices of ND6 and HND6 breakers include frame, trip, and both line and load lugs (3TA4N8500). These catalog numbers are the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**
Prices of NXD6, HNXD6, and CND6 include frame with non-interchangeable trip units installed only. Order required terminal connectors separately. For line and load lugs (3TA4N8500) installed, add suffix "L" to catalog number (add 2 times list price of lug kit).

**100% Rated (3-Pole only)⑦**
Types NXD6, HNXD6 and CND6 breakers are available with 100% ratings. To order, add suffix "H" to catalog number, and add 10% to list price. 100% rated ND breakers require 90°C cable sized at 75°C ampacity and lug kit 3TA4P8500 or 3TA3N8750.

**50°C Applications** see page 17/128.

**400Hz Applications** see page 17/128.

## Lugs⑥

| Catalog Number | Cables per Lug | Wire Range |
|---|---|---|
| **TA2K500** | 2 | #1-500 kcmil Cu/Al |
| **TA3K500** | 3 | #1-500 kcmil Cu/Al |
| **TC2K500** | 2 | #1-500 kcmil Cu |
| Kits (2 Kits required per breaker) | | |
| **2TA4P8500④** | 4 | 250-500 kcmil Cu/Al |
| **3TA4P8500④** | | |
| **2TA4N8500⑤** | 4 | 250-500 kcmil Cu/Al |
| **3TA4N8500⑤** | | |
| **2TA2N8750** | 2 | 500-750 kcmil Cu/Al |
| **3TA2N8750** | | |
| **2TA3N8750** | 3 | 500-750 kcmil Cu/Al |
| **3TA3N8750** | | |

## Enclosures

| Type | Catalog Number |
|---|---|
| 1 | **MND61** |
| 3R | **MND63** |
| Neutral | **W63623** |

Modifications page 17/128
For accessories, please refer to pages 17/113 and 17/132 to 17/137

## Type HNXD6①④

Black Label

| Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs) | | |
|---|---|---|
| Continuous Current Rating @ 40°C | 2-Pole 600V AC/250V DC | 3-Pole 600V AC/500V DC |
| | Catalog Number | Catalog Number |
| 900<br>1000<br>1200 | For 2-pole application use outside poles of 3-pole circuit breaker | HNXD63B900<br>HNXD63B100<br>HNXD63B120 |

## Type HND6④

Black Label

| Interchangeable Trip | | | |
|---|---|---|---|
| Continuous Current Rating @ 40°C | Complete Breaker Unassembled with Lugs | Frame Only | Trip Unit Only |
| | Catalog Number | Catalog Number | Catalog Number |
| **2-Pole 600V AC, 250V DC②** | | | |
| 800<br>900<br>1000<br>1200 | For 2-pole application use outside poles of 3-pole circuit breaker | | |
| **3-Pole 600V AC, 500V DC③** | | | |
| 800 | HND63B800 | HND63F120 | MD63T800 |
| 900 | HND63B900 | | ND63T900 |
| 1000 | HND63B100 | | ND63T100 |
| 1200 | HND63B120 | | ND63T120 |

## Type CND6①④

**Fuseless Current Limiting**

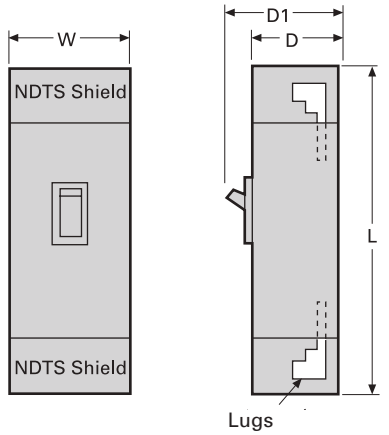
Red Label

| Non-Interchangeable Trip (Assembled Circuit Breaker) | | |
|---|---|---|
| Continuous Current Rating @ 40°C | 2-Pole | 3-Pole |
| | Catalog Number | Catalog Number |
| 900<br>1000<br>1200 | For 2-pole application, use outside poles of 3-pole circuit breaker | CND63B900■<br>CND63B100<br>CND63B120 |

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **ND6, HND6, NXD6, HNXD6, CND6 Assembled Breaker (less terminals)** | | |
| 2 | 1 | 53 |
| 3 | 1 | 61.5 |
| **ND6, HND6 Frame Only** | | |
| 2 | 1 | 42.25 |
| 3 | 1 | 46 |
| **ND6, HND6 Trip Unit Only** | | |
| 2 | 1 | 4.5 |
| 3 | 1 | 6.5 |

NXD63B120




When lugs shield NDTS is used.

**Note:** NDTS lug shields are required when oversized lugs TA4P8500 or TA4N8500 are used. The kits include the NDTS shield.

## Dimensions (in inches)

| Breaker Type | W | L | D | D1 |
|---|---|---|---|---|
| ND6, NXD6, HND6, HNXD6, CND6, SND6-B, SHND6-B, and SCND6-B | 9 | 16 | 6 | 8.25 |
| with NDTS lug shield | 9 | 24 | 6 | 8.25 |

**For inches / millimeters conversion, see Application Data section.**

■ Built to order. Allow 2–3 weeks for delivery.

①HNXD6 and CND6 circuit breakers are UL Listed for reverse connection applications.

②2-pole units available in 3-pole width only.

③When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

④HACR rated.

## Accessories for:

**MD/SMD 800A Frame**
**ND/SND 1200A Frame**
**PD/SPD 1600A Frame**
**RD 2000A Frame**

**S01MN6**

Accessory modules can mount in either left hand or right hand poles of all circuit breakers, including solid state. Exception: when mechanical interlock is used. Accessories cannot be mounted in left pole.

## Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 120 | | S01MN6 | S01MN64A |
| 208 | | S02MN6▲ | — |
| 240 | | S03MN6 | S03MN64A▲ |
| 277 | | S15MN6▲ | S15MN64A▲ |
| 480 | | S04MN6▲ | S04MN64A▲ |
| 600 | | S06MN6▲ | — |
| | 12 | S16MN6▲ | S16MN64A▲ |
| | 24 | S07MN6 | S07MN64A |
| | 48 | S09MN6▲ | — |
| | 125 | S11MN6 | S11MN64A▲ |
| | 250 | S13MN6▲ | S13MN64A▲ |

## Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01MN6 | U01MN64A | U01MN64AA |
| 208 | | U02MN6▲ | U02MN64A▲ | U02MN64AA▲ |
| 240 | | U03MN6▲ | U03MN64A▲ | U03MN64AA▲ |
| 277 | | U15MN6▲ | U15MN64A▲ | U15MN64AA▲ |
| 480 | | U04MN6▲ | U04MN64A▲ | U04MN64AA▲ |
| 600 | | U06MN6▲ | — | — |
| | 24 | U07MN6 | U07MN64A | U07MN64AA |
| | 48 | U09MN6▲ | U09MN64A▲ | U09MN64AA▲ |
| | 125 | U11MN6▲ | U11MN64A▲ | U11MN64AA▲ |

## Auxiliary Switch Combinations

| Maximum Voltage | | 1 Form C | 2 Form C |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | A01MN64 | A02MN64 |
| — | 24 | A01MNDLV▲ | A02MNDLV▲ |

## Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 480 | 250 | B00MN64 | A01MN64B | A02MN64B |

▲ Built to order. Allow 6–8 weeks for delivery.

## Type PXD6② Non-Interchangeable Trip⑤

**3-Pole 600V AC, 250-500V DC①** — Blue Label

| Continuous Current Rating @ 40°C | Complete Breaker Assembled (Frame/Trip Unit Only) Catalog Number | Mounting Assembly Catalog Number | Lugs (6 required) Catalog Number |
|---|---|---|---|
| 1200 | PXD63B120■ | MB9301 | TA5P600 |
| 1400 | PXD63B140■ | -or- | |
| 1600 | PXD63B160 | MBR9302 | |

## Type PD6 Interchangeable Trip⑤

**3-Pole 600V AC, 250-500V DC①** — Blue Label

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number | Mounting Assembly Catalog Number | Lugs (6 required) Catalog Number |
|---|---|---|---|---|---|
| 1200 | PD63B120■ | PD63F160 | PD63T120■ | MB9301 | TA5P600 |
| 1400 | PD63B140 | | PD63T140 | -or- | |
| 1600 | PD63B160 | | PD63T160 | MBR9302 | |

## Type HPXD6② Non-Interchangeable Trip⑤

**3-Pole 600V AC, 250-500V DC①** — Blue Label

| Continuous Current Rating @ 40°C | Complete Breaker Assembled (Frame/Trip Unit Only) Catalog Number |
|---|---|
| 1200 | HPXD63B120■ |
| 1400 | HPXD63B140■ |
| 1600 | HPXD63B160 |

## Type HPD6 Interchangeable Trip⑤

**3-Pole 600V AC, 250-500V DC①** — Black Label

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number | Mounting Assembly Catalog Number | Lugs (6 required) Catalog Number |
|---|---|---|---|---|---|
| 1200 | HPD63B120■ | HPD63F160 | PD63T120■ | MB9301 | TA5P600 |
| 1400 | HPD63B140 | | PD63T140 | -or- | |
| 1600 | HPD63B160 | | PD63T160 | MBR9302 | |

## Type CPD6 Non-Interchangeable Trip⑤

**Fuseless Current Limiting**
**3-Pole 600V AC, 250-500V DC①** — Red Label

| Continuous Current Rating @ 40°C | Complete Breaker Assembled (Frame/Trip Unit Only) Catalog Number |
|---|---|
| 1200 | CPD63B120■ |
| 1400 | CPD63B140■ |
| 1600 | CPD63B160■ |

## Interrupting Ratings

| Breaker Type | UL 489 A IR RMS Symmetrical KA Volts AC 240 | 480 | 600 | Volts DC⑥ 250 | 500 |
|---|---|---|---|---|---|
| PD6, PXD6 | 65 | 50 | 25 | 30 (2P) | 25 (3P) |
| HPD6, HPXD6 | 100 | 65 | 50 | 30 (2P) | 50 (3P) |
| CPD6 | 200 | 100 | 65 | 30 (2P) | 50 (3P) |

■ Built to order. Allow 2–3 weeks for delivery.

▲ Built to order. Allow 6–8 weeks for delivery.

①Use two outside poles of a 3-pole circuit breaker for 250V

②When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

③PXD6, HPXD6 and CPD6 type circuit breakers are UL Listed for reverse feed applications.

④For additional information See **Note: A**, page 17/125.

⑤HACR rated.

**Note:** PD frame qualified to UL489 supplement B "NAVAL". See page 17/128 for additional information.

### Ordering Instructions

**Complete Breaker Unassembled with Lugs**

Prices of PD6, HPD6, RD6, and HRD6 type breakers include frame, trip, mounting base (MB9301), and both line and load lugs (PD Frame – TA5P600, RD Frame – TC5R600). When ordered by these catalog numbers, the customer will receive the frame, trip, mounting assembly and lugs separately packaged. For applications requiring different mounting base or lugs, order individual items as needed.

**Complete Breaker Assembled without Lugs**

Prices of PXD6, HPXD6, RXD6, HRXD6 and CPD6 type breakers include frame with non-interchangeable trip unit installed only. Order required mounting base and lugs separately.

**100% Rated (3-Pole only)**

Types PXD6, HPXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% PD breakers require 90° C cable sized at 75° C ampacity and TC5R600 lugs. RD 2000A Frames not available with 100% ratings.

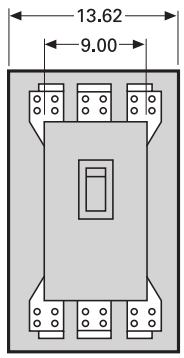
**50°C Applications** see page 17/128.

**400HZ Applications** see page 17/128.

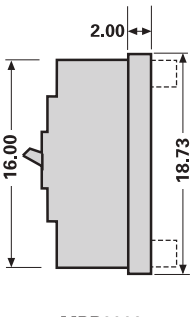
## Lugs (6 required per breaker)④

| Catalog Number | No of Cables per Connector | Wire Range |
|---|---|---|
| TA5P600 | 1-5 | 300-600 kcmil Cu/Al |
| TC5R600 | 1-5 | 300-600 kcmil Cu only |
| TA4P750▲ | 1-4 | 600-750 kcmil Cu/Al |
| TA6R600 | 1-6 | 300-600 kcmil Cu/Al |

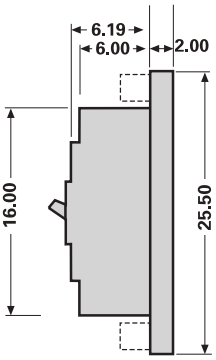
## All PD, RD Frames:




**MB9301** (shown)
**MBR9302**




**MBR9302**




**MB9301**

**MBR9302**

**MB9301**

**For inches / millimeters conversion, see Application Data section.**

# Internal Accessories

## Selection

### Accessories for:

**MD/SMD 800A Frame**
**ND/SND 1200A Frame**
**PD/SPD 1600A Frame**
**RD 2000A Frame**

**S01MN6**

Accessory modules can mount in either left hand or right hand poles of all circuit breakers, including solid state. Exception: when mechanical interlock is used. Accessories cannot be mounted in left pole.

### Shunt Trip Combinations

| Control Voltage | | 1 Shunt Trip | 1 Shunt Trip and 1 Auxiliary Switch |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 120 | | S01MN6 | S01MN64A |
| 208 | | S02MN6▲ | — |
| 240 | | S03MN6 | S03MN64A▲ |
| 277 | | S15MN6▲ | S15MN64A▲ |
| 480 | | S04MN6▲ | S04MN64A▲ |
| 600 | | S06MN6▲ | — |
| | 12 | S16MN6▲ | S16MN64A▲ |
| | 24 | S07MN6 | S07MN64A |
| | 48 | S09MN6▲ | — |
| | 125 | S11MN6 | S11MN64A▲ |
| | 250 | S13MN6▲ | S13MN64A▲ |

### Undervoltage Trip Combinations

| Control Voltage | | 1 Undervoltage Trip | 1 Undervoltage Trip and 1 Auxiliary Switch | 1 Undervoltage Trip and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 120 | | U01MN6 | U01MN64A | U01MN64AA |
| 208 | | U02MN6▲ | U02MN64A▲ | U02MN64AA▲ |
| 240 | | U03MN6▲ | U03MN64A▲ | U03MN64AA▲ |
| 277 | | U15MN6▲ | U15MN64A▲ | U15MN64AA▲ |
| 480 | | U04MN6▲ | U04MN64A▲ | U04MN64AA▲ |
| 600 | | U06MN6▲ | — | — |
| | 24 | U07MN6 | U07MN64A | U07MN64AA |
| | 48 | U09MN6▲ | U09MN64A▲ | U09MN64AA▲ |
| | 125 | U11MN6▲ | U11MN64A▲ | U11MN64AA▲ |

### Auxiliary Switch Combinations

| Maximum Voltage | | 1 Form C | 2 Form C |
|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number |
| 480 | 250 | A01MN64 | A02MN64 |
| — | 24 | A01MNDLV▲ | A02MNDLV▲ |

### Alarm Switch Combinations

| Maximum Voltage | | 1 Alarm Switch | 1 Alarm Switch and 1 Auxiliary Switch | 1 Alarm Switch and 2 Auxiliary Switches |
|---|---|---|---|---|
| AC | DC | Catalog Number | Catalog Number | Catalog Number |
| 480 | 250 | B00MN64 | A01MN64B | A02MN64B |

▲ Built to order. Allow 6–8 weeks for delivery.

## Type RXD6④

**3-Pole 600V AC, 250-500V DC①** — Blue Label

| Non-Interchangeable Trip (Assembled Circuit Breaker Only Without Lugs) | | | |
|---|---|---|---|
| Continuous Current Rating @ 40°C | Complete Breaker Assembled (Frame/Trip Unit Only) Catalog Number | Mounting Assembly Catalog Number | Lugs (6 required) Catalog Number |
| 1600 | RXD63B160 | MB9301 | |
| 1800 | RXD63B180 | -or- | TC5R600 |
| 2000 | RXD63B200 | MBR9302 | |

## Type RD6④

**3-Pole 600V AC, 250-500V DC①** — Blue Label

| Interchangeable Trip (Unassembled Circuit Breaker with Lugs) | | | | | |
|---|---|---|---|---|---|
| Continuous Current Rating @ 40°C | Complete Breaker Unassembled Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number | Mounting Assembly Catalog Number | Lugs (6 required) Catalog Number |
| 1600 | RD63B160■ | | RD63T160■ | MB9301 | |
| 1800 | RD63B180 | RD63F200 | RD63T180 | -or- | TC5R600 |
| 2000 | RD63B200 | | RD63T200 | MBR9302 | |

## Type HRXD6④ — Black Label

| Continuous Current Rating @ 40°C | Complete Breaker Assembled (Frame/Trip Unit Only) Catalog Number |
|---|---|
| 1600 | HRXD63B160■ |
| 1800 | HRXD63B180■ |
| 2000 | HRXD63B200 |

## Type HRD6④ — Black Label

| Continuous Current Rating @ 40°C | Complete Breaker Unassembled Catalog Number | Frame Only Catalog Number | Trip Unit Only Catalog Number | Mounting Assembly Catalog Number | Lugs (6 required) Catalog Number |
|---|---|---|---|---|---|
| 1600 | HRD63B160■ | | RD63T160■ | MB9301 | |
| 1800 | HRD63B180 | HRD63F200 | RD63T180 | -or- | TC5R600 |
| 2000 | HRD63B200 | | RD63T200 | MBR9302 | |

## Interrupting Ratings

| Breaker Type | UL 489 A IR RMS Symmetrical KA Volts AC 240 | 480 | 600 | Volts DC① 250 | 500 |
|---|---|---|---|---|---|
| RD6, RXD6 | 65 | 50 | 25 | 30 (2P) | 25 (3P) |
| HRD6, HRXD6 | 100 | 65 | 50 | 30 (2P) | 50 (3P) |

## Instantaneous Adjustment Trip Range (PD / RD Frames)

| Breaker Ampere Rating | Nominal Instantaneous Values ±20% Tolerance Low | 2 | 3 | 4 | 5 | 6 | 7 | ±20% Tolerance High |
|---|---|---|---|---|---|---|---|---|
| 1200-2000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9790 | 10,000 |

**RXD63B200**

## Mounting Block⑥

| Catalog Number | Connection Points |
|---|---|
| MB9301 | Front |
| MBR9302 | Rear |

## Shipping Weights

| Number of Poles | Number per Carton | Shipping Weight (lbs.) |
|---|---|---|
| **PXD6, HPXD6, RXD6, HRXD6, CPD6 Assembled Breakers** | | |
| 3 | 1 | 61.5 |
| **PD6, HPD6, RD6, HRD6 Frame Only** | | |
| 3 | 1 | 55.0 |
| **PD6, RD6 Trip Unit Only** | | |
| 3 | 1 | 6.5 |
| **Mounting Assembly** | | |
| MB9301 | 1 | 53.0 |
| MBR9302 | 1 | 50.9 |

## Lugs (6 required per breaker)⑤

| Catalog Number | No of Cables per Connector | Wire Range |
|---|---|---|
| TC5R600 | 1-5 | 300-600 kcmil Cu only |
| TA6R600 | 1-6 | 300-600 kcmil Cu/Al |

■ Built to order. Allow 2–3 weeks for delivery.

▲ Built to order. Allow 6–8 weeks for delivery.

①Use two outside poles of a 3-pole circuit breaker for 250V DC applications.

②When the power is connected in a "zig-zag" through the breaker, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS system.

③RXD6 and HRXD6 type circuit breakers are UL Listed for reverse feed applications.

④HACR rated.

⑤For additional information See **Note: A**, page 17/125.

**Note:** RD frame qualified to UL489 supplement B "NAVAL". See page 17/128 for additional information.

⑥For required mounting base (MB9301 or MBR9302) see page 17/115.

# Magnetic Trip Only — ETI Motor Circuit Protector

## Selection

| Breaker Type | Ampere Rating | Instantaneous Trip Range② Minimum③ | Instantaneous Trip Range② Maximum③ | Complete Circuit Breaker Without Lugs⑤ Catalog Number 2-Pole | Complete Circuit Breaker Without Lugs⑤ Catalog Number 3-Pole |
|---|---|---|---|---|---|
| **ED6-A** 600V AC 250V DC | 1 | 2.6 | 9 | — | **ED63A001** |
| | 2 | 7 | 22 | — | **ED63A002** |
| | 3 | 10 | 35 | — | **ED63A003** |
| | 5 | 16 | 54 | — | **ED63A005** |
| | 10 | 30 | 100 | — | **ED63A010** |
| | 25 | 55 | 180 | — | **ED63A025** |
| | 30 | 80 | 270 | — | **ED63A030** |
| | 40 | 115 | 375 | — | **ED63A040** |
| | 50 | 180 | 600 | — | **ED63A050** |
| | 100 | 315 | 1000 | — | **ED63A100** |
| | 125 | 500 | 1250 | — | **ED63A125** |
| | SHIPPING: | | | | 3.8 lbs. each |
| **CED6-A** 600V AC 250V DC | 1 | 2.6 | 9 | — | **CED63A001■** |
| | 2 | 7 | 22 | — | **CED63A002■** |
| | 3 | 10 | 35 | — | **CED63A003■** |
| | 5 | 16 | 54 | — | **CED63A005■** |
| | 10 | 30 | 100 | — | **CED63A010■** |
| | 25 | 55 | 180 | — | **CED63A025■** |
| | 30 | 80 | 270 | — | **CED63A030■** |
| | 40 | 115 | 375 | — | **CED63A040■** |
| | 50 | 180 | 600 | — | **CED63A050■** |
| | 100 | 315 | 1000 | — | **CED63A100■** |
| | 125 | 500 | 1250 | — | **CED63A125■** |
| | SHIPPING: | | | | 6 lbs. each |
| **FXD6④** 600V AC 250V DC | 150 | 400 | 800 | — | **FXD63L150■** |
| | 150 | 800 | 1500 | — | **FXD63A150** |
| | 150 | 1100 | 2500 | — | **FXD63H150** |
| | 250 | 1100 | 2500 | — | **FXD63A250** |
| | SHIPPING: | | | | 9 lbs. each |
| **CFD6④** 600V AC 250V DC | 150 | 400 | 800 | — | **CFD63L150■** |
| | 150 | 800 | 1500 | — | **CFD63A150■** |
| | 150 | 1100 | 2500 | — | **CFD63H150■** |
| | 250 | 1100 | 2500 | — | **CFD63A250■** |
| | SHIPPING: | | | 12 lbs. each | 12 lbs. each |
| **JXD6(A)①** 600V AC 250V DC | 400 | 1250 | 2500 | — | **JXD63L400** |
| | 400 | 2000 | 4000 | **JXD62H400■** | **JXD63H400** |
| | SHIPPING: | | | 16 lbs. each | 20 lbs. each |
| **CJD6①** 600V AC 250V DC | 400 | 1250 | 2500 | — | **CJD63L400■** |
| | 400 | 2000 | 4000 | — | **CJD63H400■** |
| | SHIPPING: | | | 29.5 lbs. each | 31.5 lbs. each |
| **LXD6(A)①** 600V AC 250V DC | 600 | 2000 | 4000 | **LXD62L600■** | **LXD63L600■** |
| | 600 | 3000 | 6000 | — | **LXD63H600** |
| | SHIPPING: | | | 16 lbs. each | 20 lbs. each |
| **CLD6①** 600V AC 250V DC | 600 | 2000 | 4000 | — | **CLD63L600■** |
| | 600 | 3000 | 6000 | — | **CLD63H600■** |
| | SHIPPING: | | | | 31.5 lbs. each |
| **LMXD6④** 600V AC 250V DC | 800 | 2800 | 6000 | — | **LMXD63L800■** |
| | 800 | 3200 | 8000 | — | **LMXD63A800** |
| | SHIPPING: | | | | 35 lbs. each |
| **MXD6④** 600V AC 250V DC | 800 | 3000 | 6000 | — | **MXD63L800■** |
| | 800 | 4000 | 8000 | — | **MXD63A800■** |
| | 800 | 5000 | 10000 | — | **MXD63H800** |
| | SHIPPING: | | | | 33 lbs. each |
| **CMD6④** 600V AC 250V DC | 800 | 3000 | 6000 | — | **CMD63L800■** |
| | 800 | 4000 | 8000 | — | **CMD63A800■** |
| | 800 | 5000 | 10000 | — | **CMD63H800■** |
| | SHIPPING: | | | | 80 lbs. each |

**Important Information**

ETI interrupting ratings are determined through combination tests with properly sized overload relays and contactors.

**⑤ Connectors included when ordering by circuit breaker catalog number for HEM, ED and CED6 ETIs. Order ETI circuit breaker and lugs (2 per pole) separately for the FXD6, CFD6, MXD6, CMD6, JXD6, CJD6, LXD6 and CLD6 ETI's.**

Lug Information pages 17/125 to 17/127
Accessories pages 17/132 to 17/137
Application data pages 17/119 to 17/120

■ Built to order. Allow 2–3 weeks for delivery.

① 2-pole available in 3-pole width only.

② When applied on DC Circuits — Trip levels will increase approximately +15 to 20%.

③ Tolerance -20%/+30% for lowest setting. All other settings are -20%/+20%

④ For 2-pole application use outside poles of 3-pole circuit breaker.

## General

### Protection of Motor Circuits

Molded case circuit breakers are used in motor circuits as a disconnecting means and for short-circuit protection. They should be used in conjunction with motor-running, over-current-protection devices, and should permit the motor to start without nuisance tripping from motor-inrush current. The circuit breaker should have a continuous-current rating of not less than 115% of the motor full-load current.

The recommended motor circuit protectors (Siemens ETI instantaneous only circuit breakers) listed have continuous-current ratings of at least 115% of motor full-load currents. The trip-setting positions are approximately 11 times motor full-load currents. The suggested trip settings may have to be adjusted upward to no higher than 1300% of full-load current for non-design E type motors, and no greater than 1700% of full load current for design E motors, to allow for motor start-up due to inrush currents.

### Breaker Mounted Immediately Ahead of Motor Starter

Siemens ETI motor circuit protectors are recommended for use in combination motor starters to provide selective short-circuit protection for the motor branch circuit. The adjustable instantaneous-trip feature of the Siemens ETI motor circuit protector provides for a trip setting slightly above the peak motor-inrush current. With this setting, no delay is introduced in opening the circuit when a fault occurs. This circuit breaker has no time-delay trip element. Therefore it must be used in conjunction with, and immediately ahead of, the motor-running overcurrent protective device.

Important: The information below does not apply to all motor applications: it is recommended that the user refer to the National Electrical Code (NEC) for specific needs.

**Table 1 (When Breaker is Mounted Immediately Ahead of Motor Starter)**

3-Phase Induction Type Motors (Siemens ETI motor circuit protectors for branch circuit use with alternating-current combination, full voltage motor starters).

| Motor Full Load Amperes | Catalog Number | ETI Trip Setting | |
|---|---|---|---|
| | | Adjustment | Amperes |
| .20 – .33 | ED63A001 CED63A001 | Low | 2.6 |
| .34 – .45 | | 2 | 4.5 |
| .46 – .56 | | 3 | 6 |
| .57 – .68 | | 4 | 7.5 |
| .69 – .81 | | High | 9 |
| .53 – .83 | ED63A002 CED63A002 | Low | 7 |
| .84 – 1.14 | | 2 | 11 |
| 1.15 – 1.45 | | 3 | 15 |
| 1.46 – 1.68 | | 4 | 19 |
| 1.69 – 2.00 | | High | 22 |
| .76 – 1.29 | ED63A003 CED63A003 | Low | 10 |
| 1.30 – 1.75 | | 2 | 17 |
| 1.76 – 2.29 | | 3 | 23 |
| 2.30 – 2.68 | | 4 | 30 |
| 2.69 – 3.18 | | High | 35 |
| 1.23 – 1.99 | ED63A005 CED63A005 | Low | 16 |
| 2.00 – 2.75 | | 2 | 26 |
| 2.76 – 3.52 | | 3 | 36 |
| 3.53 – 4.14 | | 4 | 46 |
| 4.15 – 4.90 | | High | 54 |
| 2.30 – 3.83 | ED63A010 CED63A010 | Low | 30 |
| 3.84 – 5.37 | | 2 | 50 |
| 5.38 – 6.52 | | 3 | 70 |
| 6.53 – 7.68 | | 4 | 85 |
| 7.69 – 9.10 | | High | 100 |
| 4.23 – 6.91 | ED63A025 CED63A025 | Low | 55 |
| 6.92 – 9.61 | | 2 | 90 |
| 9.62 – 11.91 | | 3 | 125 |
| 11.92 – 13.83 | | 4 | 155 |
| 13.84 – 16.40 | | High | 180 |
| 6.15 – 10.37 | ED63A030 CED63A030 | Low | 80 |
| 10.38 – 14.22 | | 2 | 135 |
| 14.23 – 18.06 | | 3 | 185 |
| 18.07 – 20.75 | | 4 | 235 |
| 20.76 – 24.50 | | High | 270 |

| Motor Full Load Amperes | Catalog Number | ETI Trip Setting | |
|---|---|---|---|
| | | Adjustment | Amperes |
| 8.84 – 14.22 | ED63A040 CED63A040 | Low | 115 |
| 14.23 – 19.60 | | 2 | 185 |
| 19.61 – 24.99 | | 3 | 255 |
| 25.00 – 28.83 | | 4 | 325 |
| 28.84 – 34.00 | | High | 375 |
| 13.84 – 23.06 | ED63A050 CED63A050 | Low | 180 |
| 23.07 – 31.52 | | 2 | 300 |
| 31.53 – 39.99 | | 3 | 410 |
| 40.00 – 46.14 | | 4 | 520 |
| 46.15 – 54.50 | | High | 600 |
| 24.23 – 41.52 | ED63A100 CED63A100 | Low | 315 |
| 41.53 – 56.91 | | 2 | 540 |
| 56.92 – 68.45 | | 3 | 740 |
| 68.46 – 76.91 | | 4 | 890 |
| 76.92 – 90.90 | | High | 1000 |
| 38.46 – 55.37 | ED63A125 CED63A125 | Low | 500 |
| 55.38 – 70.75 | | 2 | 720 |
| 70.76 – 84.60 | | 3 | 920 |
| 84.61 – 96.14 | | 4 | 1100 |
| 96.15 – 113.60 | | High | 1250 |
| 30.76 – 35.37 | FXD63L150 CFD63L150 | Low | 400 |
| 35.38 – 39.99 | | 2 | 460 |
| 44.51 – 49.23 | | 4 | 580 |
| 53.84 – 58.45 | | 6 | 700 |
| 58.46 – 63.06 | | 7 | 760 |
| 63.07 – 74.50 | | High | 820 |
| 61.53 – 69.22 | FXD63A150 CFD63A150 | Low | 800 |
| 69.23 – 76.91 | | 2 | 900 |
| 84.61 – 92.29 | | 4 | 1100 |
| 100.00 – 108.00 | | 6 | 1300 |
| 108.00 – 115.00 | | 7 | 1400 |
| 115.00 – 136.00 | | High | 1500 |
| 85.00 – 100.00 | FXD63A250 CFD63A250 | Low | 1100 |
| 100.00 – 115.00 | | 2 | 1300 |
| 131.00 – 146.00 | | 4 | 1700 |
| 162.00 – 177.00 | | 6 | 2100 |
| 177.00 – 192.00 | | 7 | 2300 |
| 192.00 – 227.00 | | High | 2500 |

| Motor Full Load Amperes | Catalog Number | ETI Trip Setting | |
|---|---|---|---|
| | | Adjustment | Amperes |
| 95.00 – 110.00 | JXD63L400 CJD63L400 | Low | 1250 |
| 110.00 – 124.00 | | 2 | 1430 |
| 138.00 – 151.00 | | 4 | 1790 |
| 165.00 – 178.00 | | 6 | 2140 |
| 178.00 – 192.00 | | 7 | 2320 |
| 192.00 – 227.00 | | High | 2500 |
| 154.00 – 176.00 | JXD63H400 CJD63H400 | Low | 2000 |
| 176.00 – 198.00 | | 2 | 2290 |
| 220.00 – 242.00 | | 4 | 2860 |
| 264.00 – 285.00 | | 6 | 3430 |
| 285.00 – 308.00 | | 7 | 3710 |
| 308.00 – 326.00 | | High | 4000 |
| 155.00 – 176.00 | LXD63L600 CLD63L600 | Low | 2000 |
| 176.00 – 198.00 | | 2 | 2290 |
| 220.00 – 242.00 | | 4 | 2860 |
| 264.00 – 285.00 | | 6 | 3430 |
| 285.00 – 308.00 | | 7 | 3710 |
| 308.00 – 326.00 | | High | 4000 |
| 231.00 – 264.00 | LXD63H600 CLD63H600 | Low | 3000 |
| 264.00 – 292.00 | | 2 | 3430 |
| 330.00 – 362.00 | | 4 | 4290 |
| 395.00 – 428.00 | | 6 | 5140 |
| 428.99 – 462.00 | | 7 | 5570 |
| 462.00 – 490.00 | | High | 6000 |
| 215.00 – 238.00 | LMXD63L800 | Low | 2800 |
| 238.00 – 261.00 | | 2 | 3100 |
| 261.00 – 284.00 | | 3 | 3400 |
| 308.00 – 369.00 | | 5 | 4000 |
| 369.00 – 423.00 | | 6 | 4800 |
| 423.00 – 462.00 | | 7 | 5500 |
| 462.00 – 490.00 | | High | 6000 |
| 246.00 – 269.00 | LMXD63A800 | Low | 3200 |
| 269.00 – 284.00 | | 2 | 3500 |
| 284.00 – 323.00 | | 3 | 3700 |
| 362.00 – 492.00 | | 5 | 4700 |
| 492.00 – 562.00 | | 6 | 6400 |
| 562.00 – 616.00 | | 7 | 7300 |
| 616.00 – 660.00 | | High | 8000 |
| 231.00 – 264.00 | MXD63L800 CMD63L800 | Low | 3000 |
| 264.00 – 292.00 | | 2 | 3430 |
| 292.00 – 330.00 | | 3 | 3800 |
| 362.00 – 395.00 | | 5 | 4710 |
| 428.00 – 462.00 | | 7 | 5570 |
| 462.00 – 490.00 | | High | 6000 |
| 308.00 – 352.00 | MXD63A800 CMD63A800 | Low | 4000 |
| 352.00 – 442.00 | | 2 | 4570 |
| 442.00 – 447.00 | | 3 | 5740 |
| 483.00 – 527.00 | | 5 | 6280 |
| 571.00 – 616.00 | | 7 | 7240 |
| 616.00 – 660.00 | | High | 8000 |
| 385.00 – 440.00 | MXD63H800 CMD63H800 | Low | 5000 |
| 495.00 – 550.00 | | 3 | 6430 |
| 605.00 – 660.00 | | 5 | 7860 |
| 660.00 – 695.00 | | 6 | 8575 |

**Note:** Lowest instantaneous settings have a -20%/+30% tolerance and all other settings have a -20%/+20% tolerance.

# Motor Circuits

## Application

### Breaker Mounted at a Distance From Motor Starter

ET thermal-magnetic circuit breakers conform to the National Electrical Code table 430-52 requirements for motor branch and feeder circuit protection when properly applied in conjunction with motor-running overcurrent protective devices. The recommended circuit-breaker ratings in Table 2 provide adequate time delay for starting the majority of three phase induction motors.

To determine the ampere ratings of the ET breaker to protect a motor feeder, add the rating of the ET breaker used to protect the largest motor branch circuit in the group to the full-load currents of the remaining motors in the group.

### Interrupt Ratings

For normal commercial purposes, available fault current can conveniently be obtained in the Interrupting Selector Tables.

**Table 2 (When Breaker is Mounted at a Distance From Motor Starter)**

3-Phase Induction Type Motors (EQ and ET circuit breakers (thermal-magnetic trip) for branch breaker use with alternating-current combination motor starters).

| Motor Horse-power Rating | 200 and 208V Motors | | | 230V Motors | | | 460V Motors | | | 575V Motors | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 240V Circuit Breaker Data[1] | | | 240V Circuit Breaker Data[1] | | | 480V Circuit Breaker Data[1] | | | 600V Circuit Breaker Data[1] | | |
| | Breaker Type | Catalog Number | Ampere Rating | Breaker Type | Catalog Number | Ampere Rating | Breaker Type | Catalog Number | Ampere Rating | Breaker Type | Catalog Number | Ampere Rating |
| ½ | BQ[2] | **BQ3B015** | 15 | BQ[2] | **BQ3B015** | 15 | ED4 | **ED43B015** | 15 | ED6 | **ED63B015** | 15 |
| ¾ | | **BQ3B015** | 15 | | **BQ3B015** | 15 | | **ED43B015** | 15 | | **ED63B015** | 15 |
| 1 | | **BQ3B015** | 15 | | **BQ3B015** | 15 | | **ED43B015** | 15 | | **ED63B015** | 15 |
| 1½ | | **BQ3B015** | 15 | | **BQ3B015** | 15 | | **ED43B015** | 15 | | **ED63B015** | 15 |
| 2 | | **BQ3B020** | 20 | | **BQ3B015** | 15 | | **ED43B015** | 15 | | **ED63B015** | 15 |
| 3 | | **BQ3B030** | 30 | | **BQ3B020** | 20 | | **ED43B015** | 15 | | **ED63B015** | 15 |
| 5 | BQ[2] | **BQ3B040** | 40 | BQ[2] | **BQ3B030** | 30 | ED4 | **ED43B015** | 15 | ED6 | **ED63B015** | 15 |
| 7½ | | **BQ3B060** | 60 | | **BQ3B050** | 50 | | **ED43B030** | 30 | | **ED63B020** | 20 |
| 10 | | **BQ3B070** | 70 | | **BQ3B070** | 70 | | **ED43B030** | 30 | | **ED63B030** | 30 |
| 15 | | **BQ3B100** | 100 | | **BQ3B090** | 90 | | **ED43B040** | 40 | | **ED63B035** | 35 |
| 20 | | | | | **BQ3B100** | 100 | | **ED43B050** | 50 | | **ED63B050** | 50 |
| 25 | FXD6 | **FXD63B125** | 125 | FXD6 | **FXD63B125** | 125 | FXD6 | **FXD63B090** | 90 | FXD6 | **FXD63B060** | 60 |
| 30 | | **FXD63B150** | 150 | | **FXD63B150** | 150 | | **FXD63B100** | 100 | | **FXD63B070** | 70 |
| 40 | | **FXD63B175** | 175 | | **FXD63B175** | 175 | | **FXD63B125** | 125 | | **FXD63B090** | 90 |
| 50 | | **FXD63B200** | 200 | | **FXD63B200** | 200 | | **FXD63B150** | 150 | | **FXD63B100** | 100 |
| | | **FXD63B225** | 225 | | | | | | | | | |
| 60 | JXD2 | **JXD23B300** | 300 | — | **—** | **—** | FXD6, FD6 | **FXD63B150** | 150 | FXD6 | **FXD63B100** | 100 |
| 75 | JXD2 | **JXD23B400** | 400 | JXD2 | **JXD23B350** | 350 | FXD6, FD6 | **FXD63B200** | 200 | FXD6, FD6 | **FXD63B125** | 125 |
| 100 | JXD2 | **JXD23B400** | 400 | JXD2 | **JXD23B400** | 400 | FD6[3]<br>JD6[3] | **FD63B250**<br>**JD63B250** | 250<br>250 | FXD6, FD6 | **FD63B175** | 175 |
| 125 | LD6[3] or LMD6 | **LD63B600**<br>**LMD63B600** | 600 | LD6[3] or LMD6 | **LD63B500** or **LMD63B500** | 500 | JD6[3] | **JD63B300** | 300 | FXD6, FD6 OR JD6[3] | **FXD63B200**<br>**JD63B200** | 200<br>200 |
| 150 | LD6[3] or LMD6 | **LD63B600** or **LMD63B600** | 600 | LMD6 | **LD63B600** or **LMD63B600** | 600 | JD6[3] | **JD63B300** | 300 | FXD6 or JD6[3] | **FXD63B225**<br>**JD63B225** | 225<br>225 |
| 200 | LMD6 | **LMD63B800** | 800 | LMD6 | **LMD63B800** | 800 | JD6[3] | **JD63B350** | 350 | JD6[3] | **JD63B300** | 300 |
| 250 | — | **—** | — | — | **—** | — | JD6[3] | **JD63B400** | 400 | JD6[3] | **JD63B400** | 400 |
| 300 | — | **—** | — | — | **—** | — | LD6[3] or LMD6 | **LD63B600** or **LMD63B600** | 600 | JD6[3] | **JD63B400** | 400 |
| 350 | — | **—** | — | — | **—** | — | LMD6 | **LMD63B700** | 700 | LD6[3] or LMD6 | **LD63B500** or **LMD63B500** | 500 |
| 400 | — | **—** | — | — | **—** | — | LMD6 | **LMD63B800** | 800 | LD6[3] or LMD6 | **LD63B600** or **LMD63B600** | 600 |
| 500 | — | **—** | — | — | **—** | — | — | **—** | — | LMD6 | **LMD63B800** | 800 |

[1] The selection of breakers for this table is in accordance with Article 430, 2005 National Electric Code. Recommended circuit breakers are for full voltage starting, special consideration is necessary for reduced voltage starting.

[2] For panelboard applications, substitute the BL breaker for the BQ, ED2 circuit breakers may also be used.

[3] For non-interchangeable trip applications, substitute the FXD6 for the FD6, the JXD6 for the JD6, or the LXD6 for the LD6.

# Adjustable Installments Magnetic Trip Settings

## Application

| Breaker Type | Maximum Continuous Amperes | Nominal AC Adjustable Trip Range | | | | | | | | ETI Motor Circuit Protector Catalog Number | Thermal Magnetic Catalog Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | 2 | 3 | 4 | 5 | 6 | 7 | High | 3-Pole | 2-Pole | 3-Pole |
| ED6 | 1 | 2.6 | 4.5 | 6 | 7.5 | — | — | — | 9 | **ED63A001** | — | — |
| | 2 | 7 | 11 | 15 | 19 | — | — | — | 22 | **ED63A002** | — | — |
| | 3 | 10 | 17 | 23 | 30 | — | — | — | 35 | **ED63A003** | — | — |
| | 5 | 16 | 26 | 36 | 46 | — | — | — | 54 | **ED63A005** | — | — |
| | 10 | 30 | 50 | 70 | 85 | — | — | — | 100 | **ED63A010** | — | — |
| | 25 | 55 | 90 | 125 | 155 | — | — | — | 180 | **ED63A025** | — | — |
| | 30 | 80 | 135 | 185 | 235 | — | — | — | 270 | **ED63A030** | — | — |
| | 40 | 115 | 185 | 255 | 325 | — | — | — | 375 | **ED63A040** | — | — |
| | 50 | 180 | 300 | 410 | 520 | — | — | — | 600 | **ED63A050** | — | — |
| | 100 | 315 | 540 | 740 | 890 | — | — | — | 1000 | **ED63A100** | — | — |
| | 125 | 500 | 720 | 920 | 1100 | — | — | — | 1250 | **ED63A125** | — | — |
| CED6 | 1 | 2.6 | 4.5 | 6 | 7.5 | — | — | — | 9 | **CED63A001■** | — | — |
| | 2 | 7 | 11 | 15 | 19 | — | — | — | 22 | **CED63A002■** | — | — |
| | 3 | 10 | 17 | 23 | 30 | — | — | — | 35 | **CED63A003■** | — | — |
| | 5 | 16 | 26 | 36 | 46 | — | — | — | 54 | **CED63A005■** | — | — |
| | 10 | 30 | 50 | 70 | 85 | — | — | — | 100 | **CED63A010■** | — | — |
| | 25 | 55 | 90 | 125 | 155 | — | — | — | 180 | **CED63A025■** | — | — |
| | 30 | 80 | 135 | 185 | 235 | — | — | — | 270 | **CED63A030■** | — | — |
| | 40 | 115 | 185 | 255 | 325 | — | — | — | 375 | **CED63A040■** | — | — |
| | 50 | 180 | 300 | 410 | 520 | — | — | — | 600 | **CED63A050** | — | — |
| | 100 | 315 | 540 | 740 | 890 | — | — | — | 1000 | **CED63A100** | — | — |
| | 125 | 500 | 720 | 920 | 1100 | — | — | — | 1250 | **CED63A125** | — | — |
| FXD6-A | 70 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **FXD62B070** | **FXD63B070** |
| | 80 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **FXD62B080** | **FXD63B080** |
| | 90 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **FXD62B090** | **FXD63B090** |
| | 100 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **FXD62B100** | **FXD63B100** |
| | 110 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **FXD62B110** | **FXD63B110** |
| | 125 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | **FXD62B125** | **FXD63B125** |
| | 150 | 400 | 460 | 520 | 580 | 640 | 700 | 760 | 820 | **FXD63L150** | — | — |
| | 150 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | **FXD63A150** | **FXD62B150** | **FXD63B150** |
| | 150 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | **FXD63H150** | — | — |
| | 175 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **FXD62B175** | **FXD63B175** |
| | 200 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **FXD62B200** | **FXD63B200** |
| | 225 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | **FXD62B225** | **FXD63B225** |
| | 250 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | **FXD63A250** | **FXD62B250** | **FXD63B250** |
| FD6-A | 70 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **FD62B070** | **FD63B070** |
| | 80 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **FD62B080** | **FD63B080** |
| | 90 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **FD62B090** | **FD63B090** |
| | 100 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **FD62B100** | **FD63B100** |
| | 110 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **FD62B110** | **FD63B110** |
| | 125 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | **FD62B125** | **FD63B125** |
| | 150 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | **FD62B150** | **FD63B150** |
| | 175 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **FD62B175** | **FD63B175** |
| | 200 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **FD62B200** | **FD63B200** |
| | 225 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | **FD62B225** | **FD63B225** |
| | 250 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | **FD62B250** | **FD63B250** |
| HFD6 | 70 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **HFD62B070** | **HFD63B070** |
| | 80 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **HFD62B080** | **HFD63B080** |
| | 90 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **HFD62B090** | **HFD63B090** |
| | 100 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **HFD62B100** | **HFD63B100** |
| | 110 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **HFD62B110** | **HFD63B110** |
| | 125 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | **HFD62B125** | **HFD63B125** |
| | 150 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | **HFD62B150** | **HFD63B150** |
| | 175 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **HFD62B175** | **HFD63B175** |
| | 200 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **HFD62B200** | **HFD63B200** |
| | 225 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | **HFD62B225** | **HFD63B225** |
| | 250 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | **HFD62B250** | **HFD63B250** |
| HHFD6 | 70 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | — | **HHFD63B070** |
| | 80 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | — | **HHFD63B080** |
| | 90 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | — | **HHFD63B090** |
| | 100 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | — | **HHFD63B100** |
| | 110 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | — | **HHFD63B110** |
| | 125 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | — | **HHFD63B125** |
| | 150 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | — | **HHFD63B150** |
| | 175 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | — | **HHFD63B175** |
| | 200 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | — | **HHFD63B200** |
| | 225 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | — | **HHFD63B225** |
| | 250 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | — | **HHFD63B250** |
| CFD6 | 70 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **CFD62B070** | **CFD63B070** |
| | 80 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **CFD62B080** | **CFD63B080** |
| | 90 | 600 | 640 | 690 | 730 | 770 | 810 | 850 | 900 | — | **CFD62B090** | **CFD63B090** |
| | 100 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **CFD62B100** | **CFD63B100** |
| | 110 | 700 | 770 | 840 | 920 | 990 | 1060 | 1140 | 1200 | — | **CFD62B110** | **CFD63B110** |
| | 125 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | — | **CFD62B125** | **CFD63B125** |
| | 150 | 400 | 460 | 520 | 580 | 640 | 700 | 760 | 820 | **CFD63L150** | — | — |
| | 150 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | **CFD63A150** | **CFD62B150** | **CFD63B150** |
| | 150 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | **CFD63H150** | — | — |
| | 175 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **CFD62B175** | **CFD63B175** |
| | 200 | 900 | 1060 | 1210 | 1370 | 1520 | 1780 | 1930 | 2000 | — | **CFD62B200** | **CFD63B200** |
| | 225 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | — | **CFD62B225** | **CFD63B225** |
| | 250 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 | **CFD63A250** | **CFD62B250** | **CFD63B250** |

**Note:** Tolerances for instantaneous trip points meet UL 489 (7.3). Nominal AC instantaneous trip points are given in the tables. For DC instantaneous trip points, add 15% to nominal values.

Instantaneous trip adjustment is made through the breaker cover on all frame breakers. To change instantaneous trip point on circuit breaker, depress indicating knob, then rotate to desired position.

■ Built to order. Allow 2–3 weeks for delivery.

# Adjustable Instantaneous Magnetic Trip Settings

## Application

| Breaker Type | Maximum Continuous Amperes | Nominal AC Adjustable Trip Range | | | | | | | | ETI Motor Circuit Protector Catalog Number | Thermal Magnetic Catalog Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | 2 | 3 | 4 | 5 | 6 | 7 | High | 3-Pole | 2-Pole | 3-Pole |
| JXD2(A) | 200 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD22B200 | JXD23B200 |
| | 225 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD22B225 | JXD23B225 |
| | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD22B250 | JXD23B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD22B300 | JXD23B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | JXD22B350 | JXD23B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | JXD22B400 | JXD23B400 |
| JXD6(A) | 200 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD62B200 | JXD63B200 |
| | 225 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD62B225 | JXD63B225 |
| | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD62B250 | JXD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JXD62B300 | JXD62B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | JXD62B350 | JXD23B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | JXD62B400 | JXD23B400 |
| JD6(A) | 200 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JD62B200 | JD63B200 |
| | 225 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JD62B225 | JD63B225 |
| | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JD62B250 | JD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | JD62B300 | JD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | JD62B350 | JD63B350 |
| | 400 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | JXD63L400 | — | — |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | JXD63H400 | JD62B400 | JD63B400 |
| HJD6(A) | 200 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HJD62B200 | HJD63B200 |
| | 225 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HJD62B225 | HJD63B225 |
| | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HJD62B250 | HJD63H250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HJD62B300 | HJD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HJD62B350 | HJD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HJD62H400 | HJD63B400 |
| HHJD6 | 200 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HHJD62B200 | HHJD63B200 |
| | 225 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HHJD62B225 | HHJD63B225 |
| | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HHJD62B250 | HHJD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HHJD62B300 | HHJD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HHJD62B350 | HHJD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HHJD62B400 | HHJD63B400 |
| CJD6 | 200 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | — | CJD63B200 |
| | 225 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | — | CJD63B225 |
| | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | — | CJD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | — | CJD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | — | CJD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | CJD63H400 | — | CJD63B400 |
| | 400 | 1250 | 1450 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | CJD63L400 | — | — |
| LXD6(A) | 450 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | LXD62B450 | LXD63B450 |
| | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | LXD62B500 | LXD63B500 |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | LXD62B600 | LXD63B600 |
| LD6(A) | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | LD62B250 | LD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | LD62B300 | LD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | LD62B350 | LD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | LD62B400 | LD63B400 |
| | 450 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | LD62B450 | LD63B450 |
| | 500 | 3000 | 3430 | 3800 | 4290 | 4710 | 5140 | 5570 | 6000 | — | LD62B500 | LD63B500 |
| | 600 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | LXD63L600 | — | — |
| | 600 | 3000 | 3430 | 3800 | 4290 | 4710 | 5140 | 5570 | 6000 | LXD63H600 | LD62B600 | LD63B600 |
| HLD6(A) | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HLD62B250 | HLD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HLD62B300 | HLD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HLD62B350 | HLD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HLD62B400 | HLD63B400 |
| | 450 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HLD62B450 | HLD63B450 |
| | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | HLD62B500 | HLD63B500 |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | HLD62B600 | HLD63B600 |
| HHLD6 | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HHLD62B250 | HHLD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | HHLD62B300 | HHLD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HHLD62B350 | HHLD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HHLD62B400 | HHLD63B400 |
| | 450 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | HHLD62B450 | HHLD63B450 |
| | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | HHLD62B500 | HHLD63B500 |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | HHLD62B600 | HHLD63B600 |
| CLD6 | 250 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | — | CJD63B250 |
| | 300 | 1250 | 1430 | 1610 | 1790 | 1960 | 2140 | 2320 | 2500 | — | — | CJD63B300 |
| | 350 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | — | CJD63B350 |
| | 400 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | — | CLD63B400 |
| | 450 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | — | — | CLD63B450 |
| | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | — | CLD63B500 |
| | 600 | 2000 | 2290 | 2570 | 2860 | 3140 | 3430 | 3710 | 4000 | CLD63L600 | — | — |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | CLD63H600 | — | CLD63B600 |
| LMXD6 | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | — | LMXD63B500 |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | LMXD62B600 | LMXD63B600 |
| | 700 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | LMXD62B700 | LMXD63B700 |
| | 800 | 2800 | 3100 | 3400 | 3700 | 4000 | 4800 | 5500 | 6000 | LMXD63L800 | — | — |
| | 800 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | LMXD63A800 | LMXD62B800 | LMXD63B800 |
| LMD6 | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | LMD62B500 | LMD63B500 |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | LMD62B600 | LMD63B600 |
| | 700 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | LMD62B700 | LMD63B700 |
| | 800 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | LMD62B800 | LMD63B800 |

# Adjustable Instantaneous Magnetic Trip Settings

## Application

| Breaker Type | Maximum Continuous Amperes | Nominal AC Adjustable Trip Range | | | | | | | | ETI Motor Circuit Protector Catalog Number | Thermal Magnetic Catalog Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | 2 | 3 | 4 | 5 | 6 | 7 | High | 3-Pole | 2-Pole | 3-Pole |
| HLMXD6 | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | — | **HLMXD63B500** |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | — | **HLMXD63B600** |
| | 700 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | — | **HLMXD63B700** |
| | 800 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | — | **HLMXD63B800** |
| HLMD6 | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | **HLMD62B500** | **HLMD63B500** |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | **HLMD62B600** | **HLMD63B600** |
| | 700 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | **HLMD62B700** | **HLMD63B700** |
| | 800 | 3200 | 3500 | 3700 | 4200 | 4700 | 6400 | 7300 | 8000 | — | **HLMD62B800** | **HLMD63B800** |
| MD6 | 500 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | **MD62B500** | **MD63B500** |
| | 600 | 3000 | 3430 | 3860 | 4290 | 4710 | 5140 | 5570 | 6000 | — | **MD62B600** | **MD63B600** |
| | 700 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | **MD62B700** | **MD63B700** |
| | 800 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | **MXD63L800** | — | — |
| | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | **MXD63A800** | **MD62B800** | **MD63B800** |
| | 800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | **MXD63H800** | — | — |
| MXD6 | 500 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | **MXD62B500** | **MXD63B500** |
| | 600 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | **MXD62B600** | **MXD63B600** |
| | 700 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | **MXD62B700** | **MXD63B700** |
| | 800 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | **MXD63L800** | — | — |
| | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | **MXD63A800** | **MXD62B800** | **MXD63B800** |
| | 800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | **MXD63H800** | — | — |
| HMD6 | 500 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | **HMD62B500** | **HMD63B500** |
| | 600 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | **HMD62B500** | **HMD63B600** |
| | 700 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | **HMD62B700** | **HMD63B700** |
| | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | **HMD62B800** | **HMD63B800** |
| HMXD6 | 500 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | — | **HMXD63B500** |
| | 600 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | — | **HMXD63B600** |
| | 700 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | — | **HMXD63B700** |
| | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | — | **HMXD63B800** |
| CMD6 | 400 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | — | |
| | 500 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | — | |
| | 600 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | — | — | **CMD63B600** |
| | 700 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | — | **CMD63B700** |
| | 800 | 3000 | 3430 | 3860 | 4280 | 4710 | 5140 | 5570 | 6000 | **CMD63L800** | — | — |
| | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | **CMD63A800** | — | **CMD63B800** |
| | 800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | **CMD63H800** | — | — |
| ND6 | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | **ND62B800** | **ND63B800** |
| | 900 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **ND62B900** | **ND63B900** |
| | 1000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **ND62B100** | **ND63B100** |
| | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **ND62B120** | **ND63B120** |
| NXD6 | 900 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **NXD62B900** | **NXD63B900** |
| | 1000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **NXD62B100** | **NXD63B100** |
| | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **NXD62B120** | **NXD63B120** |
| HND6 | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | **HND62B800** | **HND63B800** |
| | 900 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **HND62B900** | **HND63B900** |
| | 1000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **HND62B100** | **HND63B100** |
| | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | **HND62B120** | **HND63B120** |
| HNXD6 | 900 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HNXD63B900** |
| | 1000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HNXD63B100** |
| | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HNXD63B120** |
| CND6 | 800 | 4000 | 4570 | 5140 | 5710 | 6280 | 6850 | 7420 | 8000 | — | — | **CND63B800** |
| | 900 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **CND63B900** |
| | 1000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **CND63B100** |
| | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **CND63B120** |
| PD6 | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **PD63B120** |
| | 1400 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **PD63B140** |
| | 1600 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **PD63B160** |
| PXD6 | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **PXD63B120** |
| | 1400 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **PXD63B140** |
| | 1600 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **PXD63B160** |
| HPD6 | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HPD63B120** |
| | 1400 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HPD63B140** |
| | 1600 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HPD63B160** |
| HPXD6 | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HPXD63B120** |
| | 1400 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HPXD63B140** |
| | 1600 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HPXD63B160** |
| CPD6 | 1200 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **CPD63B120** |
| | 1400 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **CPD63B140** |
| | 1600 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **CPD63B160** |
| RD6 | 1800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **RD63B180** |
| | 2000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **RD63B200** |
| RXD6 | 1800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **RXD63B180** |
| | 2000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **RXD63B200** |
| HRD6 | 1800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HRD63B180** |
| | 2000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HRD63B200** |
| HRXD6 | 1800 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HRXD63B180** |
| | 2000 | 5000 | 5715 | 6430 | 7145 | 7860 | 8575 | 9290 | 10000 | — | — | **HRXD63B200** |

# Molded Case Switch — Circuit Disconnect

## Selection

| Maximum Frame Amp Rating | 2-Pole Catalog Number | 3-Pole Catalog Number | Self-Protective Instantaneous Override ±20%[3] |
|---|---|---|---|
| 125 | ED22S100A■ | ED23S100A | 1000 |
| | ED42S100A■ | ED43S100A | 1000 |
| | ED42S125A■ | ED43S125A | 1000 |
| | ED62S100A■ | ED63S100A | 1000 |
| | — | ED63S125A | 1000 |
| | CED62S100A■ | CED63S100A■ | 1000 |
| | CED62S125A■ | CED63S125A■ | 1000 |
| 250 | — | HQR23S250HA | 2000 |
| | FXD62S250A | FXD63S250A | 3200 |
| | HFXD62S250A■ | HFXD63S250A■ | 3200 |
| | [1] | CFD63S250A■ | 3200 |
| 400 | JXD22S400A■ | JXD23S400A | 6000 |
| | — | JXD63S400A | 6000 |
| | — | HJXD63S400A■ | 6000 |
| | [1] | CJD63S400A■ | 6000 |
| 600 | — | LXD63S600A | 6000 |
| | — | HLXD63S600A■ | 6000 |
| | [1] | CLD63S600A■ | 6000 |
| 800 | — | LMXD63S800A■ | 8000 |
| | — | MXD63S800A | 8000 |
| | [1] | CMD63S800A | 8000 |
| 1200 | — | NXD63S120A | 10000 |
| | [1] | CND63S120A■ | 10000 |
| 1600 | [1] | PXD63S160A[5] | 10000 |
| 2000 | [1] | RXD63S200A■[5] | 10000 |

### Ordering Information

Order by catalog number. Switches include frame and self protective trip unit only. Order lugs separately from pages 17/125 to 17/127.

■ Built to order. Allow 2–3 weeks for delivery.

[1] For 2-pole application use outside poles of 3-pole circuit breaker.

[2] For additional lugs see pages 7-159 to 7-161.

[3] Molded case switches up to R frame contain a self protecting instantaneous element, which may open circuit above their override set point.

[4] UL file E57556 Volume 1, section 2 and CSA LR 42022-51.

[5] Requires mounting block MB9301 or MBR9302.

Lugs pages 17/125 to 17/127
For accessories, please refer to pages 17/132 to 17/137

| For Use With Type(s) | Circuit Breaker Ampere Rating | Cables Per Lug | Lug Wire Range | Catalog Number |
|---|---|---|---|---|
| BQ, BQH, BQHF BQE, BQF, BL, BLH, BT④, BTH④, HBL, HBQ Switching Neutrals BG, BLG | **Line Side** | | | |
| | 15–40 | 1<br>1 | #14–#6 AWG Cu<br>#12–#6 AWG Al | **TC1Q1**①② |
| | 45–125 | 1<br>1 | #8–#1 AWG Cu<br>#6–#1/0 AWG Al | **TA1Q1**② |
| | **Load Side** | | | |
| | 15–20 | 1<br>1 | #14–#10 AWG Cu<br>#12–#10 AWG Al | Lugs are integral to Circuit Breaker |
| | 25–35 | 1<br>1 | #14–#6 AWG Cu<br>#12–#6 AWG Al | Lugs are integral to Circuit Breaker |
| | 40–50 | 1<br>1 | #8–#6 AWG Cu<br>#8–#4 AWG Al | Lugs are integral to Circuit Breaker |
| | 55–70<br>*exceptions in Table A | 1<br>1 | #8–#4 AWG Cu<br>#8–#2 AWG Al | Lugs are integral to Circuit Breaker |
| | 80–100 | 1<br>1 | #4–#1/0 AWG Cu<br>#2–#1/0 AWG Al | Lugs are integral to Circuit Breaker |
| | 110–125 | 1<br>1 | #2–#1/0 AWG Cu<br>#1/0–#2/0 AWG Al | Lugs are integral to Circuit Breaker |
| BQD, CQD BQD6, CQD6 | **Line Side (CQD, CQD6) & Load Side** | | | |
| | 15–40 | 1 | #14–#6 AWG Cu<br>#12–#6 AWG Al | Integral |
| | 45–100 | 1 | #8–#1 AWG Cu<br>#6–#1/0 AWG Al | Integral |
| NGG, HGG, LGG | 15–30 | 1 | #14–#6 AWG Cu<br>#12–#6 AWG Al | **TC1Q1** |
| | 15–30 | 1 | #14–#6 AWG Cu<br>#12–#6 AWG Al | **3TC1Q1** (pkg. of 3) |
| | 35–125 | 1 | #8–#1/0 AWG Cu<br>#8–#2/0 AWG Al | **3TC1GG20** (pkg. of 3) |
| | 15–125 | — | NUT KEEPER PLATE | **TNKG3**③ (pkg. of 3) |

Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards.

### Table A

| For Use With Type(s) | Circuit Breaker Ampere Rating | Cables Per Lug | Lug Wire Range | Number of Poles |
|---|---|---|---|---|
| BQ, BL, QP | **Load Side** | | | |
| | 55-60 | 1 | #8–#4 AWG Cu-Al<br>#3 AWG requires 22 or 65 kAIC | This exception is applicable to 1- and 2-pole only |

**Note:**

(A) Molded case circuit breakers having a rated ampacity of 125 amperes or less are to be connected with 60 or 75°C wire. Circuit breakers having a rated ampacity greater than 125 amperes shall only be cabled with 75°C cable unless otherwise indicated on the circuit breaker label. Exceptions to this rule are outlined in article 110-14 C(1)(2) of the 2005 National Electrical Code.

(B) Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards.

① Lug is steel.
② Sold in package of six.
③ One nut keeper plate is required with each lug on the NGG breaker.
④ BT and BTH lug wire range is limited to #14 - #12 AWG for Copper.

# Aluminum Body Lugs for Copper or Aluminum Wire

## Selection

| For Use With Type(s) | Circuit Breaker Ampere Rating | Cables Per Lug | Lug Wire Range | Catalog Number |
|---|---|---|---|---|
| QR2, QR2H, HQR2, HQR2H | 100-250 | 1 | #3–300 Kcmil Al/C | **3TA1QR300** (3 lugs per kit) |
| All 2, 3-pole ED2, ED4, ED6, ED6 ETI, HED4, HHED6 | 15–25 | 1 | #14–#10 AWG (Cu) #12–#10 AWG (Al) | **SA1E025** |
| | 30–100 | 1 | #10–#1/0 (Cu or Al) | **LN1E100** |
| | 110–125 | 1 | #3-3/0 (Cu) #1-2/0 (Al) | **TA1E6125** |
| CED6 All 1-pole ED, HED | 30–60 | 1 | #10–4 (Cu or Al) | **LD1E060** (Load Side) |
| | 70–100 | 1 | #4–#1/0 (Cu or Al) | **LD1E100** (Load Side) |
| FXD6-A, FD6-A, HFD6, CFD6 HHFD6 | 70–250 | 1 | #6 AWG–350 kcmil (Cu) #4 AWG–350 kcmil (Al) | **TA1FD350A** |
| SJD6-B, SHJD6-B SCJD6-B | 65-200 | 1–2 | #4 AWG–3/0 (Cu or Al) | **TA2J630** |
| JXD2(A), JXD6(A), JD6(A), SJD6-B, HJD6(A), HJXD6(A) HHJXD6, HHJD6, SHJD6-B, CJD6, SCJD6-B | 200–400 | 1–2 | 3/0–500 kcmil (Cu) 4/0–500 kcmil (Al) | **TA2J6500** |
| LXD6(A), LD6(A), SLD6-B, HLD6(A), HLXD6(A), HHLXD6, HHLD6, SHLD6-B, CLD6, SCLD6-B | 250–600 | 1–2 | 3/0–500 kcmil (Cu) 4/0–500 kcmil (Al) | **TA2J6500** |
| LMD6①, LMXD6①, HLMD6①, HLMXD6①, MD6, MXD6, SMD6-B, HMD6, HMXD6, SHMD6-B, CMD6, SCMD6-B | 500–600 | 1–2 | #1–500 kcmil (Cu or Al) | **TA2K500** |
| | | 1–3 | 1/0–500 kcmil (Cu or Al) | **TA3K500** |
| | 500–800 | 1–2 | 500–750 kcmil (Cu or Al) | **TA2N750**② |
| ND6, NXD6, SND6-B, HND6, HNXD6, SHND6-B, CND6, SCND6-B | 800–1200 | 1–4 | 250–500 kcmil (Cu or Al) | **2TA4P8500**②③ **3TA4P8500**②④ |
| | | | 250–500 kcmil (Cu or Al) | **2TA4N8500**③ **3TA4N8500**④ |
| PD6, HPD6, CPD6 PXD6, HPXD6, SPD6-B, SHPD6-B | 1200–1600 | 1–5 | 300–600 kcmil (Cu or Al) | **TA5P600** |
| PD6, PXD6, HPD6, HPXD6, SPD6-B, SHPD6-B, RD6, RXD6, HRD6, HRXD6, STD | 1200–2000 | 1–6 | 300–600 kcmil (Cu or Al) | **TA6R600** |

①Use TA2K500 or TA3K500 only.
②Used for 100% rated MD/ND frame breakers. Rated for 90° C cable.
③Contains 2 connectors plus 1 NDTS end barrier.
④Contains 3 connectors plus 1 NDTS end barrier.

# Optional Mechanical Lugs

## Selection

| For Use With Type | Circuit Breaker Ampere Rating | Cables Per Lug | Lug Material | Lug Wire Range | Qty Per Catalog No | Catalog Number |
|---|---|---|---|---|---|---|
| QR2, QR2H, HQR2, HQR2H | 100-250 | 1 | Cu | #3 - 300 Kcmil Cu ONLY) | 3 | **3TC1QR2520** (3 lugs per kit) |
| ED, HED 1, 2 & 3-pole | 1, 2 & 3-pole 30-125 | 1 | Cu | #10–#1/0 (Cu) | 1 | **TC1ED6150** |
| HFD6, HHFD6, CFD6, F(X)D6-A | 70–250 | 1 | Cu | #6 AWG–350 kcmil (Cu) | 1 | **TC1FD350** |
| J(X)D2(A), J(X)D6(A), HJD6(A), HHJD6, SHJD6-B, L(X)D6(A), HHLD6, SCD6-B, HLD6(A), SHLD6-B, CJD6, CLD6, SCJD6-B, SCLD6-B | 200–600 | 1<br>1–2 | Cu | 3/0–600 kcmil (Cu)<br>3/0–500 kcmil (Cu) | 1<br>1 | **TC1J6600**①<br>**TC2J6500**① |
| | 250–600 | 1<br>1 | Al | 500–750 kcmil (Al)<br>500–600 kcmil (Cu) | 1 | **TA1L6750** |
| SMD6-B, M(X)D6, HM(X)D6, HMD6, CMD6, SCMD6-B, SND6-B, N(X)D6, HN(X)D6, SHND6-B, CND6, SCND6-B | 500–600 | 1–2 | Cu | #1 AWG–500 kcmil (Cu) | 1 | **TC2K500** |
| | 700–800 | 1–2 | Al | 500–750 kcmil (Cu)<br>500–750 kcmil (Al) | 2<br>3 | **2TA2N8750**<br>**3TA2N8750** |
| | 800–1200 | 1–3 | Al | 500–750 kcmil (Cu)<br>500–750 kcmil (Al) | 2<br>3 | **2TA3N8750**<br>**3TA3N8750** |
| R(X)D6, HR(X)D6 | 1600–2000 | 1–5 | Cu | 300–600 kcmil (Cu) | 1 | **TC5R600** |
| P(X)D6, HP(X)D6, CPD6, SPD6-B, SHPD6-B | 1200–1600 | 1–4 | Al | 600–750 kcmil (Cu/Al) | 1 | **TA4P750**▲ |

## Compression Lugs

| For Circuit Breaker Types | Ampere Rating | Poles | Lugs Per Kit | Lug Wire Size | Catalog Number |
|---|---|---|---|---|---|
| Lugs (contains indicated number of lugs and necessary hardware per kit) | | | | | |
| ED2, ED4, ED6, HED4, HHED6, CED6 | 15–125 | 1, 2, 3 | 1 | #2/0 AWG Cu/Al | **CCE125** |
| QR2, QR2H, HQR2, HQR2H | 100-250 | 2-3 | 1 | #6 - 350kcmil Al/Cu | **CCQ250** |
| F(X)D6-A, HF(X)D6, HHF(X)D6, CFD6 | 125–250 | 2, 3 | 1 | 350 kcmil | **CCF250** |
| JXD2-A, J(X)D6-A, HJ(X)D6-A, HHJ(X)D6-A, CJD6, SJD6-B, SHJD6-B, SCJD6-B, L(X)D6-A, HL(X)D6-A, CLD6, SLD6-B, SHLD6-B, SCLD6-B | 200–600 | 2, 3 | 1 | 500 kcmil | **CCL600** |
| Kits (contain lugs and hardware for complete line or load end of 2 or 3-pole breaker) | | | | | |
| M(X)D6, HM(X)D6, CMD6, SMD6-B, SHMD6-B, SCMD6-B | 500–800 | 2 | 6 | 500 kcmil | **CCM800K2** |
| | | 3 | 9 | | **CCM800K3** |
| N(X)D6, HN(X)D6, CND6, SND6-B, SHND6-B, SCND6-B | 900–1200 | 2 | 8 | | **CCN1200K2** |
| | | 3 | 12 | | **CCN1200K3** |

## Distribution Lugs②

| For Circuit Breaker Types | Ampere Rating | Poles | Lugs Per kit | Wires Per Lug | Lug Wire Size | Catalog Number |
|---|---|---|---|---|---|---|
| NGG, HGG, LGG | 15-125 | 1,2,3 | 1 | 6 | #6-#4 AL<br>#14-#4 Cu | **TA6GG04** |
| ED2, ED4, ED6, HED4, HHED6, CED6 | 15-125 | 1,2,3 | 1 | 6 | #14-#4 AWG Cu<br>#6-#4 AWG Al | **TA6ED06** |
| F(X)D6-A, HF(X)D6, HHF(X)D6, CFD6 | 70-250 | 2,3 | 1 | 6 | #14-#4 AWG Cu<br>#6-#4 AWG Al | **TA6FD04** |
| JXD2-A, J(X)D6-A, HJ(X)D6-A, HHJ(X)D6-A, CJD6-A, SJD6-B, SHJD6-B, SCJD6-B, L(X)D6-A, HL(X)D6-A, CLD6-A, SLD6-B, SHLD6-B, SCLD6-B | 200-600 | 2,3 | 1 | 6 | #14-2/0 AWG Cu<br>#6-2/0 AWG Al | **TA6JD20** |

▲ Built to order. Allow 6–8 weeks for delivery.

①Used for 100% rated JD/LD frame circuit breakers.

② Special purpose wire connectors, not for general use.

# Modifications

## General/Selection

A variety of internal and external accessories, as well as modifications, are available to adapt Siemens circuit breakers to special installation requirements. UL listed internal accessories for 100 through 2000A circuit breakers are field-addable.

Internal accessories fine tune an electrical distribution system, allowing control of the circuit breakers to meet special application requirements. For example, emergency situations may dictate tripping critically placed circuit breakers quickly. Shunt trips accomplish this conveniently and efficiently. Or, when voltage drops are a concern, undervoltage trips automatically open the circuit breaker at a predetermined voltage level.

A wide range of external operating and mounting accessories is also available. For example, face, shallow, and back mounting plates are ideal for tailoring BQ circuit breakers to OEM applications. A complete line of operating handles and handle-blocking devices meet switchboard, enclosure and safety needs. Plug-in mounting assemblies, which simplify switchboard mounting of circuit breakers and permit breaker removal without disconnecting bus or cable connections, are available.

**50°C Ambient Calibration — Not UL listed and not available for solid state, 100% rated breakers or 400HZ calibrated breakers.**

For BL Type Circuit Breakers
— Add suffix 'M' to catalog number
(Example: B120M) ..... No Charge

For BQ and ED Frame Circuit Breakers
— Replace 'B' in catalog number with 'M' ..... No Charge
(Example: BQ3M060, ED63M060)

For FD, JD, LD, LMD, MD, ND, PD, and RD Frame Circuit Breakers
Non-Interchangeable Trip (3–pole only) ..... No Charge
— Replace 'B' in catalog number with 'M'
(Example: FXD63M225, JXD63M400)

**400 HZ Calibration**

Not UL Listed
For all Not UL Listed Circuit Breakers, see derating tables on page 7-172 and order standard circuit breakers

**Fungus Proofing**

All 3VA, BQD, CQD, GB, GG, ED, FD, JD, LD, LMD, MD, ND, PD, RD, MG, NG, and PG Frame Circuit Breakers are inherently fungus resistant and do not require special treatment.

For BL, and BQ Type Circuit Breakers ..... Add $10.00 net per pole
— Consult Sales Office for Availability

For all other Circuit Breaker Types ..... Add $160.00 net per device
— Consult Sales Office for Availability

**Certificate of Compliance with Test Report (catalog number CERT OF COMP.)** Add $210.00 net
Certificate of compliance testing must be performed on the actual device being shipped. The certificate cannot be provided after initial shipment. Order for devices with COC requirement must be placed directly with the factory by the sales office and shipped directly to the end user.

## UL 489 Supplement SB Naval Use Breakers

Breakers tested to UL 489 Supplement SB are qualified for use on non combat and auxiliary naval vessels.

Various Siemens molded case breakers can be labeled "NAVAL" in compliance with UL 489 Supplement SB. See table to the right for specific breaker types and UL file references.

Supplement SB testing comprises two sets of vibration tests. The first is to find mechanical resonances in the product and to subject the breaker to extreme testing at each resonant frequency. The second is a swept frequency test, in which the frequency of excitation is changed in intervals of 1Hz, and held at each frequency for five minutes. The excitation frequencies run from 4 to 33Hz, and the test is conducted in each of the three orthogonal axes of the breaker.

During these tests, the breaker must not trip from the closed position, nor may the contacts touch from the open position. Calibration and insulation resistance are also verified during the test.

For detailed information, refer to UL 489, Supplement SB.

### Ordering Information

For "NAVAL" label, add **$75.** net per catalog number per order. Order must be placed directly with the factory by Siemens Sales Office.

| Breaker Type | UL File |
|---|---|
| BL | E82615, Vol 1, Sec 1 & 4 |
| NGB | E10848, Vol 10, Sec 3 |
| CED6 | E10848, Vol 4, Sec 13 |
| HED4, ED6 | E10848, Vol 4, Sec 11 |
| FXD6, HFD6, HHFD6 | E10848, Vol 4, Sec 17 |
| HHJD6 | E10848, Vol 4, Sec 20 |

## Feature Combinations

The available feature combinations are shown in the chart below. For applications requiring combinations of features not listed in this chart, consult the sales office for availability.

| Breakers | Modules Per Breaker | Avail. On Breaker Poles | ST | ST/ AUX | ST/ ALSW | ST/ AUX/ ALSW | UVT | UVT/ AUX | UVT/ ALSW | UVT/ AUX/ ALSW | AUX | AUX/ ALSW | ALSW | Elect. Bell Alarm | Ground fault | Grd fault w/Bell |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QP, BQ, BL① | 1 | 1, 2, 3 | 1 | — | — | — | — | — | | | 1,2 | — | — | — | — | — |
| BQD, CQD, GB, GG | 1 | 2, 3 | 1 | 1/1 | — | — | — | — | | | 1,2 | 1/1 | 1 | — | — | — |
| QR | 1, 2 | 2, 3 | 1 | 1/1 | — | — | — | — | | | 2 | — | — | — | — | — |
| All ED | 1 | 1, 2, 3 | 1 | 1/1,1/2 | 1/1 | 1/1/1 | 1 | 1/1, 1/2 | 1/1 | 1/1/1 | 1, 2 | 1/1, 2/1 | 1 | — | 1 | 1 |
| All FD | 2 | 2, 3 | 1 | — | — | — | 1 | 1/1 | — | — | 1, 2 | 1/1 | 1 | — | — | — |
| All JD, LD, LMD② | 2 | 2, 3 | 1 | 1 | — | — | 1 | 1/1, 1/2 | — | — | 1, 2 | 1/1, 1/2 | 1, 2 | — | — | — |
| SJD, SHJD, SCJD,SLD, SHLD, SCLD③ | 1 | 3 | 1 | 1 | — | — | 1 | 1/1, 1/2 | — | — | 1, 2 | 1/1, 1/2 | 1, 2 | — | — | — |
| All MD, ND, PD, RD Including Electronic trip④ | 2 | 2, 3 | 1 | 1/1 | — | — | 1 | 1/1, 1/2 | — | — | 1, 2 | 1/1, 2/1 | 1, 2 | — | — | — |

### Shunt Trip (ST)

One or all critical circuit breakers may be tripped from a distant control point by use of a shunt trip device. A shunt trip operates through an auxiliary switch contact; when the breaker opens, current is not maintained on the shunt trip coil.

### Undervoltage Trip (UVT)

When voltage drops to a value below 35% of the nominal coil rating, the undervoltage trip device automatically opens the breaker. The operation is instantaneous, and the circuit breaker cannot be reclosed until the voltage returns to 85% of line voltage. The undervoltage trip, which is continuously energized, must be energized before the circuit breaker can be closed.

### Auxiliary Switch (AUX)

For applications requiring remote "on" or "off" indication (or electrical interlocking), auxiliary switches are available. Each switch comprises an "A" (open when circuit breaker is open) and a "B" (closed when circuit breaker is open) contact with a common connection. (Form C)

### Alarm Switch (ALSW)

The alarm switch contact is closed when the circuit breaker is opened automatically by an overload, short circuit, shunt trip or undervoltage trip. The alarm switch contact is open when the circuit breaker is reset.

For ED Frames

**S01FD60**

For FD Frames

**S01FD60**

For JD and LD Frames

①Factory assembled only
②If mechanical interlock is installed, no accessory module can be installed in the right pocket.
③If mechanical interlock is installed, no accessory module can be installed.
④If mechanical interlock is installed, no accessory module can be installed in the left pocket.

## Circuit Breaker Accessories④⑤⑥⑦⑧⑨

| Catalog Number | For Use With Breaker Type | Number of Poles | Standard Package |
|---|---|---|---|
| **Padlocking Device**<br>For locking breaker in "OFF" position. Note "ON" position does not affect breaker fuctionally | | | |
| **ECPLD1** | Type QP, BL, QAF2, QPF2, QE, QT-Duplex, BQ, BQXD | 1P | 3 Pieces |
| **ECPLD1R** | Type QP, BL, QAF2, QPF, QE, QT-Duplex, BQ, BQXD (Red Color) | 1P | 3 Pieces |
| **ECPLD2** | Type QP, BL, QAF2, QPF, QE, QT-Triplex & Quadplex, BQ, BQXD | 2P | 3 Pieces |
| **ECPLD2R** | Type QP, BL, QAF2, QPF, QE, QT-Triplex & Quadplex, BQ, BQXD (Red Color) | 2P | 3 Pieces |
| **ECPLD3** | Type QP, BL, QAF2, QPF, QE, BQ | 3P | 1 Piece |
| **US2:ECPLD3R** | Type QP, BL, QAF2, QPF, QE, BQ (Red Color) | 3P | 1 Piece |
| **ECQLD3** | Type QP, BL, BQ, BQXD | 1P | 10 Pieces |
| **ECQLD4** | Type QT-Duplex | QT-Duplex Breakers | 10 Pieces |
| **ECQLN3**② | 150-225 MBKA, QN, QNR | n/a | 1 Piece |
| **ECQTH4** | Type QP, BL, BQH | Designed for (3) 1P Breakers | 1 Piece |
| **Handle Tie**<br>Provide simultaneous swiching of 2 adjacent handles. | | | |
| **ECQAFC** | Type QAF2, QAFN | 2P | 10 Pieces |
| **ECQTH2** | Type QT Duplex, BT Duplex, BTH Duplex, QTA, QTAN | Designed for (2) QT Duplex Breakers | 25 Pieces |
| **ECQTH3** | Type QP, BL | 2P | 50 Pieces |
| **Mechanical Interlock**① | | | |
| **ECQML12** | Type QP, BL, BQ Interlock Bracket | Designed for 1" Breaker | 10 Pieces |
| **Handle Blocking Device**<br>For holding breaker in "ON" or "OFF" position. Not a lockout/tagout device | | | |
| **ECQL1** | Type QP, BL, BQ, BQXD | 1P | 10 Pieces |
| **ECBX231M** | Type QT-Duplex | 1/2" Breakers | 10 Pieces |
| **Main Breaker Retainer** | | | |
| **ECMBR1**③ | EQ Load Centers | | 1 Piece |
| **ECMBR2** | PN, SN, PL, ES and Ultimate Load Centers: 2-Pole QP | | 1 Piece |
| **ECMBR3** | PL, ES, and Ultimate Load Centers: 3-pole QP | | 1 Piece |
| **Mounting Accessories** | | | |
| **MB120** | Type BQ, BQH Mounting Clips | 1P | 20 Pieces |
| **FP9508** | Type BQ, BQH FACE MOUNT PLATE | 1P | 10 Pieces |
| **FP9555** | Type BQ, BQH FACE MOUNT PLATE | 2P | 10 Pieces |
| **FP9556** | Type BQ, BQH FACE MOUNT PLATE | 3P | 10 Pieces |
| **SMB6R** | Type BQ MOUNTING BRACKET | 1P, 2P, 3P | 6 Pieces |
| **TCH65K** | Type BQ MOUNTING ADAPTER | | 500 Pieces |
| **BR2** | Type BQ, BQH, BQXD Back Mounting Plates | 2P | 10 Pieces |
| **BR3** | Type BQ, BQH, BQXD Back Mounting Plates | 3P | 10 Pieces |
| **BR4** | Type BQ, BQH, BQXD Back Mounting Plates | 4P | 10 Pieces |
| **I0204ML1125CU** | Type QP Back Mounting Plates | 1P, 2P | 10 Pieces |
| **I0303ML3100CU** | Type QP Back Mounting Plates | 3P | 10 Pieces |
| **Replacement Lugs** | | | |
| **TA1Q1** | Type BQ, NGG 100A Al Cu LGS | n/a | 6 Pieces |
| **TC1Q1** | Type BQ, NGG 40A Al Cu LUGS | n/a | 6 Pieces |
| **Finger Shield** | | | |
| **BQFS1K** | Type BQXD Finger Shield (Bulk Pack) | n/a | 1000 Pieces |
| **BQFS2** | Type BQXD Finger Shield | n/a | 2 Pieces |
| **Filler Plate** | | | |
| **ECQF3** | 1" Filler Plate | n/a | 5 Pieces |

① For a complete list of standby power mechanical interlock kits, see page 1-25
② For use with Ultimate Load Center Main Breakers
③ Not suitable for use on 15-50A, 10 AIC Type QP Circuit Breakers
④ QP Type includes QPH, HQP
⑤ BL Type includes BLH, HBL
⑥ BQ Type includes BQH, HBQ
⑦ QAF2 Type includes QAFH2, BAF2, BAFH2, QFGA2, QFGAH2, BFGA2, BFGAH2
⑧ QPF Type includes QPHF, BLF, BLHF
⑨ QE Type includes QEH, BLE, BLEH

## Padlocking Device

ECPLD1

ECPLD2

**ECPLD1R/2R/3R** (Single pole pictured. 2-/3-pole available)

ECQLD3

ECQLD4

ECQTH4

## Handle Tie

ECQAFC

ECQTH2

ECQTH3

## Handle Blocking Device

ECQL1

ECBX231M

## Main Breaker Retainer

ECMBR1

ECMBR2

## Mechanical Interlock

ECQML12

## Mounting Accessories

MB120

SMB6R

I0204ML1125

FP9508

FP9555

FP9556

## Handle Ties with Padlock Device

Provide simultaneous switching of 2 or 3 adjacent handles.
Do not provide common trip.

| For Use With Breaker Frame(s) | Catalog Number | Standard Package | Wt Lb/ Std Pkg |
|---|---|---|---|
| BQD, NGB, HGB, LGB | **BQDHT2** | 10 | ½ |
| | **BQDHT3** | 10 | ½ |

## Padlocking Devices

For locking breaker in "OFF" position.

| | | | |
|---|---|---|---|
| All QR | **HPLQR** | 1 | ¼ |
| All BQD, CQD, NGB, HGB, LGB | **BQDPLD** | 1 | ⅛ |
| NGG, HGG, LGG | **HPLG** | 1 | ¼ |
| All ED | **ED2HPL** | 1 | ¼ |
| All FD | **FD6PL1** | 1 | ¼ |
| All JD, LD, LMD | **JD6HPL** | 1 | ¼ |
| All MD, ND, PD, RD | **MN6PLD** | 1 | ¼ |

FD Padlocking Device
**FD6PLI**

## Handle Blocking Devices

For holding breaker in "ON" or "OFF" position.
Not a lockout/tagout device.

| | | | |
|---|---|---|---|
| All QR | **HBLQR** | 1 | 1 |
| All BQD, CQD, GG, GB | **BQDHBD** | 1 | ¼ |
| All ED | **E2HBL** | 1 | ¼ |
| All FD | **FD6HB1** | 1 | ½ |
| All JD, LD, LMD | **JD6HBL** | 1 | ½ |
| All MD, ND, PD, RD | **MN6BL** | 1 | ½ |

FD Handle Blocking Device
**FD6HB1**

## Handle Extensions

For replacement. One extension shipped with breaker.

| | | | |
|---|---|---|---|
| All MD, ND, PD, RD | **EX11** | 1 | 2 |

## Terminal Shields

| Breaker Type | Poles | Catalog Number | Standard Package |
|---|---|---|---|
| HGG, LGG, NGG | 3 | **TSSG3A** | 1 |
| JD, LD | 3 | **JDTERMSHIELD** | 1 |
| MD, ND, PD, RD | 3 | **MDTERMSHIELD** | 1 |

Handle Extension
**EX11**

■ Built to order. Allow 2–3 weeks for delivery.
① Sold only in standard package quantities.

## Face Mounting Plates

| For Use With Breaker Frame(s) | Number of Poles | Catalog Number | Standard Package | Wt Lb/ Std Pkg |
|---|---|---|---|---|
| CQD, CQD6 | 1<br>2<br>3 | **CQDFMB1**<br>**CQDFMB2■**<br>**CQDFMB3■** | 1<br>1<br>1 | ¼<br>¼<br>¼ |
| NGG, HGG, LGG | 1<br>2<br>3 | **FMPG1**<br>**FMPG2**<br>**FMPG3** | **1**<br>**1**<br>**1** | ¼<br>¼<br>¼ |

## Back Mounting Plates

| | | | | |
|---|---|---|---|---|
| ED2, ED4, ED6, HED4, HED6 | 1 | **E2BMB** | 1 | ¼ |

## Mounting Screw Kits

| | | | |
|---|---|---|---|
| CQD, CQD6 | **CQDSMK**① | 1 | 1¼ |
| NGG, HGG, LGG | **MSKG4**① | 1 | ¼ |
| All QR | **MSQR3** | 1 | ⅛ |
| All ED (CED6 requires 2 kits) | **MSE6**①<br>**MSE6100**② | 1<br>100⑥ | ¼<br>1 |
| All FD (CFD6 requires 2 kits) | **MSF6**①<br>**MSF650**③ | 1<br>50⑥ | ¼<br>1 |
| All JD, LD | **MSJ6**① | 1 | ¼ |
| All LMD | **MSLMD** | 1 | ¼ |
| All MD, ND, | **MSMN** | 1 | ¼ |
| All PD, RD | **MSPR6** | 1 | 2 |

Mounting Screw Kit
**MSE6**

Mechanical Interlock
**MI5444**

## "MI" Mechanical Interlocks

| For Use With Breaker Type(s) | Panel⑦ Mounted | Plug-in Mounted | Standard Package | Wt Lb Std Pkg |
|---|---|---|---|---|
| All QR (Sliding Bar) | **SBMIQR** | — | 1 | 1½ |
| All FD | **MI5444** | **MI5444** | 1 | — |
| All JD, LD | **MI5413**④ | — | 1 | 1 |
| All LMD | **MI5406**④■ | — | 1 | 1 |
| All MD | **MI5404**⑤■ | — | 1 | 3 |
| All ND | **MI5404**⑤■ | — | 1 | 3 |
| All PD, RD | **MI5405**⑤▲ | — | — | — |

## Service Entrance Barriers

| For Use With Breaker Frames | Description | Catalog Number |
|---|---|---|
| All Enclosed QR Frame Breakers | Service entrance barrier QR 3-Pole only<br>Line or load side | **ECLTB4** |
| All Enclosed ED Frame Breakers | Service Entrance Barrier Kit for 3-pole only<br>15A-100A ED Line side only<br>15-125A CED6 Line or load side | **SEBENED63** |
| All Enclosed FD Frame Breakers | Service Entrance Barrier Kit for 2- or 3-pole<br>Line or Load side | **SEBENFD63** |
| All Enclosed JD & LD Frame Breakers | Service Entrance Barrier Kit for 2- or 3-pole<br>Line or Load side | **SEBENJD63** |
| All Enclosed LMD Frame Breakers | Service Entrance Barrier Kit for 2- or 3-pole<br>Line or Load side | **SEBENLMD63** |
| All Enclosed MD & ND Frame Breakers | Service Entrance Barrier Kit for 2- or 3-pole<br>breakers with oversize lugs and NDTS shield<br>Line or load side | **SEBENMND63EXT** |
| All Enclosed PD & RD Frame Breakers | Service Entrance Barrier Kit for 2- or 3-pole<br>Line or Load side | **SEBENPRD63** |

■ Built to order. Allow 2–3 weeks for delivery.

▲ Built to order. Allow 6–8 weeks for delivery.

①Kit consists of 4 screws and washers.
②Consists of 1 screw and washers (order 100).
③Consists of 1 screw and washers (order 50).

④With mechanical interlock in place, no accessory can be installed into circuit breaker right pole.
⑤Addition of the mechanical interlock will prevent accessory installation in the left pole.
⑥Sold only in standard package quantities. Multiply List Price Each times package quantity for full price.

⑦Mechanical interlock is not designed for use within Siemens panelboards.

## Rotary Door Mounted Operating Handles
**Types 1, 3, 3R , 12, 4 4X**

| For Use With Breaker Frames | Complete Mechanism Catalog Number | | Handle Only | Breaker Operator | Shaft Only | |
|---|---|---|---|---|---|---|
| | Standard Depth | Variable Depth | Catalog Number | Catalog Number | Length (inches) | Catalog Number |
| ED① | CRHOESD | CRHOEVD | CRHOH③ | RHOEBO | 2 | RHOSSD |
| FD | CRHOFSD | CRHOFVD | | RHOFBO | 12 | RHOSVD |
| JD, LD | CRHOJSD | CRHOJVD | | RHOJBO | 16 | RHOSXD |
| LMD | CRHOLMSD | CRHOLMVD | | RHOLMBO | | |
| MD, ND PD, RD | RHONSD | RHONVD | RHOH③ | RHONBO④ | 3<br>12<br>24 | RHONSSD▲<br>RHONSVD<br>RHONSXD |

RHOH

## Rotary Door Mounted Operating Handles
**Types 1 & 12**

| For Use With Breaker Frames | Standard Depth Catalog Number | Variable Depth Catalog Number | Handle and Shaft Catalog Number | Breaker Operator Catalog Number |
|---|---|---|---|---|
| CQD, NGG, HGG, LGG | — | RHOCQVD | RHOH62⑤ | CQDOP |
| ED | D11CEU1 | D11CEU2 | — | — |
| FD | D11CFU1▲ | D11CFU2 | — | — |
| JD, LD | — | D11CJU2 | — | — |

For CQD, NGG, HGG and LGG red emergency handle, order assembly **RHOCQVDE** (includes handle and operator).▲
For CQD, NGG, HGG and LGG in a NEMA 3R enclosure, order **CQDOP34** operator, **RHOH** handle and **RHOSVD** shaft.
For CQD, NGG, HGG and LGG in a NEMA 4 or 4X enclosure, order **CQDOP34** operator, **RHOH4** handle and **RHOSVD** shaft.

CRHOH

## Through Door Mounted Operating Handles②
**Types 1 & 12**

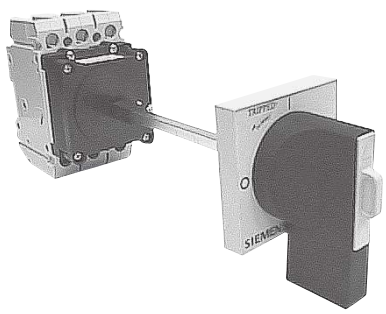
| For Use With Breaker Frames | Standard Depth Catalog Number | Variable Depth Catalog Number |
|---|---|---|
| CQD, NGG, HGG, LGG | FMHOS | — |
| ED | E2RH1 | E2RHV9 |
| FD | F6RH1 | F6RHV9 |

D11CEU2

## Door Latch Kits

| Type | Catalog Number Right Hand | Catalog Number Left Hand |
|---|---|---|
| 2 point latch | DKR2 | DKL2■ |
| 3 point latch | DKR3 | DKL3■ |

Standard Depth F6RH1



Rotary Handle **RHOCQVD**

Variable Depth **F6RHV9**

■ Built to order. Allow 2–3 weeks for delivery.
▲ Built to order. Allow 6–8 weeks for delivery.
① For use on 3-pole ED frame only.
② Meets the requirements of NFPA 79, section 5.3.3.1 for locking external operator disconnecting devices.
③ For 3 or 3R, order shaft and breaker operator as shown, and handle RHOH. For 4 & 4X, order handle **RHOH4**. Consult sales office for additional EG operator shaft lengths.
④ For extended shaft support order catalog number **RHONSB2**.
⑤ Length of shaft is 300mm (11.8 inches).

## Max-Flex™, Flange Mounted Variable Depth Operators③

| Frames | NEMA Type | Complete Kit Catalog Number | Handle Only Catalog Number | Breaker Operator Catalog Number | 36" Cable Catalog Number |
|---|---|---|---|---|---|
| GG | 1, 3 (R), 12 | MFKG3R3 | MFHG3R | MFMG | MFCF036 |
| | 4 (x) | MFKG4X3 | MFHG4X | | |
| ED | 1, 3 (R), 12 | FHOE036① | FHOH | FHOEBO① | FHOEC036 |
| | 4 (x) | — | FHOH4 | | |
| FD | 1, 3 (R), 12 | FHOF036 | FHOH | FHOFBO | FHOFC036 |
| | 4 (x) | — | FHOH4 | | |
| JD, LD, SJD, SLD | 1, 3 (R), 12 | FHOJ036 | FHOH | FHOJBO | FHOJC036 |
| | 4 (x) | — | FHOH4 | | |
| LMD | 1, 3 (R), 12 | FHOLM036 | FHOH | FHOLMBO | FHOJC036 |
| | 4 (x) | — | FHOH4 | | |
| MD, ND, PD, RD, SMD, SND, SPD | 1, 3 (R), 12 | FHON048 | FHOHN | FHONBO | FHONC048② |
| | 4 (x) | — | FHOHN4 | | |

Max-Flex™ handles are available with solid black handles instead of the customary "red for on" flange handle. These are preferred for use in IECmarkets, where red handles have specific meaning. Order components separately, appending the letter "i" to the catalog number (e.g. FHOHI).

## Alternate Length Cable Only

| Inches | ED Catalog Number | FD Catalog Number | JD/LD/LMD Catalog Number | MD/ND/PD/RD Catalog Number |
|---|---|---|---|---|
| 48 | FHOEC048 | FHOFC048 | FHOJC048 | FHONC048 |
| 60 | FHOEC060 | FHOFC060 | FHOJC060 | FHONC060 |
| 72 | FHOEC072 | FHOFC072 | FHOJC072 | FHONC072 |
| 96 | FHOEC096 | FHOFC096 | FHOJC096 | FHONC096 |
| 120 | FHOEC120▲ | FHOFC120 | FHOJC120▲ | FHONC120▲ |
| 144 | FHOEC144▲ | FHOFC144▲ | FHOJC144▲ | FHONC144▲ |

## Handle Auxiliary Switch

For use with Max-Flex and Rotary Door operators (FHOH and RHOH). 1 NO and 1 NC contact (Form C).

| For Use With | Catalog Number |
|---|---|
| ED, FD, JD, LD, LMD, ND, PD, RD, SD, Max Flex | HAS1 |

## Fixed Depth Flange Mounting

| Frames | Minimum Enclosure Depth | NEMA Type | Left Hand Mount Catalog Number | Right Hand Mount Catalog Number |
|---|---|---|---|---|
| ED⑤ | 6.44 | 1, 3R, 12 | FDFBEL▲ | FDFBER▲ |
| | | 4, 4X | FDFBEL4▲ | FDFBER4▲ |
| FD | 6.44 | 1, 3R, 12 | FDFBFL▲ | FDFBFR▲ |
| | | 4, 4X | FDFBFL4▲ | FDFBFR4▲ |

Max-Flex™ handles are available with solid black handles instead of the customary "Red for On" flange handle. These are preferred for use in IECmarkets, where red handles have specific meaning. Order components separately, appending the letter "i" to the catalog number (e.g. FHOHI).

▲ Built to order. Allow 6–8 weeks for delivery.

①For 1- or 2-pole breaker order FHOED036 complete kit or FHOEDBO breaker operator only. Use MFHM3R handle.

②48 inch cable is standard length for M through R frame Max-Flex operators.

③Meets requirements of NFPA 79, section 5.3.3.1 for locking external operator disconnecting devices

④Consult sales office for additional cable lengths for EG Flex Shaft Operators. For 3-Pole only.

⑤3-Pole ED only.

## Telemand® Motor Operator

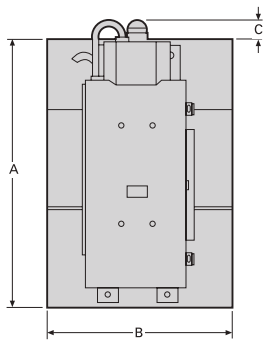
| Breaker Frame | AC Voltage | Hinged to Open Right Catalog Number |
|---|---|---|
| FD | 120 | **MOF6120** |
| | 240 | **MOF6240** |
| JD, LD | 120 | **MOJ6120** |
| | 240 | **MOJ6240** |
| LMD | 120 | **MOLMD6120** |
| | 240 | **MOLMD6240** |
| MD, ND, PD, RD | 120 | **EMOPL120MN** |
| | 240 | **EMOPL240MN** |

Telemand Motor Operator

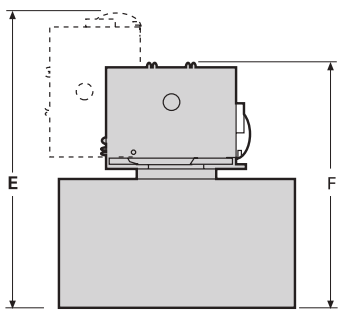
## Dimensions

| Frame | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| ED | 7.04 | 4.31 | — | 4.31 | 13.84 | 8.84 |
| FD | 9.50 | 4.55 | 1.60 | 6.84 | 9.70 | 7.58 |
| JD, LD, LMD | 11.00 | 7.50 | 0.79 | 8.34 | 9.85 | 7.74 |
| MD, ND, PD, RD | 16.00 | 9.00 | — | 9.83 | 13.13 | 10.13 |

**FD, JD, LD, LMD, MD, ND, PD, RD**
Frames




Front View




Bottom View

## Operating Currents

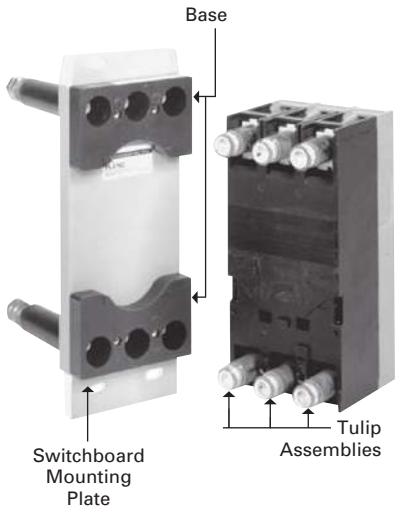
| Catalog Number | On | | | Off | | | Reset (Amps) |
|---|---|---|---|---|---|---|---|
| | In-Rush (Amps) | Running (Amps) | Time (msec) | In-Rush (Amps) | Running (Amps) | Time (msec) | |
| **MOF6120/L** | 13.6 | 5.5 | 200 | 13.6 | 5.5 | 175 | 5.5 |
| **MOF6240/L** | 7.6 | 3.5 | 200 | 7.6 | 3.5 | 185 | 3.5 |
| **MOLMD6120/L** | 13.6 | 6 | 210 | 13.6 | 6 | 185 | 6 |
| **MOJ6120/L** | 13.6 | 6 | 210 | 13.6 | 6 | 185 | 6 |
| **MOJ6240/L** | 7.6 | 3.5 | 217 | 7.6 | 3.5 | 185 | 3.5 |
| **EMOPL120MN** | 15 | 5.5 | 500 | 15 | 5.5 | 500 | 5.5 |
| **EMOPL240MN** | 7.6 | 3.25 | 500 | 7.6 | 3.25 | 500 | 3.25 |

**For inches / millimeters conversion, see Application Data section.**

▲ Built to order. Allow 6–8 weeks for delivery.

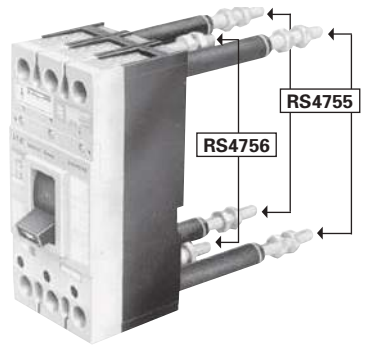
## Plug-In Mounting Assemblies, Including Base and Tulip Assemblies

| For Use With Breaker Frames | Poles | Line Side Catalog Number[2] | Load Side Catalog Number[2] | Steel Switchboard Mounting Plate[1] Catalog Number |
|---|---|---|---|---|
| All ED except CED | 2 | **PC2637▲** | **PC2638▲** | **PL2616** |
| | 3 | **PC2657** | **PC2658** | |
| CED | 2 | **PC2637▲** | **PC2638▲** | **PL2617** |
| | 3 | **PC2657** | **PC2658** | |
| All FD except CFD | 2 | **PC4753▲** | **PC4753▲** | **PL4762** |
| | 3 | **PC4754** | **PC4754** | |
| CFD | 2 | **PC4753▲** | **PC4753▲** | **PL4763** |
| | 3 | **PC4754** | **PC4754** | |
| All JD except CJD | 2 | **PC5777▲** | **PC5777▲** | **PL5796** |
| | 3 | **PC5778** | **PC5778** | |
| All LD except CLD | 2 | **PC5660▲** | **PC5660▲** | **PL5680** |
| | 3 | **PC5661** | **PC5661** | |
| All MD | 2 | **PC5662▲** | **PC5662▲** | **PL9698** |
| | 3 | **PC5663** | **PC5663** | |
| All ND | 2 | **PC5664[3]▲** | **PC5664[3]▲** | **PL9699** |
| | 3 | **PC5666[3]** | **PC5666[3]** | |




## Tulip Assemblies Separately

| For Frame | 3-Pole Catalog Number |
|---|---|
| ED | **TCE3▲** |
| FD | **TCF3▲** |
| JD | **TCJ3▲** |
| LD | **TCL3▲** |
| MD | **TCM3▲** |
| ND | **TCN3▲** |




Circuit Breaker With Rear-Connecting Studs

## Rear-Connecting Studs

| For Use With Breaker Frames | Ampere Rating | Description | Extension Behind Breaker (inches) | Line Side Catalog Number[4] | Load Side Catalog Number[4] |
|---|---|---|---|---|---|
| All ED | 100 | Line Side (Short) | 2.38 | **RS2643[5]▲** | — |
| | 100 | Load Side (Short) | 2.38 | — | **RS2644[5]▲** |
| | 100 | Line Side (Long) | 4.88 | **RS2641[5]▲** | — |
| | 100 | Load Side (Long) | 4.88 | — | **RS2642[5]▲** |
| All FD | 250 | Short | 3.12 | **RS4756[5]▲** | **RS4756[5]▲** |
| | 250 | Long | 7.06 | **RS4755[5]▲** | **RS4755[5]▲** |
| All JD | 400 | Short | 5.85 | **RS5774▲** | **RS5774▲** |
| | 400 | Long | 11.20 | **RS5773▲** | **RS5773▲** |
| All LD | 600 | Short | 5.85 | **RS5784▲** | **RS5784▲** |
| | 600 | Long | 11.20 | **RS5783▲** | **RS5783▲** |
| CJD, SCJD CLD, SCLD | Add required shield kit. | | | | **CLRSJL3** |
| LM(X)D6, HLM(X)D6 | 800 | Short | 5.85 | **RS5788▲** | **RS5788▲** |
| | | Long | 11.20 | **RS5787▲** | **RS5787▲** |
| All MD, ND | 1200 | Short | 5.50 | **RS5786▲** | **RS5786▲** |
| | 1200 | Long | 8.00 | **RS5785▲** | **RS5785▲** |

▲ Built to order. Allow 6–8 weeks for delivery.

[1] Must be ordered separately with other plug-in assemblies.

[2] Each piece catalog number consists of (1) mounting block assembly and required tulip assemblies (2) for 2-pole, (3) for 3-pole

[3] For vertical bus mounting — for horizontal, substitute PC5665 for PC5664 and PC5667 for PC5666.

[4] Price includes one current stud, insulating tube, stud nuts and terminal shields, when required.

[5] For proper electrical clearance, studs must alternate between short and long stud lengths on circuit breaker poles (e.g. SLSLSL or LSLSLS).

[6] Plug-in assembly for EG breakers include line and load side in one assembly.

# Unusual Operating Conditions



**Note:** The information provided on this and the next page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data below is based less on controlled testing, than on experience and engineering judgment. Contact Siemens for further information on special conditions and treatment.

## High Ambient Temperatures

Because thermal-magnetic trip breakers are temperature sensitive and calibrated for a specific ambient of 40° C (104° F) (average enclosure temperature), a higher ambient will cause the breaker to trip at lower current than its nameplate rating, in other words, causing the breaker to "derate" (see Table 1). Similarly, the current carrying capacity of a circuit conductor is based upon a certain ambient temperature, a higher ambient will reduce its current carrying capacity, causing it to "derate." Thus, with a fluctuating temperature, a thermal-magnetic breaker will derate nearly parallel with its connected circuit conductors and maintain close circuit protection. If the application temperature exceeds 40° C (104° F) and is known, either a breaker specially calibrated for the higher ambient or one oversized according to Table 1 may be selected. In a case such as this, the circuit conductors should be oversized as well.

Siemens Sensitrip® IV and Type SB Encased Systems Breakers are insensitive to temperature changes. However, they do include circuitry to protect the components from abnormally high temperatures.

## Moisture — Corrosion

For atmospheres having high moisture content and / or where fungus growth is prevalent, a special preventive treatment may be required.

Where the air is heavily laden with corrosive elements, breakers made with special corrosion-resistant finishes may be required.

## Altitude

Reduced air density at altitudes greater than 6600 ft. (2000 meters) affects the ability of a molded case circuit breaker to transfer heat and interrupt faults. Therefore, circuit breakers applied at these altitudes should have interrupting, insulation and continuous currents derated as indicated in Figure 1.

**Table 1 — Temperature Derating Data for Thermal-Magnetic Breakers**

| Reference Ampere Rating at 40°C (104°F) | Ampere Rating at: 50°C (122°F) | 60°C (140°F) | Siemens Breaker Frames |
|---|---|---|---|
| 15 | 13 | 11 | BQ, BL, BQD, CQD, GG, GB, ED |
| 20 | 18 | 16 | |
| 25 | 23 | 21 | |
| 30 | 28 | 26 | |
| 35 | 30 | 28 | |
| 40 | 37 | 34 | |
| 50 | 46 | 42 | |
| 60 | 56 | 52 | |
| 70 | 65 | 60 | |
| 90 | 84 | 78 | |
| 100 | 94 | 87 | |
| 125 | 114 | 100 | |
| 150 | 136 | 120 | QR |
| 175 | 159 | 140 | |
| 200 | 182 | 160 | FD |
| 225 | 205 | 180 | |
| 250 | 235 | 220 | |
| 300 | 276 | 252 | JD |
| 350 | 325 | 301 | |
| 400 | 372 | 340 | LD |
| 500 | 468 | 435 | |
| 600 | 564 | 525 | MD |
| 700 | 658 | 613 | |
| 800 | 754 | 704 | ND |
| 900 | 828 | 749 | |
| 1000 | 900 | 825 | PD |
| 1200 | 1090 | 1000 | |
| 1400 | 1304 | 1148 | RD |
| 1600 | 1500 | 1320 | |
| 1800 | 1690 | 1485 | |
| 2000 | 1880 | 1650 | |

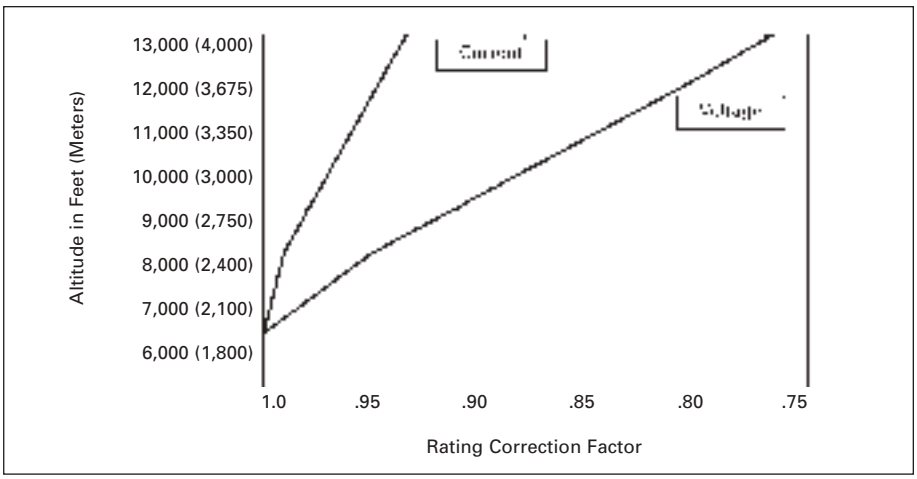



Figure 1 — Altitude Adjustment

## 400 Hz Systems①

Siemens molded case circuit breakers can be applied for overcurrent protection on 400Hz systems, commonly used to power computer installations, aircraft, military and other specialty equipment. Below are basic guidelines.

### Circuit Breaker Derating Required

This table lists the maximum continuous current carrying capacity for Siemens breakers at 400Hz. Due to the increased resistance of the copper sections resulting from the skin effect produced by eddy currents at these frequencies, circuit breakers in many cases require derating. The thermal derating on these devices is based upon 100%, three phase application in open air in a maximum of 40° C (104° F) with 48 in. (1219 mm) of the specified cable or bus at the line and load side. Additional derating of not less than 20% will be required if the circuit breaker is to be utilized in an enclosure. Further derating may be required if the enclosure ambient temperature exceeds 40° C (104° F).

### Cable and Bus Sizing

The cable and bus sizes to be utilized at 400Hz are not based on standard National Electric Codes tables for 60Hz application. Larger cross sections are necessary at 400Hz. All bus bars specified are based upon mounting the bars in the vertical plane to allow maximum air flow. All bus bars are spaced at a minimum of 0.25 in. (6 mm) apart. Mounting of bus bars in the horizontal plane will necessitate additional drafting. Edgewise orientation of the bus may change the maximum ratings indicated. If additional information is required for other connections of cable or bus, contact Siemens for information.

### Application Recommendations

It is recommended that temperatures be measured on the line and load terminals or T-connectors of the center pole. These are usually the hottest terminals with a balanced load. A maximum temperature of 75° C (35° C over a maximum ambient of 40° C) would verify the particular application. Temperature profiles taken on these breakers can be correlated to ensure that the hottest points within the breaker are within the required temperature limits.

### Factory Configuration

When required, molded case circuit breakers may be factory calibrated for 400Hz application. These breakers are specially labeled for 400Hz usage and their nameplate current rating will include the necessary derating factory. The highest "Maximum Continuous Amperes" rating at 400Hz, found in the table below approximates the highest specially calibrated 400Hz nameplate ampere rating available for a given frame size. Contact Siemens for ordering information on other breakers applied in 400Hz systems.

### 400Hz Breakers

| Siemens Breaker Type | Maximum Continuous Ampere Rating At 40°C (104°F)② | | | 75°C (167°F) Copper Cable per Pole | |
|---|---|---|---|---|---|
| | 60HZ | 400HZ | | | |
| | Open Air | Open Air③ | Enclosed After Derating | No of Pieces | Wire Size |
| ED2, ED4, ED6, BQD, HED4, HED6, CED6, GG, GB | 15 | 15 | 12 | 1 | #14 |
| | 20 | 20 | 16 | 1 | #12 |
| | 25 | 25 | 20 | 1 | #10 |
| | 30 | 30 | 24 | 1 | #10 |
| | 35 | 35 | 28 | 1 | #10 |
| | 40 | 40 | 32 | 1 | #8 |
| | 45 | 43 | 34 | 1 | #8 |
| | 50 | 48 | 38 | 1 | #8 |
| | 60 | 57 | 46 | 1 | #6 |
| | 70 | 67 | 54 | 1 | #4 |
| | 80 | 76 | 61 | 1 | #4 |
| | 90 | 86 | 69 | 1 | #3 |
| | 100 | 95 | 76 | 1 | #3 |
| | 110 | 105 | 84 | 1 | #2 |
| | 125 | 119 | 95 | 1 | #1 |
| QR2, QR2H, HQR2, HQR2H, FD6, FXF6, HFD6, HFXD6, CFD6 | 70 | 63 | 50 | 1 | #4 |
| | 80 | 72 | 58 | 1 | #4 |
| | 90 | 80 | 64 | 1 | #3 |
| | 100 | 90 | 72 | 1 | #3 |
| | 110 | 95 | 75 | 1 | #2 |
| | 125 | 105 | 84 | 1 | #1 |
| | 150 | 125 | 100 | 1 | #1/0 |
| | 175 | 140 | 112 | 1 | #2/0 |
| | 200 | 160 | 128 | 1 | #3/0 |
| | 225 | 180 | 144 | 1 | #4/0 |
| | 250 | 200 | 160 | 1 | 250 kcmil |
| JXD2, JD6, JXD6, HJD6, HJXD6, HHJD6, HHJXD6, CJD6 | 200 | 170 | 136 | 1 | #3/0 |
| | 225 | 190 | 152 | 1 | #4/0 |
| | 250 | 210 | 168 | 1 | 250 kcmil |
| | 300 | 240 | 192 | 1 | 350 kcmil |
| | 350 | 260 | 208 | 1 | 500 kcmil |
| | 400 | 300 | 240 | 2 | #3/0 |
| JD6, JXD6, HJD6, HJXD6 100% Rated | 200 | 170 | 170 | 2 | #3/0 |
| | 225 | 190 | 190 | 2 | #4/0 |
| | 250 | 210 | 210 | 1 | 250 kcmil |
| | 300 | 240 | 240 | 1 | 350 kcmil |
| | 350 | 260 | 260 | 1 | 500 kcmil |
| | 400 | 300 | 300 | 2 | #3/0 |

| Siemens Breaker Type | Maximum Continuous Ampere Rating At 40°C (104°F)② | | | 75°C (167°F) Copper Cable per Pole | |
|---|---|---|---|---|---|
| | 60HZ | 400/415HZ | | | |
| | Open Air | Open Air③ | Enclosed After Derating | No of Pieces | Wire Size |
| LD6, LXD6, HLD6, HLXD6, HHLD6, HHLXD6, CLD6 | 250 | 210 | 168 | 1 | 250 kcmil |
| | 300 | 240 | 192 | 1 | 350 kcmil |
| | 350 | 260 | 208 | 1 | 500 kcmil |
| | 400 | 300 | 240 | 2 | #3/0 |
| | 450 | 340 | 272 | 2 | #4/0 |
| | 500 | 375 | 300 | 2 | 250 kcmil |
| | 600 | 420 | 336 | 2 | 350 kcmil |
| LD6, LXD6, HLD6, HLXD6, 100% Rated | 250 | 210 | 210 | 1 | 250 kcmil |
| | 300 | 240 | 240 | 1 | 350 kcmil |
| | 350 | 260 | 260 | 1 | 500 kcmil |
| | 400 | 300 | 300 | 2 | #3/0 |
| | 450 | 340 | 340 | 2 | #4/0 |
| | 500 | 375 | 375 | 2 | 250 kcmil |
| | 600 | 420 | 420 | 2 | 350 kcmil |
| MD6, MXD6, HMD6, HMXD6, CMD6 | 500 | 400 | 320 | 2 | 250 kcmil |
| | 600 | 430 | 360 | 2 | 350 kcmil |
| | 700 | 500 | 400 | 3 | 250 kcmil |
| | 800 | 560 | 448 | 3 | 300 kcmil |
| MD6, MXD6, HMD6, HMXD6, CMD6 100% Rated | 500 | 400 | 400 | 2 | 250 kcmil |
| | 600 | 430 | 430 | 2 | 350 kcmil |
| | 700 | 500 | 500 | 3 | 250 kcmil |
| | 800 | 560 | 560 | 3 | 300 kcmil |
| ND6, NXD6 HND6, HNXD6, CND6 | 800 | 560 | 448 | 3 | 300 kcmil |
| | 900 | 600 | 480 | 3 | 350 kcmil |
| | 1000 | 650 | 520 | 3 | 400 kcmil |
| | 1200 | 780 | 624 | 4 | 350 kcmil |
| ND6, NXD6 HND6, HNXD6, CND6 100% Rated | 900 | 600 | 600 | 3 | 350 kcmil |
| | 1000 | 650 | 650 | 3 | 400 kcmil |
| | 1200 | 780 | 780 | 4 | 350 kcmil |
| PD6, PXD6, HPD6, HPXD6, CPD6, | 1200 | 780 | 624 | 4 | 400 kcmil |
| | 1400 | 850 | 680 | 4 | 500 kcmil |
| | 1600 | 960 | 768 | 5 | 500 kcmil |
| PD6, PXD6, HPD6, HPXD6, CPD6 100% Rated | 1200 | 780 | 780 | 4 | 400 kcmil |
| | 1400 | 850 | 850 | 4 | 500 kcmil |
| | 1600 | 960 | 960 | 5 | 500 kcmil |
| RD6, RXD6, HRD6, HRXD6 80% Rated | 1600 | 960 | 768 | 5 | 500 kcmil |
| | 1800 | 1080 | 864 | 5 | 500 kcmil |
| | 2000 | 1200 | 960 | 6 | 500 kcmil |

①The information provided on this page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data above is based less on controlled testing, than on experience and engineering judgment. Contact Siemens for further information on special conditions and treatment.

②Additional derating may be required if the ambient temperature is greater than 40°C (104°F).

③Calculated after derating to compensate for the heating of the copper conductor, caused by the skin effect generated by eddy currents produced at 400/415HZ.

# Typical Specifications



## General Specifications

Molded case circuit breakers shall provide circuit overcurrent protection with inverse time and instantaneous tripping characteristics and shall be Siemens Sentron, Sensitrip or approved equal.

All circuit breakers shall be listed by Underwriters' Laboratories, Inc., conform to applicable requirements of NEMA Standard Publication No. AB1 and meet appropriate classifications of Federal Specifications W C 375B/Gen.

All circuit breakers shall have a quick-make, quick-break over center toggle type mechanism and the handle mechanism shall be trip free to prevent holding contacts closed against a short circuit or sustained overload. All circuit breaker handles shall assume a position between "ON" and "OFF when tripped automatically. Multi-pole circuit breakers shall be common-trip such that an overload or short circuit on any one pole will result in all poles opening simultaneously. Arc extinction is to be accomplished by magnetic arc chutes. All ratings are to be clearly visible. When reverse feed is indicated on the drawings, in accordance with UL, circuit breakers with sealed trip units shall be supplied.

## Thermal Magnetic Specifications

Unless otherwise noted on the drawings, all Circuit breakers 2000 Ampere and below shall have thermal-magnetic trip units, with inverse time-current characteristics. Automatic operation of these circuit breakers shall be obtained by means of thermal-magnetic tripping devices located in each pole providing inverse time delay and instantaneous circuit protection. Circuit breakers shall be ambient compensating in that, as the ambient temperature increases over 40°C, the circuit breaker automatically derates itself so as to better protect its associated conductor. Thermal magnetic breakers from 250 to 2000A frames shall have thermal interchangeable trip units, with instantaneous magnetic trip settings that are adjustable and accessible from the front of all circuit breakers on frame sizes 250 Amperes and above. Where indicated, provide circuit breakers UL listed for application at 100% of their continuous ampere rating in their intended enclosure.

## Motor Circuit Protectors

Where indicated on the drawings and in the combination motor starter/motor control center schedule, furnish instantaneous magnetic trip only circuit breakers for motor short circuit protection. The magnetic trips shall be adjustable and accessible from the front of all circuit breakers frames. The continuous current rating shall be between 1 and 800 Amperes as indicated on the drawing.

The interrupting rating of the circuit breakers shall be as indicated in the specifications, and shown on the drawing or single line diagram. The interrupting rating of the circuit breakers shall be at least equal to the available short circuit current at the line terminals of the circuit breaker and correspond to the UL listed integrated short circuit current rating specified.

## Internal Accessories

Provide shunt trips, bell alarms, and auxiliary switches as shown on the contract drawings. Gold plated auxiliary switches shall be supplied for PLC connection. Internal accessories for all breakers shall be UL listed for field installation and modification.

## Connection Accessories

Unless otherwise noted, Mechanical lugs shall be provided with all Molded Case Breakers. Where indicated on the drawings, compression lugs shall be provided on 1200 Ampere frame and below circuit breakers. All compression lugs shall be supplied by the Circuit Breaker Manufacturer. Where indicated on the drawings, UL listed plug-in or rear connectors shall be supplied.

## Solid State Sensing Specifications

As indicated on the drawings, circuit breaker frames 400 Ampere through 3200-Ampere shall have microprocessor-based RMS sensing trip units, with the capability to measure through to the 21st harmonic. Automatic operation of all circuit breaker frames 400A and larger shall be obtained by means of solid state tripping elements providing inverse time delay and (instantaneous) and/or (short-time delay) circuit protection. Continuous current ratings shall be adjustable from 20% to 100% of the trip unit rating, without the need for a rating plug. Long-time delay and instantaneous trip shall be adjustable. The optional short-time trip function shall have adjustable pick-up settings, three fixed times, and $I^2t$ ramp. Circuit breaker frames 400A and larger, and where indicated on the drawings, shall be 100% equipment rated.

## Integral Ground Fault Option

Main and feeder circuit breakers, as indicated on the drawings, shall be provided with integral ground fault protection. Ground fault pick-up shall be adjustable from 20% to 70% of the circuit breakers maximum continuous current rating. Ground fault time delay shall be adjustable with three $1^2t$ ramps.

## Metering Option

When indicated on the drawings, solid state trip breakers shall be furnished with a plug-in or panel mounted metering device. This device shall simultaneously display all three phase currents, as well as average current, ground current, and phase unbalance. In addition it shall display breaker status, a max log, and a trip log. The trip log will retain and display date, time and type of trip (overload, short circuit or ground fault) for the most recent 5 trip events.

## Current Limiting Specifications

Where indicated on the drawings, Siemens current limiting circuit breakers are to be furnished. Current limiting circuit breakers shall limit the let-through $I^2t$ to a value less than the $I^2t$ of one-half cycle wave of the symmetrical prospective current without any fusible elements when operating within its current range.

## Series Connected Combination Specifications

Where protective devices are applied in series combination, such that the prospective available fault current exceeds the interrupting rating (AIR) of the downstream protective devices, such combinations shall be UL recognized combinations. All electrical equipment using these UL recognized circuit breaker combinations shall be clearly marked in accordance with NEC Section 240-83(c).

# Safety and Disconnect Switches

General Duty Switch

Heavy Duty Switch

## contents


| | |
|---|---|
| Safety Switch Guide Form Specifications | 18/3 |
| Feature Comparison | 18/4 |
| Enclosure Types | 18/5 |
| Catalog Numbering System | 18/6 |
| Non-Fusible Safety Switch AIC Ratings When Protected by a 3VA Circuit Breaker | 18/8 |
| **General Duty Safety Switches** | |
| General Duty Switches—Features | 18/9 |
| 240V Fusible—Selection | 18/10 |
| 240V Non-Fusible—Selection | 18/11 |
| **Heavy Duty Safety Switches** | |
| Heavy Duty Switches—Features | 18/12 |
| 240V Fusible—Selection | 18/13 |
| 600V Fusible—Selection | 18/14 |
| 600V Non-Fusible—Selection | 18/15 |
| Type 4/4X and 12 with Viewing Window—Selection | 18/16 |
| **Special Applications Safety Switches** | |
| Type ECS Elevator Control Switches | 18/17 – 18/18 |
| 4-Pole and 6-Pole—Selection | 18/19 |
| Interlocked Receptacle—Selection | 18/20 |
| Non-Metallic—Selection | 18/21 |
| Enclosed Solar PV Disconnects | 18/22 |
| Double-Throw Switches—Selection | 18/23 – 18/24 |
| **Accessories—General and Heavy Duty Switches** | |
| Class R Fuse Clips, Class J Fusing, Class T Fuse Adapter Kits | 18/25 |
| Neutral Kits, 200% Neutral Kits, Fuse Puller Kits | 18/25 |
| Auxiliary Contacts, Copper Lug Kits | 18/27 |
| Equipment Ground Kits, Isolated Ground Kits | 18/27 |
| Interchangeable Hubs | 18/28 |
| Compression Lug, Neutral Barrier Kits, Lugs and Wire Ranges | 18/28 |
| Multiple Padlocks, Kirk-Key Interlocks | 18/28 |
| **Dimensions and Weights** | |
| General and Heavy Duty Switches | 18/29 – 18/32 |
| Type 1 and 3R Knockout Diagrams | 18/33 – 18/34 |
| Non-Metallic and Receptacle Switch Dimensions | 18/35 |
| 4-Pole and 6-Pole Switch Dimensions | 18/36 |
| Double-Throw Switches Dimensions | 18/37 |
| VBII Safety Switch Replacement Parts | 18/38 |

# Safety and Disconnect Switches

**CFS Compact Fusible Switch**

**VBFS361**

## contents


**3LD Switch Disconnectors**

| | |
|---|---|
| Quick selection guides | 18/40 – 18/41 |
| 3LD3 main control and EMERGENCY_STOP switches UL508 | 18/42 – 18/51 |
| 3LD2 main control and EMERGENCY_STOP switches UL508 | 18/52 – 18/71 |
| 3LD5 main control and EMERGENCY_STOP switches UL489 | 18/72 – 18/81 |
| Enclosed Rotary Disconnects | 18/82 – 18/83 |

**Type VBII (30-600A)**

| | |
|---|---|
| Features and Ordering Information | 18/84 |
| Switch and Handle Selection | 18/85 |
| Accessories | 18/86 – 18/87 |
| Dimensions and Lug Wire Ranges | 18/88 |

**Type MCS (30-200A)**

| | |
|---|---|
| Switches, Fuse, and No Fuse Kit—Selection | 18/89 |
| Handle Operators and Accessories | 18/90 |

**Type CFS Compact Fusible Switches**

| | |
|---|---|
| General information and catalog numbering system | 18/91 |
| Features and ordering information | 18/92 |
| Switch, shaft and handle selection | 18/93 |
| Selection and accessories | 18/94 |
| Technical Characteristics | 18/95 |

**Type CNFS Compact Non-Fusible Switches**

| | |
|---|---|
| General information and catalog numbering system | 18/96 |
| Features and ordering information | 18/97 |
| Switch, shaft and handle selection | 18/98 |
| Additional accessories | 18/99 |

| | General Duty | Heavy Duty | Double Throw |
|---|---|---|---|
| **Application** | General Duty Switches are intended for applications where reliable performance and continuity of service are needed, but where duty requirements are not severe and usual service conditions prevail. (These switches are intended for use primarily with supply circuits rated 240V AC or less where the available fault current is less than 100,000A when used with Class R or T fuses or 10,000A max. when used with Class H fuses.) | Heavy Duty Switches are intended for use in applications where:<br>1. Rugged construction, reliable performance, continuity of service and ease of maintenance are emphasized, or<br>2. Available fault currents higher than 10,000A are likely to be encountered, such as in manufacturing plants, mass production industries, and commercial, institution-al and other large buildings served by network systems or transformers of higher capacities.<br>3. System voltage is 600V AC or DC Max.<br>4. A Type 12 or 4 / 4X enclosure is required. | Double throw switches are intended to transfer loads from one power source to another. All 2 & 3 pole double throw switches are suitable for use as service equipment. All are UL Listed. Switches are rated for use on systems with an available fault current of up to 10,000 AIC when protected with Class H fuses or either 100,000 or 200,000 AIC when protected with Class R, J or Class T fuses. They can also be used to connect a single source of power to either of two loads, In this application it is necessary to field modify fusible switches so that the fuses are on the load side of the switching mechanism. |
| **Short Circuit Withstand Ratings** | Suitable for use on systems capable of delivering not more than 100,000 RMS symmetrical amperes of fault current as follows:<br>Sw. Rating / AIC Rating / Protective Device①<br>30-600A / 10,000 / Circuit Breaker<br>30-600A / 10,000 / Class H Fuse<br>30-600A / 100,000 / Class R Fuse<br>100-600A / 100,000 / Class J or T Fuse | Suitable for use on systems capable of delivering not more than 200,000 RMS symmetrical amperes of fault current as follows:<br>Sw. Rating & Tpye / AIC Rating / Protective Device①<br>All Heavy Duty & DT / 10,000 / Circuit Breaker<br>30-600A HD & DT / 10,000 / Class H Fuse<br>60A Compact HD / 100,000 / Class R, J or T Fuse<br>GD & 4P DT / 100,000 / Class R, J or T Fuse<br>30-600A HD / 200,000 / Class R, J or T Fuse<br>30-600A DTF & DTNF DT② / 200,000 / Class R, J or T Fuse<br>800 & 1200A HD & DT② / 200,000 / Class L or T Fuse | |
| **Fuses** | Fusible switches will accept the following UL class fuses:<br>30-600A "GF" Class H & K, Class R with kit<br>100-600A "GF" Class J-move base<br>100-200 "GF" Class T with kit<br>400-600A "GF" Class T with kit | Fusible switches will accept the following UL class fuses:<br>30-600A "HF" Class H & K, Class R with kit<br>30-400A, 600V "HF" Class J-move base<br>100-600A, 240V "HF" Class J-move base<br>100-200A "HF" Class T with kit<br>400-600A "HF" Class T with kit<br>800-1200A "HF" Class L, Class T③ | Fusible switches will accept the following UL class fuses:<br>30-200A "DT" & "F" Class H & K, Class R with kit<br>30 & 60A 600V "DT" Class J-move base<br>100-200A "DT" Class J-move base, Class T with kit<br>400-600A "DT" Class J-standard, Class T-move bases<br>400A 240v "F" Class H-standard<br>400A, 600V & 600A "F" Class T-Standard |
| **Cover Interlocks** | Voidable – cover interlocks on switches prevent the switch door from being opened when in the "ON" position. No cover interlock on 30-60A GD. | Voidable dual cover interlocks standard on all heavy duty switches. Prevents cover from being opened when switch is in the "ON" position and prevents switch from being turned "ON" when door is opened. | Dual cover interlocks standard on all double throw switches. Prevents cover from being opened when switch is in the "ON" position and prevents switch from being turned "ON" when door is opened. |
| **Underwriters' Laboratories, Inc.** | Listed by UL under file #E4776 as enclosed switches and also suitable for use as service equipment (where applicable).<br>UL98 Enclosed and Deadfront Switches. | | |
| **NEMA Specifications** | Meet NEMA standard KS-1-2001 for type GD switches. | Meet NEMA standard KS-1-2001 for type HD switches. | Meet NEMA standard KS-1-2001 type GD for "DTG" & type HD for "DT", "F" & "NF" switches. |
| **Seismic Qualifications** | 30-1200A GD & all HD switches and "DT" type double throw switches have been tested and designed in accordance with the American Society of Civil Engineers (ASCE) 7-17 chapter 13 - Compliance Level SDS = 2.00 g (z/h = 1); 2.50 g (z/h=0) | | |
| **Groundable Neutral** (All neutrals are bondable for service entrance use.) | Fusible switches have groundable neutral blocks factory installed. Non-fusible switches accept field addable neutrals. | All switches (both Fusible and Non-Fusible) are either supplied with factory installed neutrals or accept field addable neutrals. | All except 4 pole switches will accept field addable neutrals except that "DTG" 100 & 200A switches are also available with factory installed neutrals. |
| **Padlocks** | Padlockable cover latch. OFF padlock provisions on handle. | Padlockable cover latch and multiple OFF padlock provisions on handle. | Padlockable cover latch and multiple OFF padlock provisions on handle. |
| **HP & Load Break Ratings** | All General Duty, Heavy Duty and Double Throw Switches are both load break and horsepower rated. | | |

① The protective device can either be a fuse or circuit breaker protecting a non-fusible switch. The ampere rating of the protective device must not exceed the switch ampere rating.

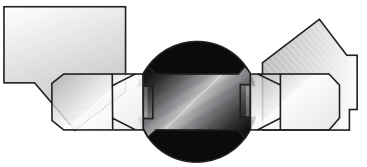
② All 4 pole and fusible double switches with catalog numbers starting with "F" are rated 100,000 AIC max.

③ 800A switches do not require an adapter kit, bases can be relocated to accommodate class-T fuses. A class-T adapter kit is required available for 240V applications on 1200A switches.

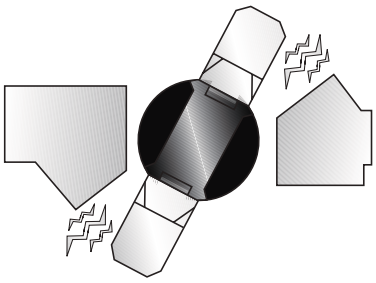
# Feature Comparison



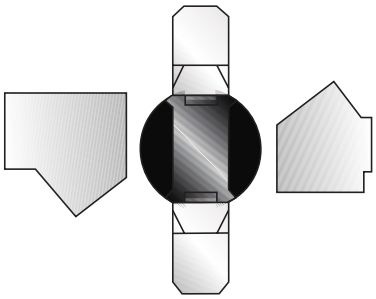
| General Duty | Heavy Duty | Double Throw | Features / Ratings |
|---|---|---|---|
| ▪ | ▪ | ▪ | 30 thru 600 Amps |
| | ▪ | ▪ | 800 and 1200 Amps |
| ▪ | ▪ | ▪ | 240 Volt AC |
| | ▪ | ▪ | 600 Volt AC |
| ▪ | ▪ | ▪ | 250 Volt DC |
| | ▪ | | 600 Volt DC |
| ▪ | ▪ | ▪ | Double-break visible blade design (30-200A) |
| ▪ | ▪ | ▪ | Quick-make, quick-break switching action (excludes 30A GD) |
| | ▪ | | Handle design for hook stick operation |
| ▪ | ▪ | ▪ | Padlockable cover latch |
| ▪ | ▪ | ▪ | Padlockable handle |
| ▪ | | ▪ | Single voidable cover interlock (excludes 30-60A GD) |
| | ▪ | ▪ | Dual voidable cover interlock |
| ▪ | ▪ | ▪ | Type 1 enclosure |
| ▪ | ▪ | ▪ | Type 3R enclosure |
| | ▪ | ▪ | Type 12 enclosure |
| | ▪ | ▪ | Type 4 / 4X enclosures |
| ▪ | ▪ | ▪ | Generous wiring gutters that meet UL and NEC wire-bending space requirements |
| ▪⑤ | ▪ | ▪ | Lugs suitable for copper or aluminum at 60˚ or 75˚C |
| ▪ | ▪ | ▪ | CU/AL wire lugs that meet UL 486B requirements |
| | ▪ | ▪ | Suitable for field-convertible compression connectors |
| ▪⑥ | ▪ | ▪ | All plated copper current carrying parts (except lugs) |
| ▪ | ▪ | ▪ | Spring reinforced Fuse Clips (except 30-60A GD)② |
| | ▪ | ▪ | Clear pivoting line terminal shield |
| ▪ | ▪ | ▪ | Replacement parts (except 30-60A GD) |
| | ▪ | | 200% neutral available for purchase separately |
| ▪⑦ | ▪①⑦ | ▪①⑦ | Provisions for UL Class T, R and H Fuses |
| | ▪ | ▪① | Provisions for UL Class J and L Fuses |
| | ▪ | ▪ | Metal nameplate |
| ▪ | ▪ | ▪ | Aux. switch kits (excludes 30-60A GD) |
| | ▪③ | | Type 4X with stainless steel interior parts |
| ▪④ | ▪ | | Rolled flange enclosure design (30-200A) |
| | ▪ | ▪ | Isolated ground kits |



on



in operation



off

## Double Break Switching Action

Like the time-proven Vacu-Break Design, the Siemens VBII double break switching action breaks the arc in two places in 30-600A ratings. This reduces heat generation and increases switching speed by doubling the breaking distance. The result is enhanced performance and increased longevity. We also provide the most visible blade design available today. Unlike conventional knife blade switches, the blades are self-aligning to ensure positive contact. In addition, they have no wear and friction point since the "electrical hinge" has been eliminated. The result is a very fast, positive and reliable switching action for even the most severe applications.

① 400, 600V & 600A fusible, double-throw switches accept only Class J or T fuses. Only 800 & 1200A HD switches will accept Class L fuses.
② 30-60A general duty switches have fuse clips constructed of spring type copper.
③ 30-200A Type VBII in stainless steel enclosures.
④ 100-200A.
⑤ 60A only suitable for Cu at 75°.
⑥ 200A general duty switches have aluminum neutral assemblies.
⑦ 100-600A GD & DT and 100-1200A HD switches will accept Class T fuses.

## Enclosure Types

A **Type 1** enclosures are intended for indoor use primarily to provide protection against contact with the enclosed equipment in locations where unusual service conditions do not exist.

B **Type 3R** enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain and sleet and must remain undamaged by the formation of ice on the enclosure. They are not intended to provide protection against conditions such as dust, internal condensation, or internal icing.

C **Type 4, 4X** enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust, rain, splashing water and hose-directed water. They are not intended to provide protection against conditions such as internal condensation or internal icing. Also meets 4X definition by providing a high degree of protection against corrosion. Siemens 30-200A stainless steel 4X switches are supplied stainless interior parts and hardware as standard.

D **Type 4** enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust, rain, splashing water and hose-directed water. They are not intended to provide protection against conditions such as internal condensation or internal icing.

E **Type 12**① enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt and dripping water. They are not intended to provide protection against conditions such as internal condensation.

**Type 7/9** enclosures for use in hazardous locations. Use with molded case switches listed in Section 7.

A

B

C D

E

## Load Break Ratings

All Siemens safety switches are load break rated. The load break rating is assigned by UL after the switching unit has successfully performed the following tests:

| Switch Ampere Rating | Number of ON/OFF Operations per Minute | Number of Operations | | |
|---|---|---|---|---|
| | | With Current | Without Current | Total |
| 30–100 | 6 | 6000 | 4000 | 10000 |
| 200 | 5 | 6000 | 2000 | 8000 |
| 400 | 4 | 1000 | 5000 | 6000 |
| 600 | 3 | 1000 | 4000 | 5000 |
| 800 | 2 | 500 | 3000 | 3500 |
| 1200 | 1 | 500 | 2000 | 2500 |

## Maintenance

Refer to the latest edition of the following standards for switch maintenance.

- NEMA KS-3: Guidelines for Inspection and Preventive Maintenance of Switches Used in Commercial and Industrial Applications (available online at www.nema.org)
- NFPA 70B: Recommended Practice for Electrical Equipment Maintenance (available online at www.nfpa.org)

## Horsepower Ratings

All Siemens safety switches, where appropriate, are horsepower rated. Ratings are approved by UL only after the switching unit has undergone testing to determine its acceptability which includes repeated interruption of the locked rotor current of the motor for which it is to be rated as follows:

| Max HP Rating | Number of ON/OFF Operations per minute | Number of Cycles of Operation |
|---|---|---|
| 100 | 6 | 50 |
| 500 | 1 | 10 |

① VBII Type 12 switches are also rated 3R & 3S for outdoor use. Type 3R is defined in B above. 3S rated enclosures provide a degree of protection against windblown dust and allow operation when the enclosure is ice laden.

# Type VBII Safety Switch Catalog Numbering System

## Product Overview

| H | F | 3 | 6 | 4 | N | R | CU | A |
|---|---|---|---|---|---|---|---|---|

**Switch Type**

| | |
|---|---|
| **L** | = General Duty Quick Install④ |
| **G** | = Gen. Duty |
| **H** | = Heavy Duty |
| **DT** | = Double Throw |
| **DTG** | = General Duty DT |

**Fused or Non-Fused**

| | |
|---|---|
| **F** | = Fused |
| **NF** | = Non-Fused |

**Number of Poles**

| | | | |
|---|---|---|---|
| **2** | = 2 | **4** | = 4 |
| **3** | = 3 | **6** | = 6 |

**Voltage**

| | |
|---|---|
| **1** | = 120V or 120/240V |
| **2** | = 240V |
| **6** | = 600V |

**Amperes**

| | | | |
|---|---|---|---|
| **1** | = 30A | **5** | = 400A |
| **2** | = 60A | **6** | = 600A |
| **3** | = 100A | **7** | = 800A |
| **4** | = 200A | **8** | = 1200A |

**Series Type**

| | |
|---|---|
| **A** | = All General Duty, 400A HD, 600A HD |
| **Omit** | = All HD except 400A, 600A |

**Special Applications With:**

| | |
|---|---|
| **CH** | = Crouse-Hinds Receptacle |
| **H** | = Height or Size Reduced |
| **L** | = Overzised enclosure / Plus Series |
| **LL** | = Max Series (30A GD) |
| **PN** | = Pyle-National Receptacle |
| **PV** | = Photovoltaic rated |
| **PVPG** | = Photovoltaic rated, Positive Ground |
| **W** | = Viewing Window |

**Enclosure Type**

| | |
|---|---|
| **Omit** | = Type 1, Indoor |
| **R** | = Type 3R, Outdoor |
| **S** | = Type 4 / 4X, Stainless Steel |
| **SS** | = Type 4 / 4X, 316 Grade Stainless Steel |
| **X** | = Type 4 / 4X, Non-Metallic |
| **J** | = Type 12, Industrial |

**With or Without Neutral**

| | |
|---|---|
| **Omit** | = Less Neutral |
| **N** | = With Neutral |

## Type VBII Accessories Catalog Numbering System

| H | R | 6 | 4 | A |
|---|---|---|---|---|

**Switch Type**

| | |
|---|---|
| **H** | = Heavy Duty |
| **G** | = General Duty③ |

**Accessory Type**

| | |
|---|---|
| **A1** | = Auxiliary Switch 1/NO and 1/NC |
| **A2** | = Auxiliary Switch 2/NO and 2/NC |
| **A3** | = Auxiliary Switch Low Current |
| **CL** | = Compression Lug Barrier / Mounting Kit |
| **CU** | = Copper Lug③ |
| **G** | = Ground Lug Kit |
| **G2** | = Insulated Ground Lug Kit |
| **J** | = Class J Fuse Kit② |
| **LC** | = Copper Lug Kit③ |
| **N** | = Neutral |
| **N2** | = 200% Neutral③ |
| **NCM** | = Field Replacement Lug Kit② |
| **P** | = Fuse Puller Kit |
| **R** | = Class R - Fuse Clip Kit |
| **T** | = Class T - Fuse Kit |

**Series Type**

| | |
|---|---|
| **A** | = All General Duty, 400A HD, 600A HD |
| **Omit** | = All HD except 400A, 600A |

**Amperes**

| | | | |
|---|---|---|---|
| **1** | = 30A | **1234** | = 30/60/100/200A |
| **2** | = 60A | **4** | = 200A |
| **12** | = 30/60A | **5** | = 400A |
| **3** | = 100A | **56** | = 400/600A |
| **23** | = 60/100A | **5678** | = 400/600/800/1200A |
| **123** | = 30/60/100A | **6** | = 600A |
| | | **78** | = 800/1200A |

**Maximum Voltage**

| | |
|---|---|
| **2** | = 240V Max① |
| **6** | = 600V Max |

**Note:** Catalog numbering systems above do not apply to 4-pole & Type "F" & "FR" double throw switches & accessories.

① For 400A, 600A use 680V max accessories except for T Fuse Kit.
② Only offered for 400A, 600A.
③ For 30A-200A, 800A-1200A.
④ Quick install switches are NEMA 3R rated with ground lug included and no top top hub provision.

## Wire Ranges (Line, Load and Standard Neutral)

| Switch Ampere Rating | Wire Range with Wire Bending Space Per NEC Requirements | Lug Wire Range |
|---|---|---|
| 30GD | #14-8 AWG (Cu/Al) | #14-2 AWG (Cu/Al)① |
| 60GD | #14-6 AWG (Cu) | #14-2 AWG (Cu)① |
| 30HD | #14-6 AWG (Cu/Al) | #14-2 AWG (Cu/Al) |
| 60HD②③ | #14-3 AWG (Cu/Al) | #14-2 AWG (Cu/Al) |
| 100④ | #14-1/0 AWG (Cu/Al) | #14-1/0 AWG (Cu/Al) |
| 200⑤ | #6 AWG-250 Kcmil (Cu/Al) | #6 AWG-300 Kcmil (Cu/Al) |
| 400⑥ | (1) 1/0 AWG-600 Kcmil (Cu/Al)<br>(2) 1/0 AWG-500 Kcmil (Cu/Al) | (2) 1/0 AWG-600 Kcmil (Cu/Al) |
| 600⑥ | (1) 1/0 AWG-600 Kcmil (Cu/Al)<br>(2) 1/0 AWG-500 Kcmil (Cu/Al) | (2) 1/0 AWG-600 Kcmil (Cu/Al) |
| 800 | (3) 1/0 AWG-750 Kcmil (Cu/Al) Line Load<br>(4) 1/0 AWG-750 Kcmil (Cu/Al) neutral | (3) 1/0 AWG-750 Kcmil (Cu/Al) Line Load<br>(4) 1/0 AWG-750 Kcmil (Cu/Al) neutral |
| 1200 | (4) 3/0 AWG-750 Kcmil (Cu/Al) Line Load<br>(4) 1/0 AWG-750 Kcmil (Cu/Al) neutral | (4) 1/0 AWG-750 Kcmil (Cu/Al) Line Load<br>(4) 1/0 AWG-750 Kcmil (Cu/Al) neutral |

■ Built to order. Allow 3-4 weeks for delivery.

① Neutral lugs (only) are UL approved to accept #14-4 CU/Al cable.
② Compact HD NF switches are also UL approved for #2 Cu/Al conductors.
③ Also for 30A oversized heavy duty switches.
④ Also for 60A oversized heavy duty switches.
⑤ All 200A Heavy Duty Switches have a wire range & wire bending space for (1) #6-300 Kcmil (Cu/Al).
⑥ Max. wire size for height reduced switches is 500 kcmil (Cu/Al).

# Non-Fusible Safety Switch Short Circuit Current Ratings



## Non-Fusible Safety Switch Short Circuit Current Ratings when protected by a 3VA Circuit Breaker

| HD Switch Rating (Amps) | 3VA Breaker Type | 3-Phase | | | |
|---|---|---|---|---|---|
| | | 240 VAC | 480 VAC | 600 VAC | 250 VDC / 600 VDC |
| **Single Throw and Double Throw** | | | | | |
| 30 | SEAS | 18 kA | 18 kA | 18 kA | — |
| 30 | MEAS | 18 kA | 18 kA | 18 kA | — |
| 60-100 | SEAS | 65 kA | 25 kA | 14 kA | — |
| 60-100 | MEAS | 85 kA | 35 kA | 18 kA | — |
| 60-100 | HEAS | 150 kA | 65 kA | 25 kA | — |
| 60-100 | MDAE | 100 kA | 35 kA | 18 kA | — |
| 60-100 | HDAE | 100 kA | 65 kA | 22 kA | — |
| 60-100 | CDAE | 200 kA | 100 kA | 35 kA | — |
| 60-100 | LDAE | 200 kA | 150 kA | 50 kA | — |
| 60-100 | EDAE | — | 200 kA | 100 kA | — |
| 200 | MFAS | 85 kA | 35 kA | 18 kA | — |
| 200 | HFAS | 100 kA | 65 kA | 25 kA | — |
| 200 | CFAS | 200 kA | 100 kA | 35 kA | — |
| 200 | MFAE | 100 kA | 35 kA | 18 kA | — |
| 200 | HFAE | 100 kA | 65 kA | 22 kA | — |
| 200 | CFAE | 200 kA | 100 kA | 35 kA | — |
| 200 | LFAE | 200 kA | 150 kA | 50 kA | Up to 10 kA |
| 200 | EFAE | — | 200 kA | 100 kA | — |
| **Single Throw Only** | | | | | |
| 400 | MJAS | 85 kA | 35 kA | 18 kA | — |
| 400 | HJAS | 100 kA | 65 kA | 25 kA | — |
| 400 | CJAS | 200 kA | 100 kA | 35 kA | — |
| 400 | MJAE | 100 kA | 35 kA | 18 kA | — |
| 400 | HJAE | 100 kA | 65 kA | 22 kA | — |
| 400 | CJAE | 200 kA | 100 kA | 35 kA | — |
| 400 | LJAE | 200 kA | 150 kA | 50 kA | — |
| 400 | EJAE | — | 200 kA | 100 kA | — |
| 600 | MLAS | 85 kA | 35 kA | 18 kA | — |
| 600 | HLAS | 100 kA | 65 kA | 25 kA | — |
| 600 | CLAS | 200 kA | 100 kA | 35 kA | — |
| 600 | MLAE | 100 kA | 35 kA | 18 kA | — |
| 600 | HLAE | 100 kA | 65 kA | 22 kA | — |
| 600 | CLAE | 200 kA | 100 kA | 35 kA | — |
| 600 | LLAE | 200 kA | 150 kA | 50 kA | — |
| 600 | ELAE | — | 200 kA | 100 kA | — |

| GD Switch Rating (Amps) | 3VA Breaker Type | 240 VAC |
|---|---|---|
| **Single Throw and Double Throw** | | |
| 100 | SEAS | 65 kA |
| 100 | MEAS | 85 kA |
| 100 | MDAE | 100 kA |
| 100 | HDAE | 100 kA |
| 200 | MFAS | 85 kA |
| 200 | HFAS | 100 kA |
| 200 | MFAE | 100 kA |
| 200 | HFAE | 100 kA |
| **Single Throw Only** | | |
| 400 | MJAS | 85 kA |
| 400 | HJAS | 100 kA |
| 400 | MJAE | 100 kA |
| 400 | HJAE | 100 kA |
| 600 | MLAS | 85 kA |
| 600 | HLAS | 100 kA |
| 600 | MLAE | 100 kA |
| 600 | HLAE | 100 kA |

## Non-Fusible Safety Switch Short Circuit Current Ratings when protected by a Legacy Circuit Breaker

| Breaker Frame | Non-Fused Switch | UL Listed Short Circuit Current Rating |
|---|---|---|
| NEG, NGB, ED4 | 30 DT (240V) | 18 kA Thru 240 VAC |
| NEB, NEG, NGG, NGB, ED4 | 100A GD & DT (240V) | 18 kA Thru 240 VAC |
| NEB, NEG, NGG, NGB, ED4 | 30-100A HD & DT (600V) | 18 kA Thru 480 VAC |
| ED6 | 30-100A HD & DT (600V) | 18 kA Thru 600 VAC |
| FD6-A, JD6-A | 200A HD & DT (600V) | 18 KA Thru 600 VAC |
| JD6-A, LD6-A | 400A GD & DT (240V) | 18 kA Thru 240 VAC |
| JD6-A, LD6-A | 400A HD & DT (600V) | 18 kA Thru 600 VAC |
| LD6-A | 600A GD & DT (240V) | 25kA Thru 240 VAC |
| LD6-A | 600A HD & DT (600V) | 25kA Thru 600 VAC |
| NNG | 1200A HD & DT (600V) | 25 kA Thru 600 VAC |

# General Duty Safety Switches

## Features (60-600A)

1. Cover interlock
2. Tangential knockouts 100-600A for easy conduit lineup
3. Quick-make, quick-break operating mechanism that ensures positive operation
4. Provisions for T, R, J, H, and K class fuses (T & J 100-600A)
5. Wiring gutters that meet or exceed NEC wire-bending space requirements
6. Visible blade, double-break switch action
7. Positive 2 or 3 point mounting
8. Highly visible red handle grip
9. Informative door labeling which includes replacement parts list
10. Handle and cover padlocking provisions
11. 100A and above have side-hinged door that opens 180 degrees for easier wiring

**Note.** 400A and 600A GD switches include internal shields which meet 2020 NEC 230.62 touch safe requirements for service entrance equipment.

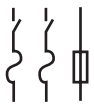
# 240 Volt Fusible

## Selection

| System | Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs) Std. Pkg | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs) Std. Pkg | Horsepower Rating① 240V AC 1-Phase, 2-Wire Std. | 1-Phase, 2-Wire Max. | 2-Phase, 4-Wire Std. | 2-Phase, 4-Wire Max. | 3-Phase, 3-Wire Std. | 3-Phase, 3-Wire Max. | 250 Volt DC Std. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

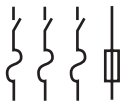
## 240 Volt Fusible②

### 2-Pole, 2-Fuse, and Solid Neutral③④ — 240 Volt AC/250 Volt DC



| Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs) Std. Pkg | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs) Std. Pkg | Horsepower Rating① 240V AC 1-Phase, 2-Wire Std. | 1-Phase, 2-Wire Max. | 2-Phase, 4-Wire Std. | 2-Phase, 4-Wire Max. | 3-Phase, 3-Wire Std. | 3-Phase, 3-Wire Max. | 250 Volt DC Std. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | GF221NA⑤ | 30⑦ | GF221NRA⑤⑨ | 30⑦ | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 30 | GF221NLA④ | 20⑧ | GF221NRLA⑥⑨ | 20⑧ | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 60 | GF222NA | 20⑧ | GF222NRA⑨ | 20⑧ | 3 | 10 | — | — | 7½ | 15 | 10 |
| 100 | GF223NA | 17 | GF223NRA | 17 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 200 | GF224NA | 37 | GF224NRA | 37 | 15 | — | — | — | 25 | 60 | 40 |
| 400 | GF225NA | 91 | GF225NRA | 91 | — | — | — | — | 50 | 125 | 50 |
| 600 | GF226NA | 92 | GF226NRA | 92 | — | — | — | — | 75 | 200 | 50 |

### 3-Pole, 3-Fuse, and Solid Neutral④ — 240 Volt AC/250 Volt DC



| Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs) Std. Pkg | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs) Std. Pkg | Horsepower Rating① 240V AC 1-Phase, 2-Wire Std. | 1-Phase, 2-Wire Max. | 2-Phase, 4-Wire Std. | 2-Phase, 4-Wire Max. | 3-Phase, 3-Wire Std. | 3-Phase, 3-Wire Max. | 250 Volt DC Std. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | GF321NA⑤ | 30⑦ | GF321NRA⑤⑨ | 30⑦ | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 30 | GF321NLA⑥ | 20⑧ | GF321NRLA⑥⑨ | 20⑧ | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 60 | GF322NA | 20⑧ | GF322NRA⑨ | 20⑧ | 3 | 10 | — | — | 7½ | 15 | 10 |
| 100 | GF323NA | 17.5 | GF323NRA | 17.5 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 100 | GF323NLA | 22.5 | GF323NLA | 22.5 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 200 | GF324NA | 37 | GF324NRA | 37 | 15 | — | — | — | 25 | 60 | 40 |
| 200 | GF324NLA | 43.5 | GF324NRLA | 43.5 | 15 | — | — | — | 25 | 60 | 40 |
| 400 | GF325NA | 94.6 | GF325NRA | 94.6 | 15 | — | — | — | 50 | 125 | 50 |
| 600 | GF326NA | 95.6 | GF326NRA | 95.6 | 15 | — | — | — | 75 | 200 | — |

① Dual HP ratings: Std.- applies with installed non-time delay fuses. Max.- applies with installed time-delay fuses.
② Internal shields for 30A to 200A switches to meet 2020 NEC 230.62 touch safe requirements for service entrance equipment can be purchased separately.
③ These switches are UL-listed for application on grounded B-phase systems.
④ Service entrance labeled unless otherwise noted.
⑤ Compact series
⑥ PLUS series: largest enclosure option for 60A non-fusible, 30A fusible.
⑦ 10 switches per standard package.
⑧ 5 switches per standard package.
⑨ Has provision for ECHA type hub.

# 240 Volt Non-fusible

## Selection

| System | Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs) Std. Pkg | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs) Std. Pkg | Horsepower Rating① 240V AC 1-Phase, 2-Wire Std. | 1-Phase, 2-Wire Max. | 2-Phase, 4-Wire Std. | 2-Phase, 4-Wire Max. | 3-Phase, 3-Wire Std. | 3-Phase, 3-Wire Max. | 250 Volt DC Std. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 240 Volt Non-Fusible②③

### 2-Pole Quick Install — 1 or 2-Pole — No Fuse — 240 Volt — 1-Phase, 2-Wire

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | — | — | **LNF221RLA**④ | 30⑦ | — | 3 | — | — | — | — | — |
| | 30 | — | — | **LNF221RLLA**④⑤ | 38⑧ | — | 3 | — | — | — | — | — |
| | 60 | — | — | **LNF222RA**④ | 30⑦ | — | 10 | — | — | — | — | — |
| | 60 | — | — | **LNF222RLA**④⑥ | 38⑧ | — | 10 | — | — | — | — | — |

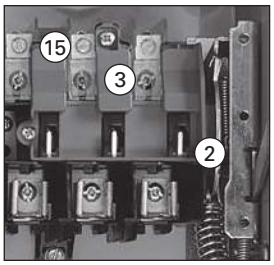
### 2-Pole or 3-Pole — 240 Volt AC/250 Volt DC

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | **GNF221A**⑨⑩ | 20⑦ | **GNF221RA**⑨⑩⑭ | 20⑦ | — | 3 | — | — | — | — | 5 |
| | 30 | **GNF221LA**⑪ | 30⑦ | **GNF221RLA**⑪⑭ | 30⑦ | — | 3 | — | — | 7½ | — | 5 |
| | 30 | **GNF221LLA**⑫ | 20⑧ | **GNF221RLLA**⑫⑭ | 20⑧ | — | 3 | — | — | 7½ | — | 5 |
| | 30 | **GNF321A**⑨⑩ | 20⑦ | **GNF321RA**⑨⑩⑭ | 20⑧ | — | 3 | — | — | 7½ | — | 5 |
| | 30 | **GNF321LA**⑪ | 30⑦ | **GNF321RLA**⑪⑭ | 30⑦ | — | 3 | — | — | 7½ | — | 5 |
| | 30 | **GNF321LLA**⑫ | 20⑧ | **GNF321RLLA**⑫⑭ | 20⑧ | — | 3 | — | — | 7½ | — | 5 |
| | 60 | **GNF222A** | 30⑦ | **GNF222RA**⑭ | 30⑦ | — | 10 | — | — | 15 | — | 10 |
| | 60 | **GNF222LA**⑬ | 20⑧ | **GNF222RLA**⑬⑭ | 20⑧ | — | 10 | — | — | 15 | — | 10 |
| | 60 | **GNF322A** | 30⑦ | **GNF322RA**⑭ | 30⑦ | — | 10 | — | — | 15 | — | 10 |
| | 60 | **GNF322LA**⑬ | 20⑧ | **GNF322RLA**⑬⑭ | 20⑧ | — | 10 | — | — | 15 | — | 10 |
| | 100 | — | — | **GNF223RA** | 17 | — | 15 | — | — | 30 | — | 20 |
| | 100 | **GNF323A** | 17 | **GNF323RA** | 18 | — | 15 | — | — | 30 | — | 20 |
| | 200 | — | — | **GNF224RA** | 35 | — | 15 | — | — | 60 | — | 40 |
| | 200 | **GNF324A** | 35 | **GNF324RA** | 35 | — | 15 | — | — | 60 | — | 40 |
| | 400 | **GNF325A** | 114 | Use 600V Switch **HNF365RA** | | — | 15 | — | — | 125 | — | 50 |
| | 600 | **GNF326A** | 116 | Use 600V Switch **HNF366RA** | | — | 15 | — | — | 200 | — | — |

① Dual HP ratings: Std.- applies with installed non-time delay fuses. Max.- applies with installed time-delay fuses.
② Service entrance labeled unless otherwise noted.
③ Internal shields for 30A to 200A switches to meet 2020 NEC 230.62 touch safe requirements for service entrance equipment can be purchased separately.
④ Quick install switches are NEMA 3R rated with ground lug included and no top top hub provision.
⑤ MAX series: Larger enclosure compared to LNF221RLA.
⑥ PLUS series: Larger enclosure compared to LNF222RA.
⑦ 10 switches per standard package.
⑧ 5 switches per standard package.
⑨ Not suitable for service entrance.
⑩ Compact series
⑪ PLUS series: larger enclosure, metal handle, quick make-break action.
⑫ MAX series: largest enclosure option for 30A non-fusible, included same upgraded features as PLUS series and additional KOs.
⑬ PLUS series: largest enclosure option for 60A non-fusible, 30A fusible.
⑭ Has provision for ECHA type hub.

# Heavy Duty Safety Switches

## Features



1. Quick-make, quick-break operating mechanism that ensures positive operation.
2. Visible blade, double-break switching action.
3. Arc chutes dissipate heat and prolong switch life.
4. Highly visible red handle grip. Designed for hook stick operation.
5. Defeatable dual cover interlock.
6. Center punch provided for field drilling to allow ON padlocking.
7. Handle can be padlocked in the OFF position with up to (3) padlocks with 5/16" hasps.
8. Generous top, bottom and side gutters that meet or exceed NEC wire-bending space requirements.
9. Informative door labeling which includes replacement parts list.
10. Tangential knockouts through 600A for easy conduit lineup.
11. Side-hinged door that opens past 180 degrees for easier wiring.
12. Unique enclosure design increases rigidity and prevents cuts and scrapes to conductors and installer's hands.
13. Spring reinforced fuse clips that assure reliable contact for cool operation.
14. Door latch securely holds door closed and allows cover padlocking.
15. Front removable mechanical lugs that are suitable for CU/Al 60 or 75° C conductors.
16. Lugs are field convertible to copper body and to a wide variety of compression connectors.
17. Hinged clear line terminal shield with probe holes for inspecting or testing line side terminals.
18. Embossed aluminum nameplate on Heavy Duty Switches provides highly visible ON/OFF indication.
19. Drawn cover for increased rigidity and resistance to abuse.
20. Top key hole and bottom mounting holes provide easy 2 or 3 point mounting.

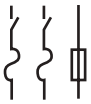
# Heavy Duty Safety Switches

## Selection

| System | Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs.) Std. Pkg | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs.) Std. Pkg | Horsepower Rating① 240V AC 1-Phase, 2-Wire Std. | 1-Phase, 2-Wire Max. | 2-Phase, 4-Wire Std. | 2-Phase, 4-Wire Max. | 3-Phase, 3-Wire Std. | 3-Phase, 3-Wire Max. | 250 Volt DC Std. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

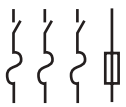
## 240 Volt Fusible⑤

### 2-Pole, 2-Fuse, and Solid Neutral③ (Also used for 2-Pole, 2-Wire Applications) 240 Volt AC/250 Volt DC



| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | HF221N | 12 | HF221NR | 13 | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 60 | HF222N | 18 | HF222NR | 19 | 3 | 10 | — | — | 7½ | 15 | 10 |
| 100 | HF223N | 23 | HF223NR | 24 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 200 | HF224N | 47 | HF224NR | 48 | 15 | — | — | — | 25 | 60 | 40 |
| 400 | HF225NA | 91.1 | HF225NRA | 91.1 | 15 | — | — | — | 50 | 125 | 50 |
| 600 | HF226NA | 95.6 | HF226NRA | 95.6 | 15 | — | — | — | 75 | 200 | 50 |
| 800 | HF227N | 365 | HF227NR | 365 | — | — | — | — | 100 | 250 | 50 |
| 1200 | HF228N■ | 385 | HF228NR■ | 385 | — | — | — | — | 100 | 250 | 50 |

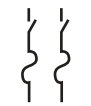
### 3-Pole, 3-Fuse, and Solid Neutral (Also used for 3-Pole, 3-Wire Applications) 240 Volt AC/250 Volt DC



| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | HF321N | 14 | HF321NR | 15 | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 60 | HF322N | 19 | HF322NR | 20 | 3 | 10 | — | — | 7½ | 15 | 10 |
| 100 | HF323N | 25 | HF323NR | 26 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 200 | HF324N | 49 | HF324NR | 50 | 15 | — | — | — | 25 | 60 | 40 |
| 400 | HF325NA | 94.6 | HF325NRA | 94.6 | 15 | — | — | — | 50 | 125 | 50 |
| 600 | HF326NA | 99.6 | HF326NRA | 99.6 | 15 | — | — | — | 75 | 200 | 50 |
| 800 | HF327N | 375 | HF327NR | 375 | — | — | — | — | 100 | 250 | 50 |
| 1200 | HF328N | 395 | HF328NR | 388 | — | — | — | — | 100 | 250 | 50 |

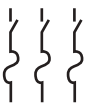
## 240 Volt Fusible⑤

### 2-Pole, 2-Fuse④ 240 Volt AC/250 Volt DC



| | Type 4/4X Stainless⑦ | | Type 12 Industrial⑥ | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | HF221S | 13 | HF221J | 13 | 1½ | 3 | — | — | 3 | 7½ | 5 |
| 60 | HF222S | 19 | HF222J | 19 | 3 | 10 | — | — | 7½ | 15 | 10 |
| 100 | HF223S | 24 | HF223J | 24 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 200 | HF224S | 48 | HF224J | 48 | 15 | — | — | — | 25 | 60 | 40 |

### 3-Pole, 3-Fuse④ (Also used for 2-Pole, 2-Wire Applications in 400–800A Ratings) 240 Volt AC/250 Volt DC



| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | HF321S | 14 | HF321J | 14 | 1½ | 3 | — | — | 3 | 7½ | — |
| 60 | HF322S | 20 | HF322J | 20 | 3 | 10 | — | — | 7½ | 15 | 10 |
| 100 | HF323S | 25 | HF323J | 25 | 7½ | 15 | — | — | 15 | 30 | 20 |
| 200 | HF324S | 49 | HF324J | 49 | 15 | — | — | — | 25 | 60 | 40 |
| 400 | HF325SA | 93 | HF325JA | 93 | 15 | — | — | — | 50 | 125 | 50 |
| 600 | HF326SA | 98 | HF326JA | 98 | 15 | — | — | — | 75 | 200 | 50 |
| 800 | HF327S■ | 370 | HF327J■ | 365 | — | — | — | — | 100 | 250 | 50 |

■ Built to order. Allow 3-5 weeks for delivery.
① Height reduced switch (45.25 rather than 56 inches in height) for use with 500MCM or smaller conductors.
② Dual horsepower ratings: Std.- applies when non-time delay fuses are installed. Max.- applies when time-delay fuses are installed.
③ These switches are UL-listed for application on grounded B-phase systems and are suitable for 3-phase motor applications.
④ When a neutral is required use a field installed neutral kit.
⑤ Suitable for use as service entrance equipment.
⑥ Also rated Type 3S/3R.
⑦ 304 grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, substitute "SS" in catalog number for "S." 316 available up through 600A.

# Heavy Duty Safety Switches

## Selection

| System | Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs.) Std. Pkg | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs.) Std. Pkg | Horsepower Rating④ 480V AC 1-Phase, 2-Wire Std. | 480V AC 1-Phase, 2-Wire Max. | 480V AC 3-Phase, 3-Wire Std. | 480V AC 3-Phase, 3-Wire Max. | 600V AC 1-Phase, 2-Wire Std. | 600V AC 1-Phase, 2-Wire Max. | 600V AC 3-Phase, 3-Wire Std. | 600V AC 3-Phase, 3-Wire Max. | 250 Volt DC | 600 Volt DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **600 Volt Fusible⑤** | | | | | | | | | | | | | | | |
| **2-Pole, 2-Fuse③** | | | | | | | | | | | | | | **480 Volt AC/600 Volt AC/600 Volt DC** | |
| | 30 | HF261 | 15 | HF261R | 15 | 3 | 7½ | — | — | 3 | 10 | — | — | 5 | 15 |
| | 60 | HF262 | 20 | HF262R | 20 | 5 | 20 | — | — | 10 | 25 | — | — | 10 | 30 |
| | 100 | HF263 | 26 | HF263R | 27 | 10 | 30 | — | — | 15 | 40 | — | — | 20 | 50 |
| **3-Pole, 3-Fuse** | | | | | | | | | | | | | | **480 Volt AC/600 Volt AC/250 Volt DC①** | |
| | 30 | HF361 | 14 | HF361R | 15 | 3 | 7½ | 5 | 15 | 3 | 10 | 7½ | 20 | 5 | — |
| | 30 | HF361L⑦ | 19 | HF361RL⑦ | 20 | 3 | 7½ | 5 | 15 | 3 | 10 | 7½ | 20 | 5 | — |
| | 60 | HF362 | 19 | HF362R | 20 | 5 | 20 | 15 | 30 | 10 | 25 | 15 | 50 | 10 | 30⑧ |
| | 60 | — | — | HF362RL⑦ | 25 | 5 | 20 | 15 | 30 | 10 | 25 | 15 | 50 | 10 | 30⑧ |
| | 100 | HF363 | 24 | HF363R | 25 | 5 | 20 | 25 | 60 | 15 | 40 | 30 | 75 | 20 | 50⑧ |
| | 200 | HF364 | 48 | HF364R | 49 | 25 | 50 | 50 | 125 | 30 | 50 | 60 | 150 | 40 | 50 |
| | 400 | HF365A① | 93 | HF365RA① | 157 | — | — | 100 | 250 | — | — | 125 | 350 | 50 | — |
| | 600 | HF366A① | 98 | HF366RA① | 161 | — | — | 150 | 400 | — | — | 200 | 500 | 50 | — |
| | 800 | HF367 | 365 | HF367R | 365 | — | — | 200 | 500 | — | — | 250 | 500 | 50 | — |
| | 1200 | HF368 | 383 | HF368R | 385 | — | — | 200 | 500 | — | — | 250 | 500 | 50 | — |
| **3-Pole, 3-Fuse and Solid Neutral** | | | | | | | | | | | | | | **480 Volt AC/600 Volt AC/250 Volt DC①** | |
| | 30 | HF361N | 14 | HF361NR | 15 | 3 | 7½ | 5 | 15 | 3 | 10 | 7½ | 20 | 5 | — |
| | 60 | HF362N | 19 | HF362NR | 20 | 5 | 20 | 15 | 30 | 10 | 25 | 15 | 50 | 10 | 30⑧ |
| | 100 | HF363N | 25 | HF363NR | 26 | 10 | 30 | 25 | 60 | 15 | 40 | 30 | 75 | 20 | 50⑧ |
| | 200 | HF364N | 49 | HF364NR | 50 | 25 | 50 | 50 | 125 | 30 | 50 | 60 | 150 | 40 | 50 |
| | 400 | HF365NA | 94.6 | HF365NRA | 94.6 | — | — | 100 | 250 | — | — | 125 | 350 | 50 | — |
| | 600 | HF366NA | 99.6 | HF366NRA | 99.6 | — | — | 150 | 400 | — | — | 200 | 500 | 50 | — |
| | 800 | HF367N | 375 | HF367NR | 375 | — | — | 250 | 500 | — | — | 250 | 500 | 50 | — |
| | 1200 | HF368N | 395 | HF368NR | 388 | — | — | 250 | 500 | — | — | 250 | 500 | 50 | — |
| **600 Volt Fusible⑤** | | | | | | | | | | | | | | | |
| **2-Pole, 2-Fuse③** | | | | | | | | | | | | | | **480 Volt AC/600 Volt AC/600 Volt DC** | |
| | | Type 4/4X Stainless⑨ | | Type 12 Industrial⑥ | | | | | | | | | | | |
| | 30 | HF261S | 15 | HF261J■ | 15 | 3 | 7½ | — | — | 3 | 10 | — | — | 5 | 15 |
| | 60 | HF262S | 20 | HF262J■ | 20 | 5 | 20 | — | — | 10 | 25 | — | — | 10 | 30 |
| | 100 | HF263S■ | 27 | HF263J■ | 27 | 10 | 30 | — | — | 15 | 40 | — | — | 20 | 50 |
| **3-Pole, 3-Fuse** | | | | | | | | | | | | | | **480 Volt AC/600 Volt AC/250 Volt DC①** | |
| | 30 | HF361S | 13 | HF361J | 14 | — | — | 5 | 15 | — | — | 7½ | 20 | 5 | — |
| | 60 | HF362S | 20 | HF362J | 20 | — | — | 15 | 30 | — | — | 15 | 50 | 10 | 30⑧ |
| | 100 | HF363S | 25 | HF363J | 25 | — | — | 25 | 60 | — | — | 30 | 75 | 20 | 50⑧ |
| | 200 | HF364S | 49 | HF364J | 49 | — | — | 50 | 125 | — | — | 60 | 150 | 40 | 50 |
| | 400 | HF365SA① | 93 | HF365JA① | 93 | — | — | 100 | 250 | — | — | 125 | 350 | 50 | — |
| | 600 | HF366SA① | 98 | HF366JA① | 98 | — | — | 150 | 400 | — | — | 200 | 500 | 50 | — |
| | 800 | HF367S | 370 | HF367J■ | 365 | — | — | 200 | 500 | — | — | 250 | 500 | 50 | — |
| | 1200 | HF368S■ | 388 | HF368J■ | 388 | — | — | 250 | 500 | — | — | 250 | 500 | 50 | — |

■ Built to order. Allow 3-5 weeks for delivery.
① 60-600A 3-Pole switches are also rated 600V DC.
② Height reduced switch (45.25 rather than 56 inches in height) for use with 500MCM or smaller conductors.
③ Use 3-Pole switch for 200A applications.
④ Dual horsepower ratings: Std.- applies when non-time delay fuses are installed. Max.- applies when time-delay fuses are installed.
⑤ Suitable for use as service entrance equipment except on 1200 Amp solidly grounded wye systems per NEC 230.95.
⑥ Also rated Type 3S/3R.
⑦ Indicates oversized enclosure (30A switch with 60A lugs in a 60A enclosure or 60A switch with 100A lugs in a 100A enclosure).
⑧ 600V DC & 600V DC horsepower rating shown requires (2) poles to be connected in series.
⑨ 304 grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, substitute "SS" in catalog number for "S." 316 available up through 600A.

| System | Ampere Rating | Indoor — Type 1 Catalog Number | Indoor — Type 1 Ship Wt. (lbs.) | Outdoor — Type 3R Catalog Number | Outdoor — Type 3R Ship Wt. (lbs.) | Horsepower Rating 240 Volt 1-Phase | 240 Volt 3-Phase | 480 Volt 1-Phase | 480 Volt 3-Phase | 600 Volt 1-Phase | 600 Volt 3-Phase | 250V DC | 600V DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **600 Volt Non-Fusible④** | | | | | | | | | | | | | |
| **2-Pole③** | | | | | | | | | | | | **480 Volt AC / 600 Volt AC / 600 Volt DC** | |
| | 30 | **HNF261** | 12 | **HNF261R** | 13 | — | — | 7½ | — | 10 | — | 5 | 15 |
| | 60 | **HNF262** | 19 | **HNF262R** | 20 | — | — | 20 | — | 25 | — | 10 | 30 |
| | 100 | **HNF263** | 24 | **HNF263R** | 25 | — | — | 30 | — | 40 | — | 20 | 50 |
| **3-Pole** | | | | | | | | | | | | **480 Volt AC / 600 Volt AC / 250 Volt DC** | |
| | 30 | **HNF361** | 12 | **HNF361R** | 13 | 5 | 10 | 7½ | 20 | 10 | 30 | 5 | — |
| | 30 | **—** | — | **HNF361RL⑥** | 19 | 5 | 10 | 7½ | 20 | 10 | 30 | 5 | — |
| | 60 | **HNF362H②** | 11 | **HNF362RH②** | 11 | 10 | 20 | 20 | 50 | 20 | 40 | 10 | — |
| | 60 | **HNF362①** | 18 | **HNF362R①** | 19 | 10 | 20 | 20 | 50 | 25 | 60 | 10 | 30⑦ |
| | 60 | **—** | — | **HNF362RL⑥** | 24 | 10 | 20 | 20 | 50 | 25 | 60 | 10 | 30⑦ |
| | 100 | **HNF363①** | 16 | **HNF363R①** | 16 | 15 | 40 | 30 | 75 | 40 | 100 | 20 | 50⑦ |
| | 100 | **HNF363L** | 22½ | **HNF363RL** | 22½ | 15 | 40 | 30 | 75 | 40 | 100 | 20 | 50 |
| | 200 | **HNF364①** | 35 | **HNF364R①** | 35 | 15 | 60 | 50 | 125 | 50 | 150 | 40 | 50 |
| | 200 | **HNF364L** | 43½ | **HNF364RL** | 43½ | 15 | 60 | 50 | 125 | 50 | 150 | 40 | 50 |
| | 400 | **HNF365A①** | 75 | **HNF365RA①** | 75 | 15 | 125 | 50 | 250 | 50 | 350 | 50 | — |
| | 600 | **HNF366A①** | 77 | **HNF366RA①** | 77 | 15 | 200 | 50 | 400 | 50 | 500 | 50 | — |
| | 800 | **HNF367** | 295 | **HNF367R** | 295 | 15 | 250 | 50 | 500 | 50 | 500 | 50 | — |
| | 1200 | **HNF368** | 305 | **HNF368R** | 307 | 15 | 250 | 50 | 500 | 50 | 500 | 50 | — |
| **600 Volt Non-Fusible④** | | | | | | | | | | | | | |
| **2-Pole③** | | | | | | | | | | | | **480 Volt AC / 600 Volt AC / 600 Volt DC** | |
| | | **Type 4 / 4X Stainless⑧** | | **Type 12 Industrial⑤** | | | | | | | | | |
| | 30 | **HNF261S** | 13 | **HNF261J** | 13 | — | — | 7½ | — | 10 | — | 5 | 15 |
| | 60 | **HNF262S** | 20 | **HNF262J** | 20 | — | — | 20 | — | 25 | — | 10 | 30 |
| | 100 | **HNF263S■** | 25 | **HNF263J■** | 25 | — | — | 30 | — | 40 | — | 20 | 50 |
| **3-Pole** | | | | | | | | | | | | **480 Volt AC / 600 Volt AC / 250 Volt DC** | |
| | 30 | **HNF361S** | 13 | **HNF361J** | 13 | 5 | 10 | 7½ | 20 | 10 | 30 | 5 | — |
| | 60 | **HNF362SH②** | 15 | **HNF362JH②** | 14 | 10 | 20 | 20 | 50 | 20 | 40 | 10 | — |
| | 60 | **HNF362S①** | 19 | **HNF362J①** | 19 | 10 | 20 | 20 | 50 | 25 | 60 | 10 | 30⑦ |
| | 100 | **HNF363S①** | 24 | **HNF363J①** | 24 | 15 | 40 | 30 | 75 | 40 | 100 | 20 | 50⑦ |
| | 200 | **HNF364S①** | 47 | **HNF364J①** | 47 | 15 | 60 | 50 | 125 | 50 | 150 | 40 | 50 |
| | 400 | **HNF365SA①** | 75 | **HNF365JA①** | 75 | 15 | 125 | 50 | 250 | 50 | 350 | 50 | — |
| | 600 | **HNF366SA①** | 77 | **HNF366JA①** | 77 | 15 | 200 | 50 | 400 | 50 | 500 | 50 | — |
| | 800 | **HNF367S** | 295 | **HNF367J■** | 295 | 15 | 250 | 50 | 500 | 50 | 500 | 50 | — |
| | 1200 | **HNF368S■** | 310 | **HNF368J■** | 310 | 15 | 250 | 50 | 500 | 50 | 500 | 50 | — |

■ Built to order. Allow 3-5 weeks for delivery.
① 60-600A 3-Pole switches are also rated 600V DC.
② Compact switch (11.1"H, 6.6"W box less cover and handle). Short circuit withstand rating—100,000 RMS sym. amps.
③ Use 3-Pole switch for 200A application.
④ Suitable for use as service entrance equipment except for 1200 when used on a 480 or 600V grounded wye system.
⑤ Also rated type 3S / 3R.
⑥ Indicates oversized enclosure (30A switch in a 60A enclosure or a 60A switch in a 100A enclosure.
⑦ 600V DC and 600V DC horsepower rating shown requires (2) poles to be connected in series.
⑧ 304 grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, substitute "SS" in catalog number for "S." 316 available for up through 600A.

# Heavy Duty Safety Switches

## Type 3R, 4/4X, & 12 with Viewing Window

### Description

30–600A, 3-pole 600V max. in fusible and non-fusible versions in Type 4/4X stainless steel, and Type 12, and select 3R enclosures.

All allow viewing of visible blade position with the door closed. 30–200A also allow viewing of indicating type fuses.

### Features

- Rugged installer-friendly enclosure design features a gasket flange with continuously welded seams
- Tool-free cover latches
- Two, three and four point mounting
- Metal handle with large insulating grip features a positive stop in both ON and OFF position
- Ground lugs provided as standard in Type12 and 4X switches
- Type 12 enclosures are fabricated from galvanized steel and are also rated for 3R/3S outdoor applications
- Type 4X stainless steel switches (30–200A) are provided with stainless steel interior parts
- The widest range of accessories available including 200% neutrals, gold plated PLC auxiliary contacts and isolated ground kits

| System | Ampere Rating | Catalog Number | Ship Wt. (lbs.) | Maximum Horsepower Rating② 240V AC 1-Phase, 2-Wire | 240V AC 3-Phase | 480V AC 3-Phase | 600V AC 3-Phase | 250V DC | 600V DC |
|---|---|---|---|---|---|---|---|---|---|
| **3-Pole, 3-Wire Fusible, Type 3R④** | | | | | | | | **600 Volt AC / 250 Volt DC①** | |
| | 30 | HF361RW | 17 | 3 | 7½ | 15 | 20 | 5 | — |
| | 60 | HF362RW | 22 | 10 | 15 | 30 | 50 | 10 | 30⑤ |
| | 800 | HF367NRW | 375 | — | — | 500 | 500 | 50 | — |
| | 1200 | HF368NRW | 388 | — | — | 500 | 500 | 50 | — |
| **3-Pole, 3-Wire Non-Fusible, Type 3R④** | | | | | | | | **600 Volt AC / 250 Volt DC①** | |
| | 30 | HNF361RW | 14 | 3 | 10 | 20 | 30 | 5 | — |
| | 60 | HNF362RW | 21 | 10 | 20 | 50 | 60 | 10 | 30⑤ |
| | 800 | HNF367RW | 295 | 15 | 250 | 500 | 500 | 50 | — |
| | 1200 | HNF368RW | 307 | 15 | 250 | 500 | 500 | 50 | — |
| **3-Pole, 3-Wire Fusible, Type 12③④** | | | | | | | | **600 Volt AC / 250 Volt DC①** | |
| | 30 | HF361JW | 17 | 3 | 7½ | 15 | 20 | 5 | — |
| | 60 | HF362JW | 22 | 10 | 15 | 30 | 50 | 10 | 30⑤ |
| | 100 | HF363JW | 26 | 15 | 30 | 60 | 75 | 20 | 50⑤ |
| | 200 | HF364JW | 53 | — | 60 | 125 | 150 | 40 | 50 |
| | 400 | HF365JWA | 93 | — | 125 | 250 | 350 | 50 | — |
| | 600 | HF366JWA | 98 | — | 200 | 400 | 500 | 50 | — |
| | 800 | HF367JW | 365 | — | — | 500 | 500 | 50 | — |
| | 1200 | HF368JW | 388 | — | — | 500 | 500 | 50 | — |
| **3-Pole, 3-Wire Non-Fusible, Type 12③④** | | | | | | | | **600 Volt AC / 250 Volt DC** | |
| | 30 | HNF361JW | 14 | 3 | 10 | 20 | 30 | 5 | — |
| | 60 | HNF362JW | 21 | 10 | 20 | 50 | 60 | 10 | 30⑤ |
| | 100 | HNF363JW | 25 | 15 | 40 | 75 | 100 | 20 | 50⑤ |
| | 200 | HNF364JW | 51 | 15 | 60 | 125 | 150 | 40 | 50 |
| | 400 | HNF365JWA | 75 | 15 | 125 | 250 | 350 | 50 | — |
| | 600 | HNF366JWA | 77 | 15 | 200 | 400 | 500 | 50 | — |
| | 800 | HNF367JW | 295 | 15 | 250 | 500 | 500 | 50 | — |
| | 1200 | HNF368JW | 310 | 15 | 250 | 500 | 500 | 50 | — |
| **3-Pole, 3-Wire Fusible, Type 4X Stainless Steel④⑥** | | | | | | | | **600 Volt AC / 250 Volt DC①** | |
| | 30 | HF361SW | 17 | 3 | 7½ | 15 | 20 | 5 | — |
| | 60 | HF362SW | 23 | 10 | 15 | 30 | 50 | 10 | 30⑤ |
| | 100 | HF363SW | 28 | 15 | 30 | 60 | 75 | 20 | 50⑤ |
| | 200 | HF364SW | 55 | — | 60 | 125 | 150 | 40 | 50 |
| | 400 | HF365SWA | 75 | 15 | 125 | 250 | 350 | 50 | — |
| | 600 | HF366SW | 98 | — | — | 400 | 500 | 50 | — |
| | 800 | HF367SW | 365 | — | — | 500 | 500 | 50 | — |
| | 1200 | HF368SW | 388 | — | — | 500 | 500 | 50 | — |
| **3-Pole, 3-Wire Non-Fusible, Type 4X Stainless Steel④⑥** | | | | | | | | **600 Volt AC / 250 Volt DC①** | |
| | 30 | HNF361SW | 15 | 3 | 10 | 20 | 30 | 5 | — |
| | 60 | HNF362SW | 23 | 10 | 20 | 50 | 60 | 10 | 30⑤ |
| | 100 | HNF363SW | 27 | 15 | 40 | 75 | 100 | 20 | 50⑤ |
| | 200 | HNF364SW | 54 | 15 | 60 | 125 | 150 | 40 | 50 |
| | 400 | HNF365SWA | 75 | 15 | 125 | 250 | 350 | 50 | — |
| | 800 | HNF367SW | 295 | 15 | 250 | 500 | 500 | 50 | — |
| | 1200 | HNF368SW | 310 | 15 | 250 | 500 | 500 | 50 | — |

① 200A switches are also rated 600V DC.
② Maximum HP ratings listed apply only when time delay fuses are used.
③ Also rated 3S/3R for outdoor use.
④ All switches are suitable for use as service entrance equipment.
⑤ 600V DC and 600V DC horsepower rating shown requires (2) poles to be connected in series.
⑥ 304 grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, substitute "SS" in catalog number for "S." 316 available for up through 600A.

# Elevator Control Switches

## Application

Siemens Type (ECS) Elevator Control disconnect switches are designed for single cable or hydraulic elevator application to interrupt the incoming AC power upon receiving a signal from the Fire Alarm Control Panel (FACP).

## Description

The Elevator Control switch units come completely assembled for quick installation, eliminating the labor and time needed to assemble individual components. Therefore, the numbering system assures that you get all of the correct components, assembled with the correct ratings, without having to individually order accessories.

It is easy to meet Code requirements for selective coordination in a fully fused system. Siemens Type (ECS) Elevator Control disconnect switches utilize Class J fuses that easily coordinate with any upstream fuse by simply using a 2:1 line-side to load-side fuse ratio.

## Standards

- UL 98 Enclosed and Dead Front Switch – Guide 96NK3917, File E182262

## Catalog Number System

The following catalog numbering system defines an Elevator Control Switch construction.

| ECS | 1 | T2 | R2 | G | F1 | 3 | N | B | C |
|---|---|---|---|---|---|---|---|---|---|

**Elevator Control Switches**

**Ampere rating**

1 = 30 A
2 = 60 A
3 = 100 A
4 = 200 A
5 = 400A

**Control Transformer**

T2 = 208 V
T3 = 240 V
T1 = 480 V
T4 = 600 V

**Fire Safety Interface Relay (3PDT, 10 A, 120 V)**

R2 = 24 Vdc Coil
R1 = 120 Vac Coil

**Pilot Light ON**

G = Green
R = Red
W = White

**Fire Alarm Voltage Monitoring Relay (To Monitor Shunt Trip Voltage)**

F1 = Single-Pole③
F3 = Three-Pole

**Enclosure options (NEMA 1 Standard With No Suffix Designation Required)**

3 = NEMA 3R
D = NEMA 12
P = NEMA 4 Painted Steel

**Neutral Lug**

N = Isolated Full Capacity

**Auxiliary Contacts (1NO/1NC)**

B = Main Switch

**Surge Protection**

C = Integrated surge protection device

① 100 VA with Primary and Secondary fusing (120 V Secondary)
② For information on Siemens TPS3 03 protection device refer to product literature or Speedfax
③ F1 must be selected if 24 Vdc Coil for safety interface relay (R2) is selected

# Elevator Control Switches

## Standard Features

- 30-400 A, 600 Vac, 3-phase fused power switch
- 200 kA RMS assembly short-circuit current rating
- Shunt trip 120 V
- Control power terminal block
- Ground lug compliant with the National Electric Code
- Class J fuse mounting only (Class J fuses not included)
- Key to test switch
- Pilot light – "ON"
- Mechanically interlocked auxiliary contact for hydraulic elevators with battery backup (5 A, 120 Vac rated)
- Handle designed for hook stick operation
- OSHPD Special Seismic Certification Preapproval (OSP)

## Configurable Standard Features

- Control power transformer with fuses and blocks
- Fire safety interface relay
- Isolated neutral lug
- Fire Alarm Voltage Monitoring Relay (to monitor Shunt Trip Voltage)
- NEMA 3R, 4, and 12 enclosures available

## Optional Features

- Oversized 200% rated neutral option available where required by excessive non-linear loads
- Additional auxiliary contact (1NO / 1NC)
- Integrated surge protection device (TPS3 03). Externally viewable though window in door

## Other Options

Optional features include contact closure, i.e. battery lowering/door opening system. The B option offers support for the states of Arizona, Oregon, and Texas requirements to prevent "nuisance" fire alarms by over-riding the "Control Power not Available" signal when the Siemens Elevator control disconnect is manually (intentionally) turned off, and distinctive signaling for ON-OFF-TRIPPED conditions (Option B).

All Siemens Elevator Control elevator disconnect switches are UL-Listed and designed for safe access by qualified personnel. When maintenance or shutdown service is required, no energized parts are exposed inside the enclosure when the disconnect switch is manually turned to the OFF position. For proper maintenance safety precautions, always turn off incoming power to the Siemens Elevator Control elevator switch when possible. When servicing any live electrical equipment, always wear appropriate personal protective equipment.

## Shunt-Trip Operation

The disconnect means is a shunt-trip operated switch. The control power source for the shunt-trip operator is a 120 Vac supply originating in the Siemens Elevator Control switch. Current to the shunt-trip device is switched by an isolation relay, which is in turn controlled by the FACP.

The control signal may be either 24 Vdc from the FACP (Option R2) or a "dry" contact closure in the FACP (Option R1). In the case of a "dry" contact closure, the sensing voltage is 120 Vac originating in the Siemens Elevator Control switch.

A key test switch (Option K) is included for testing the shunttrip circuit.

## Supervisory Indication

Additionally, an optional separate relay can be specified to monitor the 120 Vac control power source in the Siemens Elevator Control switch. This relay (Option F1 or F3) is used to provide supervisory indication of "Control Power Available" as required by NFPA 72 Section 6.15.4.4.

### Transformer Fuse Details

| ECS Voltage/ Transformer Voltage | Primary Fuse (amps) | Secondary Fuse (amps) |
|---|---|---|
| 208/120 | FNQ-R-2 | FNM-1 1/4 |
| 240/120 | FNQ-R-2 | FNM-1 1/4 |
| 480/120 | FNQ-R-1 | FNM-1 1/4 |
| 600/120 | FNQ-R-1 | FNM-1 1/4 |

### $UL_A$ / $NEC_B$ Listed Horsepower Ratings

| | 30A | | 60A | | 100A | | 200A | | 400A | |
|---|---|---|---|---|---|---|---|---|---|---|
| Voltage / Poles | Std② | Max① | Std② | Max① | Std② | Max① | Std② | Max① | Std② | Max① |
| 208VAC / 3 $Pole_B$ | 2 | 5 | 5 | 10 | 10 | 15 | 20 | 40 | 40 | 75 |
| 240VAC / 3 $Pole_A$ | 2 | 7½ | 7½ | 15 | 15 | 30 | 25 | 60 | 50 | 75 |
| 480VAC / 3 $Pole_A$ | 5 | 15 | 15 | 30 | 25 | 60 | 50 | 125 | 100 | 150 |
| 6008VAC / 3 $Pole_A$ | 7½ | 20 | 15 | 50 | 30 | 75 | 60 | 150 | 125 | 200 |

Fuse and Short Circuit Information
This switch is suitable for use with Class J Fuses ONLY.

① Max HP with time delay Class J Fuses.
② Max HP with non-time delay Class J Fuses.

# Type VBII 4 & 6-Pole Heavy Duty Safety Switches

**Selection**

## Application

4 & 6-pole Switches are commonly used as a disconnecting means for two-speed, two-winding motors. Fused switches provide both over current and short circuit protection. Non-fusible switches normally provide a local disconnection means for two-speed motors which are remote from their motor controller. 4-pole switches are also used in 3-phase, 4-wire circuits when a switching neutral is required. All 4 & 6-pole switches are service entrance rated.

## Description

4 & 6-pole switches are available in 30-200A ratings and in both fusible and non-fusible versions. 4-pole switches are supplied with either Type 1 or Type12/3R enclosures.
6-pole switches are available with either Type 12/3R or Type 4X stainless steel enclosures.

## Standards

- UL & CUL listed under file #E4776
- Meets UL98 for enclosed switches
- 4 & 6-Pole switches are suitable for use as service entrance
- Meets NEMA Standard KS-1 for enclosed switches
- Meets NEC wire bending space requirements

## Features

- Visible blade, double break switching action
- Highly visible ON/OFF indication
- Defeatable dual cover interlock
- Padlock option in OFF position
- All copper current carrying parts①
- Tangenital knockouts (Type 1, 4-pole switches)

**HNF662J**

## 4-Pole Type VBII Switches①②

| System | Amp Rating | Indoor Type 1 Catalog Number | Indoor Type 1 Ship Wt. (lbs.) | Type 12/3R Industrial⑤ Catalog Number | Type 12/3R Industrial⑤ Ship Wt. (lbs.) | Horsepower Ratings③ 240V, 2Ø, 4W Std. | 240V, 2Ø, 4W Max. | 240V 3Ø Std. | 240V 3Ø Max. | 480V, 3Ø Std. | 480V, 3Ø Max. | 600V, 3Ø Std. | 600V, 3Ø Max. | 250V DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fusible 600 Volt AC, 250 Volt DC — 4-Pole, 4 Fuse④** | | | | | | | | | | | | | | |
| | 30 | **HF461** | 36 | **HF461J** | 36 | 3 | 10 | 3 | 7½ | 5 | 15 | 7½ | 20 | 5 |
| | 60 | **HF462** | 40 | **HF462J** | 40 | 7½ | 20 | 7½ | 15 | 15 | 30 | 15 | 50 | 10 |
| | 100 | **HF463** | 43 | **HF463J** | 43 | 15 | 30 | 15 | 30 | 25 | 60 | 30 | 75 | 20 |
| | 200 | **HF464■** | 88 | **HF464J■** | 88 | 25 | 50 | 25 | 60 | 50 | 125 | 60 | 150 | 40 |
| **Non-fusible 600 Volt AC, 250 Volt DC — 4-Pole** | | | | | | | | | | | | | | |
| | 30 | **HNF461** | 32 | **HNF461J** | 32 | — | 10 | — | 10 | — | 20 | — | 30 | 5 |
| | 60 | **HNF462** | 34 | **HNF462J** | 34 | — | 20 | — | 20 | — | 50 | — | 60 | 10 |
| | 100 | **HNF463■** | 36 | **HNF463J■** | 36 | — | 30 | — | 40 | — | 75 | — | 100 | 20 |
| | 200 | **HNF464■** | 78 | **HNF464J■** | 78 | — | 50 | — | 60 | — | 125 | — | 150 | 4 |

## 6-Pole Type VBII Switches①②⑤

| System | Amp Rating | Type 12/3R Industrial Catalog Number | Type 12/3R Industrial Ship Wt. (lbs.) | Type 4X Stainless Steel Catalog Number | Type 4X Stainless Steel Ship Wt. (lbs.) | Horsepower Ratings③ 240V 3Ø Std. | 240V 3Ø Max. | 480V, 3Ø Std. | 480V, 3Ø Max. | 600V, 3Ø Std. | 600V, 3Ø Max. | 250V DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fusible 600 Volt AC, 250 Volt DC — 6-Pole, 6 Fuse④** | | | | | | | | | | | | |
| | 30 | **HF661J** | 37 | **HF661S■** | 37 | 3 | 7½ | 5 | 15 | 7½ | 20 | 5 |
| | 60 | **HF662J** | 41 | **HF662S■** | 41 | 7½ | 15 | 15 | 30 | 15 | 50 | 10 |
| | 100 | **HF663J■** | 44 | **HF663S■** | 44 | 15 | 30 | 25 | 60 | 30 | 75 | 20 |
| | 200 | **HF664J■** | 90 | **HF664S■** | 90 | 25 | 60 | 50 | 125 | 60 | 150 | 40 |
| **Non-fusible 600 Volt AC, 250 Volt DC — 6-Pole** | | | | | | | | | | | | |
| | 30 | **HNF661J** | 33 | **HNF661S** | 33 | — | 10 | — | 20 | — | 30 | 5 |
| | 60 | **HNF662J** | 35 | **HNF662S** | 35 | — | 20 | — | 50 | — | 60 | 10 |
| | 100 | **HNF663J** | 37 | **HNF663S** | 37 | — | 40 | — | 75 | — | 100 | 20 |
| | 200 | **HNF664J** | 80 | **HNF664S■** | 80 | — | 60 | — | 125 | — | 150 | 40 |

■ Built to order. Allow 3-5 weeks for delivery.

① Lugs are aluminum alloy as standard. Optional copper body lugs are available.

② All 4 & 6-pole VBII switches are suitable for use as service equipment when a neutral is installed or equipment ground kit is properly connected.

③ Dual horsepower ratings: Std. – applies when non-time-delay fuses are installed. Max. – applies when time delay fuses are installed.

④ Fusible switches accept Class H Fuses as the standard. Class R & J fuses can also be installed and increase the rating from 10,000 to 200,000 AIC. For Class J, the load base is moved upward. For Class R fuses, rejection kits are required.

⑤ Supplied with factory installed ground lugs.

# Special Application Safety Switches

## Interlocked Receptacle Switches

### Application

Receptacle Safety Switches provide cord connection protection of heavy-duty portable equipment (welders, infrared ovens, batch feeders, portable conveyors, assembly line fixtures and tools, refrigerator trucks, etc.) under load or fault conditions.

### Standards

All receptacle switches are UL listed under file #E4776. Those with a viewing window are also CSA certified under file #1079316.

### Description①②

Type 12 and 4/4X Receptacle Safety Switches are available with 3-phase, 4-wire grounded type Crouse-Hinds Arkite™ 2 or Pyle-National receptacle, pre-wired and mounted with interlock linkage to the switch mechanism. Insertion or removal of the plug is prevented by the interlock linkage while the switch is in the "ON" position. Receptacle prevents operation of switch if incorrect plug is inserted.

HF362JCH

## Crouse-Hinds Interlocked Receptacle Switches

| Ampere Rating④ | Type 12⑤ Catalog Number | Type 4/4X⑥ Catalog Number | Shipping Wt. (lbs.) Std. Pkg. | Accepts Crouse-Hinds Arktitea Plug Catalog Number |
|---|---|---|---|---|
| **240V Fusible, 3-Pole, 3-Wire** | | | | |
| 30 | **HF321JCH** | — | 23 | APJ3485 & NPJ3485 |
| 60 | **HF322JCH** | — | 30 | APJ6485 & NPJ6485 |
| 100 | **HF323JCH** | **HF323SCH▲** | 36 | APJ10487 & NPJ10487 |
| **600V Fusible, 3-Pole, 3-Wire** | | | | |
| 30 | **HF361JCH** | **HF361SCH** | 24 | APJ3485 & NPJ3485 |
| 60 | **HF362JCH** | **HF362SCH** | 30 | APJ6485 & NPJ6485 |
| 100 | **HF363JCH** | **HF363SCH▲** | 36 | APJ10487 & NPJ10487 |
| **600V Non-Fusible, 3-Pole, 3-Wire** | | | | |
| 30 | **HNF361JCH▲** | **HNF361SCH▲** | 22 | APJ3485 & NPJ3485 |
| 60 | **HNF362JCH** | **HNF362SCH** | 29 | APJ6485 & NPJ6485 |
| 100 | **HNF363JCH▲** | **HNF363SCH▲** | 35 | APJ10487 & NPJ10487 |
| **600V Fusible, 3-Pole, 3-Wire with Viewing Window** | | | | |
| 30 | **HF361JCHW▲** | **HF361SCHW▲** | 24 | APJ3485 & NPJ3485 |
| 60 | **HF362JCHW** | **HF362SCHW** | 30 | APJ6485 & NPJ6485 |
| 100 | **HF363JCHW▲** | **HF363SCHW▲** | 36 | APJ10487 & NPJ10487 |
| **600V Non-Fusible, 3-Pole, 3-Wire with Viewing Window** | | | | |
| 30 | **HNF361JCHW▲** | **HNF361SCHW▲** | 22 | APJ3485 & NPJ3485 |
| 60 | **HNF362JCHW** | **HNF362SCHW▲** | 29 | APJ6485 & NPJ6485 |
| 100 | **HNF363JCHW▲** | **HNF363SCHW▲** | 35 | APJ10487 & NPJ10487 |

## Pyle-National Interlocked Receptacle Switches 3-Poles Fusible and Non-Fusible

| Ampere Rating | | Voltage Rating | Type 12 Catalog Number⑤ | Shipping Wt. (lbs.) Std. Pkg. | Accepts Pyle-National QuelArc™②③ Plugs |
|---|---|---|---|---|---|
| Switch | Receptacle | | | | Plug Catalog Number |
| 30 | 30 | 600 (F) | **HF361JPN▲** | 23 | **JPD-83046** |
| | | 600 (N-F) | **HNF361JPN** | 21 | |
| 60 | 60 | 600 (F) | **HF362JPN▲** | 28 | **JPD-116046** |
| | | 600 (N-F) | **HNF362JPN** | 27 | |

▲ Built to order. Allow 6–8 weeks for delivery.

① Arktite™ is a registered trademark of the Crouse-Hinds Company. Plugs are not sold or supplied by Siemens.

② Indicates plug with maximum diameter cable bushing.

③ QuelArc™ is a registered trademark of the Pyle-National Company.

④ Ampere rating of both switch and receptacle.

⑤ Also rated Type 3R/3S.

⑥ Enclosure is constructed of Type 304 stainless steel.

# Special Application Safety Switches

## Type VBII Non-Metallic & 316 Grade Stainless Steel

### Application

Siemens Non-metallic switches provide a superior level of corrosion resistance to assure trouble free performance in the most severe conditions. Our non-metallic enclosures are constructed from fiberglass reinforced polyester and are extremely resistant to a wide range of corrosive atmospheres. They allow a wide range of operating temperatures and their insulating properties virtually eliminate problems caused by internal condensation.

### Description

30-200A, 600V Max, fusible and non-fusible switches are available in non-metallic enclosures. All are supplied with factory installed ground bars as standard.

### Type 4/4X Non-Metallic

| Ampere Rating | Catalog Number | Ship Weight Std. pkg. (lbs.) | Horsepower Rating—3-Phase | | | | | | 250 Volts DC | 600 Volts DC |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 240 Volt AC | | 480 Volt AC | | 600 Volt AC | | | |
| | | | Std. | Max. | Std. | Max. | Std. | Max. | | |
| **3-Pole, 4-Wire, 240 Volt Fusible, Type 4X⑤** | | | | | | | | | | |
| 30 | **HF321NX** | 21 | 3 | 7½ | — | — | — | — | 5 | — |
| 60 | **HF322NX▲** | 22 | 7½ | 15 | — | — | — | — | 10 | — |
| **3-Pole, 4-Wire, 600 Volt AC Fusible, Type 4X②③⑤** | | | | | | | | | | |
| 30 | **HF361NX** | 21 | 3 | 7½ | 5 | 15 | 7½ | 20 | 5 | 15④ |
| 60 | **HF362NX** | 22 | 7½ | 15 | 15 | 30 | 15 | 50 | 10 | 30④ |
| 100 | **HF363NX▲①** | 39 | 15 | 30 | 25 | 60 | 30 | 75 | 20 | 50④ |
| 200 | **HF364NX▲①** | 83 | 25 | 60 | 50 | 125 | 60 | 150 | 40 | 50 |
| **3-Pole, 3-Wire, 600 AC Volt Non-Fusible,① Type 4X②③** | | | | | | | | | | |
| 30 | **HNF361X** | 20 | — | 7½ | — | 20 | — | 30 | 5 | 15④ |
| 60 | **HNF362X** | 20 | — | 15 | — | 50 | — | 60 | 10 | 30④ |
| 100 | **HNF363X▲** | 38 | — | 30 | — | 75 | — | 100 | 20 | 50④ |
| 200 | **HNF364X▲** | 81 | — | 60 | — | 125 | — | 150 | 40 | 50 |

▲ Built to order. Allow 6–8 weeks for delivery.

① Also used for 240 volt applications.

② Add "L" to end of catalog number for switches less line & load lugs with mounting hardware for crimp type or copper body lugs.

③ 200A switches are also rated 600V DC max.

④ 600V DC voltage and horsepower rating shown requires (2) poles to be connected in series.

⑤ Supplied with factory installed neutral.

# Enclosed Solar Photovoltaic (PV) Switches



## Application

Solar disconnect switches are designed to be used in the DC portion of photovoltaic power generation circuits. They incorporate powerful magnets within the switch line base which work in combination with a double break switching action to quickly dissipate the very hot arc that is generated when a 600V DC circuit is opened under load. These circuits are defined by article 690 of the NEC which requires the grounded conductor to be at ground potential at all times and therefore cannot be switched.

## Description

30-200A switches are available in both Type 1 and 3R enclosures and in both fusible and non–fusible versions. They are provided with an additional door mounted warning label as required by the NEC and are supplied with a factory installed equipment ground bar. They are built to UL98 requirements but are UL listed in file number E335018 as UL1741 photovoltaic disconnect switches. They are 3 pole switches that are approved to switch 3 separate 600V DC circuits (one per pole). The design incorporates many of the standard VBII switch features including a rolled out enclosure front flange, a large metal operating handle, oversized line and load lugs and large wire gutters. 1000VDC photovoltaic switches are UL98B listed for solar applications and comply with article 690 of the NEC. The new 400-600Amp switches are also UL98B listed at 600VDC and come in NEMA Type 3R.

## Solar Photovoltaic Enclosed Disconnect Switches

| Ampere Rating | Indoor – Type 1 Catalog Number | Indoor – Type 1 Ship Wt* Std. Pkg. | Outdoor – Type 3R Catalog Number | Outdoor – Type 3R Ship Wt* Std. Pkg. | Rated Isc Per NEC Article 690 |
|---|---|---|---|---|---|
| **Negative Ground 3 Pole 3 Wire Fusible 600Volt DC** | | | | | |
| 30 | HF361PV | 14 | HF361RPV | 15 | 19.2 A |
| 60 | HF362PV | 20 | HF362RPV | 21 | 38.4 A |
| 100 | HF363PV▲ | 25 | HF363RPV | 26 | 64.0 A |
| 200 | HF364PV▲ | 49 | HF364RPV | 50 | 128.0 A |
| **Negative Ground 3 Pole 3 Wire Non-Fusible 600Volt DC** | | | | | |
| 30 | HNF361PV | 12 | HNF361RPV | 13 | 24.0 A |
| 60 | HNF362PV | 19 | HNF362RPV | 20 | 48.0 A |
| 100 | HNF363PV▲ | 24 | HNF363RPV | 25 | 80.0 A |
| 200 | HNF364PV▲ | 47 | HNF364RPV | 48 | 160.0 A |
| **Positive and Negative Ground, 1 Pole, Fusible 1000 Volt DC** | | | | | |
| 200 | HF1104NPV▲ | 52 | HF1104NRPV▲ | 53 | 128.0A |
| **Positive and Negative Ground, 1 Pole, Non-Fusible 1000 Volt DC** | | | | | |
| 200 | HNF1104NPV▲ | 50 | HNF1104NRPV▲ | 51 | 160.0A |
| **Positive Ground 3 Pole 3 Wire Fusible 600Volt DC** | | | | | |
| 30 | HF361PVPG | 14 | HF361RPVPG | 15 | 19.2 A |
| 60 | HF362PVPG▲ | 20 | HF362RPVPG | 21 | 38.4 A |
| 100 | HF363PVPG▲ | 25 | HF363RPVPG▲ | 26 | 64.0 A |
| 200 | HF364PVPG▲ | 49 | HF364RPVPG▲ | 50 | 128.0 A |
| **Positive Ground 3 Pole 3 Wire Non-Fusible 600Volt DC** | | | | | |
| 30 | HNF361PVPG | 12 | HNF361RPVPG | 13 | 24.0 A |
| 60 | HNF362PVPG▲ | 19 | HNF362RPVPG | 20 | 48.0 A |
| 100 | HNF363PVPG▲ | 24 | HNF363RPVPG▲ | 25 | 80.0 A |
| 200 | HNF364PVPG▲ | 47 | HNF364RPVPG▲ | 48 | 160.0 A |

**Positive and Negative Ground, 2 Wire, 600Volt DC, Type 3R**

| Amperage Rating | No. Poles | Fuse Type | Catalog Number | Ship Wt* Std. Pkg | Rated Isc Per NEC Article 690 |
|---|---|---|---|---|---|
| 400A | 1 | Fusible | HF165NRPV▲ | 165 | 256A |
| 400A | 1 | Non-fusible | HNF165NRPV▲ | 127 | 256A |
| 600A | 1 | Fusible | HF166NRPV▲ | 167 | 384A |
| 600A | 1 | Non-fusible | HNF166NRPV▲ | 129 | 384A |

HF361PV

HNF361RPV

HF362RPV

▲ Built to order. Allow 6–8 weeks for delivery.

* In pounds (lbs)

Note: All disconnects are rated at 10,000 AIC per UL requirements when used with or protected by Class K, J or R fuses rated at 600VDC.

## Description

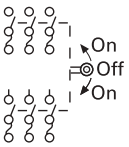
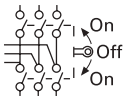
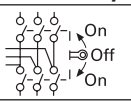
Double throw switches are intended to transfer loads from one power source to another. All 2 & 3-pole double throw switches are suitable for use as service equipment including non-fusible versions when used in combination with a UL listed circuit breaker or fusible switch. All are UL Listed and both horsepower and load break rated. Switches are rated for use on systems up to 10,000A when protected with Class H fuses or 100,000A when protected with Class R or Class T fuses②. They can also be used to connect a single source of power to either of two loads. In this application it is necessary to field modify fusible switches so that the fuses are on the load side of the switching mechanism.

A cover interlock is provided on all ampere ratings. The operating handle may be padlocked in the off position.

**Fuse Capabilities of Fusible DTF Switches**

| Amp Rating | Fuse Type | | | |
|---|---|---|---|---|
| | H | R | T | J |
| 30 & 60A, 240V | Std | Yes (kit) | No | No |
| 30 & 60A, 600V | Std | Yes (kit) | No | Yes③ |
| 100 & 200A | Std | Yes (kit) | Yes (kit) | Yes③ |
| 400 & 600A (DTF) | No | No | Yes③ | Std |

## Double Throw Switches

| System | Voltage | Number of Poles | Amps | Type 1 — Indoor Catalog Number | Type 3R — Outdoor① Catalog Number | Type 12/3R — Industrial Catalog Number | Type 4X — Stainless Steel Catalog Number |
|---|---|---|---|---|---|---|---|
| **Heavy Duty Fusible (30-200A) with Class H fuse spacings —Less Neutral ②** | | | | | | | |
|  | 240 Volt AC or 250 Volt DC | 2 | 200 | DTF224▲ | DTF224R | — | — |
| | | 3 | 30 | DTF321 | DTF321R▲ | — | — |
| | | | 60 | DTF322 | DTF322R▲ | — | — |
| | | | 100 | DTF323▲ | DTF323R | — | — |
| | | | 200 | DTF324 | DTF324R | — | — |
| | | | 400 | DTF325 | FR325DTK⑥▲ | — | — |
| | | | 600 | DTF326▲ | FR326DTK④▲ | — | — |
| | 600 Volt AC, 250 Volt DC | 3 | 30 | DTF361 | — | — | — |
| | | | 60 | DTF362▲ | — | — | — |
| | | | 100 | DTF363 | DTF363R | — | F353SSDTK⑥▲ |
| | | | 200 | DTF364 | DTF364R | — | F354SSDTK⑥▲ |
| | | | 400 | DTF365 | FR355DTK④▲ | — | F355SSDTK④▲ |
| **Heavy Duty Non-Fusible —Less Neutral ②** | | | | | | | |
|  | 240 Volt AC or 250 Volt DC | 2 | 30 | DTNF221 | — | — | — |
| | | | 60 | DTNF222 | — | — | — |
| | | | 100 | DTNF223 | — | — | — |
| | | | 200 | DTNF224 | DTNF224R | — | — |
| | | | 400 | DTNF225 | DTNF225R | — | — |
| | | 3 | 30 | DTNF321 | — | — | — |
| | | | 60 | DTNF322 | — | — | — |
| | | | 100 | DTNF323 | DTNF323R | — | — |
| | | | 200 | DTNF324 | DTNF324R | — | — |
| | | | 400 | DTNF325 | — | — | — |
| | | | 600 | DTNF326 | — | — | — |
| | | | 800 | DTNF327▲ | — | — | — |
| | 600 Volt AC, or 250 Volt DC | 3 | 30 | DTNF361 | DTNF361R | DTNF361J | DTNF361S |
| | | | 60 | DTNF362 | DTNF362R | DTNF362J | DTNF362S |
| | | | 100 | DTNF363 | DTNF363R | DTNF363J | DTNF363S |
| | | | 200 | DTNF364 | DTNF364R | DTNF364J▲ | DTNF364S |
| | | | 400 | DTNF365 | DTNF365R | NF355HDTK | NF355SSDTK |
| | | | 600 | DTNF366 | DTNF366R | — | — |
| | | | 800 | DTNF367 | DTNF367R | — | — |
| | | | 1200 | DTNF368▲ | DTNF368R | — | — |
| | | 4⑤ | 30 | — | NFR451DTK▲ | — | — |
| | | | 60 | — | NFR452DTK▲ | — | — |
| | | | 100 | — | NFR453DTK▲ | — | — |
| | | | 200 | NF454DTK | NFR454DTK▲ | — | NF454SSDTK▲ |
| | | | 400 | NF455DTK▲ | NFR455DTK▲ | — | — |
| | | | 600 | NF456DTK▲ | NFR456DTK▲ | — | — |
| | | | 800 | NF457DTK▲ | NFR457DTK▲ | — | — |
| **General Duty Non-Fusible** | | | | Type 3R — Outdoor① Less Neutral | Type 3R — Outdoor① With Neutral | Type 3R — Outdoor General Duty With Neutral ⑦ | |
|  | 240 Volt AC | 2 | 100 | DTGNF223R | DTGNF223NR | DTLNF213NR | — |
| | | | 200 | DTGNF224R | DTGNF224NR | — | — |
| | | 3 | 100 | DTGNF323R | DTGNF323NR | — | — |
| | | | 200 | DTGNF324R | DTGNF324NR | — | — |

▲ Built to order. Allow 3–4 weeks for delivery.

① Use HS Type hubs for 30–200A switches. 400A and larger switches do not have hub provisions.

② All Heavy Duty double throw switches with a catalog number starting with "DT" are rated 200,000 AIC max. when protected by Class R, J or T fuses. Fuse ampere rating must not exceed switch ampere rating.

③ Move load base.

④ Will accept class T Fuses only.

⑤ 4-pole switches are not approved for service entrance.

⑥ Will accept class H fuses only.

⑦ General duty Stand-by Power Panel catalog number DTLNF213NR contains (2) 100A, 2P circuit breakers rated 120/240V AC & 10,000 AIC.

# Accessories, Lug Data and Horsepower Ratings

## Accessories – 2 and 3-Pole Switches Type "DT" Only①

| Description | | Catalog Number |
|---|---|---|
| Neutral Kits | 30A<br>60 & 100A<br>200A<br>400 & 600A<br>800 & 1200A | HNC612<br>HN263<br>HNC264<br>HN678<br>HND678 |
| Equipment Ground Kit | 30-200A (2) #14-4 AWG<br>400 & 600A (4) #14-2/0<br>800-1200A (8) #6-350 Kcmil | HG61234<br>HG656<br>HG678 |
| Auxiliary Contacts (HD only) (two required per switch)④ | 30-200A with (1) NO & (1) NC contact<br>30-200A with (2) NO & (2) NC contacts<br>400-1200A with (1) NO & (1) NC contact<br>400-1200A with (2) NO & (2) NC contacts | HA161234<br>HA261234<br>HA165678<br>HA265678 |
| Class R Fuse Clip Kits (two required per switch) | 30A, 240V Kit<br>30A, 600V Kit/60A, 240V Kit<br>60A, 600V Kit<br>100A Kit<br>200A Kit | HR21<br>HR612<br>HR62<br>HR63<br>HR64 |
| Class T Fuse Adapter Kits (two required per pole) | 100A, 240V Kit<br>100A, 600V Kit<br>200A, 240V Kit<br>200A, 600V Kit | HT23<br>HT63<br>HT24<br>HT64 |
| Type 3R Hubs (30-200A) | For ¾" Conduit<br>For 1" Conduit<br>For 1 ¼" Conduit<br>For 1 ½" Conduit<br>For 2" Conduit<br>For 2 ½" Conduit | ECHS075<br>ECHS100<br>ECHS125<br>ECHS150<br>ECHS200<br>ECHS250 |

## Accessories – 4-Pole and Type "F" & "NF" 3-Pole Switches Only②

| Description | | Catalog Number |
|---|---|---|
| Auxiliary Switch (two required per switch) | 30-800A (1) NO, (1) NC④<br>(2) NO, (2) NC④ | DS200EK1<br>DS200EK2 |
| Ground Lug Kit③ | 30-60-100A<br>200A<br>400-600-800A | DS100GK<br>DS200GK<br>DS468GK |
| Hubs | 30-60-100A Use Type HR Hubs<br>200-400A Use Type SSH 4, 4X Hubs<br>600-800A Use Type SSH 4, 4X Hubs | |
| Neutrals (3-pole only) | 30-60-100A<br>200A<br>400 & 600A Fusible<br>400A 3P Non-Fusible | DT100NK<br>DT200NK<br>DS800NK<br>DT600NK |

## Maximum Horsepower Ratings

### Fused

| Ampere Rating | 1-Phase AC | 3-Phase AC | | | 250V DC |
|---|---|---|---|---|---|
| | 240V | 240V | 480V | 600V | |
| 30 | 3 | 7½ | 15 | 20 | 5 |
| 60 | 10 | 15 | 30 | 50 | 10 |
| 100 | 15 | 30 | 60 | 75 | 20 |
| 200 | 15 | 60 | 125 | 150 | 40 |
| 400 | — | 125 | 125 | 125 | 50 |
| 600 | — | 125 | — | — | 50 |

### Non-Fused

| | | | | | |
|---|---|---|---|---|---|
| 30 | 5 | 10 | 20 | 30 | 5 |
| 60 | 10 | 20 | 50 | 60 | 10 |
| 100 | 15 | 40 | 75 | 100 | 20 |
| 200 | 15 | 60 | 125 | 150 | 40 |
| 400-800 | — | 125 | 250 | 350 | 50 |

## Wire Ranges (Line, Load and Neutral) per NEC Requirements

### 30-200A – 2, 3 & 4-Pole Switches

| Switch Ampere Rating | Wire Range (Cu/Al) New VBII Design Line, Load and Neutral |
|---|---|
| 30 | (1) #14–6 |
| 60 | (1) #14–2 |
| 100 | (1) #14–1/0 AWG |
| 100 | (1) #14–1/0 AWG |
| 200 | (1) #6–250 kcmil |

### 400-1200A – 2 & 3-Pole Switches

| Switch Ampere Rating | Wire Range (Cu/Al) New VBII Design Line, Load and Neutral |
|---|---|
| 400 | (1) 1/0 AWG–750 kcmil or<br>(2) 1/0 AWG–250 kcmil |
| 600 | (2) 1/0 AWG–500 kcmil |
| 800 | (2) 1/0 AWG–750 kcmil or<br>(3) 1/0 AWG–500 kcmil |
| 1200 | (3) 1/0 AWG–600 kcmil or<br>(4) 1/0 AWG–500 kcmil |

### 400-800A – 4-Pole switches

| Switch Ampere Rating | Wire Range (Cu/Al) New VBII Design Line, Load and Neutral |
|---|---|
| 400 | (2) 1/0 AWG–300 kcmil or<br>(1) 1/0 AWG–750 kcmil |
| 600 | (2) 250-500 Kcmil |
| 800 | (3) 250-500 Kcmil |

## Replacement Parts – 2 and 3-Pole Switches Only①

| Description | | Catalog Number |
|---|---|---|
| Type 1, 3R & 12 Replacement Handle | 30-200A | HHD61234 |
| Type 4X Replacement Handle | 30-200A | HHD61234S |
| Replacement Handle | 400-1200A | HHD656 |

▲ Built to order. Allow 6–8 weeks for delivery.

① For "DT" VBII Type switches only.
② Also for fusible stainless & 400A Type 12 & 4x switches.
③ The following ground lugs are provided as standard in 200A and larger switches 200-(1) #14-4 Cu/Al 400-800A-(3) #6-250MCM Cu/Al.
④ One aux. required for normal and one required for emergency switch line base.

HR612

### Class R Fuse Clip Kits

All General Duty and Heavy Duty Switches are field convertible to accept Class R Fuse Clip Kits. The kits prevent the installation of Class H and K fuses (one kit required per 3-pole switch).

## Class R Fuse Clip Kits

| Catalog Number | Description |
|---|---|
| **HR21A** | 30A, 240V Kit (GD only) |
| **HR21** | 30A, 240V Kit (HD only) |
| **HR612** | 30A, 600V Kit |
| **HR22A** | 60A 240V Kit (GD only) |
| **HR62** | 60A, 600V Kit |
| **HR63** | 100A Kit |
| **HR64** | 200A Kit |
| **HR656A** | 400A Kit |
| **HR656A** | 600A Kit |

### Class J Fusing

All 30-600A, 600V and 100-600A,240V fusible Heavy Duty Switches are field convertible to accept Class J fuses by moving the load base to a pre-drilled J fuse position. All 100-600A fusible General Duty switches can also be field converted to accept Class J fuses. ***Note:*** Only 600A switches require an adapter kit to be field converted to Class J.

## Class J Fuse Kits

| Catalog Number | Description |
|---|---|
| **HJ66A** | 600A, 240V/600V Kit |

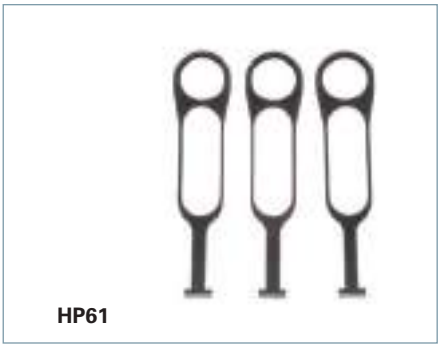
HT63

### Class T Fuse Adapter Kits

All 100-1200A Switches are field convertible to accept Class T fuses. 800A switch can accept class T without adapter kit

## Class T Fuse Adapter Kits①

| Catalog Number | Description |
|---|---|
| **HT23** | 100A, 240V Kit |
| **HT63** | 100A, 600V Kit |
| **HT24** | 200A, 240V Kit |
| **HT64▲** | 200A, 600V Kit |
| **HT25A** | 400A, 240V Kit |
| **HT65A** | 400A, 600V Kit |
| **HT26A** | 600A, 240V Kit |
| **HT66A** | 600A, 600V Kit |
| No kit required | 800A, 240V |
| No kit required | 800A, 600V |
| **TFAK82** | 1200A, 240V Kit |



HP61

### Fuse Puller Kits

Fuse Puller Kits are field installable in 30-100A Type VBII Heavy Duty Switches (one kit required per 3-pole switch).

## Fuse Puller Kits

| Switch Ampere Rating | Fuse Puller Kit Catalog Number |
|---|---|
| 30 | **HP61** |
| 60 | **HP62▲** |
| 100 | **HP63▲** |

▲ Built to order. Allow 6–8 weeks for delivery.
① One kit per pole required.

### Full Coverage Shielding

Kits provide a clear plastic inner shield to prevent contact with any internal switch parts. The shield covers the complete opening of the switch. Fuses can be accessed via a shield-integrated hinged door.

## Full Coverage Shielding

| Switch Ampere Rating | Kit Catalog Number | Coverage | Qty to Order Per Switch |
|---|---|---|---|
| 30A HD Fusible① | **HSK61SSW** | Full | 1 |
| 60A HD① | **HSK62SSW** | Full | 1 |
| 100A HD① | **HSK63SSW** | Full | 1 |
| 200A HD① | **HSK64SSW** | Full | 1 |

### Service Entrance Compliant Internal Barriers

All HD and 400A, 600A GD come with line side shielding from the factory to reduce chance of incidental contact with live parts. When switches are utilized as a service entrance, additional internal shielding is required by the latest UL 98 standard and to meet NEC 230.62. These barriers are field installable.

## Internal Line side barrier kits

| Switch Ampere Rating | Kit Catalog Number | Coverage | Qty to Order Per Switch |
|---|---|---|---|
| 30-60A GD Non-fusible | **HSK212BA** | Line Side | 1 |
| 30A GD Fusible | **HSK21BA** | Line Side | 1 |
| 60A GD Fusible | **HSK22BA** | Line Side | 1 |
| 100A GD | **HSK23B** | Line Side | 1 |
| 200A GD | **HSK24B** | Line Side | 1 |
| 30A HD | **HSK61B** | Line Side | 1 |
| 60-100A HD | **HSK623B** | Line Side | 1 |
| 200A HD | **HSK64B** | Line Side | 1 |
| 400-600A HD/GD | **HSK656BA** | Line Side | 1 |
| 800A HD | **HSK67B** | Line Side | Per Pole |
| 1200A HD | **HSK68B** | Line Side | Per Pole |

**HN264**

### 200% Neutral Kits

UL listed 200% Neutrals are available on 100-600A Heavy Duty Switches. They are typically used with non-linear transformers or where increased neutral ampacity/lug capacity is required.

## 200% Neutral Kits

| Switch Ampere Rating | Kit Catalog Number | Wire Range Line & Load Lugs (Cu/Al) |
|---|---|---|
| 100 | **HN263** | (2) #14-1/0 AWG |
| 200 | **HN264** | (2) #6 AWG-300 Kcmil |
| 400 | **HN656A** | (2) 1/0 AWG-600 Kcmil<br>(2) #6 AWG-300 Kcmil |
| 600 | **HN678A** | (4) 1/0 AWG - 600 Kcmil<br>(2) #6 AWG - 300 Kcmil |

**HN612**

### Neutral Kits

Standard Neutral Kits can be field installed in General and Heavy Duty Switches.

## Neutral Kits

| Switch Ampere Rating | Kit Catalog Number |
|---|---|
| 30 GD | n/a |
| 30 HD | **HN612** |
| 60 GD | **HN22A** |
| 60, 100 HD, 100 GD | **HN623** |
| 200 | **HN64** |
| 400 & 600 | **HN656A** |
| 800 & 1200 | **HN678** |

▲ Built to order. Allow 6–8 weeks for delivery.

① Not designed for use in Non-metallic 4X safety switches. Not designed for use with Auxiliary Contacts.

HA261234

HA265678



HLC612

HG261234

### Auxiliary Contacts

Auxiliary Contacts are available only for Heavy Duty Switches. The auxiliary contacts are available in 1 normally open and 1 normally closed or 2 normally open and 2 normally closed configurations. Siemens offers a PLC Auxiliary Switch (30-600A) that has very low resistance for low voltage and current typical in PLC circuits. All auxiliary contacts make after and break before main switch contacts.

## Auxiliary Contacts①

| Switch Ampere | Aux. Switch Catalog Number | Kit Ampere Rating 125V AC Max. | 250V AC Max. | 28V DC Max. | Horsepower Rating 125V AC Max. | 250V AC Max. |
|---|---|---|---|---|---|---|
| **With 1 NO & 1 NC Isolated Contacts** | | | | | | |
| 30-600 | **HA161234** | 10 | 10 | 7 | 1/2 | 3/4 |
| 800-1200 | **HA165678** | 10 | 10 | — | 1/2 | 3/4 |
| **With 2 NO & 2 NC Isolated Contacts** | | | | | | |
| 30-600 | **HA261234** | 10 | 10 | 7 | 1/2 | 3/4 |
| 800-1200 | **HA265678** | 10 | 10 | 7 | 1/2 | 3/4 |
| **Low Current PLC Type with 1 NO & 1 NC Gold Plated Contacts** | | | | | | |
| 30-600 | **HA361234** | 10 | 10 | 7 | 1/2 | 3/4 |
| 800-1200 | **HA365678** | 10 | 10 | — | 1/2 | 3/4 |

### Copper Lug Kits

Heavy duty switches are UL approved to accept field installed copper lug kits.

## Copper Lug Kits

| Switch Ampere Rating | Copper Lug Catalog Number | Description |
|---|---|---|
| 30–60 | **HLC612** | (9) Lugs/Kit #14-4 AWG Cu |
| 100 | **HLC63▲** | (9) Lugs/Kit #14-1/0 AWG Cu |
| 200 | **HLC64▲** | (9) Lugs/Kit #6 AWG-300 Kcmil Cu |
| 400-600 | **HCU656A■** | (1) Lugs/Kit #1/0 AWG-600 Kcmil Cu |
| 800–1200 | **HLC65678** | (1) Lugs/Kit #1/0 AWG-600 Kcmil Cu |

▲ Built to order. Allow 6–8 weeks for delivery.

■ Purchase field replacement kit along with lugs.

① Series A 400A and 600A switches use HA161234, HA261234 or HA361234 auxiliary contacts. Earlier 400A and 600A switches use HA165678, HA265678 or HA365678 auxiliary contacts.

### Quick Connects

They provide two point control power take-off capability and are normally used on two poles on the line side when it is required to have control power available when the switch is in the OFF position. They provide a mounting provision for standard ¼" quick connect terminal. Installed in the line or load side. 30A VBII switches have lugs UL listed to accept (2) wires per pole as standard so a 30A kit is not required.

## Quick Connects

| Catalog Number | Description |
|---|---|
| **HCQ62** | 60A 2 wire quick connect kit |
| **HCQ63** | 100A 2 wire quick connect kit |
| **HCQ64** | 200A 2 wire quick connect kit |

### Isolated Ground Kits

Isolated Ground Kits are available on 30-600A Heavy Duty Switches. They are normally used on circuits with a high content of computer or other electronic loading which require a ground which is isolated from the building ground and neutral circuits. The kit includes both isolated and grounded terminals as listed below.

## Isolated Ground Kits

| Switch Ampere Rating | Catalog Number | Number of Terminals Isolated | Grounded | Wire Range Per Terminal (Cu/Al) |
|---|---|---|---|---|
| 30–200 | **HG261234** | 2 | 2 | #14-4 AWG |
| 400–600 | **HG2656A** | 4 | 4 | 2/0-14 AWG<br>2/0-6 AWG |

### Equipment Ground Kits

Equipment Ground Lug Kits are available for all General and Heavy Duty Switches. They are field installable in Type 1 and Type 3R Switches and are factory installed as standard in Type 4 / 4X and Type 12 and also in all VBII 4&6-pole Switches.

## Equipment Ground Kits

| Switch Ampere Rating | Catalog Number | Number of Terminals | Wire Range Per Terminal (Cu/Al) |
|---|---|---|---|
| 30–200 GD | **HG61234** | 2 | #14-4 AWG |
| 30–200 HD | **HG61234** | 2 | #14-4 AWG |
| 400 & 600 | **HG656A** | 4 | 2/0-6 AWG |
| 800–1200 | **HG678** | 8 | #6 AWG-250 Kcmil |

### Interchangeable Hubs

Conduit hubs are available for Type 3R, 12 and 4 / 4X applications. 30-200A Type 3R Switches are provided with a conduit hub provision and a removable hub plate on their top rainshed.

| Conduit Size (inches) | Catalog Number | Used On |
|---|---|---|
| **Type 3R①** | | |
| Cover | **ECHA000** | 30–60A GD Only |
| 3/4 | **ECHA075** | |
| 1 | **ECHA100** | |
| 1 1/4 | **ECHA125** | |
| Cover | **ECHS000** | 100–200A GD<br>30–200A HD |
| 3/4 | **ECHS075** | |
| 1 | **ECHS100** | |
| 1 1/4 | **ECHS125** | |
| 1 1/2 | **ECHS150** | |
| 2 | **ECHS200** | |
| 2 1/2 | **ECHS250** | |
| 2 1/2 | **ECHV250** | 400–1200A② |
| 3 | **ECHV300** | |
| 3 1/2 | **ECHV350** | |
| 4 | **ECHV400** | |
| **Type 4/4X③** | | |
| 3/4 | **SSH075** | 30–200A |
| 1 | **SSH100** | |
| 1 1/4 | **SSH125** | |
| 1 1/2 | **SSH150** | |
| 2 | **SSH200** | |

**Note:** 30 thru 200A. Type 3R Switches have removable hub plates on rainshed. 400A and larger Type 3R Switches have no provisions for mounting hubs. Drill or punch hole in the field to accommodate hub size desired.

### Field Replacement Kits and Neutral Barrier Kits

All Heavy Duty Switches are field convertible for (Crimp) type lugs. When compression lugs are required for 30-100A switches, a neutral barrier kit is required for 1-Phase, 3W or 3-Phase, 4W applications. When compression lugs are required on 400-1200A switches, lug mounting kits are required.

## Field Replacement Kits and Neutral Barrier Kits

| Switch Ampere Rating | Catalog Number | Kit Description |
|---|---|---|
| 30 | **HCL612** | Neutral Barrier Kit |
| 60 & 100 | **HCL623** | Neutral Barrier Kit |
| 400 | **HCM65A** | 240V/600V Fusible Kit |
| 400 | **HNCM65A** | 240/600V Non-Fusible Kit |
| 600 | **HCM66A** | 240V/600V Fusible Kit |
| 600 | **HNCM66A** | 240V/600V Non-Fusible Kit |
| 800④ | **HCL65678■** | 1 Pole, Compression Lug Mounting Kit |

### Lugs

30 & 60A HD Switches are suitable for use with 60° or 75°C wire. 100-1200A are suitable for use with 75°C rated wire.

### Multiple Padlock Accessory

A tamper-proof device to provide for multiple padlocking to meet OSHA or plant requirements. Accepts up to 6 1/4" padlocks. Catalog number **SL0420**. Standard Carton-12.

**SSH125**

**ECHV300**

**ECHS200**

**SL0420**

■ Built to order. Allow 3-4 weeks for delivery.

① Hubs suitable for 3R Switches.
② 400-1200A require an additional Hub Gasket Kit with use of a Hub. Catalog number HVGK is a suitable gasket kit for this.
③ Also suitable for Type 12 applications.
④ Provides mounting for (2) compression lugs per phase on line or load.

## Safety Switch Dimensions (Inches)* & Shipping Weights

| Catalog Number | Height | | | Width | | Depth | | Knockout Diagram① | Approx. Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | Box A | With Door B | With Rain Shed C | Box D | With Handle E | Box F | With Handle G | | |
| **GF221NA, GF321NA** | 8.4 | 8.56 | — | 5.08 | 5.44 | 2.93 | 3.96 | S4 | 30(10) |
| **GF221NRA, GF321NRA** | 8.4 | 8.56 | 8.56 | 5.08 | 5.44 | 2.93 | 3.96 | S5 | 30(10) |
| **GF221NLA, GF321NLA** | 9.91 | 10.07 | 10.07 | 6.06 | 6.42 | 3.21 | 4.24 | S26 | 20(5) |
| **GF221NRLA, GF321NRLA** | 9.91 | 10.07 | — | 6.06 | 6.42 | 3.21 | 4.24 | S25 | 20(5) |
| **GF222NA, GF3222NA** | 9.91 | 10.07 | — | 6.06 | 6.42 | 3.21 | 4.24 | S21 | 20(5) |
| **GF222NRA, GF322NRA** | 9.91 | 10.07 | 10.07 | 6.06 | 6.42 | 3.21 | 4.24 | S22 | 20(5) |
| **GF223NA** | 16.3 | 17.5 | — | 10.2 | 11.2 | 5.1 | 8.5 | S16 | 17 |
| **GF223NRA** | 16.3 | 17.5 | 17.8 | 10.2 | 11.2 | 5.1 | 8.5 | S17 | 17 |
| **GF224NA** | 25 | 26 | — | 15.4 | 16.6 | 7.8 | 10.7 | S12 | 37 |
| **GF224NRA** | 25 | 26 | 26.3 | 15.4 | 16.6 | 7.8 | 10.7 | S13 | 37 |
| **GF225NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 91.1 |
| **GF225NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 91.1 |
| **GF226NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 95.6 |
| **GF226NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 95.6 |
| **GF323NA** | 16.3 | 17.5 | — | 10.2 | 11.2 | 5.1 | 8.5 | S16 | 17 |
| **GF323NRA** | 16.3 | 17.5 | 17.8 | 10.2 | 11.2 | 5.1 | 8.5 | S17 | 17 |
| **GF323NLA** | 21.95 | 23.15 | — | 9.64 | 11.7 | 5.05 | 8.63 | S10 | 25 |
| **GF323NRLA** | 21.95 | — | 23.46 | 9.64 | 11.67 | 5.05 | 8.7 | S11 | 25 |
| **GF324NA** | 25 | 26 | — | 15.4 | 16.6 | 7.8 | 10.7 | S12 | 37 |
| **GF324NRA** | 25 | 26 | 26.3 | 15.4 | 16.6 | 7.8 | 10.7 | S13 | 37 |
| **GF324NLA** | 29.9 | 31.07 | — | 14.62 | 16.68 | 6.36 | 10.92 | S12 | 49 |
| **GF324NRLA** | 29.9 | — | 31.42 | 14.61 | 16.68 | 6.36 | 10.92 | S13 | 50 |
| **GF325NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 94.6 |
| **GF325NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 94.6 |
| **GF326NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 99.6 |
| **GF326NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 99.6 |
| **GF326NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 99.6 |
| **GNF221A, GNF321A** | 6.18 | 6.35 | — | 4.2 | 4.56 | 2.88 | 3.93 | S4 | 20(10) |
| **GNF221RA, GNF321RA** | 6.18 | 6.35 | 6.35 | 4.2 | 4.56 | 2.88 | 3.93 | S5 | 20(10) |
| **GNF321LA, GNF221LA** | 8.4 | 8.56 | — | 5.08 | 5.43 | 2.93 | 3.95 | S4 | 30(10) |
| **GNF321LLA, GNF221LLA** | 9.91 | 10.07 | — | 6.06 | 6.42 | 3.21 | 4.24 | S24 | 20(5) |
| **GNF321RLA, GNF221RLA** | 8.4 | 8.56 | 8.56 | 5.08 | 5.43 | 2.93 | 3.95 | S5 | 30(10) |
| **GNF321RLLA, GNF221RLLA** | 9.91 | 10.07 | 10.07 | 6.06 | 6.42 | 3.21 | 4.24 | S23 | 20(5) |
| **GNF222A, GNF322A** | 8.4 | 8.56 | — | 5.08 | 5.43 | 2.93 | 3.95 | S4 | 30(10) |
| **GNF322LA, GNF222LA** | 9.91 | 10.07 | — | 6.06 | 6.42 | 3.21 | 4.24 | S24 | 20(5) |
| **LNF222RA, LNF221RLA** | 8.4 | 8.56 | 8.56 | 5.08 | 5.43 | 2.93 | 3.95 | S20 | 30(10) |
| **GNF322RLA, GNF222RLA** | 9.91 | 10.07 | 10.07 | 6.06 | 6.42 | 3.21 | 4.24 | S23 | 20(5) |
| **GNF222RA, GNF322RA** | 8.4 | 8.56 | 8.56 | 5.08 | 5.43 | 2.93 | 3.95 | S5 | 30(10) |
| **LNF221RLLA, LNF222RLA** | 9.91 | 10.07 | — | 6.06 | 6.42 | 3.21 | 4.24 | S23 | 20(5) |
| **GNF323A** | 16.3 | 17.5 | — | 10.2 | 11.2 | 5.1 | 8.5 | S16 | 17 |
| **GNF323RA, GNF223RA** | 16.3 | 17.5 | 17.8 | 10.2 | 11.2 | 5.1 | 8.5 | S17 | 17 |
| **GNF324A** | 25 | 26 | — | 15.4 | 16.6 | 7.8 | 10.7 | S12 | 35 |
| **GNF324RA, GNF224RA** | 25 | 26 | 26.3 | 15.4 | 16.6 | 7.8 | 10.7 | S13 | 35 |
| **GNF325A** | 33.47 | 33.96 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 75 |
| **GNF326A** | 33.47 | 33.96 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 77 |
| **HF221J** also **HF261J** | 14.27 | 17.33 | — | 6.65 | 9.02 | 5.32 | 10.46 | — | 13 |
| **HF221N** also **HF261** | 14.26 | 14.60 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| **HF221NR** also **HF261R** | 14.34 | — | 14.91 | 6.64 | 7.88 | 5.00 | 9.18 | S8 | 14 |
| **HF221S** also **HF261S** | 14.27 | 17.33 | — | 6.65 | 9.02 | 5.32 | 10.46 | — | 13 |
| **HF222J** also **HF262J** | 16.22 | 19.31 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 19 |
| **HF222N** also **HF262** | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| **HF222NR** also **HF262R** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| **HF222S** also **HF262S** | 16.22 | 19.31 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 19 |
| **HF223J** also **HF263J** | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 24 |
| **HF223N** also **HF263** | 21.95 | 23.15 | — | 9.64 | 12.01 | 5.05 | 10.17 | S10 | 23 |
| **HF223NR** also **HF263R** | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 24 |
| **HF223S** also **HF263S** | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 24 |
| **HF224J** | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 48 |
| **HF224N** | 29.9 | 31.07 | — | 14.62 | 16.98 | 6.36 | 12.33 | S12 | 47 |
| **HF224NR** | 29.9 | — | 31.42 | 14.61 | 16.99 | 6.36 | 12.33 | S13 | 48 |
| **HF224S** | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 48 |
| **HF225NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 91.1 |
| **HF225NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 91.1 |
| **HF226NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 95.6 |
| **HF226NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 95.6 |
| **HF227N** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 360 |
| **HF227NR** | 66.67 | — | 67.74 | 38.4 | 39.96 | 9.24 | 14.68 | — | 362 |
| **HF228N** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 362 |

***For inches / millimeters conversion, multiply inches by 25.4.**

① Knocks not provided on Type 4 / 4X and 12 or in 800 & 1200A switches.

## Safety Switch Dimensions (Inches)* & Shipping Weights

| Catalog Number | Height | | | Width | | Depth | | Knockout Diagram① | Approx. Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | Box A | With Door B | With Rain Shed C | Box D | With Handle E | Box F | With Handle G | | |
| HF228NR | 66.67 | — | 67.74 | 38.4 | 39.96 | 9.24 | 14.68 | — | 364 |
| HF261 | 14.26 | 14.60 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| HF261R | 14.34 | — | 14.91 | 6.64 | 7.88 | 5.00 | 9.18 | S8 | 14 |
| HF262 | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| HF262R | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| HF321J | 14.27 | 17.33 | — | 6.65 | 9.02 | 5.32 | 10.46 | — | 14 |
| HF321N | 14.26 | 14.60 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| HF321NR | 14.34 | — | 14.91 | 6.64 | 7.88 | 5.00 | 9.18 | S8 | 14 |
| HF321S, SS | 14.27 | 17.33 | — | 6.65 | 9.02 | 5.32 | 10.46 | — | 14 |
| HF322J | 16.27 | 19.31 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 20 |
| HF322N | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| HF322NR | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| HF322S, SS | 16.27 | 19.31 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 20 |
| HF323J | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 25 |
| HF323N | 21.95 | 23.15 | — | 9.64 | 12.01 | 5.05 | 10.17 | S10 | 25 |
| HF323NR | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 26 |
| HF323S, SS | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 25 |
| HF324J | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 49 |
| HF324N | 29.9 | 31.07 | — | 14.62 | 16.98 | 6.36 | 12.33 | S12 | 49 |
| HF324NR | 29.9 | — | 31.42 | 14.61 | 16.99 | 6.36 | 12.33 | S13 | 50 |
| HF324S, SS | 21.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 49 |
| HF325JA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 93 |
| HF325NA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 94.6 |
| HF325NRA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 94.6 |
| HF325SA | 45.32 | 45.81 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 93 |
| HF325SSA | 45.32 | 45.81 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 93 |
| HF326JA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 98 |
| HF326NA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 99.6 |
| HF326NRA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 99.6 |
| HF326SA | 45.32 | 45.81 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 98 |
| HF326SSA | 45.32 | 45.81 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 98 |
| HF327J | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 367 |
| HF327N | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 380 |
| HF327NR | 66.67 | — | 67.74 | 38.4 | 40.25 | 9.24 | 14.68 | — | 383 |
| HF327S | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 367 |
| HF328N | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 382 |
| HF328NR | 66.67 | — | 67.74 | 38.4 | 40.25 | 9.24 | 14.68 | — | 385 |
| HF361, PV, PVPG | 14.26 | 14.60 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| HF361J, JW | 14.27 | 17.33 | — | 6.65 | 9.02 | 5.32 | 10.46 | — | 14 |
| HF361L | 16.26 | 17.46 | — | 9.15 | 11.53 | 5.05 | 10.17 | S16 | 19 |
| HF361N | 14.26 | 14.60 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| HF361NR | 14.34 | — | 14.91 | 6.64 | 7.88 | 5.00 | 9.18 | S8 | 14 |
| HF361R, RPV, RPVPG | 14.34 | — | 14.91 | 6.64 | 7.88 | 5.00 | 9.18 | S8 | 14 |
| HF361RL, RW | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| HF361S, SS, SSW, SW | 14.27 | 17.33 | — | 6.65 | 9.02 | 5.32 | 10.46 | — | 15 |
| HF362, PV, PVPG | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| HF362J, JW | 16.27 | 19.31 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 20 |
| HF362N | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| HF362NR | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| HF362R, RPV, RPVPG, RW | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| HF362RL | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 25 |
| HF362S, SS, SSW, SW | 16.27 | 19.31 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 20 |
| HF363, PV, PVPG | 21.95 | 23.15 | — | 9.64 | 12.01 | 5.05 | 10.17 | S10 | 24 |
| HF363J, JW | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 25 |
| HF363N | 21.95 | 23.15 | — | 9.64 | 12.01 | 5.05 | 10.17 | S10 | 25 |
| HF363NR | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 26 |
| HF363R, RPV, RPVPG | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 25 |
| HF363S, SS, SSW, SW | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 25 |
| HF364, PV, PVPG | 29.9 | 31.07 | — | 14.62 | 16.98 | 6.36 | 12.33 | S12 | 48 |
| HF364J, JW | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 49 |
| HF364N | 29.9 | 31.07 | — | 14.62 | 16.98 | 6.36 | 12.33 | S12 | 49 |
| HF364NR | 29.9 | — | 31.42 | 14.61 | 16.99 | 6.36 | 12.33 | S13 | 48 |
| HF364R, RPV, RPVPG | 29.9 | — | 31.42 | 14.61 | 16.99 | 6.36 | 12.33 | S13 | 49 |
| HF364S, SS, SSW, SW | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 49 |
| HF365A | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 93 |
| HF365JA, JWA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 93 |
| HF365NA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 94.6 |
| HF365NRA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 94.6 |

***For inches / millimeters conversion, multiply inches by 25.4.**

① Knocks not provided on Type 4 / 4X and 12 or in 800 & 1200A switches.

## Safety Switch Dimensions (Inches)* & Shipping Weights

| Catalog Number | Height | | | Width | | Depth | | Knockout Diagram① | Approx. Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | Box A | With Door B | With Rain Shed C | Box D | With Handle E | Box F | With Handle G | | |
| **HF365RA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 93 |
| **HF365SA, SS, SWA, SSWA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 93 |
| **HF366A** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 98 |
| **HF366JA, JWA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 98 |
| **HF366NA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S18 | 99.6 |
| **HF366NRA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 99.6 |
| **HF366RA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 98 |
| **HF366SA, SSA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 98 |
| **HF367** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 380 |
| **HF367J, JW** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 380 |
| **HF367N** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 382 |
| **HF367NR** | 66.67 | — | 67.74 | 38.4 | 40.25 | 9.24 | 14.68 | — | 386 |
| **HF367R, RW** | 66.67 | — | 67.74 | 38.4 | 40.25 | 9.24 | 14.68 | — | 382 |
| **HF367S, SW** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 380 |
| **HF368, J, S, JW, SW** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 383 |
| **HF368N** | 66.67 | 67.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 385 |
| **HF368NR** | 66.67 | — | 67.74 | 38.4 | 40.25 | 9.24 | 14.68 | — | 388 |
| **HF368R, RW** | 66.67 | — | 67.74 | 38.4 | 40.25 | 9.24 | 14.68 | — | 385 |
| **HFC221N** | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| **HFC221NR** | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| **HFC222N** | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| **HFC222NR** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| **HFC261** | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| **HFC261R** | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| **HFC262** | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| **HFC262R** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| **HFC321N** | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| **HFC321NR** | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| **HFC322N** | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| **HFC322NR** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| **HFC361** | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| **HFC361N** | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| **HFC361NR** | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| **HFC361R** | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| **HFC362** | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| **HFC362N** | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| **HFC362NR** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| **HFC362R** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| **HNF365JA, JWA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 75 |
| **HNF365RA** | 33.47 | 33.96 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 75 |
| **HNF365SA, SSA, SWA, SSWA** | 33.47 | 33.96 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 75 |
| **HNF366SA, SSA** | 33.47 | 33.96 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 77 |
| **HNF366JA, JWA** | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 77 |
| **HNF366RA** | 33.47 | 33.96 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 77 |
| **HNF361, PV, PVPG** also **HNF261 & HNF362H, HNFC261, HNFC361** | 11.11 | 11.45 | — | 6.64 | 7.72 | 4.7 | 9.15 | S7 | 11 |
| **HNF361J, JW** also **HNF261J & HNF362JH** | 11.12 | 14.14 | — | 6.65 | 9.02 | 5.56 | 10.46 | — | 13 |
| **HNF361R, RPV, RPVPG** also **HNF261R & HNF362RH, HNFC261R, HNFC361R** | 11.09 | — | 11.76 | 6.64 | 7.88 | 5 | 8.91 | S9 | 12 |
| **HNF361RL, HNF362R, RPV, RPVPG** also **HNF262R, HNFC262R, HNFC362R** | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.14 | S17 | 18 |
| **HNF361S, SS, SSW, SW** also **HNF261S & HNF362SH** | 11.12 | 14.14 | — | 6.65 | 9.02 | 5.56 | 10.46 | — | 13 |
| **HNF362, PV, PVPG** also **HNF262, HNFC262, HNFC362** | 16.26 | 16.62 | — | 9.16 | 10.26 | 4.71 | 9.04 | S16 | 17 |
| **HNF362J, JW** also **HNF262J** | 16.27 | 17.46 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 19 |
| **HNF362RL, HNFC262R, HNFC362R** | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 24 |
| **HNF362S, SS, SSW, SW** also **HNF262S** | 16.27 | 17.46 | — | 9.17 | 11.47 | 5.33 | 10.46 | — | 19 |
| **HNF263** | 16.3 | 17.5 | — | 10.2 | 11.5 | 5.1 | 10.2 | S16 | 17 |
| **HNF236R** | 16.3 | 17.5 | 17.8 | 10.2 | 11.5 | 5.1 | 10.2 | S17 | 17 |
| **HNF363** | 16.3 | 17.5 | — | 10.2 | 11.5 | 5.1 | 10.2 | S16 | 17 |
| **HNF363R** | 16.3 | 17.5 | 17.8 | 10.2 | 11.5 | 5.1 | 10.2 | S17 | 17 |
| **HNF363L, PV, PVPG** | 21.95 | 23.15 | — | 9.64 | 12.01 | 5.05 | 10.17 | S10 | 23 |
| **HNF363J, JW** also **HNF263J** | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 24 |
| **HNF363RL, RPV, RPVPG** also **HNF263R** | 21.95 | — | 23.46 | 9.64 | 11.97 | 5.05 | 10.17 | S11 | 24 |
| **HNF364** | 25 | 26 | — | 15.4 | 16.6 | 7.8 | 12.3 | S12 | 35 |
| **HNF364R** | 25 | 26 | 26.3 | 15.4 | 16.6 | 7.8 | 12.3 | S13 | 35 |
| **HNF363S, SS, SSW, SW** also **HNF263S** | 21.96 | 23.16 | — | 9.65 | 12.02 | 5.34 | 10.46 | — | 24 |

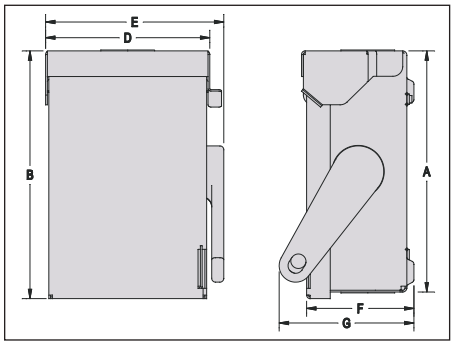
***For inches / millimeters conversion, multiply inches by 25.4.**

① Knocks not provided on Type 4 / 4X and 12 or in 800 & 1200A switches.

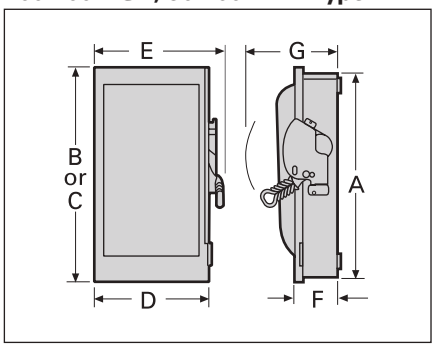
## Safety Switch Dimensions (Inches)* & Shipping Weights

| Catalog Number | Height | | | Width | | Depth | | Knockout Diagram① | Approx. Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | Box A | With Door B | With Rain Shed C | Box D | With Handle E | Box F | With Handle G | | |
| HNF364L, PV, PVPG | 29.9 | 31.07 | — | 14.62 | 16.98 | 6.36 | 12.33 | S12 | 46 |
| HNF364J, JW | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 47 |
| HNF364RL, RPV, RPVPG | 29.9 | — | 31.42 | 14.61 | 16.99 | 6.36 | 12.33 | S13 | 47 |
| HNF364S, SS, SSW, SW | 29.96 | 31.07 | — | 14.62 | 16.95 | 6.63 | 12.58 | — | 47 |
| HNF365JA, JWA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 75 |
| HNF365RA | 33.47 | 33.96 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 75 |
| HNF365SA, SSA, SWA, SSWA | 33.47 | 33.96 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 75 |
| HNF366JA, JWA | 45.32 | 45.81 | — | 22.4 | 23.404 | 6.97 | 10.05 | — | 77 |
| HNF366RA | 33.47 | 33.96 | — | 22.4 | 23.404 | 6.94 | 9.93 | S19 | 77 |
| HNF366SA | 33.47 | 33.96 | — | 22.4 | 23.404 | 7.34 | 10.347 | — | 77 |
| HNF367, J, JWA | 54.67 | 55.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 302 |
| HNF367R, RW | 54.67 | — | 55.7 | 38.4 | 40.25 | 9.24 | 14.68 | — | 304 |
| HNF367S, SW | 54.67 | 55.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 302 |
| HNF368, J, S, SW, JW | 54.67 | 55.16 | — | 38.4 | 39.96 | 9.24 | 14.68 | — | 305 |
| HNF368R, RW | 54.67 | 55.16 | — | 38.4 | 40.25 | 9.24 | 14.68 | — | 307 |
| US2:HF361PV | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| US2:HF361PVPG | 14.26 | 14.6 | — | 6.64 | 7.75 | 4.71 | 8.89 | S6 | 13 |
| US2:HF361RPV | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| US2:HF361RPVPG | 14.34 | — | 14.91 | 6.64 | 7.88 | 5 | 9.18 | S8 | 14 |
| US2:HF362PV | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| US2:HF362PVPG | 16.26 | 16.62 | — | 9.16 | 10.37 | 4.71 | 8.67 | S16 | 18 |
| US2:HF362RPV | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| US2:HF362RPVPG | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.21 | S17 | 19 |
| US2:HNF361PV | 11.11 | 11.45 | — | 6.64 | 7.72 | 4.7 | 9.15 | S7 | 11 |
| US2:HNF361PVPG | 11.11 | 11.45 | — | 6.64 | 7.72 | 4.7 | 9.15 | S7 | 11 |
| US2:HNF361RPV | 11.09 | — | 11.76 | 6.64 | 7.88 | 5 | 8.91 | S9 | 12 |
| US2:HNF361RPVPG | 11.09 | — | 11.76 | 6.64 | 7.88 | 5 | 8.91 | S9 | 12 |
| US2:HNF362PV | 16.26 | 16.62 | — | 9.16 | 10.26 | 4.71 | 9.04 | S16 | 17 |
| US2:HNF362PVPG | 16.26 | 16.62 | — | 9.16 | 10.26 | 4.71 | 9.04 | S16 | 17 |
| US2:HNF362RPV | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.14 | S17 | 18 |
| US2:HNF362RPVPG | 16.26 | — | 16.93 | 9.16 | 10.41 | 5.05 | 9.14 | S17 | 18 |

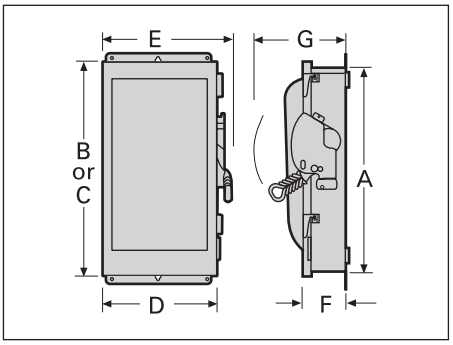
**Type 1 or 3R**
**30-60A GD**



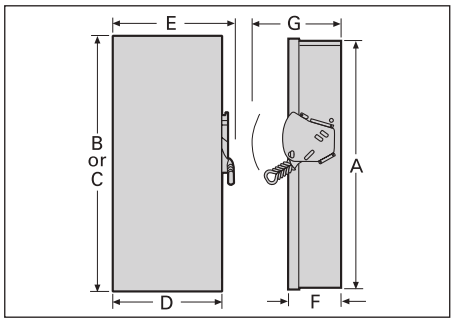

**Type 1 or 3R**
**100-200A GD, 30-200A HD Type VBII**



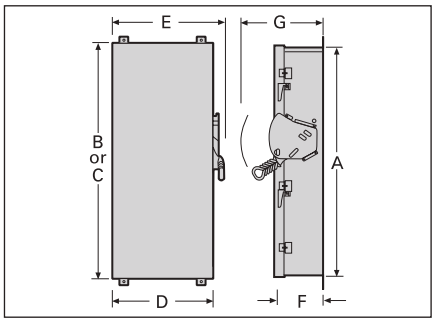

**Type 4/4X or 12**
**30-200A HD Type VBII**




**Type 1 or 3R**
**400-1200A Type VBII (GD & HD)**



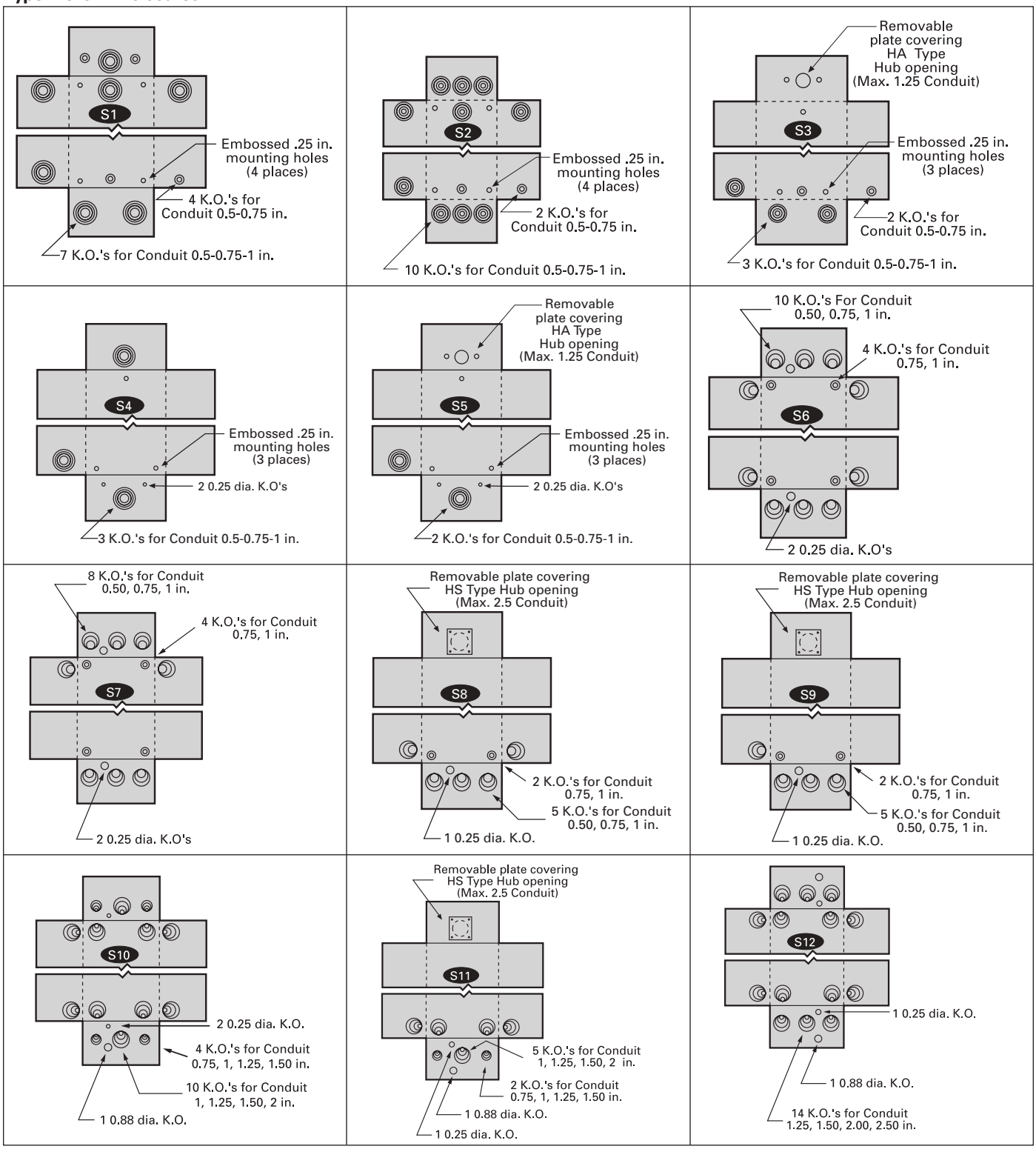

**Type 4/4X or 12**
**400-1200A HD Type VBII**




***For inches / millimeters conversion, multiply inches by 25.4.**

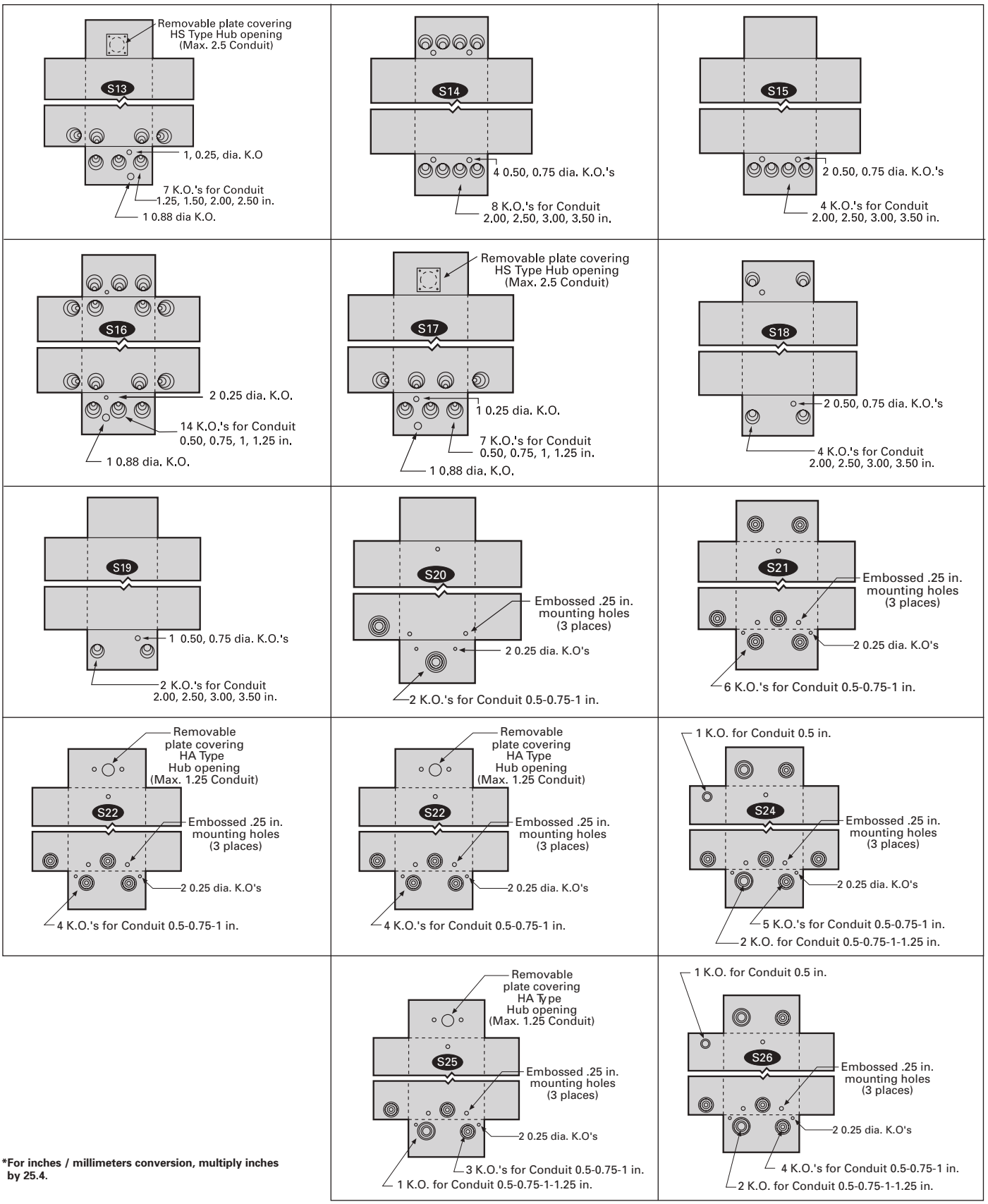
① Knocks not provided on Type 4 / 4X and 12 or in 800 & 1200A switches.

## Type 1 & 3R Enclosures




***For inches / millimeters conversion, multiply inches by 25.4.**

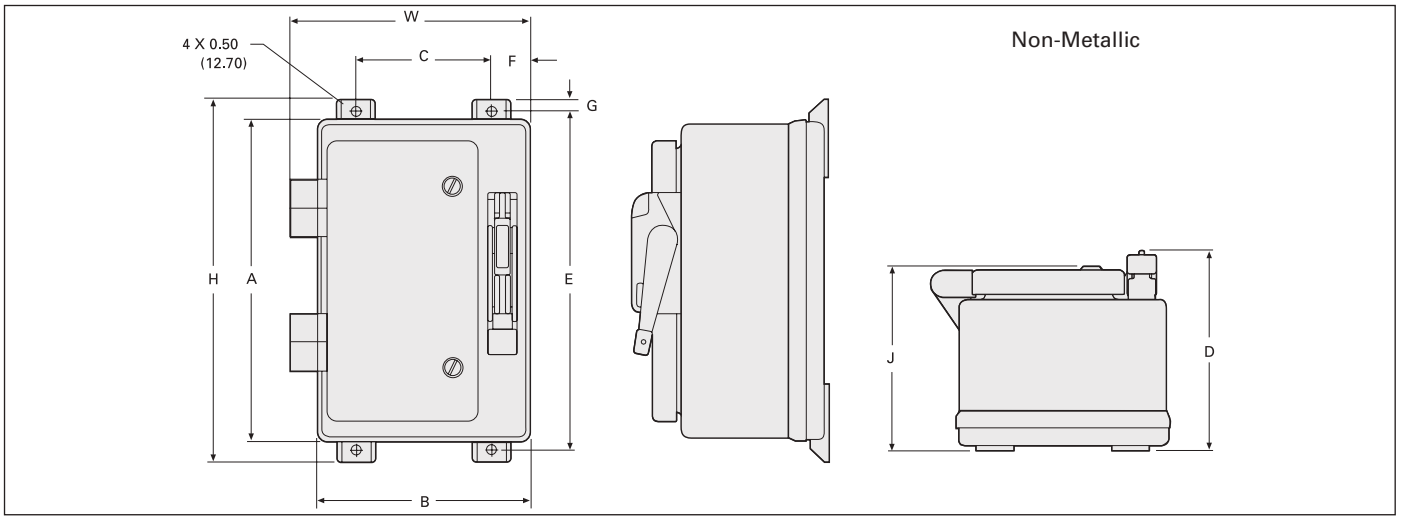
## Type 1 & 3R Enclosures




***For inches / millimeters conversion, multiply inches by 25.4.**

# Special Application: Non-Metallic

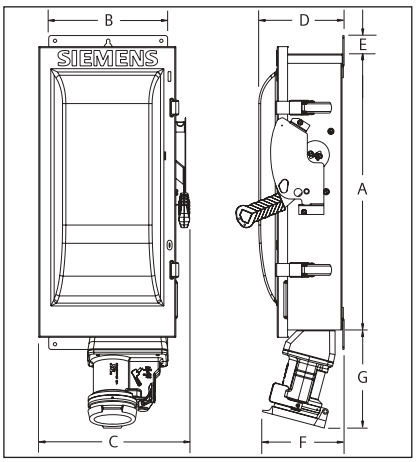
## Dimensions




| Catalog Number | Dimensions (Inches) Non-Metallic | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | W | D | A | B | C | E | F | G | J |
| **HF321NX** | 18.75 | 12.11 | 10.25 | 16.59 | 10.97 | 7.00 | 17.50 | 1.98 | .46 | 9.20 |
| **HF322NX** | 18.75 | 12.11 | 10.25 | 16.59 | 10.97 | 7.00 | 17.50 | 1.98 | .46 | 9.20 |
| **HF361NX**① | 18.75 | 12.11 | 10.25 | 16.59 | 10.97 | 7.00 | 17.50 | 1.98 | .46 | 9.20 |
| **HF362NX**① | 18.75 | 12.11 | 10.25 | 16.59 | 10.97 | 7.00 | 17.50 | 1.98 | .46 | 9.20 |
| **HF363NX**① | 26.95 | 14.87 | 13.25 | 24.84 | 13.72 | 6.25 | 25.75 | 3.75 | .46 | 12.15 |
| **HF364NX**① | 33.41 | 27.47 | 13.19 | 31.31 | 26.31 | 18.50 | 32.25 | 3.91 | .47 | 12.10 |
| **HNF361X**① | 18.75 | 12.11 | 10.25 | 16.59 | 10.97 | 7.00 | 17.50 | 1.98 | .46 | 9.20 |
| **HNF362X**① | 18.75 | 12.11 | 10.25 | 16.59 | 10.97 | 7.00 | 17.50 | 1.98 | .46 | 9.20 |
| **HNF363X**① | 26.95 | 14.87 | 13.25 | 24.84 | 13.72 | 6.25 | 25.75 | 3.75 | .46 | 12.15 |
| **HNF364X**① | 33.41 | 27.47 | 13.19 | 31.31 | 26.31 | 18.50 | 32.25 | 3.91 | .47 | 12.10 |

## VBII Interlocked Receptacle Switches

| Ampere Rating | Dimensions (Inches) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| **Cr-H Type Fusible (240 & 600V)** | | | | | | | |
| 30 | 14.27 | 7.42 | 9.02 | 6.22 | 1.52 | 6.1 | 6.0 |
| 60 | 16.27 | 9.17 | 11.47 | 6.34 | 1.52 | 6.4 | 7.4 |
| 100 | 21.96 | 9.65 | 12.02 | 6.80 | 1.52 | 6.5 | 7.6 |
| **Cr-H Type Non-Fusible (600V max.)** | | | | | | | |
| 30 | 14.27 | 7.42 | 9.02 | 6.22 | 1.52 | 6.1 | 6.0 |
| 60 | 16.27 | 9.17 | 11.47 | 6.34 | 1.52 | 6.4 | 7.4 |
| 100 | 21.96 | 9.65 | 12.02 | 6.80 | 1.52 | 6.5 | 7.6 |
| **Pyle-National Type Fusible (240 & 600V)** | | | | | | | |
| 30 | 14.27 | 7.42 | 9.02 | 6.22 | 1.52 | 3.5 | 3.0 |
| 60 | 16.27 | 9.17 | 11.47 | 6.34 | 1.52 | 5.0 | 4.5 |
| **Pyle-National Type Non-Fusible (600V max.)** | | | | | | | |
| 30 | 14.27 | 7.42 | 9.02① | 6.22 | 1.52 | 3.5 | 3.0 |
| 60 | 16.27 | 9.17 | 11.47① | 6.34 | 1.52 | 5.0 | 4.5 |




***For inches / millimeters conversion, multiply inches by 25.4.**

① Dimensions also apply to "L" suffix switches (less lugs).

## 4 & 6-Pole Safety Switch Dimensions – Inches (mm)

| Catalog Number | Enclosure | | | Mounting | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| **Figure 1, 4-Pole Fusible and Non-fusible, Type 1** | | | | | | |
| **HNF461** | 24.50 (622) | 9.53 (242) | 6.09 (155) | 19.00 (483) | 6.75 (171) | 0.268 (7) |
| **HF461** | 29.12 (740) | 9.53 (242) | 6.09 (155) | 23.50 (597) | 6.75 (171) | 0.268 (7) |
| **HNF462** | 24.88 (632) | 11.50 (292) | 6.09 (155) | 19.00 (483) | 9.38 (238) | 0.268 (7) |
| **HF462** | 33.53 (852) | 11.50 (292) | 6.09 (155) | 27.50 (699) | 9.38 (238) | 0.268 (7) |
| **HNF463** | 27.62 (702) | 12.18 (309) | 6.09 (155) | 19.36 (492) | 8.00 (203) | 0.268 (7) |
| **HF463** | 36.44 (926) | 12.18 (309) | 6.09 (155) | 28.11 (714) | 8.00 (203) | 0.268 (7) |
| **HNF464** | 36.00 (914) | 19.12 (486) | 6.42 (163) | 30.88 (784) | 15.00 (381) | 0.44 (11) |
| **HF464** | 49.48 (1257) | 19.12 (486) | 6.42 (163) | 45.50 (1130) | 15.00 (381) | 0.44 (11) |
| **Figure 2, 4 & 6-Pole Fusible Type 12/3R and 4X** | | | | | | |
| **HF461J, HF661J, HF661S** | 29.50 (622) | 9.53 (242) | 6.48 (165) | 31.65 (804) | 5.47 (139) | 0.27 (7) |
| **HF462J, HF662J, HF662S** | 33.53 (852) | 11.50 (292) | 6.48 (165) | 35.69 (907) | 8.00 (203) | 0.27 (7) |
| **HF463J, HF663J, HF663S** | 36.44 (926) | 12.18 (309) | 6.48 (165) | 38.67 (982) | 8.47 (215) | 0.27 (7) |
| **HF464J, HF664J, HF664S** | 49.48 (1257) | 19.12 (486) | 6.78 (172) | 51.64 (1312) | 13.44 (341) | 0.33 (8) |
| **Figure 2, 4 & 6-Pole Non-fusible Type 12/3R and 4X** | | | | | | |
| **HNF461J, HNF661J, HNF661S** | 24.50 (622) | 9.53 (242) | 6.48 (165) | 26.65 (667) | 5.47 (139) | 0.27 (7) |
| **HNF462J, HNF662J, HNF662S** | 24.88 (632) | 11.50 (292) | 6.48 (165) | 27.03 (687) | 8.00 (203) | 0.27 (7) |
| **HNF463J, HNF663J, HNF663S** | 27.54 (700) | 12.18 (309) | 6.48 (165) | 29.77 (756) | 8.47 (215) | 0.27 (7) |
| **HNF464J, HNF664J, HNF664S** | 36.00 (914) | 19.12 (486) | 6.78 (172) | 38.16 (969) | 13.44 (341) | 0.33 (8) |

**Figure 1: Type 1**

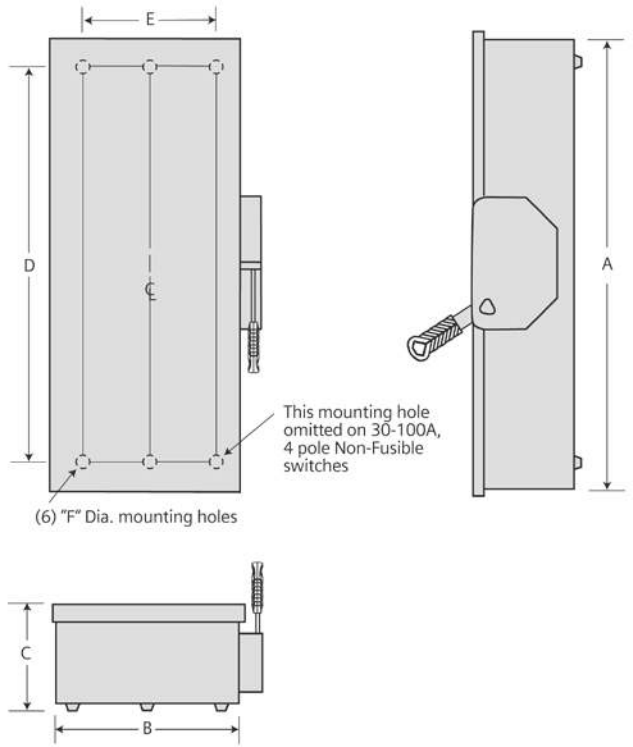
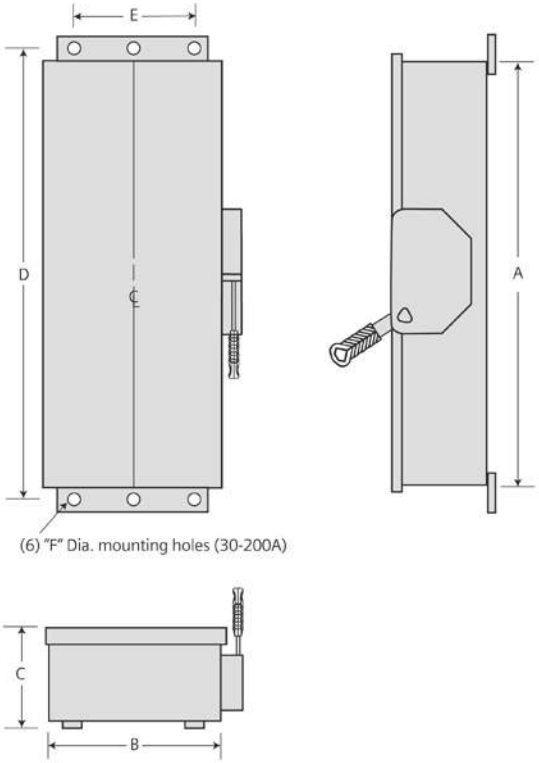
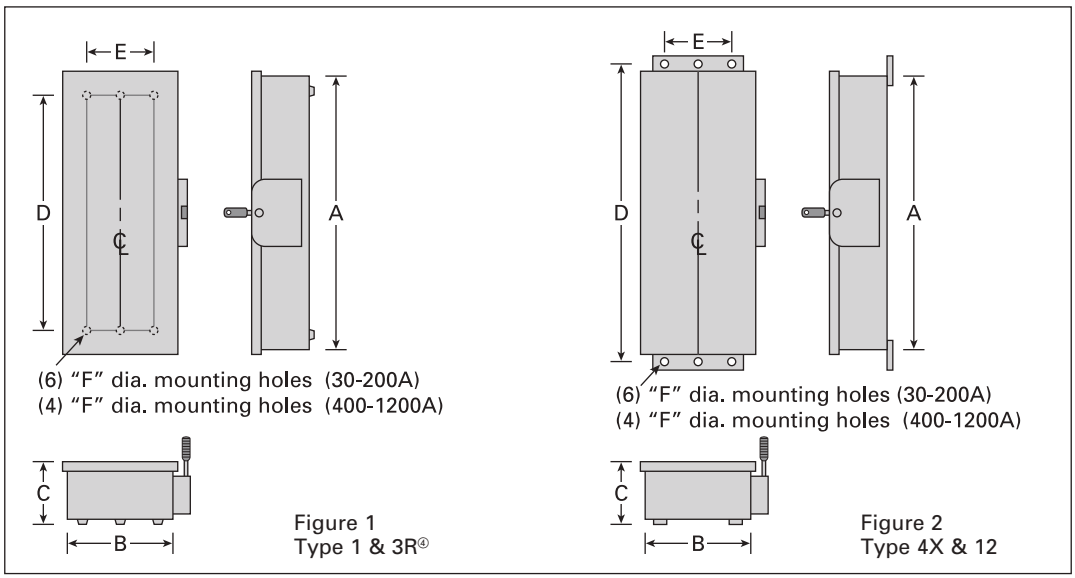



**Figure 2 : Type 12/3R and 4X**



## VBII Design Double Throw Dimensions (Inches)

| Catalog Number | Enclosure | | | Mounting | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| **Figure 1 (30-1200A Type 1 & 3R)** | | | | | | |
| DTNF221, DTNF321, DTNF361, DTNF361R | 24.50 | 9.53 | 6.09 | 19.00 | 6.75 | 0.268 |
| DTF321, DTF321R, DTF361 | 29.12 | 9.53 | 6.09 | 23.50 | 6.75 | 0.268 |
| DTNF222, DTNF322, DTNF362, DTNF362R | 24.88 | 11.50 | 6.09 | 19.00 | 9.38 | 0.268 |
| DTF322, DTF322R, DTF362 | 33.45 | 11.50 | 6.09 | 27.50 | 9.38 | 0.268 |
| DTNF223, DTNF323, DTNF323R, DTNF363, DTNF363R, DTGNF223R, DTGNF223NR, DTGNF323R , DTGNF323NR | 27.62 | 12.18 | 6.09 | 19.36 | 8.00 | 0.268 |
| DTF323, DTF323R, DTF363, DTF363R | 36.44 | 12.18 | 6.09 | 28.11 | 8.00 | 0.268 |
| DTNF224, DTNF224R, DTNF324, DTNF324R, DTNF364, DTNF364R, DTGNF224R, DTGNF224NR, DTGNF324R, DTGNF324NR | 36.00 | 19.12 | 6.42 | 31.00 | 15.00 | 0.44 |
| DTF224, DTF224R, DTF324, DTF324R, DTF364, DTF364R | 49.44 | 19.12 | 6.42 | 44.50 | 15.00 | 0.44 |
| DTF325, DTF326, DTF365 | 73.54 | 28.22 | 9.44 | 65.50 | 16.00 | 0.56 |
| DTNF225, DTNF225R, DTNF325, DTNF365, DTNF365R | 57.71 | 28.22 | 9.44 | 49.75 | 16.00 | 0.56 |
| DTNF326, DTNF366, DTNF366R | 57.71 | 28.22 | 9.44 | 49.75 | 16.00 | 0.56 |
| DTNF327, DTNF367, DTNF367R | 71.65 | 41.60 | 9.44 | 63.70 | 32.00 | 0.56 |
| DTNF368, DTNF368R | 71.65 | 41.60 | 9.44 | 63.70 | 32.00 | 0.56 |
| FR325DTK③, FR355DTK③ | 74.31 | 24.90 | 8.88 | 69.50 | 20.25 | 0.56 |
| FR326DTK③ | 85.65 | 27.00 | 8.88 | 80.75 | 22.25 | 0.56 |
| NFR451DTK③, NFR452DTK③, NFR453DTK③ | 24.63 | 17.34 | 4.78 | 21.50 | 14.97① | 0.27① |
| NF454DTK②③, NFR454DTK②③ | 37.25 | 19.19 | 6.32 | 33.50 | 16.00② | 0.56② |
| NF455DTK③, NF456DTK③, NF457DTK③, NFR455DTK③, NFR456DTK③, NFR457DTK③ | 63.31 | 27.00 | 8.88 | 58.50 | 22.25② | 0.56② |
| **Figure 2 (30-200A Type 12 & 4X)** | | | | | | |
| DTNF361J, DTNF361S | 24.42 | 9.65 | 6.48 | 26.65 | 5.47 | 0.27 |
| DTNF362J, DTNF362S | 24.80 | 11.61 | 6.48 | 27.03 | 8.00 | 0.27 |
| DTNF363J, DTNF363S | 27.54 | 12.29 | 6.48 | 29.77 | 8.47 | 0.27 |
| DTNF364J, DTNF364S | 35.93 | 19.24 | 6.78 | 38.16 | 13.44 | 0.33 |
| NF355HDTK①③, NF355SSDTK①③ | 53.82 | 22.66 | 7.25 | 56.20 | 18.00 | 0.56 |
| NF454SSDTK③ | 37.47 | 19.16 | 6.48 | 39.75 | 15.75 | 0.50② |
| F353SSDTK②③ | 37.00 | 11.62 | 5.50 | 38.50 | 9.00 | 0.26 |
| F354SSDTK②③ | 50.90 | 19.16 | 6.46 | 53.27 | 16.12 | 0.50 |
| F355SSDTK②③ | 74.50 | 25.00 | 8.92 | 76.69 | 20.25 | 0.56 |




***For inches / millimeters conversion, multiply inches by 25.4.**

① (3) Mounting holes supplied (1 at top).
② (4) Mounting holes provided.
③ These switches are not Type VBII design.
④ Drip hood not shown but provided on Type 3R enclosures.

# Enclosed Bolted Pressure Switches & Safety Switch

## Replacement Parts

For enclosed bolted pressure contact switches order as lug-in/lug-out single section BPS main switchboards using either the SPACE 2000 Switchboard EPM or COMPAS.

### VBII Safety Switch Replacement Parts

| Ampere Rating | Line Base Catalog Number | Load Base Catalog Number | Handle / Handle Guard General Duty Catalog Number | Handle / Handle Guard Heavy Duty Catalog Number |
|---|---|---|---|---|
| **Fusible 2- and 3-Pole 60-600A General Duty & 30-1200A Heavy Duty⑤⑧** | | | | |
| 30 HD 240V | **HFB21②** | **HBB21②** | — | **HH6123⑦** |
| 60 HD 240V | **HFB22②** | **HBB22②** | — | **HH6123⑦** |
| 30 600V | **HFB612②** | **HBB612②** | — | **HH6123⑦** |
| 60 600V | **HFB62②** | **HBB62②** | — | **HH6123⑦** |
| 100 | **HFB63②** | **HBB63②** | **GH223** | **HH6123⑦** |
| 200 | **HFB64②** | **HBB64②** | **GH24** | **HH64⑦** |
| 400 (Legacy) | **HFB65③⑥** | **HBB656③⑥** | **HH65678** | **HH65678⑦** |
| 400 (Series-A) | **HFB65AB** | **HBB656AB** | **HH656A** | **HH656A** |
| 600 (Legacy) | **HFB66③⑥** | **HBB656③⑥** | **HH65678** | **HH65678⑦** |
| 600 (Series-A) | **HFB66AB** | **HBB656AB** | **HH656A** | **HH656A** |
| 800 | **HFB67A②⑥** | **HBB67A②⑥** | — | **HH65678⑦** |
| 1200 | **HFB68②⑥** | **HBB68②⑥** | — | **HH68⑦** |
| **Non-Fusible 3-Pole 60-600A General Duty & 30-1200A Heavy Duty⑤⑧** | | | | |
| 30 HD | **HNB612②** | — | — | **HH6123⑦** |
| 60 HD | **HNB623②** | — | — | **HH6123⑦** |
| 100 | **HNB623②** | — | **GH223** | **HH6123⑦** |
| 200 | **HNB64②** | — | **GH24** | **HH64⑦** |
| 400 (Legacy) | **HNB65③⑥** | — | **HH65678** | **HH65678⑦** |
| 400 (Series-A) | **HNB656AB** | — | **HH656A** | **HH656A** |
| 600 (Legacy) | **HNB66③⑥** | — | **HH65678** | **HH65678⑦** |
| 600 (Series-A) | **HNB656AB** | — | **HH656A** | **HH656A** |
| 800 | **HNB67A②⑥** | — | — | **HH65678⑦** |
| 1200 | **HNB678⑥** | — | — | **HH68⑦** |

| Ampere Rating | Mechanism Assembly Catalog Number | Line & Load Lugs Catalog Number |
|---|---|---|
| **Fusible 2- and 3-Pole 60-600A General Duty & 30-1200A Heavy Duty⑤⑧** | | |
| 30 HD 240V | **HM6123⑦** | **HL612①** |
| 60 GD | **HM6123** | **HL612①** |
| 60 HD 240V | **HM6123⑦** | **HL612①** |
| 30 600V | **HM6123⑦** | **HL612①** |
| 60 600V | **HM6123⑦** | **HL612①** |
| 100 | **HM6123⑦** | **HL63①** |
| 200 | **HM64⑦** | **HL64①** |
| 400 (Legacy) | **HM65** | **HL65678⑦** |
| 400 (series-A) | **HM656A** | **HL656A⑩** |
| 600 (Legacy) | **HM66** | **HL65678④** |
| 600 (series-A) | **HM656A** | **HL66A⑩** |
| 800 | **HM67A** | ⑨ |
| 1200 | **HM678** | ⑨ |
| **Non-Fusible 3-Pole 60-600A General Duty & 30-1200A Heavy Duty⑤⑧** | | |
| 30 HD | **HH6123A⑦** | **HL612①** |
| 60 GD | **HM6123** | **HL612①** |
| 60 HD | **HH6123A⑦** | **HL612①** |
| 100 | **HM6123⑦** | **HL63①** |
| 200 | **HM64⑦** | **HL64①** |
| 400 (Legacy) | **HM65** | **HL65678④** |
| 400 (series-A) | **HM656A** | **HL56A⑩** |
| 600 (Legacy) | **HM66** | **HL65678④** |
| 600 (series-A) | **HM656A** | **HL56A⑩** |
| 800 | **HM67A** | ⑨ |
| 1200 | **HM678** | ⑨ |

① Three lugs included in kit.
② Includes lugs.
③ Lugs not included.
④ One lug per kit.
⑤ One per switch required unless otherwise noted.
⑥ One required per pole.
⑦ For type 4/4X stainless steel switches add "S" to end of catalog number.
⑧ For replacement door for heavy duty switches add "DOOR" to end of switch catalog number.
⑨ Lugs included with base only, not available separately.
⑩ Lug caps only—2 line side caps and 2 load side caps per kit.

## Notes

# Load switching devices for all applications

## Fuseless switch disconnectors

| | Type | 3LD3 | 3LD2 | 3LD5 UL |
|---|---|---|---|---|
| | Rated current $I_n$ | 16 ... 63 A | 16 ... 250 A | 30 ... 160 A |
| | Short-circuit current max. | 6 kA | 50 kA | 50 kA |
| Selection acc. to utilization category | AC max. | AC-3 | AC-3 | AC-3 |
| | DC max. | – | DC-22A | – |
| | Suitable fuses | – | – | – |
| Types of mounting | Panel mounting | ■ | ■ | ■ |
| | Mounting on a standard mounting rail | ■ | ■ (up to 125 A) | ■ (up to 63 A) |
| | Front mounting | ■ | ■ | ■ |
| | Mounting on busbar systems (spacing of the busbars) | – | – | – |
| | Draw-out technology | – | – | – |
| Methods of operation | Manual from the front | ■ | ■ | ■ |
| | Manual from the side | – | – | – |
| | Remote-controllable | – | – | – |
| Number of poles | 1-pole | – | – | – |
| | 2-pole | – | – | – |
| | 3-pole | ■ | ■ | ■ |
| | 4-pole | ■ | ■ | ■ |
| | 6-pole | – | ■ | – |
| Switching function | All poles | ■ | ■ | ■ |
| | Individual poles switchable | – | – | – |

# 3LD switch disconnectors

## Quick select guide

| Type | | | 3LD30 | 3LD31 | 3LD32 | 3LD33 | 3LD34 | 3LD20 | 3LD21 | 3LD22 | 3LD25 | 3LD27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **General technical specifications acc. to UL** | | | | | | | | | | | | |
| **General technical specifications** | | | | | | | | | | | | |
| Certification according to UL standard | | | | | UL 508 | | | | | UL 508 | | |
| $I_n$ acc. to UL 508/UL60947-4-1 \| UL489 | | A | 16\|– | 25\|– | 32\|– | 40\|– | 63\|– | 16\|– | 25\|– | 32\|– | 63\|– | 100\|– |
| $U_e$ acc. to UL 508/UL60947-4-1 \| UL489 | | V AC | | | 600\|– | | | | | 600\|– | | |
| **Operating and short-circuit behavior** | | | | | | | | | | | | |
| Operational power, 3-phase | At 480 V | hp | 7.5 | 10 | 20 | 20 | 25 | 7.5 | 10 | 20 | 40 | 60 |
| | At 600 V | hp | 10 | 15 | 20 | 20 | 30 | 10 | 15 | 20 | 50 | 75 |
| Short circuit current rating (SCCR) | At 480 V \| at 600 V | kA | | | 5\|5 | | | 5\|5 | 5\|5 | 5\|5 | 5\|5 | 10\|10 |
| Upstream fuse according to UL | | | | | RK5 | | | | | RK5 | | |
| **For IEC ratings, reference document in Industry Mall or Global LV10 catalog** | | | | | | | | | | | | |

| Type | | | 3LD28 | 3LD23 | 3LD24 | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|---|---|---|
| **General technical specifications acc. to UL** | | | | | | | | | | |
| **General technical specifications** | | | | | | | | | | |
| Certification according to UL standard | | | | UL 508 | | | UL60947-4-1 / UL489 | | | |
| $I_n$ acc. to UL 508/UL60947-4-1 \| UL489 | | A | 125\|– | 160\|– | 250\|– | 30\|30 | 60\|60 | 100\|100 | 125\|125 | 150\|150 |
| $U_e$ acc. to UL 508/UL60947-4-1 \| UL489 | | V AC | | 600\|– | | | | 480\|480 | | |
| **Operating and short-circuit behavior** | | | | | | | | | | |
| Operational power, 3-phase | At 480 V | hp | 75 | 75 | 100 | 20 | 30 | 60 | 75 | 100 |
| | At 600 V | hp | 100 | 50 | 75 | – | – | – | – | – |
| Short circuit current rating (SCCR) | At 480 V \| at 600 V | kA | 10\|10 | 10\|10 | 10\|10 | 50\|– | 65\|– | 65\|– | 65\|– | 50\|– |
| Upstream fuse according to UL | | | | RK5 | | J\|CC | J | J | J | J |
| **For IEC ratings, reference document in Industry Mall or Global LV10 catalog** | | | | | | | | | | |

# 3LD switch disconnectors

## System overview of 3LD3 main control and EMERGENCY-STOP switches

### Basic units for front mounting

3P rotary operating mechanisms

3P knob-operated mechanisms

3P+N rotary operating mechanisms

3P+N knob-operated mechanisms

### Basic units for panel mounting

3P rotary operating mechanisms

3P knob-operated mechanisms

3P+N rotary operating mechanisms

3P+N knob-operated mechanisms

### Basic units for installation in distribution boards

3P knob-operated mechanisms

3P basic switches without knob-operated mechanism

3P+N knob-operated mechanisms

3P+N basic switches without knob-operated mechanism

### Additional poles and auxiliary switches

N switching contacts

N/PE terminals

Auxiliary switches

### Operating mechanisms

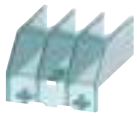
Rotary operating mechanisms for front or panel mounting (center hole)

Knob-operated mechanisms for front or panel mounting (center hole)

Door-coupling rotary operating mechanisms

Door-coupling knob-operated mechanisms

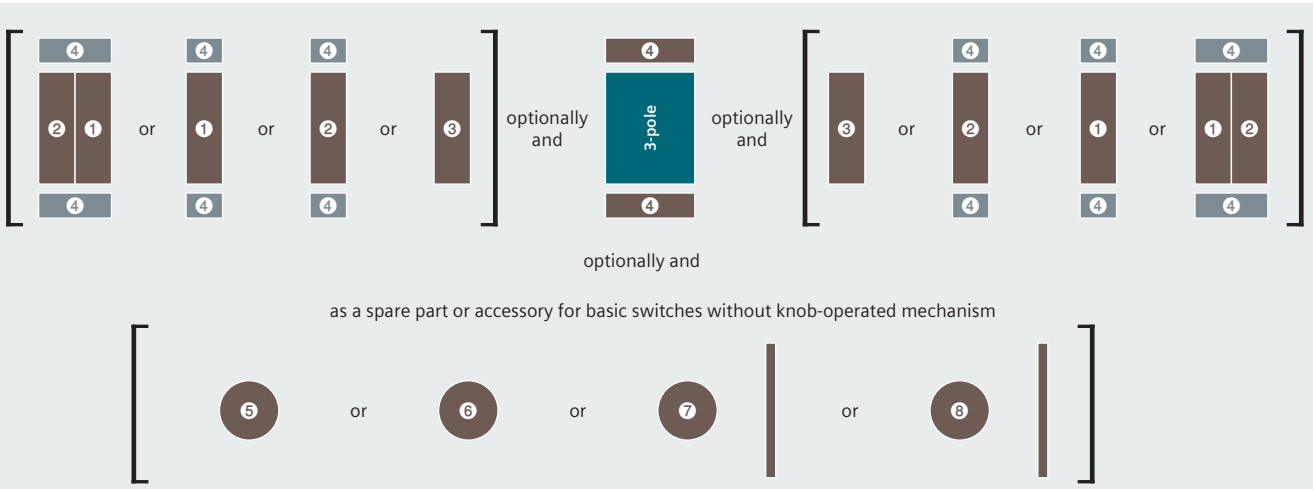
### Other accessories


Terminal covers, 1 and 3-pole

Inscription labels

**Note:** You will find a detailed range of accessories with the basic units.

# Mounting concept and accessories




**Legend**

❶ N switching contact [1)]
❷ N/PE terminal
❸ Auxiliary switch
❹ Terminal cover
❺ Rotary operating mechanism, center-hole mounting
❻ Knob-operated mechanism, center-hole mounting
❼ Door-coupling rotary operating mechanism, center-hole mounting
❽ Door-coupling knob-operated mechanism, center-hole mounting

[1)] The N switching contact ❶ first has to be mounted on the basic unit

## Mounting types

**You will find further information in the configuration manual: sie.ag/2UlrAvy**

### Front mounting

The switches for front mounting are mounted on the inside of covers, side panels or, if applicable, control cabinet doors (depending on the applicable standard and switching function). The switches are mounted via the 22.5 mm diameter center hole.

### Panel mounting

The switches for panel mounting are snapped onto 35 mm standard mounting rails according to EN 60715 or screw-mounted on mounting panels. The actuators are connected to the lower section of the switch through a door coupling, which can be released in its zero position, and a 300 mm long switch shaft. When the control cabinet door is open, the switch can be protected against inadvertent operation by removing the switch shaft from the lower section of the switch. The overall depth can be adapted to individual requirements by adjusting the switch shaft length.

### Distribution board mounting

The switches for distribution board mounting are suited for operation in distribution boards and for switching inside control cabinets or distributors. They have cap and mounting dimensions acc. to DIN 43880 and can be fitted under the same cover together with miniature circuit breakers. The selector switches can be locked in their OFF position with no more than one padlock with a hasp thickness of 4 to 6 mm.

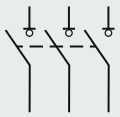
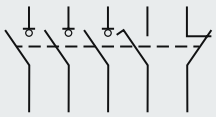
### Basic switches without knob-operated mechanism

For the basic switch variant without knob-operated mechanism, the appropriate door-coupling rotary operating mechanism can be ordered separately.

# 3LD switch disconnectors

## 3LD3 main control and EMERGENCY-STOP switches, front mounting, 6 $kA_{rms}$

## 3LD3 main control and EMERGENCY-STOP switches, front mounting

| Number of poles | Operating mechanisms, black | |
|---|---|---|
| | 3P | |
| |  |  |
| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC |
| **Rotary operating mechanisms** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD3054-0TK51 | 3LD3054-1TK51 |
| 25 A | 9 kW | 7.5 kW | 3LD3154-0TK51 | 3LD3154-1TK51 |
| 32 A | 11.5 kW | 9.5 kW | 3LD3254-0TK51 | 3LD3254-1TK51 |
| 40 A | 18.5 kW | 11.5 kW | 3LD3354-0TK51 | 3LD3354-1TK51 |
| 63 A | 22 kW | 18.5 kW | 3LD3454-0TK51 | 3LD3454-1TK51 |
| **Knob-operated mechanisms** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD3050-0TK11 | 3LD3050-1TK11 |
| 25 A | 9 kW | 7.5 kW | 3LD3150-0TK11 | 3LD3150-1TK11 |
| 32 A | 11.5 kW | 9.5 kW | 3LD3250-0TK11 | 3LD3250-1TK11 |
| 40 A | 18.5 kW | 11.5 kW | 3LD3350-0TK11 | 3LD3350-1TK11 |
| 63 A | 22 kW | 18.5 kW | 3LD3450-0TK11 | 3LD3450-1TK11 |

**Scope of supply:**
- Including terminal covers for the infeed side

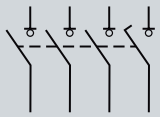
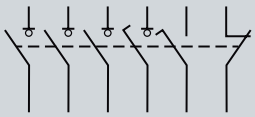
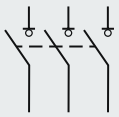
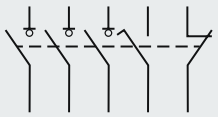
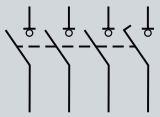
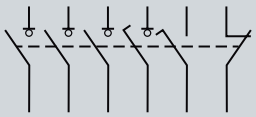
## Accessories

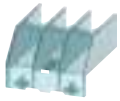
| | Variant | Contacts | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| **Additional poles** | | | | | | | | |
| | Switching contact for N conductor (4th contact) | Leading switch-on, lagging switch-off | 3LD9340-0B | ■ | ■ | ■ | ■ | ■ |
| | N terminal | Through-type | 3LD9340-2B | ■ | ■ | ■ | ■ | ■ |
| | PE terminal | Through-type | 3LD9340-3B | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switches** | | | | | | | | |
| | | Contacts | Catalog No. | | | | | |
| | | 1 NO + 1 NC | 3LD9340-6B | ■ | ■ | ■ | ■ | ■ |
| **Rotary operating mechanisms** | | | | | | | | |
| | | Color | Catalog No. | | | | | |
| | | Black | 3LD9344-4C | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9344-5C | ■ | ■ | ■ | ■ | ■ |
| **Knob-operated mechanisms** | | | | | | | | |
| | | Color | Catalog No. | | | | | |
| | | Black | 3LD9343-6C | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9343-7C | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD3 main control and EMERGENCY-STOP switches, front mounting, 6 $kA_{rms}$

**Operating mechanisms, red/yellow**

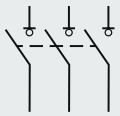
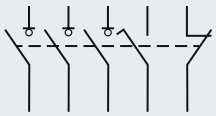
| 3P+N | | 3P | | 3P+N | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| Without auxiliary switch | 1 NO + 1 NC | Without auxiliary switch | 1 NO + 1 NC | Without auxiliary switch | 1 NO + 1 NC |
| 3LD3054-0TL51 | 3LD3054-1TL51 | 3LD3054-0TK53 | 3LD3054-1TK53 | 3LD3054-0TL53 | 3LD3054-1TL53 |
| 3LD3154-0TL51 | 3LD3154-1TL51 | 3LD3154-0TK53 | 3LD3154-1TK53 | 3LD3154-0TL53 | 3LD3154-1TL53 |
| 3LD3254-0TL51 | 3LD3254-1TL51 | 3LD3254-0TK53 | 3LD3254-1TK53 | 3LD3254-0TL53 | 3LD3254-1TL53 |
| 3LD3354-0TL51 | 3LD3354-1TL51 | 3LD3354-0TK53 | 3LD3354-1TK53 | 3LD3354-0TL53 | 3LD3354-1TL53 |
| 3LD3454-0TL51 | 3LD3454-1TL51 | 3LD3454-0TK53 | 3LD3454-1TK53 | 3LD3454-0TL53 | 3LD3454-1TL53 |
| 3LD3050-0TL11 | 3LD3050-1TL11 | 3LD3050-0TK13 | 3LD3050-1TK13 | 3LD3050-0TL13 | 3LD3050-1TL13 |
| 3LD3150-0TL11 | 3LD3150-1TL11 | 3LD3150-0TK13 | 3LD3150-1TK13 | 3LD3150-0TL13 | 3LD3150-1TL13 |
| 3LD3250-0TL11 | 3LD3250-1TL11 | 3LD3250-0TK13 | 3LD3250-1TK13 | 3LD3250-0TL13 | 3LD3250-1TL13 |
| 3LD3350-0TL11 | 3LD3350-1TL11 | 3LD3350-0TK13 | 3LD3350-1TK13 | 3LD3350-0TL13 | 3LD3350-1TL13 |
| 3LD3450-0TL11 | 3LD3450-1TL11 | 3LD3450-0TK13 | 3LD3450-1TK13 | 3LD3450-0TL13 | 3LD3450-1TL13 |

| | | | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|
| **Terminal covers** | | | | | | | |
| | • Pack of 4 units | | | | | | |
| | **Version** | **Catalog No.** | | | | | |
| | For N switching contacts, N terminals or PE terminals | 3LD9341-2A | ■ | ■ | ■ | ■ | ■ |
|  | For 3-pole 3LD3 switch disconnectors | 3LD9341-0A | ■ | ■ | ■ | ■ | ■ |
| **Inscription labels** | | | | | | | |
| | • Pack of 10 units | | | | | | |
| | **Inscription** | **Catalog No.** | | | | | |
| | German / English (Hauptschalter / Main Switch) | 3LD9346-1A | ■ | ■ | ■ | ■ | ■ |
| | French / Spanish (Interrupteur Principal / Interruptor Principal) | 3LD9346-2A | ■ | ■ | ■ | ■ | ■ |
| | Without inscription | 3LD9346-3A | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD3 main control and EMERGENCY-STOP switches, panel mounting, 6 $kA_{rms}$

## 3LD3 main control and EMERGENCY-STOP switches, panel mounting

| | Operating mechanisms, black | |
|---|---|---|
| Number of poles | 3P | |
| |  |  |
| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC |
| **Rotary operating mechanisms** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD3048-0TK51 | 3LD3048-1TK51 |
| 25 A | 9 kW | 7.5 kW | 3LD3148-0TK51 | 3LD3148-1TK51 |
| 32 A | 11.5 kW | 9.5 kW | 3LD3248-0TK51 | 3LD3248-1TK51 |
| 40 A | 18.5 kW | 11.5 kW | 3LD3348-0TK51 | 3LD3348-1TK51 |
| 63 A | 22 kW | 18.5 kW | 3LD3448-0TK51 | 3LD3448-1TK51 |
| **Knob-operated mechanisms** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD3040-0TK11 | 3LD3040-1TK11 |
| 25 A | 9 kW | 7.5 kW | 3LD3140-0TK11 | 3LD3140-1TK11 |
| 32 A | 11.5 kW | 9.5 kW | 3LD3240-0TK11 | 3LD3240-1TK11 |
| 40 A | 18.5 kW | 11.5 kW | 3LD3340-0TK11 | 3LD3340-1TK11 |
| 63 A | 22 kW | 18.5 kW | 3LD3440-0TK11 | 3LD3440-1TK11 |

**Scope of supply:**
- Including terminal covers for the infeed side

**Mounting:**
- Using screws or snap-on mounting on 35 mm mounting rails

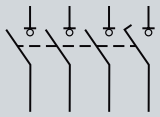
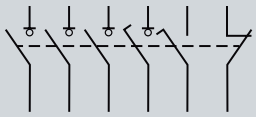
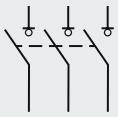
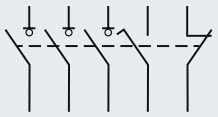
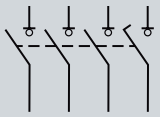
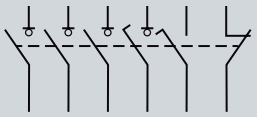
## Accessories

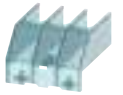
| | | | | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| **Additional poles** | | | | | | | | |
| | Variant | Contacts | Catalog No. | | | | | |
| | Switching contact for N conductor (4th contact) | Leading switch-on, lagging switch-off | 3LD9340-0C | ■ | ■ | ■ | ■ | ■ |
| | N terminal | Through-type | 3LD9340-2C | ■ | ■ | ■ | ■ | ■ |
| | PE terminal | Through-type | 3LD9340-3C | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switches** | | | | | | | | |
| | | Contacts | Catalog No. | | | | | |
| | | 1 NO + 1 NC | 3LD9340-6C | ■ | ■ | ■ | ■ | ■ |
| **Rotary operating mechanisms** | | | | | | | | |
| | Version | Color | Catalog No. | | | | | |
| | Incl. funnel | Black | 3LD9344-2C | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9344-3C | ■ | ■ | ■ | ■ | ■ |
| **Knob-operated mechanisms** | | | | | | | | |
| | Version | Color | Catalog No. | | | | | |
| | Incl. funnel | Black | 3LD9343-4C | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9343-5C | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD3 main control and EMERGENCY-STOP switches, panel mounting, 6 $kA_{rms}$

**Operating mechanisms, red/yellow**

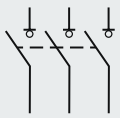
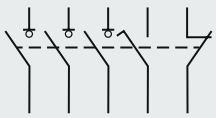
| 3P+N | | 3P | | 3P+N | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| Without auxiliary switch | 1 NO + 1 NC | Without auxiliary switch | 1 NO + 1 NC | Without auxiliary switch | 1 NO + 1 NC |
| 3LD3048-0TL51 | 3LD3048-1TL51 | 3LD3048-0TK53 | 3LD3048-1TK53 | 3LD3048-0TL53 | 3LD3048-1TL53 |
| 3LD3148-0TL51 | 3LD3148-1TL51 | 3LD3148-0TK53 | 3LD3148-1TK53 | 3LD3148-0TL53 | 3LD3148-1TL53 |
| 3LD3248-0TL51 | 3LD3248-1TL51 | 3LD3248-0TK53 | 3LD3248-1TK53 | 3LD3248-0TL53 | 3LD3248-1TL53 |
| 3LD3348-0TL51 | 3LD3348-1TL51 | 3LD3348-0TK53 | 3LD3348-1TK53 | 3LD3348-0TL53 | 3LD3348-1TL53 |
| 3LD3448-0TL51 | 3LD3448-1TL51 | 3LD3448-0TK53 | 3LD3448-1TK53 | 3LD3448-0TL53 | 3LD3448-1TL53 |
| 3LD3040-0TL11 | 3LD3040-1TL11 | 3LD3040-0TK13 | 3LD3040-1TK13 | 3LD3040-0TL13 | 3LD3040-1TL13 |
| 3LD3140-0TL11 | 3LD3140-1TL11 | 3LD3140-0TK13 | 3LD3140-1TK13 | 3LD3140-0TL13 | 3LD3140-1TL13 |
| 3LD3240-0TL11 | 3LD3240-1TL11 | 3LD3240-0TK13 | 3LD3240-1TK13 | 3LD3240-0TL13 | 3LD3240-1TL13 |
| 3LD3340-0TL11 | 3LD3340-1TL11 | 3LD3340-0TK13 | 3LD3340-1TK13 | 3LD3340-0TL13 | 3LD3340-1TL13 |
| 3LD3440-0TL11 | 3LD3440-1TL11 | 3LD3440-0TK13 | 3LD3440-1TK13 | 3LD3440-0TL13 | 3LD3440-1TL13 |

| | | | | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| **Switching shafts** | | | | | | | | |
| | Cross-section | Length | Catalog No. | | | | | |
| | 6 × 6 mm | 600 mm | 3LD93451C | ■ | ■ | ■ | ■ | ■ |
| **Door-coupling rotary operating mechanisms** | | | | | | | | |
| | Variant | Color | Catalog No. | | | | | |
| | Rotary operating mechanisms 66 × 66 mm | Black | 3LD9344-2CA | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9344-3CA | ■ | ■ | ■ | ■ | ■ |
| | Knob-operated mechanisms 48 × 48 mm | Black | 3LD9343-4CA | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9343-5CA | ■ | ■ | ■ | ■ | ■ |
| **Terminal covers** | | | | | | | | |
| | • Pack of 4 units | | | | | | | |
| | Version | | Catalog No. | | | | | |
| | For N switching contacts, N terminals or PE terminals | | 3LD9341-2A | ■ | ■ | ■ | ■ | ■ |
|  | For 3LD3 3-pole switch disconnectors | | 3LD9341-0A | ■ | ■ | ■ | ■ | ■ |
| **Inscription labels** | | | | | | | | |
| | • Pack of 10 units | | | | | | | |
| | Inscription | | Catalog No. | | | | | |
| | German / English (Hauptschalter / Main Switch) | | 3LD9346-1A | ■ | ■ | ■ | ■ | ■ |
| | French / Spanish (Interrupteur Principal / Interruptor Principal) | | 3LD9346-2A | ■ | ■ | ■ | ■ | ■ |
| | Without inscription | | 3LD9346-3A | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD3 main control and EMERGENCY-STOP switches, distribution boards and without direct operating mechanism, 6 $kA_{rms}$

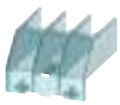
## 3LD3 main control and EMERGENCY-STOP switches, installation in distribution boards and basic switches without direct operating mechanism

| | Operating mechanisms, black | |
|---|---|---|
| Number of poles | 3P | |
| |  |  |
| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC |
| **Basic switch with masking plate and selector knob, standard rail mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD3030-0TK11 | 3LD3030-1TK11 |
| 25 A | 9 kW | 7.5 kW | 3LD3130-0TK11 | 3LD3130-1TK11 |
| 32 A | 11.5 kW | 9.5 kW | 3LD3230-0TK11 | 3LD3230-1TK11 |
| 40 A | 18.5 kW | 11.5 kW | 3LD3330-0TK11 | 3LD3330-1TK11 |
| 63 A | 22 kW | 18.5 kW | 3LD3430-0TK11 | 3LD3430-1TK11 |
| **Basic switches without knob-operated mechanism** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD3010-0TK05 | 3LD3010-1TK05 |
| 25 A | 9 kW | 7.5 kW | 3LD3110-0TK05 | 3LD3110-1TK05 |
| 32 A | 11.5 kW | 9.5 kW | 3LD3210-0TK05 | 3LD3210-1TK05 |
| 40 A | 18.5 kW | 11.5 kW | 3LD3310-0TK05 | 3LD3310-1TK05 |
| 63 A | 22 kW | 18.5 kW | 3LD3410-0TK05 | 3LD3410-1TK05 |

**Scope of supply:**
- Basic switches without direct operating mechanism, incl. terminal covers for the infeed side

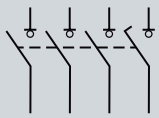
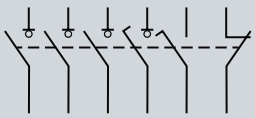
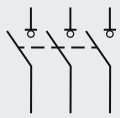
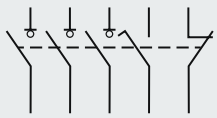
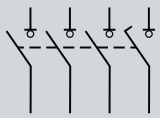
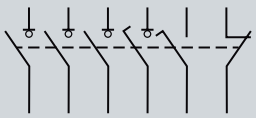
**Mounting:**
- Using screws or snap-on mounting on 35 mm mounting rails

## Accessories for switches for installation in distribution boards and basic switches without knob-operated mechanism

| | | | | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| **Additional poles** | | | | | | | | |
| | Variant | Contacts | Catalog No. | | | | | |
| | Switching contact for N conductor (4th contact) | Leading switch-on, lagging switch-off | 3LD9340-0C | ■ | ■ | ■ | ■ | ■ |
| | N terminal | Through-type | 3LD9340-2C | ■ | ■ | ■ | ■ | ■ |
| | PE terminal | Through-type | 3LD9340-3C | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switches** | | | | | | | | |
| | | Contacts | Catalog No. | | | | | |
| | | 1 NO + 1 NC | 3LD9340-6C | ■ | ■ | ■ | ■ | ■ |
| **Terminal covers** | | | | | | | | |
| | • Pack of 4 units | | | | | | | |
| | Version | | Catalog No. | | | | | |
| | For N switching contacts, N terminals or PE terminals | | 3LD9341-2A | ■ | ■ | ■ | ■ | ■ |
|  | For 3LD3 3-pole switch disconnectors | | 3LD9341-0A | ■ | ■ | ■ | ■ | ■ |
| **Switching shafts** | | | | | | | | |
| | Cross-section | Length | Catalog No. | | | | | |
| | 6 × 6 mm | 600 mm | 3LD93451C | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD3 main control and EMERGENCY-STOP switches, distribution boards and without direct operating mechanism, 6 $kA_{rms}$

| Operating mechanisms, red/yellow | | | | | |
|---|---|---|---|---|---|
| 3P+N | | 3P | | 3P+N | |
|  |  |  |  |  |  |
| Without auxiliary switch | 1 NO + 1 NC | Without auxiliary switch | 1 NO + 1 NC | Without auxiliary switch | 1 NO + 1 NC |
| 3LD3030-0TL11 | 3LD3030-1TL11 | 3LD3030-0TK13 | 3LD3030-1TK13 | 3LD3030-0TL13 | 3LD3030-1TL13 |
| 3LD3130-0TL11 | 3LD3130-1TL11 | 3LD3130-0TK13 | 3LD3130-1TK13 | 3LD3130-0TL13 | 3LD3130-1TL13 |
| 3LD3230-0TL11 | 3LD3230-1TL11 | 3LD3230-0TK13 | 3LD3230-1TK13 | 3LD3230-0TL13 | 3LD3230-1TL13 |
| 3LD3330-0TL11 | 3LD3330-1TL11 | 3LD3330-0TK13 | 3LD3330-1TK13 | 3LD3330-0TL13 | 3LD3330-1TL13 |
| 3LD3430-0TL11 | 3LD3430-1TL11 | 3LD3430-0TK13 | 3LD3430-1TK13 | 3LD3430-0TL13 | 3LD3430-1TL13 |
| 3LD3010-0TL05 | 3LD3010-1TL05 | – | – | – | – |
| 3LD3110-0TL05 | 3LD3110-1TL05 | – | – | – | – |
| 3LD3210-0TL05 | 3LD3210-1TL05 | – | – | – | – |
| 3LD3310-0TL05 | 3LD3310-1TL05 | – | – | – | – |
| 3LD3410-0TL05 | 3LD3410-1TL05 | – | – | – | – |

## Accessories for basic switches without operating mechanism

| | | | | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| **Rotary operating mechanisms** | | | | | | | | |
| | Version | Color | Catalog No. | | | | | |
| | Incl. funnel | Black | 3LD9344-2C | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9344-3C | ■ | ■ | ■ | ■ | ■ |
| **Knob-operated mechanisms** | | | | | | | | |
| | Version | Color | Catalog No. | | | | | |
| | Incl. funnel | Black | 3LD9343-4C | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9343-5C | ■ | ■ | ■ | ■ | ■ |
| **Door-coupling rotary operating mechanisms** | | | | | | | | |
| | Variant | Color | Catalog No. | | | | | |
| | Rotary operating mechanisms 66 × 66 mm | Black | 3LD9344-2CA | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9344-3CA | ■ | ■ | ■ | ■ | ■ |
| | Knob-operated mechanisms 48 × 48 mm | Black | 3LD9343-4CA | ■ | ■ | ■ | ■ | ■ |
| | | Red/yellow | 3LD9343-5CA | ■ | ■ | ■ | ■ | ■ |
| **Switching shafts** | | | | | | | | |
| | Cross-section | Length | Catalog No. | | | | | |
| | 6 × 6 mm | 600 mm | 3LD93451C | ■ | ■ | ■ | ■ | ■ |
| **Inscription labels** | | | | | | | | |
| | • Pack of 10 units | | | | | | | |
| | Inscription | | Catalog No. | | | | | |
| | German / English (Hauptschalter / Main Switch) | | 3LD9346-1A | ■ | ■ | ■ | ■ | ■ |
| | French / Spanish (Interrupteur Principal / Interruptor Principal) | | 3LD9346-2A | ■ | ■ | ■ | ■ | ■ |
| | Without inscription | | 3LD9346-3A | ■ | ■ | ■ | ■ | ■ |

# 3LD3 main control and EMERGENCY-STOP switches, accessories

| | Version | Contacts | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | |
| | For front mounting | Leading switch-on, lagging switch-off | 3LD9340-0B | ■ | ■ | ■ | ■ | ■ |
| | For panel mounting, installation in distribution boards and basic switches without knob-operated mechanism | Leading switch-on, lagging switch-off | 3LD9340-0C | ■ | ■ | ■ | ■ | ■ |
| **N terminals** | | | | | | | | |
| | For front mounting | Through-type | 3LD9340-2B | ■ | ■ | ■ | ■ | ■ |
| | For panel mounting, installation in distribution boards and basic switches without knob-operated mechanism | Through-type | 3LD9340-2C | ■ | ■ | ■ | ■ | ■ |
| **PE terminals** | | | | | | | | |
| | For front mounting | Through-type | 3LD9340-3B | ■ | ■ | ■ | ■ | ■ |
| | For panel mounting, installation in distribution boards and basic switches without knob-operated mechanism | Through-type | 3LD9340-3C | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switches** | | | | | | | | |
| | For front mounting | 1 NO + 1 NC | 3LD9340-6B | ■ | ■ | ■ | ■ | ■ |
| | For panel mounting, installation in distribution boards and basic switches without knob-operated mechanism | 1 NO + 1 NC | 3LD9340-6C | ■ | ■ | ■ | ■ | ■ |

# 3LD3 main control and EMERGENCY-STOP switches, accessories

## Rotary operating mechanisms

| Version | Color | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|
| For front mounting, without funnel | Black | 3LD9344-4C | ■ | ■ | ■ | ■ | ■ |
| | Red/ yellow | 3LD9344-5C | ■ | ■ | ■ | ■ | ■ |
| For panel mounting and basic switches without knob-operated mechanism, with funnel | Black | 3LD9344-2C | ■ | ■ | ■ | ■ | ■ |
| | Red/ yellow | 3LD9344-3C | ■ | ■ | ■ | ■ | ■ |

## Knob-operated mechanisms

| Version | Color | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|
| For front mounting, without funnel | Black | 3LD9343-6C | ■ | ■ | ■ | ■ | ■ |
| | Red/ yellow | 3LD9343-7C | ■ | ■ | ■ | ■ | ■ |
| For panel mounting and basic switches without knob-operated mechanism, with funnel | Black | 3LD9343-4C | ■ | ■ | ■ | ■ | ■ |
| | Red/ yellow | 3LD9343-5C | ■ | ■ | ■ | ■ | ■ |

## Door-coupling rotary operating mechanisms

| Version | Variant | Color | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|---|
| For panel mounting and basic switches without knob-operated mechanism | Rotary operating mechanisms 66 × 66 mm | Black | 3LD9344-2CA | ■ | ■ | ■ | ■ | ■ |
| | | Red/ yellow | 3LD9344-3CA | ■ | ■ | ■ | ■ | ■ |
| | Knob-operated mechanisms 48 × 48 mm | Black | 3LD9343-4CA | ■ | ■ | ■ | ■ | ■ |
| | | Red/ yellow | 3LD9343-5CA | ■ | ■ | ■ | ■ | ■ |

## Terminal covers

- For front mounting, panel mounting, installation in distribution boards and basic switches without knob-operated mechanism
- Pack of 4 units

| Number of poles | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|
| 1-pole | 3LD9341-2A | ■ | ■ | ■ | ■ | ■ |
| 3-pole | 3LD9341-0A | ■ | ■ | ■ | ■ | ■ |

## Switching shafts

| Cross-section | Length | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|---|
| 6 × 6 mm | 600 mm | 3LD93451C | ■ | ■ | ■ | ■ | ■ |

## Inscription labels

- Pack of 10 units
- Not for installation in distribution boards

| Inscription | Catalog No. | 3LD30 (16 A) | 3LD31 (25 A) | 3LD32 (32 A) | 3LD33 (40 A) | 3LD34 (63 A) |
|---|---|---|---|---|---|---|
| German / English (Hauptschalter / Main Switch) | 3LD9346-1A | ■ | ■ | ■ | ■ | ■ |
| French / Spanish (Interrupteur Principal / Interruptor Principal) | 3LD9346-2A | ■ | ■ | ■ | ■ | ■ |
| Without inscription | 3LD9346-3A | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## System overview of 3LD2 switch disconnectors

### Basic units for front mounting

3P rotary operating mechanisms

3P knob-operated mechanisms (3LD23/3LD24)

3P knob-operated mechanisms

3P+N rotary operating mechanisms

3P+N knob-operated mechanisms (3LD23/3LD24)

3P+N knob-operated mechanisms

6P rotary operating mechanisms

### Basic units for panel mounting

3P rotary operating mechanisms

3P knob-operated mechanisms (3LD23/3LD24)

3P knob-operated mechanisms, defeatable

3P+N rotary operating mechanisms

3P+N knob-operated mechanisms (3LD23/3LD24)

3P+N knob-operated mechanisms, defeatable

6P rotary operating mechanisms

### Basic units for installation in distribution boards/enclosures, DC

3P knob-operated mechanisms

3P+N knob-operated mechanisms

8P DC isolators

### Additional poles and auxiliary switches

N switching contacts

N/PE terminals (through-type)

Auxiliary switches (standard version)

Auxiliary switch for mounting on the front new

### Operating mechanisms

Rotary operating mechanisms for 4-hole and center-hole mounting

Knob-operated mechanisms (3LD23/3LD24)

Switching shafts

Coupling pieces without ON-lock

Assembly tools for center-hole mounting

### Other accessories

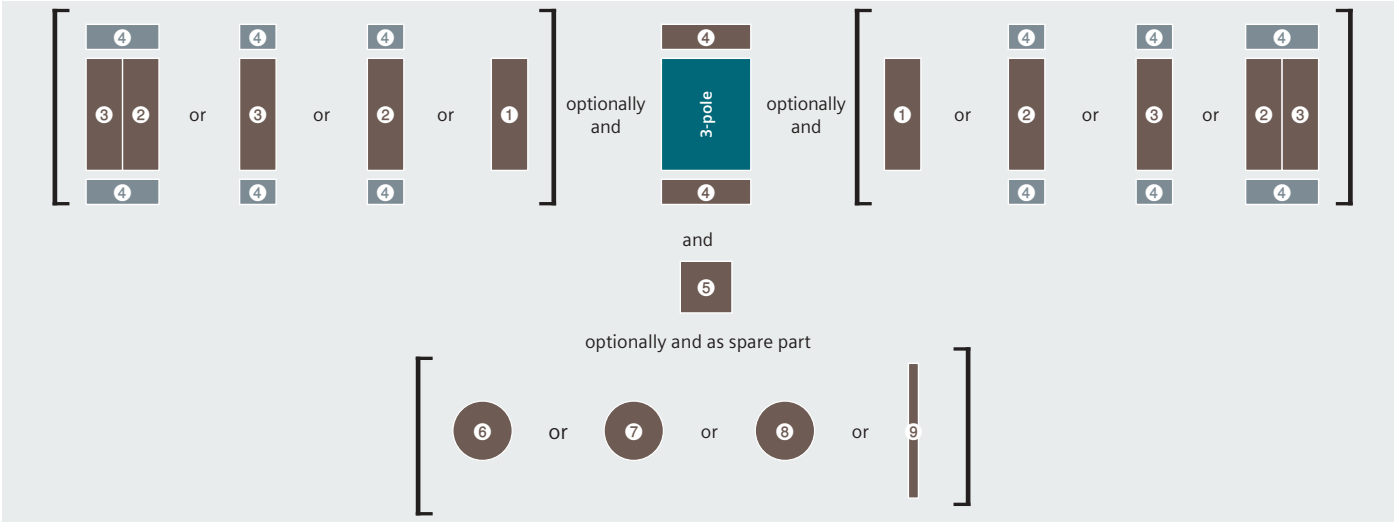
Terminal covers, 1-pole

Terminal covers, 3 and 4-pole

Inscription labels (with and without inscription)

**Note:**
You will find a detailed range of accessories with the basic units.

# Mounting concept and accessories




**Legend**

❶ Auxiliary switch
❷ N switching contact [1)]
❸ N/PE terminal
❹ Terminal cover
❺ Auxiliary switch for mounting on the front [2)]
❻ Rotary operating mechanism, center-hole mounting
❼ Rotary operating mechanism, four-hole mounting
❽ Knob-operated mechanism, four-hole mounting
❾ Switching shaft (300 or 600)

[1)] The N switching contact ❷ first has to be mounted on the basic unit
[2)] Can only be used with four-hole front mounting and panel mounting

## Mounting types

**You will find further information in the configuration manual: sie.ag/2UlrAvy**

### Front mounting

The switches for front mounting are mounted on the inside of covers, side panels or, if applicable, control cabinet doors (depending on the applicable standard and switching function). In addition to the 4-hole fastening of the handle, up to 63 A (3LD25) fastening with the 22.5 mm diameter center hole can also be chosen.

### Panel mounting

The switches for panel mounting up to 125 A (3LD28) are snapped onto 35 mm standard mounting rails according to EN 60715 or screw-mounted on mounting panels. The switches for 160 and 250 A (3LD23/3LD24) are exclusively screwed onto mounting panels.
The actuators are connected to the lower section of the switch through a door coupling, which can be released in its zero position, and a 300 mm long switch shaft. When the control cabinet door is open, the switch can be protected against inadvertent operation by removing the switch shaft from the lower section of the switch. The overall depth can be adapted to individual requirements by adjusting the switch shaft length.

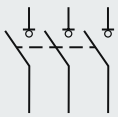
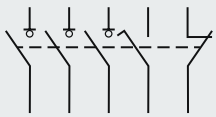
### Distribution board mounting

The switches for distribution board mounting are suited for operation in distribution boards and for switching inside control cabinets or distributors. Up to 125 A (3LD28), they have cap and mounting dimensions acc. to DIN 43880 and can be fitted under the same cover together with miniature circuit breakers.

### DC isolators

The DC isolators in the enclosure are suitable for disconnecting loads of up to 800 V DC due to their 8-pole design. To provide additional safety, the isolators can be locked in the 0 position.

## 3LD2 main control switches, front mounting

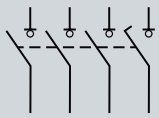
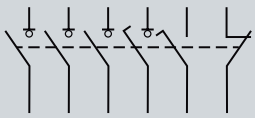
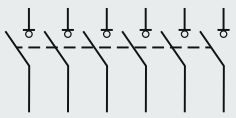
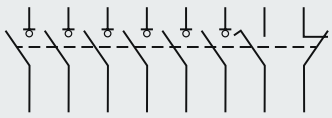
| | Operating mechanisms, black | |
|---|---|---|
| Number of poles | 3P | |
| |  |  |
| Uninterrupted current $I_u$ At AC-21A, 380 … 440 V | Operational power P At AC-23A, 380 … 440 V | Operational power P At AC-3A, 380 … 440 V | Without auxiliary switch | 1 NO + 1 NC (standard version) |
| **Rotary operating mechanism, four-hole mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2003-0TK51 | 3LD2003-1TP51 |
| 25 A | 9.5 kW | 7.5 kW | 3LD2103-0TK51 | 3LD2103-1TP51 |
| 32 A | 11.5 kW | 9.5 kW | 3LD2203-0TK51 | 3LD2203-1TP51 |
| 63 A | 22 kW | 18.5 kW | 3LD2504-0TK51 | 3LD2504-1TP51 |
| 100 A | 37 kW | 30 kW | 3LD2704-0TK51 | 3LD2704-1TP51 |
| 125 A | 45 kW | 37 kW | 3LD2804-0TK51 | 3LD2804-1TP51 |
| 160 A | 75 kW | 50 kW | 3LD2305-0TK11 | 3LD2305-0TK11 + 3LD9200-5B |
| 250 A | 132 kW | 110 kW | 3LD2405-0TK11 | 3LD2405-0TK11 + 3LD9200-5B |
| **Rotary operating mechanism, center-hole mounting Ø 22.5 mm** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2054-0TK51 | 3LD2054-1TP51 |
| 25 A | 9.5 kW | 7.5 kW | 3LD2154-0TK51 | 3LD2154-1TP51 |
| 32 A | 11.5 kW | 9.5 kW | 3LD2254-0TK51 | 3LD2254-0TK51 + 3LD9200-5B |
| 63 A | 22 kW | 18.5 kW | 3LD2555-0TK51 | 3LD2555-0TK51 + 3LD9200-5B |
| **Knob-operated mechanism, four-hole mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2022-0TK11 | 3LD2022-0TK11 + 3LD9200-5B |
| 25 A | 9.5 kW | 7.5 kW | 3LD2122-0TK11 | 3LD2122-0TK11 + 3LD9200-5B |
| 32 A | 11.5 kW | 9.5 kW | 3LD2222-0TK11 | 3LD2222-0TK11 + 3LD9200-5B |
| **Knob-operated mechanism, center-hole mounting Ø 22.5 mm** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2050-0TK11 | 3LD2050-0TK11 + 3LD9200-5B |
| 25 A | 9.5 kW | 7.5 kW | 3LD2150-0TK11 | 3LD2150-0TK11 + 3LD9200-5B |
| 32 A | 11.5 kW | 9.5 kW | 3LD2250-0TK11 | 3LD2250-0TK11 + 3LD9200-5B |

**Scope of supply:**
- Including terminal covers for the infeed side

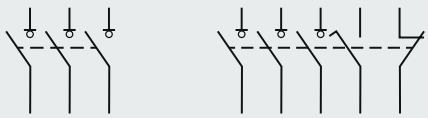
**Accessories,** see pages 18/58 to 18/59

# 3LD switch disconnectors

## 3LD2 main control switches, front mounting, 25 ... 50 $kA_{eff}$

| 3P+N | | 6P | |
|---|---|---|---|
|  |  |  |  |
| **Without auxiliary switch** | **1 NO + 1 NC (standard version)** | **Without auxiliary switch** | **1 NO + 1 NC (standard version)** |
| 3LD2003-1TL51 | 3LD2003-2EP51 | – | – |
| 3LD2103-1TL51 | 3LD2103-2EP51 | 3LD2103-3VK51 | 3LD2103-4VP51 |
| 3LD2203-1TL51 | 3LD2203-1TL51 + 3LD9200-5B | 3LD2203-3VK51 | 3LD2203-3VK51 + 3LD9200-5B |
| 3LD2504-1TL51 | 3LD2504-1TP51 + 3LD9250-0BA | 3LD2504-3VK51 | 3LD2504-3VK51 + 3LD9200-5B |
| 3LD2704-0TK51 + 3LD9280-0B | 3LD2704-0TK51 + 3LD9280-0B + 3LD9200-5B | – | – |
| 3LD2804-0TK51 + 3LD9280-0B | 3LD2804-0TK51 + 3LD9280-0B + 3LD9200-5B | – | – |
| 3LD2305-1TL11 | 3LD2305-1TL11 + 3LD9200-5B | 3LD2305-3VK11 | 3LD2305-3VK11 + 3LD9200-5B |
| 3LD2405-1TL11 | 3LD2405-1TL11 + 3LD9200-5B | 3LD2405-3VK11 | 3LD2405-3VK11 + 3LD9200-5B |
| 3LD2054-1TL51 | 3LD2054-2EP51 | – | – |
| 3LD2154-1TL51 | 3LD2154-2EP51 | – | – |
| 3LD2254-1TL51 | 3LD2254-1TL51 + 3LD9200-5B | – | – |
| 3LD2555-0TK51 + 3LD9250-0BA | 3LD2555-0TK51 + 3LD9250-0BA + 3LD9200-5B | – | – |
| 3LD2022-1TL11 | 3LD2022-1TL11 + 3LD9200-5B | – | – |
| 3LD2122-1TL11 | 3LD2122-1TL11 + 3LD9200-5B | – | – |
| 3LD2222-0TK11 + 3LD9220-0B | 3LD2222-0TK11 + 3LD9220-0B + 3LD9200-5B | – | – |
| 3LD2050-1TL11 | 3LD2050-1TL11 + 3LD9200-5B | – | – |
| 3LD2150-0TK11 + 3LD9220-0B | 3LD2150-0TK11 + 3LD9220-0B + 3LD9200-5B | – | – |
| 3LD2250-0TK11 + 3LD9220-0B | 3LD2250-0TK11 + 3LD9220-0B + 3LD9200-5B | – | – |

# 3LD2 EMERGENCY-STOP switches, front mounting



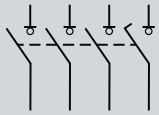
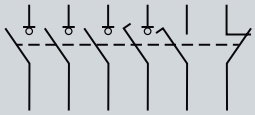
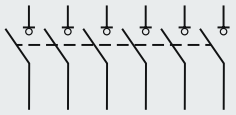
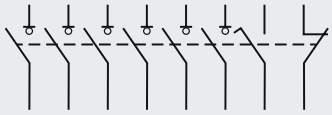
| Number of poles | Operating mechanisms, red/yellow<br>3P | |
|---|---|---|
| Uninterrupted current $I_u$<br>At AC-21A, 380 ... 440 V | Operational power P<br>At AC-23A, 380 ... 440 V | Operational power P<br>At AC-3A, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC (standard version) |
| **Rotary operating mechanism, four-hole mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2003-0TK53 | 3LD2003-1TP53 |
| 25 A | 9.5 kW | 7.5 kW | 3LD2103-0TK53 | 3LD2103-1TP53 |
| 32 A | 11.5 kW | 9.5 kW | 3LD2203-0TK53 | 3LD2203-1TP53 |
| 63 A | 22 kW | 18.5 kW | 3LD2504-0TK53 | 3LD2504-1TP53 |
| 100 A | 37 kW | 30 kW | 3LD2704-0TK53 | 3LD2704-1TP53 |
| 125 A | 45 kW | 37 kW | 3LD2804-0TK53 | 3LD2804-1TP53 |
| 160 A | 75 kW | 50 kW | 3LD2305-0TK13 | 3LD2305-0TK13 + 3LD9200-5B |
| 250 A | 132 kW | 110 kW | 3LD2405-0TK13 | 3LD2405-0TK13 + 3LD9200-5B |
| **Rotary operating mechanism, center-hole mounting Ø 22.5 mm** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2054-0TK53 | 3LD2054-1TP53 |
| 25 A | 9.5 kW | 7.5 kW | 3LD2154-0TK53 | 3LD2154-1TP53 |
| 32 A | 11.5 kW | 9.5 kW | 3LD2254-0TK53 | 3LD2254-0TK53 + 3LD9200-5B |
| 63 A | 22 kW | 18.5 kW | 3LD2555-0TK53 | 3LD2555-0TK53 + 3LD9200-5B |
| **Knob-operated mechanism, four-hole mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2022-0TK13 | 3LD2022-0TK13 + 3LD9200-5B |
| 25 A | 9.5 kW | 7.5 kW | 3LD2122-0TK13 | 3LD2122-0TK13 + 3LD9200-5B |
| 32 A | 11.5 kW | 9.5 kW | 3LD2222-0TK13 | 3LD2222-0TK13 + 3LD9200-5B |
| **Knob-operated mechanism, center-hole mounting Ø 22.5 mm** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2050-0TK13 | 3LD2050-0TK13 + 3LD9200-5B |
| 25 A | 9.5 kW | 7.5 kW | 3LD2150-0TK13 | 3LD2150-0TK13 + 3LD9200-5B |
| 32 A | 11.5 kW | 9.5 kW | 3LD2250-0TK13 | 3LD2250-0TK13 + 3LD9200-5B |

**Scope of supply:**
- Including terminal covers for the infeed side

**Accessories,** see pages 18/58 to 18/59

# 3LD switch disconnectors

## 3LD2 EMERGENCY-STOP switches, front mounting, 25 ... 50 $kA_{eff}$

| 3+N | | 6P | |
|---|---|---|---|
|  |  |  |  |
| **Without auxiliary switch** | **1 NO + 1 NC (standard version)** | **Without auxiliary switch** | **1 NO + 1 NC (standard version)** |
| 3LD2003-1TL53 | 3LD2003-2EP53 | – | – |
| 3LD2103-1TL53 | 3LD2103-2EP53 | 3LD2103-3VK53 | 3LD2103-4VP53 |
| 3LD2203-1TL53 | 3LD2203-1TL53 + 3LD9200-5B | 3LD2203-3VK53 | 3LD2203-3VK53 + 3LD9200-5B |
| 3LD2504-1TL53 | 3LD2504-1TP53 + 3LD9250-0BA | 3LD2504-3VK53 | 3LD2504-3VK53 + 3LD9200-5B |
| 3LD2704-0TK53 + 3LD9280-0B | 3LD2704-0TK53 + 3LD9280-0B + 3LD9200-5B | – | – |
| 3LD2804-0TK53 + 3LD9280-0B | 3LD2804-0TK53 + 3LD9280-0B + 3LD9200-5B | – | – |
| 3LD2305-1TL13 | 3LD2305-1TL13 + 3LD9200-5B | 3LD2305-3VK13 | 3LD2305-3VK13 + 3LD9200-5B |
| 3LD2405-1TL13 | 3LD2405-1TL13 + 3LD9200-5B | 3LD2405-3VK13 | 3LD2405-3VK13 + 3LD9200-5B |
| 3LD2054-1TL53 | 3LD2054-2EP53 | – | – |
| 3LD2154-1TL53 | 3LD2154-2EP53 | – | – |
| 3LD2254-1TL53 | 3LD2254-1TL53 + 3LD9200-5B | – | – |
| 3LD2555-0TK53 + 3LD9250-0BA | 3LD2555-0TK53 + 3LD9250-0BA + 3LD9200-5B | – | – |
| 3LD2022-1TL13 | 3LD2022-1TL13 + 3LD9200-5B | – | – |
| 3LD2122-1TL13 | 3LD2122-1TL13 + 3LD9200-5B | – | – |
| 3LD2222-0TK13 + 3LD9220-0B | 3LD2222-0TK13 + 3LD9220-0B + 3LD9200-5B | – | – |
| 3LD2050-1TL13 | 3LD2050-1TL13 + 3LD9200-5B | – | – |
| 3LD2150-0TK13 + 3LD9220-0B | 3LD2150-0TK13 + 3LD9220-0B + 3LD9200-5B | – | – |
| 3LD2250-0TK13 + 3LD9220-0B | 3LD2250-0TK13 + 3LD9220-0B + 3LD9200-5B | – | – |

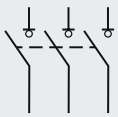
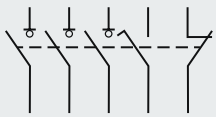
# Accessories for front mounting

| | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | | | |
| | **Contacts** | **Catalog No.** | | | | | | | | |
| | Leading switch-on, lagging switch-off | 3LD9220-0B | | ■ | ■ | | | | | |
| | | 3LD9250-0BA | | | | ■ | | | | |
| | | 3LD9280-0B | | | | | ■ | ■ | | |
| | | 3LD9240-0B | | | | | | | ■ | ■ |
| **N/PE terminals** | | | | | | | | | | |
| | **Contacts** | **Catalog No.** | | | | | | | | |
| | Through-type | 3LD9200-2B | ■ | | | | | | | |
| | | 3LD9220-2B | | ■ | ■ | | | | | |
| | | 3LD9250-2BA | | | | ■ | | | | |
| | | 3LD9280-2B | | | | | ■ | ■ | | |
| | | 3LD9240-2B | | | | | | | ■ | ■ |
| **Auxiliary switches (standard version)** | | | | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | | | |
| | **Contacts** | **Contact surface** | **Catalog No.** | | | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9200-5B | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Gold-plated | 3LD9200-5BF | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switch for mounting on the front** | | | | | | | | | | |
| | • Mounted on the switch shaft<br>• For four-hole front mounting and panel mounting only<br>• For long leading times (20 ... 150 m)<br>• Not for 6-pole 3LD23 (160 A) and 3LD24 (250 A) | | | | | | | | | |
| | **Contacts** | **Contact surface** | **Catalog No.** | | | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9280-5D | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | | 3LD9240-5D new | | | | | | | ■ | ■ |
| | | Gold-plated | 3LD9280-5DF | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | | 3LD9240-5DF | | | | | | | ■ | ■ |
| **Rotary operating mechanisms** | | | | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks | | | | | | | | | |
| | **Version** | **Mounting** | **Catalog No.** | | | | | | | |
| | For main control switches | Center-hole mounting | 3LD9224-1D | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-1D | | | | ■ | | | | |
| | | Four-hole mounting | 3LD9224-1B | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-1B | | | | ■ | ■ | ■ | | |
| | For EMERGENCY-STOP switches | Center-hole mounting | 3LD9224-3D | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-3D | | | | ■ | | | | |
| | | Four-hole mounting | 3LD9224-3B | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-3B | | | | ■ | ■ | ■ | | |

# Accessories for front mounting

| | | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Knob-operated mechanisms** | | | | | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks | | | | | | | | | | |
| | **Version** | **Mounting** | **Catalog No.** | | | | | | | | |
| | For main control switches | Four-hole mounting | **3LD9243-1B** | | | | | | | ■ | ■ |
| | For EMERGENCY-STOP switches | Four-hole mounting | **3LD9243-3B** | | | | | | | ■ | ■ |
| **Terminal covers** | | | | | | | | | | | |
| | • Pack of 4 units | | | | | | | | | | |
| | **Number of poles** | | **Catalog No.** | | | | | | | | |
| | 1-pole | | **3LD9201-2A** | ■ | | | | | | | |
| | | | **3LD9221-2A** | | ■ | ■ | | | | | |
| | | | **3LD9251-2A** | | | | ■ | | | | |
| | | | **3LD9281-2A** | | | | | ■ | ■ | | |
| | | | **3LD9241-2A** | | | | | | | ■ | ■ |
| | 3-pole | | **3LD9221-0A** | | ■ | ■ | | | | | |
| | | | **3LD9251-0A** | | | | ■ | | | | |
| | 4-pole | | **3LD9201-1A** | ■ | | | | | | | |
| **Inscription labels** | | | | | | | | | | | |
| | • Pack of 10 units | | | | | | | | | | |
| | **Inscription** | | **Catalog No.** | | | | | | | | |
| | German / English (Hauptschalter / Main Switch) | | **3LD9286-1A** | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | Without inscription | | **3LD9286-4A** | ■ | ■ | ■ | ■ | ■ | ■ | | |
| **Assembly tools** | | | | | | | | | | | |
| | • For center-hole mounting with nut<br>• Pack of 5 units | | | | | | | | | | |
| | **Version** | | **Catalog No.** | | | | | | | | |
| | For main control switches and EMERGENCY-STOP switches | | **3LD9256-0A** | ■ | ■ | ■ | ■ | | | | |

# 3LD2 main control switches, panel mounting

| | Operating mechanisms, black | |
|---|---|---|
| Number of poles | 3P | |
| |  |  |
| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3A, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC (standard version) |
| **Door-coupling rotary operating mechanism, four-hole mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2013-0TK51 | 3LD2013-0TK51 + 3LD9200-5C |
| 25 A | 9.5 kW | 7.5 kW | 3LD2113-0TK51 | 3LD2113-0TK51 + 3LD9200-5C |
| 32 A | 11.5 kW | 9.5 kW | 3LD2213-0TK51 | 3LD2213-0TK51 + 3LD9200-5C |
| 63 A | 22 kW | 18.5 kW | 3LD2514-0TK51 | 3LD2514-0TK51 + 3LD9200-5C |
| 100 A | 37 kW | 30 kW | 3LD2714-0TK51 | 3LD2714-0TK51 + 3LD9200-5C |
| 125 A | 45 kW | 37 kW | 3LD2814-0TK51 | 3LD2814-0TK51 + 3LD9200-5C |
| 160 A | 75 kW | 50 kW | 3LD2318-0TK11 | 3LD2318-0TK11 + 3LD9200-5C |
| 250 A | 132 kW | 110 kW | 3LD2418-0TK11 | 3LD2418-0TK11 + 3LD9200-5C |
| **Door-coupling rotary operating mechanism, center-hole mounting Ø 22.5 mm** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2044-0TK51 | 3LD2044-0TK51 + 3LD9200-5C |
| 25 A | 9.5 kW | 7.5 kW | 3LD2144-0TK51 | 3LD2144-0TK51 + 3LD9200-5C |
| 32 A | 11.5 kW | 9.5 kW | 3LD2244-0TK51 | 3LD2244-0TK51 + 3LD9200-5C |
| 63 A | 22 kW | 18.5 kW | 3LD2545-0TK51 | 3LD2545-0TK51 + 3LD9200-5C |
| **Defeatable door-coupling knob-operated mechanism, four-hole mounting** | | | | |
| 16 A | 7,5 kW | 5,5 kW | 3LD2017-0TK11 | 3LD2017-0TK11 + 3LD9200-5C |
| 32 A | 11,5 kW | 9,5 kW | 3LD2217-0TK11 | 3LD2217-0TK11 + 3LD9200-5C |
| 63 A | 22 kW | 18,5 kW | 3LD2517-0TK11 | 3LD2517-0TK11 + 3LD9200-5C |

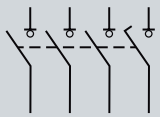
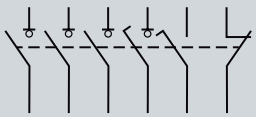
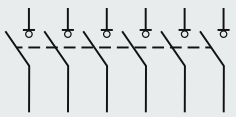
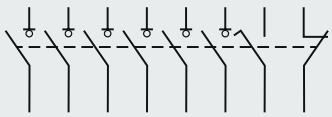
**Scope of supply:**
- Including terminal covers for the infeed side
- Up to 125 A with integrated tolerance compensation

**Mounting:**
- Up to 125 A using screws or snap-on mounting on 35 mm mounting rails

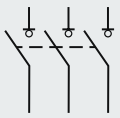
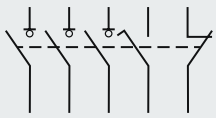
**Accessories, see pages 18/64 to 18/65**

# 3LD switch disconnectors

## 3LD2 main control switches, panel mounting, 25 ... 50 $kA_{eff}$

| 3P+N | | 6P | |
|---|---|---|---|
|  |  |  |  |
| **Without auxiliary switch** | **1 NO + 1 NC (standard version)** | **Without auxiliary switch** | **1 NO + 1 NC (standard version)** |
| 3LD2013-1TL51 | 3LD2013-1TL51 + 3LD9200-5C | – | – |
| 3LD2113-1TL51 | 3LD2113-1TL51 + 3LD9200-5C | 3LD2113-3VK51 | 3LD2113-4VP51 |
| 3LD2213-1TL51 | 3LD2213-1TL51 + 3LD9200-5C | – | – |
| 3LD2514-1TL51 | 3LD2514-1TL51 + 3LD9200-5C | – | – |
| 3LD2714-0TK51 + 3LD9280-0C | 3LD2714-0TK51 + 3LD9280-0C + 3LD9200-5C | – | – |
| 3LD2814-0TK51 + 3LD9280-0C | 3LD2814-0TK51 + 3LD9280-0C + 3LD9200-5C | – | – |
| 3LD2318-1TL11 | 3LD2318-1TL11 + 3LD9200-5C | 3LD2318-3VK11 | 3LD2318-3VK11 + 3LD9200-5C |
| 3LD2418-1TL11 | 3LD2418-1TL11 + 3LD9200-5C | 3LD2418-3VK11 | 3LD2418-3VK11 + 3LD9200-5C |
| 3LD2044-1TL51 | 3LD2044-1TL51 + 3LD9200-5C | – | – |
| 3LD2144-1TL51 | 3LD2144-1TL51 + 3LD9200-5C | – | – |
| 3LD2244-1TL51 | 3LD2244-1TL51 + 3LD9200-5C | – | – |
| 3LD2545-0TK51 + 3LD9250-0CA | 3LD2545-0TK51 + 3LD9250-0CA + 3LD9200-5C | – | – |
| 3LD2017-1TL11 | 3LD2017-1TL11 + 3LD9200-5C | – | – |
| 3LD2217-1TL11 | 3LD2217-1TL11 + 3LD9200-5C | – | – |
| 3LD2517-1TL11 | 3LD2517-1TL11 + 3LD9200-5C | – | – |

# 3LD2 EMERGENCY-STOP switches, panel mounting

| | Operating mechanisms, red/yellow | |
|---|---|---|
| Number of poles | 3P | |
| |  |  |
| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3A, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC (standard version) |
| **Door-coupling rotary operating mechanism, four-hole mounting** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2013-0TK53 | 3LD2013-0TK53 + 3LD9200-5C |
| 25 A | 9.5 kW | 7.5 kW | 3LD2113-0TK53 | 3LD2113-0TK53 + 3LD9200-5C |
| 32 A | 11.5 kW | 9.5 kW | 3LD2213-0TK53 | 3LD2213-0TK53 + 3LD9200-5C |
| 63 A | 22 kW | 18.5 kW | 3LD2514-0TK53 | 3LD2514-0TK53 + 3LD9200-5C |
| 100 A | 37 kW | 30 kW | 3LD2714-0TK53 | 3LD2714-0TK53 + 3LD9200-5C |
| 125 A | 45 kW | 37 kW | 3LD2814-0TK53 | 3LD2814-0TK53 + 3LD9200-5C |
| 160 A | 75 kW | 50 kW | 3LD2318-0TK13 | 3LD2318-0TK13 + 3LD9200-5C |
| 250 A | 132 kW | 110 kW | 3LD2418-0TK13 | 3LD2418-0TK13 + 3LD9200-5C |
| **Door-coupling rotary operating mechanism, center-hole mounting Ø 22.5 mm** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2044-0TK53 | 3LD2044-0TK53 + 3LD9200-5C |
| 25 A | 9.5 kW | 7.5 kW | 3LD2144-0TK53 | 3LD2144-0TK53 + 3LD9200-5C |
| 32 A | 11.5 kW | 9.5 kW | 3LD2244-0TK53 | 3LD2244-0TK53 + 3LD9200-5C |
| 63 A | 22 kW | 18.5 kW | 3LD2545-0TK53 | 3LD2545-0TK53 + 3LD9200-5C |
| **Defeatable door-coupling knob-operated mechanism, four-hole mounting** | | | | |
| 16 A | 7,5 kW | 5,5 kW | 3LD2017-0TK13 | 3LD2017-0TK13 + 3LD9200-5C |
| 32 A | 11,5 kW | 9,5 kW | 3LD2217-0TK13 | 3LD2217-0TK13 + 3LD9200-5C |
| 63 A | 22 kW | 18,5 kW | 3LD2517-0TK13 | 3LD2517-1TL13 + 3LD9200-5C |

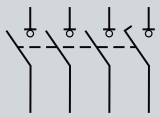
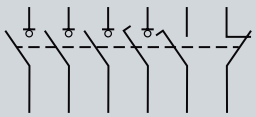
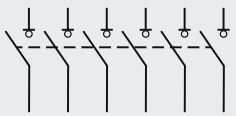
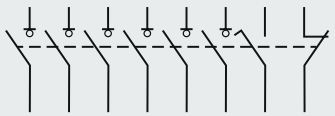
**Scope of supply:**
- Including terminal covers for the infeed side
- Up to 125 A with integrated tolerance compensation

**Mounting:**
- Up to 125 A using screws or snap-on mounting on 35 mm mounting rails

**Accessories, see pages 18/64 to 18/65**

# 3LD switch disconnectors

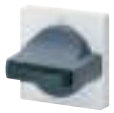
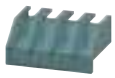
## 3LD2 EMERGENCY-STOP switches, panel mounting, 25 ... 50 $kA_{eff}$

| 3P+N | | 6P | |
|---|---|---|---|
|  |  |  |  |
| **Without auxiliary switch** | **1 NO + 1 NC (standard version)** | **Without auxiliary switch** | **1 NO + 1 NC (standard version)** |
| 3LD2013-1TL53 | 3LD2013-1TL53 + 3LD9200-5C | – | – |
| 3LD2113-1TL53 | 3LD2113-1TL53 + 3LD9200-5C | 3LD2113-3VK53 | 3LD2113-4VP53 |
| 3LD2213-1TL53 | 3LD2213-1TL53 + 3LD9200-5C | – | – |
| 3LD2514-1TL53 | 3LD2514-1TL53 + 3LD9200-5C | – | – |
| 3LD2714-0TK53 + 3LD9280-0C | 3LD2714-0TK53 + 3LD9280-0C + 3LD9200-5C | – | – |
| 3LD2814-0TK53 + 3LD9280-0C | 3LD2814-0TK53 + 3LD9280-0C + 3LD9200-5C | – | – |
| 3LD2318-1TL13 | 3LD2318-1TL13 + 3LD9200-5C | 3LD2318-3VK13 | 3LD2318-3VK13 + 3LD9200-5C |
| 3LD2418-1TL13 | 3LD2418-1TL13 + 3LD9200-5C | 3LD2418-3VK13 | 3LD2418-3VK13 + 3LD9200-5C |
| 3LD2044-1TL53 | 3LD2044-1TL53 + 3LD9200-5C | – | – |
| 3LD2144-1TL53 | 3LD2144-1TL53 + 3LD9200-5C | – | – |
| 3LD2244-1TL53 | 3LD2244-1TL53 + 3LD9200-5C | – | – |
| 3LD2545-0TK53 + 3LD9250-0CA | 3LD2545-0TK53 + 3LD9250-0CA + 3LD9200-5C | – | – |
| 3LD2017-1TL13 | 3LD2017-1TL13 + 3LD9200-5C | – | – |
| 3LD2217-1TL13 | 3LD2217-0TK13 + 3LD9200-5C | – | – |
| 3LD2517-1TL13 | 3LD2517-1TL13 + 3LD9200-5C | – | – |

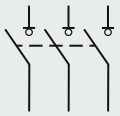
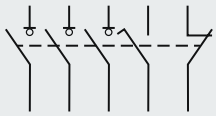
# Accessories for panel mounting

| | | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | | | | |
| | **Contacts** | | **Catalog No.** | | | | | | | | |
| | Leading switch-on, lagging switch-off | | 3LD9220-0C | | ■ | ■ | | | | | |
| | | | 3LD9250-0CA | | | | ■ | | | | |
| | | | 3LD9280-0C | | | | | ■ | ■ | | |
| | | | 3LD9240-0C | | | | | | | ■ | ■ |
| **N/PE terminals** | | | | | | | | | | | |
| | **Contacts** | | **Catalog No.** | | | | | | | | |
| | Through-type | | 3LD9200-2C | ■ | | | | | | | |
| | | | 3LD9220-2C | | ■ | ■ | | | | | |
| | | | 3LD9250-2CA | | | | ■ | | | | |
| | | | 3LD9280-2C | | | | | ■ | ■ | | |
| | | | 3LD9240-2C | | | | | | | ■ | ■ |
| **Auxiliary switches (standard version)** | | | | | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | | | | |
| | **Contacts** | **Contact surface** | **Catalog No.** | | | | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9200-5C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Gold-plated | 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | 2 NO | Standard | 3LD9200-6C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switch for mounting on the front** | | | | | | | | | | | |
| | • Mounted on the switch shaft<br>• For long leading times (20 ... 150 ms) | | | | | | | | | | |
| | **Contacts** | **Contact surface** | **Catalog No.** | | | | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9280-5D | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | | 3LD9240-5D | | | | | | | ■ | ■ |
| | | Gold-plated | 3LD9280-5DF | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | | 3LD9240-5DF | | | | | | | ■ | ■ |
| **Rotary operating mechanisms** | | | | | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks | | | | | | | | | | |
| | **Version** | **Mounting** | **Catalog No.** | | | | | | | | |
| | For main control switches | Center-hole mounting | 3LD9224-1D | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-1D | | | | ■ | | | | |
| | | Four-hole mounting | 3LD9224-1B | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-1B | | | | ■ | ■ | ■ | | |
| | For EMERGENCY-STOP switches | Center-hole mounting | 3LD9224-3D | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-3D | | | | ■ | | | | |
| | | Four-hole mounting | 3LD9224-3B | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-3B | | | | ■ | ■ | ■ | | |
| **Knob-operated mechanisms** | | | | | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks | | | | | | | | | | |
| | **Version** | **Mounting** | **Catalog No.** | | | | | | | | |
| | For main control switches | Four-hole mounting | 3LD9243-1B | | | | | | | ■ | ■ |
| | For EMERGENCY-STOP switches | Four-hole mounting | 3LD9243-3B | | | | | | | ■ | ■ |

# Accessories for panel mounting

| | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| **8UC7.. door-coupling rotary operating mechanisms** | | | | | | | | | | |
|  • To achieve defeatability from 3LD27 (100 A) to 3LD24 (250 A). A coupling driver and a switching shaft must also be ordered. | | | | | | | | | | |
| **Type** | **Version** | **Catalog No.** | | | | | | | | |
| 8UC71 | Standard | 8UC7110-1BB | | | | | ■ | ■ | | |
| | EMERGENCY-STOP | 8UC7120-3BB | | | | | ■ | ■ | | |
| 8UC72 | Standard | 8UC7210-1BB | | | | | | | ■ | ■ |
| | EMERGENCY-STOP | 8UC7220-3BB | | | | | | | ■ | ■ |
| **Coupling drivers** | | | | | | | | | | |
| | **Version** | **Catalog No.** | | | | | | | | |
| | For 8UC71 door-coupling rotary operating mechanisms | 8UC6011 | | | | | ■ | ■ | | |
| | For 8UC72 door-coupling rotary operating mechanisms | 8UC6012 | | | | | | | ■ | ■ |
| **Switching shafts** | | | | | | | | | | |
| | **Cross-section** | **Length** | **Catalog No.** | | | | | | | |
| | 6 × 6 mm | 300 mm | 3LD9205-0C | ■ | ■ | ■ | ■ | ■ | ■ | |
| | | 600 mm | 3LD9205-2C | ■ | ■ | ■ | ■ | ■ | ■ | |
| | 8 × 8 mm | 300 mm | 3LD9245-0C | | | | | | ■ | ■ |
| | | 600 mm | 3LD9245-2C | | | | | | ■ | ■ |
| **Coupling pieces** | | | | | | | | | | |
| • Without ON-lock | | | | | | | | | | |
| | | **Catalog No.** | | | | | | | | |
| | | 3LD9242-4F | | | | | | | ■ | ■ |
| **Terminal covers** | | | | | | | | | | |
| • Pack of 4 units | | | | | | | | | | |
| **Number of poles** | | **Catalog No.** | | | | | | | | |
| 1-pole | | 3LD9201-2A | ■ | | | | | | | |
| | | 3LD9221-2A | | ■ | ■ | | | | | |
| | | 3LD9251-2A | | | | ■ | | | | |
| | | 3LD9281-2A | | | | | ■ | ■ | | |
| | | 3LD9241-2A | | | | | | | ■ | ■ |
| 3-pole | | 3LD9221-0A | | ■ | ■ | | | | | |
| | | 3LD9251-0A | | | | ■ | | | | |
|  4-pole | | 3LD9201-1A | ■ | | | | | | | |
| **Inscription labels** | | | | | | | | | | |
| • Pack of 10 units<br>• Cannot be used with defeatable 3LD2.17 door-coupling rotary operating mechanisms | | | | | | | | | | |
| **Inscription** | | **Catalog No.** | | | | | | | | |
| German / English (Hauptschalter / Main Switch) | | 3LD9286-1A | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Without inscription | | 3LD9286-4A | ■ | ■ | ■ | ■ | ■ | ■ | | |
| **Assembly tools** | | | | | | | | | | |
| • For center-hole mounting with nut<br>• Pack of 5 units | | | | | | | | | | |
| **Version** | | **Catalog No.** | | | | | | | | |
| For main control switches and EMERGENCY-STOP switches | | 3LD9256-0A | ■ | ■ | ■ | ■ | | | | |

# 3LD2 main control switches, installation in distribution boards

| Number of poles | Operating mechanisms, black<br>3P | |
|---|---|---|
| |  |  |

| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3A, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC (standard version) |
|---|---|---|---|---|
| **Knob-operated mechanisms with masking plate** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2030-0TK11 | 3LD2030-0TK11 + 3LD9200-5C |
| 25 A | 9.5 kW | 7.5 kW | 3LD2130-0TK11 | 3LD2130-0TK11 + 3LD9200-5C |
| 32 A | 11.5 kW | 9.5 kW | 3LD2230-0TK11 | 3LD2230-0TK11 + 3LD9200-5C |
| 63 A | 22 kW | 18.5 kW | 3LD2530-0TK11 | 3LD2530-0TK11 + 3LD9200-5C |
| 100 A | 37 kW | 30 kW | 3LD2730-0TK11 | 3LD2730-0TK11 + 3LD9200-5C |
| 125 A | 45 kW | 37 kW | 3LD2830-0TK11 | 3LD2830-0TK11 + 3LD9200-5C |
| 160 A | 75 kW | 50 kW | 3LD2330-0TK11 | 3LD2330-0TK11 + 3LD9200-5C |
| 250 A | 132 kW | 110 kW | 3LD2430-0TK11 | 3LD2430-0TK11 + 3LD9200-5C |

**Scope of supply:**
- 3LD23/3LD24 including terminal covers for the infeed side

**Mounting:**
- Up to 125 A using screws or snap-on mounting on 35 mm mounting rails
- Up to 125 A cap and mounting dimensions acc. to DIN 43880

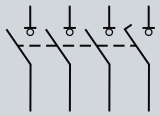
## Accessories

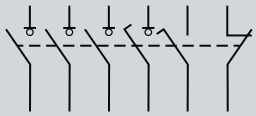
| Contacts | Contact surface | Catalog No. | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | | | |
| | | | | | | | | | | |
| Leading switch-on, lagging switch-off | | 3LD9220-0C | | ■ | ■ | | | | | |
| | | 3LD9250-0CA | | | | ■ | | | | |
| | | 3LD9280-0C | | | | | ■ | ■ | | |
| | | 3LD9240-0C | | | | | | | ■ | ■ |
| **N/PE terminals** | | | | | | | | | | |
| | | | | | | | | | | |
| Through-type | | 3LD9200-2C | ■ | | | | | | | |
| | | 3LD9220-2C | | ■ | ■ | | | | | |
| | | 3LD9250-2CA | | | | ■ | | | | |
| | | 3LD9280-2C | | | | | ■ | ■ | | |
| | | 3LD9240-2C | | | | | | | ■ | ■ |
| **Auxiliary switches (standard version)** | | | | | | | | | | |
| | | | | | | | | | | |
| • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | | | | |
| 1 NO + 1 NC | Standard | 3LD9200-5C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | Gold-plated | 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 2 NO | Standard | 3LD9200-6C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD2 main control switches, installation in distribution boards, 25 … 50 $kA_{eff}$

3P+N





| Without auxiliary switch | 1 NO + 1 NC (standard version) |
|---|---|
| 3LD2030-1TL11 | 3LD2030-1TL11 + 3LD9200-5C |
| 3LD2130-0TK11 + 3LD9220-0C | 3LD2130-0TK11 + 3LD9220-0C + 3LD9200-5C |
| 3LD2230-0TK11 + 3LD9220-0C | 3LD2230-0TK11 + 3LD9220-0C + 3LD9200-5C |
| 3LD2530-0TK11 + 3LD9250-0CA | 3LD2530-0TK11 + 3LD9250-0CA + 3LD9200-5C |
| 3LD2730-0TK11 + 3LD9280-0C | 3LD2730-0TK11 + 3LD9280-0C + 3LD9200-5C |
| 3LD2830-0TK11 + 3LD9280-0C | 3LD2830-0TK11 + 3LD9280-0C + 3LD9200-5C |
| 3LD2330-0TK11 + 3LD9240-0C | 3LD2330-0TK11 + 3LD9240-0C + 3LD9200-5C |
| 3LD2430-0TK11 + 3LD9240-0C | 3LD2430-0TK11 + 3LD9240-0C + 3LD9200-5C |

### Terminal covers

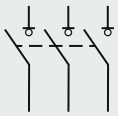
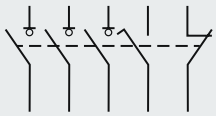
- Pack of 4 units

| | Number of poles | Catalog No. | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1-pole | 3LD9201-2A | ■ | | | | | | | |
| | | 3LD9221-2A | | ■ | ■ | | | | | |
| | | 3LD9251-2A | | | | ■ | | | | |
| | | 3LD9281-2A | | | | | ■ | ■ | | |
| | | 3LD9241-2A | | | | | | | ■ | ■ |
| | 3-pole | 3LD9221-0A | | ■ | ■ | | | | | |
| | | 3LD9251-0A | | | | ■ | | | | |
| | 4-pole | 3LD9201-1A | ■ | | | | | | | |

# 3LD switch disconnectors

## 3LD2 EMERGENCY-STOP switches, installation in distribution boards, 25 ... 50 $kA_{eff}$

## 3LD2 EMERGENCY-STOP switches, installation in distribution boards

| Number of poles | Operating mechanisms, red/yellow<br>3P | |
|---|---|---|
| |  |  |

| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | Operational power P At AC-23A, 380 ... 440 V | Operational power P At AC-3A, 380 ... 440 V | Without auxiliary switch | 1 NO + 1 NC (standard version) |
|---|---|---|---|---|
| **Knob-operated mechanisms with masking plate** | | | | |
| 16 A | 7.5 kW | 5.5 kW | 3LD2030-0TK13 | 3LD2030-0TK13 + 3LD9200-5C |
| 25 A | 9.5 kW | 7.5 kW | 3LD2130-0TK13 | 3LD2130-0TK13 + 3LD9200-5C |
| 32 A | 11.5 kW | 9.5 kW | 3LD2230-0TK13 | 3LD2230-0TK13 + 3LD9200-5C |
| 63 A | 22 kW | 18.5 kW | 3LD2530-0TK13 | 3LD2530-0TK13 + 3LD9200-5C |
| 100 A | 37 kW | 30 kW | 3LD2730-0TK13 | 3LD2730-0TK13 + 3LD9200-5C |
| 125 A | 45 kW | 37 kW | 3LD2830-0TK13 | 3LD2830-0TK13 + 3LD9200-5C |
| 160 A | 75 kW | 50 kW | 3LD2330-0TK13 | 3LD2330-0TK13 + 3LD9200-5C |
| 250 A | 132 kW | 110 kW | 3LD2430-0TK13 | 3LD2430-0TK13 + 3LD9200-5C |

**Scope of supply:**
- 3LD23/3LD24 including terminal covers for the infeed side

**Mounting:**
- Up to 125 A using screws or snap-on mounting on 35 mm mounting rails
- Up to 125 A cap and mounting dimensions acc. to DIN 43880

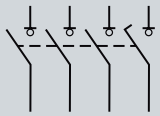
## Accessories

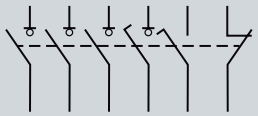
| | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | | | |
| | Contacts | Catalog No. | | | | | | | | |
| | Leading switch-on, lagging switch-off | 3LD9220-0C | | ■ | ■ | | | | | |
| | | 3LD9250-0CA | | | | ■ | | | | |
| | | 3LD9280-0C | | | | | ■ | ■ | | |
| | | 3LD9240-0C | | | | | | | ■ | ■ |
| **N/PE terminals** | | | | | | | | | | |
| | Contacts | Catalog No. | | | | | | | | |
| | Through-type | 3LD9200-2C | ■ | | | | | | | |
| | | 3LD9220-2C | | ■ | ■ | | | | | |
| | | 3LD9250-2CA | | | | ■ | | | | |
| | | 3LD9280-2C | | | | | ■ | ■ | | |
| | | 3LD9240-2C | | | | | | | ■ | ■ |
| **Auxiliary switches (standard version)** | | | | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | | | |
| | Contacts / Contact surface | Catalog No. | | | | | | | | |
| | 1 NO + 1 NC / Standard | 3LD9200-5C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | Gold-plated | 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | 2 NO / Standard | 3LD9200-6C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Terminal covers** | | | | | | | | | | |
| | • Pack of 4 units | | | | | | | | | |
| | Number of poles | Catalog No. | | | | | | | | |
| | 1-pole | 3LD9201-2A | ■ | | | | | | | |
| | | 3LD9221-2A | | ■ | ■ | | | | | |
| | | 3LD9251-2A | | | | ■ | | | | |
| | | 3LD9281-2A | | | | | ■ | ■ | | |
| | | 3LD9241-2A | | | | | | | ■ | ■ |
| | 3-pole | 3LD9221-0A | | ■ | ■ | | | | | |
| | | 3LD9251-0A | | | | ■ | | | | |
| | 4-pole | 3LD9201-1A | ■ | | | | | | | |

# 3LD switch disconnectors

## 3LD2 EMERGENCY-STOP switches, installation in distribution boards, 25 … 50 $kA_{eff}$

3+N





| Without auxiliary switch | 1 NO + 1 NC (standard version) |
|---|---|
| 3LD2030-1TL13 | 3LD2030-1TL13 + 3LD9200-5C |
| 3LD2130-0TK13 + 3LD9220-0C | 3LD2130-0TK13 + 3LD9220-0C + 3LD9200-5C |
| 3LD2230-0TK13 + 3LD9220-0C | 3LD2230-0TK13 + 3LD9220-0C + 3LD9200-5C |
| 3LD2530-0TK13 + 3LD9250-0CA | 3LD2530-0TK13 + 3LD9250-0CA + 3LD9200-5C |
| 3LD2730-0TK13 + 3LD9280-0C | 3LD2730-0TK13 + 3LD9280-0C + 3LD9200-5C |
| 3LD2830-0TK13 + 3LD9280-0C | 3LD2830-0TK13 + 3LD9280-0C + 3LD9200-5C |
| 3LD2330-0TK13 + 3LD9240-0C | 3LD2330-0TK13 + 3LD9240-0C + 3LD9200-5C |
| 3LD2430-0TK13 + 3LD9240-0C | 3LD2430-0TK13 + 3LD9240-0C + 3LD9200-5C |

Disconnect Switches

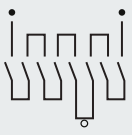
# 3LD switch disconnectors

## DC isolators, 50 $kA_{rms}$

## DC isolators

Operating mechanisms, black

Number of poles 8P



| Mains voltage | Rated operational current $I_e$ At DC-21A, 800 V DC | Rated operational current $I_e$ At DC-22A, 800 V DC | Without auxiliary switch |
|---|---|---|---|
| Knob-operated mechanisms | | | |
| 800 V DC | 32 A | 16 A | 3LD2230-8VQ11-0AF6 |

# Accessories for 3LD2 main control and EMERGENCY-STOP switches

## Additional poles

### Switching contacts for N conductor (4th contact)

| Version | Contacts | Catalog No. | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| For front mounting | Leading switch-on, lagging switch-off | 3LD9220-0B | | ■ | ■ | | | | | |
| | | 3LD9250-0BA | | | | ■ | | | | |
| | | 3LD9280-0B | | | | | ■ | ■ | | |
| | | 3LD9240-0B | | | | | | | ■ | ■ |
| For panel mounting, installation in distribution boards | Leading switch-on, lagging switch-off | 3LD9220-0C | | ■ | ■ | | | | | |
| | | 3LD9250-0CA | | | | ■ | | | | |
| | | 3LD9280-0C | | | | | ■ | ■ | | |
| | | 3LD9240-0C | | | | | | | ■ | ■ |

### N/PE terminals

| Version | Contacts | Catalog No. | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| For front mounting | Through-type | 3LD9200-2B | ■ | | | | | | | |
| | | 3LD9220-2B | | ■ | ■ | | | | | |
| | | 3LD9250-2BA | | | | ■ | | | | |
| | | 3LD9280-2B | | | | | ■ | ■ | | |
| | | 3LD9240-2B | | | | | | | ■ | ■ |
| For panel mounting, installation in distribution boards | Through-type | 3LD9200-2C | ■ | | | | | | | |
| | | 3LD9220-2C | | ■ | ■ | | | | | |
| | | 3LD9250-2CA | | | | ■ | | | | |
| | | 3LD9280-2C | | | | | ■ | ■ | | |
| | | 3LD9240-2C | | | | | | | ■ | ■ |

### Auxiliary switches (standard version)

- For mounting on the left and/or right
- Lagging switch-on, leading switch-off

| Version | Contacts | Catalog No. | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| For front mounting | 1 NO + 1 NC, standard | 3LD9200-5B | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | 1 NO + 1 NC, gold-plated | 3LD9200-5BF | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| For panel mounting, installation in distribution boards | 1 NO + 1 NC, standard | 3LD9200-5C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | 1 NO + 1 NC, gold-plated | 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | 2 NO, standard | 3LD9200-6C | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

### Auxiliary switch for mounting on the front

- Mounted on the front of the switch shaft
- For four-hole front mounting and panel mounting only
- For long leading times (20 ... 150 ms)

| Contacts | Contact surface | Catalog No. | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 NO + 1 NC | Standard | 3LD9280-5D | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | 3LD9240-5D | | | | | | | ■ | ■ |
| | Gold-plated | 3LD9280-5DF | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | 3LD9240-5DF | | | | | | | ■ | ■ |

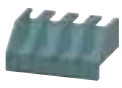
# 3LD switch disconnectors

## Accessories for 3LD2 main control and EMERGENCY-STOP switches

### Operating mechanisms

| | | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rotary operating mechanisms** | | | | | | | | | | | |
| • Lockable in 0 position with up to 3 padlocks<br>• Center-hole mounting, including seal and nut<br>• Four-hole mounting, including seal | | | | | | | | | | | |
| | **Switch** | **Mounting** | **Catalog No.** | | | | | | | | |
| | For main control switches | Center-hole mounting | 3LD9224-1D | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-1D | | | | ■ | ■ | ■ | | |
| | | Four-hole mounting | 3LD9224-1B | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-1B | | | | ■ | ■ | ■ | | |
| | For EMERGENCY-STOP switches | Center-hole mounting | 3LD9224-3D | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-3D | | | | ■ | ■ | ■ | | |
| | | Four-hole mounting | 3LD9224-3B | ■ | ■ | ■ | | | | | |
| | | | 3LD9284-3B | | | | ■ | ■ | ■ | | |
| **Knob-operated mechanisms** | | | | | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks<br>• Including seal | | | | | | | | | | |
| | **Switch** | **Mounting** | **Catalog No.** | | | | | | | | |
| | For main control switches | Four-hole mounting | 3LD9243-1B | | | | | | | ■ | ■ |
| | For EMERGENCY-STOP switches | Four-hole mounting | 3LD9243-3B | | | | | | | ■ | ■ |
| **Switching shafts** | | | | | | | | | | | |
| | **Version** | **Cross-section** | **Length** | **Catalog No.** | | | | | | | |
| | For panel mounting | 6 × 6 mm | 300 mm | 3LD9205-0C | ■ | ■ | ■ | ■ | ■ | ■ | |
| | | | 600 mm | 3LD9205-2C | ■ | ■ | ■ | ■ | ■ | ■ | |
| | | 8 × 8 mm | 300 mm | 3LD9245-0C | | | | | | | ■ | ■ |
| | | | 600 mm | 3LD9245-2C | | | | | | | ■ | ■ |
| **Coupling pieces** | | | | | | | | | | | |
| | • Without ON-lock | | | | | | | | | | |
| | **Version** | | | **Catalog No.** | | | | | | | |
| | For panel mounting | | | 3LD9242-4F | | | | | | ■ | ■ |

### Other accessories

| | | | | 3LD20 (16 A) | 3LD21 (25 A) | 3LD22 (32 A) | 3LD25 (63 A) | 3LD27 (100 A) | 3LD28 (125 A) | 3LD23 (160 A) | 3LD24 (250 A) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Terminal covers** | | | | | | | | | | | |
| • Pack of 4 units | | | | | | | | | | | |
| | **Number of poles** | | **Catalog No.** | | | | | | | | |
| | 1-pole | | 3LD9201-2A | ■ | | | | | | | |
| | | | 3LD9221-2A | | ■ | ■ | | | | | |
| | | | 3LD9251-2A | | | | ■ | | | | |
| | | | 3LD9281-2A | | | | | ■ | ■ | | |
| | | | 3LD9241-2A | | | | | | | ■ | ■ |
| | 3-pole | | 3LD9221-0A | | ■ | ■ | | | | | |
| | | | 3LD9251-0A | | | | ■ | | | | |
|  | 4-pole | | 3LD9201-1A | ■ | | | | | | | |
| **Inscription labels** | | | | | | | | | | | |
| | • Pack of 10 units | | | | | | | | | | |
| | **Inscription** | | **Catalog No.** | | | | | | | | |
| | German / English (Hauptschalter / Main Switch) | | 3LD9286-1A | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | Without inscription | | 3LD9286-4A | ■ | ■ | ■ | ■ | ■ | ■ | | |
| **Assembly tools** | | | | | | | | | | | |
| | • For center-hole mounting with nut<br>• Pack of 5 units | | | | | | | | | | |
| | **Switch** | | | **Catalog No.** | | | | | | | |
| | For main control switches and EMERGENCY-STOP switches | | | 3LD9256-0A | ■ | ■ | ■ | ■ | | | |

# 3LD switch disconnectors

## System overview of 3LD5 UL main control and EMERGENCY-STOP switches

### Basic units for front mounting

3LD5020 (3-pole)

3LD5020 (4-pole)

3LD5420 (3-pole)

3LD5420 (4-pole)

### Basic units, panel mounting with direct operating mechanism

3LD5000 (3-pole)

3LD5000 (4-pole)

3LD5400 (3-pole)

3LD5400 (4-pole)

### Basic units, panel mounting with door-coupling rotary operating mechanism

3LD5010 (3-pole)

3LD5010 (4-pole)

3LD5410 (3-pole)

3LD5410 (4-pole)

### Additional poles and auxiliary switches

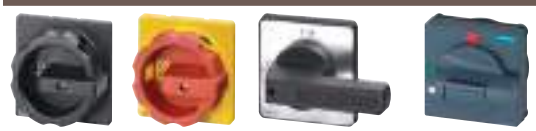
N switching contact

N/PE terminals (through-type)

Auxiliary switches (standard version)

Auxiliary switch for mounting on the front

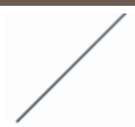
### Operating mechanisms



Rotary operators for four-hole mounting

Coupling heads with and without tolerance compensation

Supplementary handles for UL508A/NFPA79



Switching shafts

### Other accessories

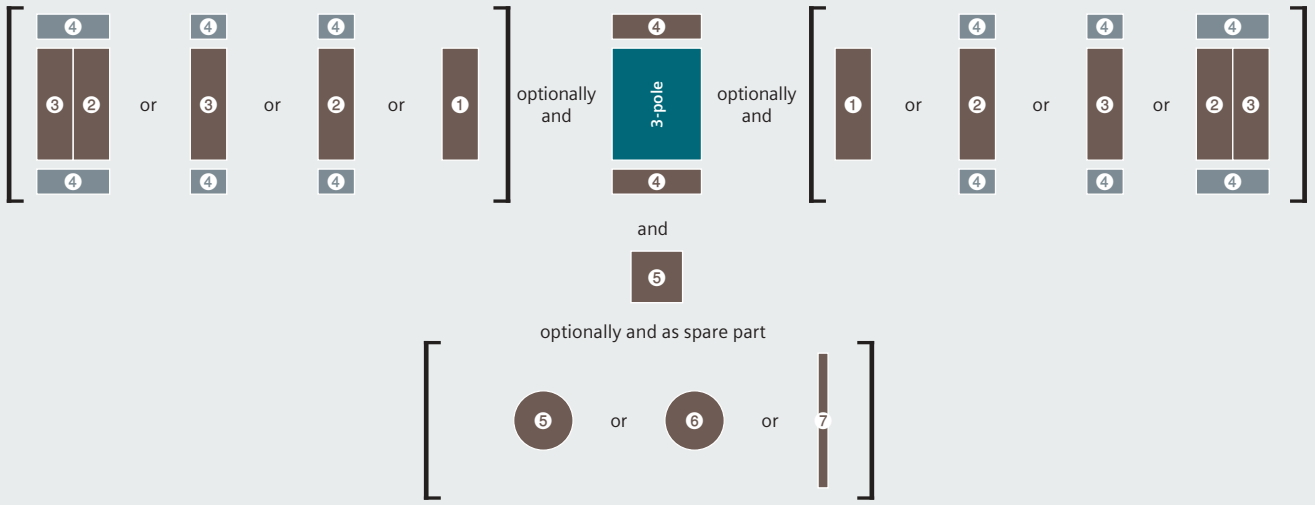
Terminal covers, 1-pole

Terminal covers, 3 and 4-pole

Inscription labels (with and without inscription)

**Note:**
You will find a detailed range of accessories with the basic units.

## Mounting concept and accessories




**Legend**

❶ Auxiliary switch
❷ N switching contact [1)]
❸ N/PE terminal
❹ Terminal cover
❺ Rotary operating mechanism, four-hole mounting
❻ Knob-operated mechanism, four-hole mounting
❼ Switching shaft (300 oder 600 mm)

[1)] The N switching contact ❷ first has to be mounted on the basic unit

### Main control switches acc. to UL

The certification according to UL489 makes the 3LD5 UL ideal for use as a main control switch for machinery and plants for export to the NAFTA states. The variety of accessories makes it especially suitable as a main disconnect switch for industrial machinery. The switch is also certified according to UL508 and can also be used as a manual motor controller.

### Mounting types

#### Front mounting of basic units

The switches for front mounting are mounted on the inside of covers, side panels or, if applicable, control cabinet doors (depending on the applicable standard and switching function). Installation is achieved by 4-hole mounting of the handle. This switch is especially suitable when door interlocking is not required or is implemented in a different way.

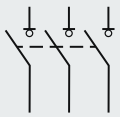
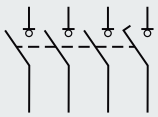
#### Panel mounting with direct operating mechanism

The switches for panel mounting with direct operating mechanism up to 30 A are snapped onto 35 mm standard mounting rails according to EN 60715 or screw-mounted on mounting panels. The switches for 100 to 160 A (3LD54 ... 3LD58) are exclusively screwed onto mounting panels.

#### Basic units, panel mounting with door-coupling rotary operating mechanism

The switches for panel mounting up to 30 A (3LD50) are snapped onto 35 mm standard mounting rails according to EN 60715 or screw-mounted on mounting panels. The switches for 100 to 160 A (3LD54 ... 3LD58) are exclusively screwed onto mounting panels. The actuators are connected to the lower section of the switch through a door coupling, which can be released in its zero position, and a 300 mm long switch shaft. The rotary operating mechanisms are also defeatable, i.e. it is possible to open the control cabinet door with a deliberate action while the switch is in the ON position. To meet the requirement acc. to UL508A/NFPA79, a supplementary handle can be mounted on the switch. Combined with the intermediate handle, the shaft can no longer be removed.

# 3LD5 UL main control and EMERGENCY-STOP switches, front mounting

| Number of poles | Operating mechanisms, black | |
|---|---|---|
| | 3P | 3P+N |
| |  |  |

| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | General use acc. UL489/60947-4-1 | Operational power P At AC-23A, 380 ... 440 V | | |
|---|---|---|---|---|
| **Rotary operating mechanism, four-hole mounting** | | | | |
| 32 | 30 | 15 | 3LD5020-0TK11 | 3LD5020-0TL11 |
| 63 | 60 | 30 | 3LD5220-0TK11 | 3LD5220-0TL11 |
| 100 | 100 | 45 | 3LD5420-0TK11 | 3LD5420-0TL11 |
| 125 | 125 | 55 | 3LD5620-0TK11 | 3LD5620-0TL11 |
| 160 | 150 | 75 | 3LD5820-0TK11 | 3LD5820-0TL11 |

**Scope of supply:**
- Including terminal covers for the infeed side

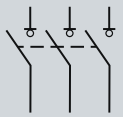
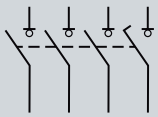
## Accessories for front mounting

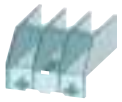
| | | | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | |
| | **Contacts** | | **Catalog No.** | | | | | |
| | Leading switch-on, lagging switch-off | | 3LD9250-0BA | ■ | | | | |
| | | | 3LD9280-0B | | ■ | | | |
| | | | 3LD9240-0B | | | ■ | ■ | ■ |
| **N/PE terminals** | | | | | | | | |
| | **Contacts** | | **Catalog No.** | | | | | |
| | Through-type | | 3LD9250-2BA | ■ | | | | |
| | | | 3LD9280-2B | | ■ | | | |
| | | | 3LD9240-2B | | | ■ | ■ | ■ |
| **Auxiliary switches (standard version)** | | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | |
| | **Contacts** | **Contact surface** | **Catalog No.** | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9200-5B | ■ | ■ | ■ | ■ | ■ |
| | | Gold-plated | 3LD9200-5BF | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switch for mounting on the front** | | | | | | | | |
| | • Mounted on the front of the switch shaft<br>• For long leading times (20 ... 150ms) | | | | | | | |
| | **Contacts** | **Contact surface** | **Catalog No.** | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9280-5D | ■ | ■ | | | |
| | | | 3LD9240-5D | | | ■ | ■ | ■ |
| | | Gold-plated | 3LD9280-5DF | ■ | ■ | | | |
| | | | 3LD9240-5DF | | | ■ | ■ | ■ |
| **Rotary operating mechanisms** | | | | | | | | |
| | • Auxiliary switch for mounting on the front | | | | | | | |
| | **Version** | | **Catalog No.** | | | | | |
| | For main control switches | | 3LD9284-1B | ■ | ■ | | | |
| | For EMERGENCY-STOP switches | | 3LD9284-3B | ■ | ■ | | | |

# 3LD switch disconnectors

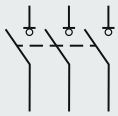
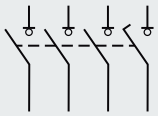
## 3LD5 UL main control and EMERGENCY-STOP switches, front mounting, SCCR 50 - 65 kA

**Operating mechanisms, red/yellow**

| 3P | 3P+N |
|---|---|
|  |  |
| 3LD5020-0TK13 | 3LD5020-0TL13 |
| 3LD5220-0TK13 | 3LD5220-0TL13 |
| 3LD5420-0TK13 | 3LD5420-0TL13 |
| 3LD5620-0TK13 | 3LD5620-0TL13 |
| 3LD5820-0TK13 | 3LD5820-0TL13 |

| | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|
| **Knob-operated mechanisms** | | | | | | |
| • Lockable in 0 position with up to 3 padlocks | | | | | | |
| **Version** | **Catalog No.** | | | | | |
| For main control switches | 3LD9243-1B | | | ■ | ■ | ■ |
| For EMERGENCY-STOP switches | 3LD9284-3B | | | ■ | ■ | ■ |
| **Terminal covers** | | | | | | |
| • Pack of 4 units | | | | | | |
| **Number of poles** | **Catalog No.** | | | | | |
| 1-pole | 3LD9251-2A | ■ | | | | |
| | 3LD9281-2A | | ■ | | | |
| | 3LD9241-2A | | | ■ | ■ | ■ |
|  3-pole | 3LD9251-0A | ■ | | | | |
| **Inscription labels** | | | | | | |
| • Pack of 10 units | | | | | | |
| **Inscription** | **Catalog No.** | | | | | |
| German / English (Hauptschalter / Main Switch) | 3LD9286-1A | ■ | ■ | ■ | ■ | ■ |
| Without inscription | 3LD9286-4A | ■ | ■ | ■ | ■ | ■ |

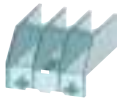
# 3LD5 UL main control and EMERGENCY-STOP switches, panel mounting with direct operating mechanism

| Number of poles | Operating mechanisms, black 3P | 3P+N |
|---|---|---|
| |  |  |

| Uninterrupted current $I_u$ At AC-21A, 380 … 440 V | General use acc. UL489/508 | Operational power P At AC-23A, 380 … 440 V | | |
|---|---|---|---|---|
| **Rotary operating mechanism, four-hole mounting** | | | | |
| 32 | 30 | 15 | 3LD5000-0TK11 | 3LD5000-0TL11 |
| 63 | 60 | 30 | 3LD5200-0TK11 | 3LD5200-0TL11 |
| 100 | 100 | 45 | 3LD5400-0TK11 | 3LD5400-0TL11 |
| 125 | 125 | 55 | 3LD5600-0TK11 | 3LD5600-0TL11 |
| 160 | 150 | 75 | 3LD5800-0TK11 | 3LD5800-0TL11 |

**Scope of supply:**
- Including terminal covers for the infeed side

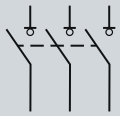
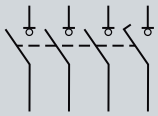
## Accessories for panel mounting with direct operating mechanisms

| | | | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | |
| | Contacts | | Catalog No. | | | | | |
| | Leading switch-on, lagging switch-off | | 3LD9250-0CA | ■ | | | | |
| | | | 3LD9280-0C | | ■ | | | |
| | | | 3LD9240-0C | | | ■ | ■ | ■ |
| **N/PE terminals** | | | | | | | | |
| | Contacts | | Catalog No. | | | | | |
| | Through-type | | 3LD9250-2CA | ■ | | | | |
| | | | 3LD9280-2C | | ■ | | | |
| | | | 3LD9240-2C | | | ■ | ■ | ■ |
| **Auxiliary switches** | | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | |
| | Contacts | Contact surface | Catalog No. | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9200-5C | ■ | ■ | ■ | ■ | ■ |
| | | Gold-plated | 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ |
| **Terminal covers** | | | | | | | | |
| | • Pack of 4 units | | | | | | | |
| | Number of poles | | Catalog No. | | | | | |
| | 1-pole | | 3LD9251-2A | ■ | | | | |
| | | | 3LD9281-2A | | ■ | | | |
| | | | 3LD9241-2A | | | ■ | ■ | ■ |
|  | 3-pole | | 3LD9251-0A | ■ | | | | |

# 3LD switch disconnectors

## 3LD5 UL main control and EMERGENCY-STOP switches, panel mounting, direct operating mechanism, SCCR 50 … 65 kA

### Operating mechanisms, red/yellow

| 3P | 3P+N |
|---|---|
|  |  |
| **3LD5000-0TK13** | **3LD5000-0TL13** |
| **3LD5200-0TK13** | **3LD5200-0TL13** |
| **3LD5400-0TK13** | **3LD5400-0TL13** |
| **3LD5600-0TK13** | **3LD5600-0TL13** |
| **3LD5800-0TK13** | **3LD5800-0TL13** |

# 3LD5 UL main control and EMERGENCY-STOP switches, panel mounting with door-coupling rotary operating mechanism

| Uninterrupted current $I_u$ At AC-21A, 380 ... 440 V | General use acc. UL489/508 | Operational power P At AC-23A, 380 ... 440 V | Operating mechanisms, black | |
|---|---|---|---|---|
| Number of poles | | | 3P | 3P+N |
| **Rotary operating mechanism, four-hole mounting** | | | | |
| 32 | 30 | 15 | 3LD5010-0TK11 | 3LD5010-0TL11 |
| 63 | 60 | 30 | 3LD5210-0TK11 | 3LD5210-0TL11 |
| 100 | 100 | 45 | 3LD5410-0TK11 | 3LD5410-0TL11 |
| 125 | 125 | 55 | 3LD5610-0TK11 | 3LD5610-0TL11 |
| 160 | 150 | 75 | 3LD5810-0TK11 | 3LD5810-0TL11 |

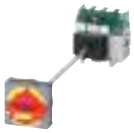
**Scope of supply:**
- Including terminal covers for the infeed side
- Defeatable door-coupling rotary operating mechanisms
- Without tolerance compensation

## Accessories for panel mounting with door mounted rotary operator

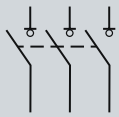
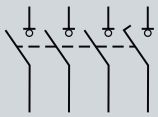
| | | | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact)** | | | | | | | | |
| | Contacts | | Catalog No. | | | | | |
| | Leading switch-on, lagging switch-off | | 3LD9250-0CA | ■ | | | | |
| | | | 3LD9280-0C | | ■ | | | |
| | | | 3LD9240-0C | | | ■ | ■ | ■ |
| **N/PE terminals** | | | | | | | | |
| | Contacts | | Catalog No. | | | | | |
| | Through-type | | 3LD9250-2CA | ■ | | | | |
| | | | 3LD9280-2C | | ■ | | | |
| | | | 3LD9240-2C | | | ■ | ■ | ■ |
| **Auxiliary switches (standard version)** | | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | | |
| | Contacts | Contact surface | Catalog No. | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9200-5C | ■ | ■ | ■ | ■ | ■ |
| | | Vergoldet | 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switch for mounting on the front** | | | | | | | | |
| | • Mounted on the front of the switch shaft<br>• For long leading times (20 ... 150ms) | | | | | | | |
| | Contacts | Contact surface | Catalog No. | | | | | |
| | 1 NO + 1 NC | Standard | 3LD9280-5D | ■ | ■ | | | |
| | | | 3LD9240-5D | | | ■ | ■ | ■ |
| | | Gold-plated | 3LD9280-5DF | ■ | ■ | | | |
| | | | 3LD9240-5DF | | | ■ | ■ | ■ |
| **Handles** | | | | | | | | |
| | • Supplied with a masking frame, but without an extension shaft or coupling driver<br>• Can be locked with up to 3 padlocks | | | | | | | |
| | Labeling | Color | Catalog No. | | | | | |
| | O-I | Gray | 8UD1771-2AD01 | ■ | ■ | | | |
| | | | 8UD1731-2AD01 | | | ■ | ■ | ■ |
| | | Red/yellow | 8UD1771-2AD05 | ■ | ■ | | | |
| | | | 8UD1731-2AD05 | | | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD5 UL main control and EMERGENCY-STOP switches, panel mounting, direct operating mechanism, SCCR 50 … 65 kA



### Operating mechanisms, red/yellow

| 3P | 3P+N |
|---|---|
|  |  |
| 3LD5010-0TK13 | 3LD5010-0TL13 |
| 3LD5210-0TK13 | 3LD5210-0TL13 |
| 3LD5410-0TK13 | 3LD5410-0TL13 |
| 3LD5610-0TK13 | 3LD5610-0TL13 |
| 3LD5810-0TK13 | 3LD5810-0TL13 |

### Supplementary handles for door-coupling rotary operating mechanism

- For requirements according to UL508A/NFPA79
- Can be locked with up to 1 padlocks in 0 position
- Can only be switched on by deliberate action

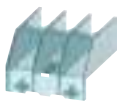
| Labeling | Color | Catalog No. | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|
| O-I | Gray | 3LD9287-1C | ■ | ■ | | | |
| | | 3LD9247-1C | | | ■ | ■ | ■ |
| | Red/yellow | 3LD9287-3C | ■ | ■ | | | |
| | | 3LD9247-3C | | | ■ | ■ | ■ |

### Coupling drivers

| Version | Catalog No. | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|
| With tolerance compensation | 8UD1900-1GA00 | ■ | ■ | | | |
| | 8UD1900-2GA00 | | | ■ | ■ | ■ |
| Without tolerance compensation | 8UD1900-1HA00 | ■ | ■ | | | |
| | 8UD1900-2HA00 | | | ■ | ■ | ■ |

### Terminal covers

- Pack of 4 units



| Number of poles | Catalog No. | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|
| 1-pole | 3LD9251-2A | ■ | | | | |
| | 3LD9281-2A | | ■ | | | |
| | 3LD9241-2A | | | ■ | ■ | ■ |
| 3-pole | 3LD9251-0A | ■ | | | | |

### Inscription labels

- Pack of 10 units

| Inscription | Catalog No. | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|
| German / English (Hauptschalter / Main Switch) | 3LD9286-1A | ■ | ■ | ■ | ■ | ■ |
| Without inscription | 3LD9286-4A | ■ | ■ | ■ | ■ | ■ |

### Switching shafts

| section | Length | Catalog No. | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|
| 6 × 6 mm | 300 mm | 3LD9205-0C | ■ | ■ | | | |
| | 600 mm | 3LD9205-2C | ■ | ■ | | | |
| 8 × 8 mm | 300 mm | 3LD9245-0C | | | ■ | ■ | ■ |
| | 600 mm | 3LD9245-2C | | | ■ | ■ | ■ |

## Accessories for 3LD5 UL main control and EMERGENCY-STOP switches

### Additional poles

| | | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|
| **Switching contacts for N conductor (4th contact) for front mounting** | | | | | | | |
| | **Contacts** | **Catalog No.** | | | | | |
| | Leading switch-on, lagging switch-off | 3LD9250-0BA | ■ | | | | |
| | | 3LD9280-0B | | ■ | | | |
| | | 3LD9240-0B | | | ■ | ■ | ■ |
| **Switching contacts for N conductor (4th contact) for panel mounting** | | | | | | | |
| | **Contacts** | **Catalog No.** | | | | | |
| | Leading switch-on, lagging switch-off | 3LD9250-0CA | ■ | | | | |
| | | 3LD9280-0C | | ■ | | | |
| | | 3LD9240-0C | | | ■ | ■ | ■ |
| **N/PE terminals for front mounting** | | | | | | | |
| | **Contacts** | **Catalog No.** | | | | | |
| | Through-type | 3LD9250-2BA | ■ | | | | |
| | | 3LD9280-2B | | ■ | | | |
| | | 3LD9240-2B | | | ■ | ■ | ■ |
| **N/PE terminals for panel mounting** | | | | | | | |
| | **Contacts** | **Catalog No.** | | | | | |
| | Through-type | 3LD9250-2CA | ■ | | | | |
| | | 3LD9280-2C | | ■ | | | |
| | | 3LD9240-2C | | | ■ | ■ | ■ |
| **Auxiliary switches (standard version) for front mounting** | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | |
| | **Contacts** | **Contact surface** / **Catalog No.** | | | | | |
| | 1 NO + 1 NC | Standard 3LD9200-5B | ■ | ■ | ■ | ■ | ■ |
| | | Gold-plated 3LD9200-5BF | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switches (standard version) for panel mounting** | | | | | | | |
| | • For mounting on the left and/or right<br>• Lagging switch-on, leading switch-off | | | | | | |
| | **Contacts** | **Contact surface** / **Catalog No.** | | | | | |
| | 1 NO + 1 NC | Standard 3LD9200-5C | ■ | ■ | ■ | ■ | ■ |
| | | Gold-plated 3LD9200-5CF | ■ | ■ | ■ | ■ | ■ |
| **Auxiliary switch for mounting on the front** | | | | | | | |
| | • Mounted on the front of the switch shaft<br>• For long leading times (20 ... 150ms) | | | | | | |
| | **Contacts** | **Contact surface** / **Catalog No.** | | | | | |
| | 1 NO + 1 NC | Standard 3LD9280-5D | ■ | ■ | | | |
| | | 3LD9240-5D | | | ■ | ■ | ■ |
| | | Gold-plated 3LD9280-5DF | ■ | ■ | | | |
| | | 3LD9240-5DF | | | ■ | ■ | ■ |

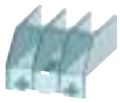
# 3LD switch disconnectors

## Accessories for 3LD5 UL main control and EMERGENCY-STOP switches

### Operating mechanisms

| | | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|
| **Rotary operating mechanism for front mounting** | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks | | | | | | |
| | **Version** | **Catalog No.** | | | | | |
| | For main control switches | 3LD9284-1B | ■ | ■ | | | |
| | For EMERGENCY-STOP switches | 3LD9284-3B | ■ | ■ | | | |
| **Knob-operated mechanism for front mounting** | | | | | | | |
| | • Lockable in 0 position with up to 3 padlocks | | | | | | |
| | **Version** | **Catalog No.** | | | | | |
| | For main control switches | 3LD9243-1B | | | ■ | ■ | ■ |
| | For EMERGENCY-STOP switches | 3LD9284-3B | | | ■ | ■ | ■ |
| **Handles for panel mounting** | | | | | | | |
| | • Supplied with a masking frame, but without an extension shaft or coupling driver<br>• Can be locked with up to 3 padlocks | | | | | | |
| | **Labeling** / **Color** | **Catalog No.** | | | | | |
| | O-I / Gray | 8UD1771-2AD01 | ■ | ■ | | | |
| | | 8UD1731-2AD01 | | | ■ | ■ | ■ |
| | / Red/yellow | 8UD1771-2AD05 | ■ | ■ | | | |
| | | 8UD1731-2AD05 | | | ■ | ■ | ■ |
| **Supplementary handles for door-coupling rotary operating mechanism** | | | | | | | |
| | • For requirements according to UL508A/NFPA79<br>• Can be locked with up to 1 padlocks in 0 position<br>• Can only be switched on by deliberate action | | | | | | |
| | **Labeling** / **Color** | **Catalog No.** | | | | | |
| | O-I / Gray | 3LD9287-1C | ■ | ■ | | | |
| | | 3LD9247-1C | | | ■ | ■ | ■ |
| | / Red/yellow | 3LD9287-3C | ■ | ■ | | | |
| | | 3LD9247-3C | | | ■ | ■ | ■ |
| **Coupling drivers for panel mounting with door-coupling rotary operating mechanism** | | | | | | | |
| | **Version** | **Catalog No.** | | | | | |
| | With tolerance compensation | 8UD1900-1GA00 | ■ | ■ | | | |
| | | 8UD1900-2GA00 | | | ■ | ■ | ■ |
| | Without tolerance compensation | 8UD1900-1HA00 | ■ | ■ | | | |
| | | 8UD1900-2HA00 | | | ■ | ■ | ■ |

### Other accessories

| | | | 3LD50 | 3LD52 | 3LD54 | 3LD56 | 3LD58 |
|---|---|---|---|---|---|---|---|
| **Terminal covers** | | | | | | | |
| | • Pack of 4 units | | | | | | |
| | **Number of poles** | **Catalog No.** | | | | | |
| | 1-pole | 3LD9251-2A | ■ | | | | |
| | | 3LD9281-2A | | ■ | | | |
| | | 3LD9241-2A | | | ■ | ■ | ■ |
|  | 3-pole | 3LD9251-0A | ■ | | | | |
| **Inscription labels** | | | | | | | |
| | • Pack of 10 units | | | | | | |
| | **Inscription** | | | | | | |
| | German / English (Hauptschalter / Main Switch) | 3LD9286-1A | ■ | | ■ | ■ | ■ |
| | Without inscription | 3LD9286-4A | ■ | | ■ | ■ | ■ |
| **Switching shafts** | | | | | | | |
| | **section** / **Length** | **Catalog No.** | | | | | |
| | 6 × 6 mm / 300 mm | 3LD9205-0C | ■ | ■ | | | |
| | / 600 mm | 3LD9205-2C | ■ | ■ | | | |
| | 8 × 8 mm / 300 mm | 3LD9245-0C | | | ■ | ■ | ■ |
| | / 600 mm | 3LD9245-2C | | | ■ | ■ | ■ |

# 3LD switch disconnectors

## 3LD2 Rotary Disconnect Switches in Non-Metallic Enclosures

### Description

16–125A non-fusible switches are available in fiberglass reinforced polycarbonate enclosures which are UL approved as Type 12 & 4X and for either indoor or outdoor use. All are horsepower and load break rated. All are panel mounted and are either supplied with factory installed aux. contacts or will accept contact kits. All are compact in size while providing ample wiring space for copper line & load conductors.

### Siemens Enclosed Rotary Disconnect Switches

- 16–125A, Non-Fusible
- 600VAC max. rated
- Available in both Type 12 and 4X non-metallic enclosures
- Listed and marked "suitable for use as motor disconnect" per NEC Section 430-109
- Switches are UL listed under File No. E47705 and are CSA certified under File No. 203576
- IEC 60947-3 rated and CE marked (enclosures are IP65 rated)
- HP rated
- 16–63A switches have factory installed ground bars.
- Switches are provided with knockouts
- Padlockable in OFF position with up to (3) padlocks
- Enclosures are constructed from Makrolon 9425.

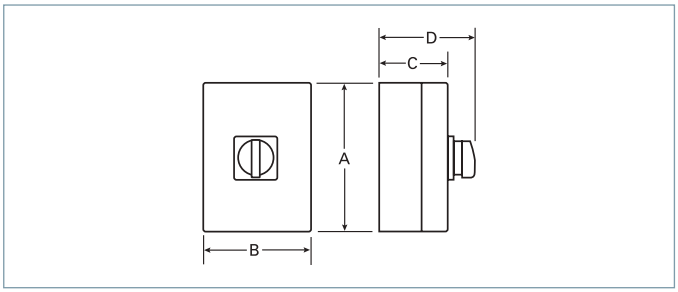
| Amp Rating | Catalog Number | | Shipping Weight① | Horsepower Ratings | | | |
|---|---|---|---|---|---|---|---|
| | | | | 240V AC | | 480V AC | 600V AC |
| | 3 Pole, 3 Wire | 3 Pole, 3 Wire with (1) NO & (1) NC Aux. Contact⑤⑥ | | 1 Phase | 3 Phase | 3 Phase | 3 Phase |
| **Non-Fusible, Type 1, 4X & 12K② with Black Rotary Handle 600V AC Max.** | | | | | | | |
| 16 | **3LD2064-0TB51-0US2** | **3LD2064-1GP51-0US2** | 1 | 1½ | 3 | 7½ | 10 |
| 25 | **3LD2164-0TB51-0US2** | **3LD2164-1GP51-0US2** | 1 | 3 | 7½ | 10 | 15 |
| 30 | **3LD2264-0TB51-0US2** | **3LD2264-1GP51-0US2** | 1 | 3 | 7½ | 15 | 20 |
| 30 | — | **3LD2264-1TS51-0US2③▲** | 1 | 3 | 7½ | 15 | 20 |
| 30 | — | **3LD2264-2TW51-0US2④▲** | 1 | 3 | 7½ | 15 | 20 |
| 63 | **3LD2565-0TB51-0US2** | **3LD2565-1GP51-0US2▲** | 3 | 10 | 15 | 40 | 50 |
| 100 | **3LD2766-0TB51-0US2** | **3LD2766-1GP51-0US2▲** | 6 | — | 30 | 60 | 75 |
| 125 | **3LD2866-0TB51-0US2** | **3LD2866-1GP51-0US2▲** | 6 | — | 40 | 75 | 100 |
| **Non-Fusible, Type 1, 4X & 12K② with Red and Yellow Rotary Handle 600V AC Max.** | | | | | | | |
| 16 | **3LD2064-0TB53-0US2** | **3LD2064-1GP53-0US2** | 1 | 1½ | 3 | 7½ | 10 |
| 25 | **3LD2164-0TB53-0US2** | **3LD2164-1GP53-0US2** | 1 | 3 | 7½ | 10 | 15 |
| 30 | **3LD2264-0TB53-0US2** | **3LD2264-1GP53-0US2** | 1 | 3 | 7½ | 15 | 20 |
| 30 | — | **3LD2264-1TS53-0US2③▲** | 1 | 3 | 7½ | 15 | 20 |
| 30 | — | **3LD2264-2TW53-0US2④▲** | 1 | 3 | 7½ | 15 | 20 |
| 63 | **3LD2565-0TB53-0US2** | **3LD2565-1GP53-0US2▲** | 3 | 10 | 15 | 40 | 50 |
| 100 | **3LD2766-0TB53-0US2▲** | **3LD2766-1GP53-0US2▲** | 6 | — | 30 | 60 | 75 |
| 125 | **3LD2866-0TB53-0US2▲** | **3LD2866-1GP53-0US2▲** | 6 | — | 40 | 75 | 100 |

▲ Built to order. Allow 6–8 weeks for delivery.
① Carton quantity of (1). Shipping weight in pounds (lbs.).
② Approved for indoor/outdoor use. No cover interlock provided.
③ Switch is supplied with (2) NO and no NC aux. contacts.
④ Switch is supplied with (4) NO and no NC aux. contacts. Ground bar is not provided or available.
⑤ Aux. contacts break about 3 Ms before and make about 3 Ms after main switch contacts.
⑥ 6P, 25A, switch with 1 NO & 1 NC aux. contacts and a black operating handle is also available. Order catalog number **3LD2165-4VD51** (Discount Code: Pilot Devices).

### Enclosed Disconnect Switch Dimensions (Inches)

| Catalog Number | Ampere Rating | Dimensions | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| **3LD2064-** | 16 | 5.52③ | 3.94 | 3.19 | 4.57 |
| **3LD2164-** | 25 | 5.52③ | 3.94 | 3.19 | 4.57 |
| **3LD2264-** | 30 | 5.52③ | 3.94 | 3.19 | 4.57 |
| **3LD2565-** | 63 | 6.93③ | 5.75 | 4.10 | 5.87 |
| **3LD2766-** | 100 | 11.90 | 8.35 | 5.36 | 7.13 |
| **3LD2866-** | 125 | 11.90 | 8.35 | 5.36 | 7.13 |

**Note:** 3LD2 Type switches only have top and bottom end KOs as follows:
16-30A - 1/2" & 3/4", 63A - 3/4" & 1", 100 & 25A - 1" & 1 1/4"




## UL and CUL Short Circuit Withstand Ratings③

| Ampere Rating | Short Circuit Withstand Rating and Fuse Class | | | | |
|---|---|---|---|---|---|
| | With Line Side Fusing | | | With Load Side Fusing① | |
| | 5 kA at 600V Max | 10 kA at 600V Max | 18 kA at 480V Max | 5 kA at 480V Max | 18 kA at 480V Max |
| 16 | RK5 (50A Max) | — | — | — | — |
| 25 & 30 | RK5 (80A Max) | — | — | — | — |
| 63 | RK5 (175A Max) | — | — | — | — |
| 100 & 125 | — | RK5 (200A Max) | — | — | — |

## Wire ranges 60/75°C Cu Only②

| | |
|---|---|
| 16 Amps | (1) #18-10 AWG |
| 25–30 Amps | (1) #14-10 AWG |
| 63 Amps | (1) #14-6 AWG |
| 100–125 Amps | (1) #12-1 AWG |

## IEC Fuse and Withstand Ratings

| Ampere Rating | gG Fuse Size | Short Circuit Rating |
|---|---|---|
| 16 | 20A | 5k Arms |
| 25 | 25A | 10k Arms |
| 32 | 50A | 10k Arms |
| 63 | 63A | 15k Arms |
| 100 | 100A | 20k Arms |
| 125 | 125A | 20k Arms |

## Accessories②

| Switch Ampere Rating | Catalog Number | Description |
|---|---|---|
| 16–30A | **3LD9220-2C** | Neutral Kit |
| 63A | **3LD9250-2CA** | Neutral Kit |
| 100–125A | **3LD9280-2C** | Neutral Kit |

① For use as supplemental protection on the load side of the branch circuit over current protective device.
② Factory installed ground lugs supplied as follows: 16-30A #14-10 Cu, 63A #14-8 Cu. Ground lug not provided and is not available on catalog numbers 3LD2264-2TW51-0US2 and 3LD2264-2TW53-0US2.
③ 6.38 inches high including mounting feet.
④ 7.85 inches high including mounting feet.
⑤ 16-63A 3LD switches are also rated 5kA at 600VAC max when protected by a 3RV type MSP of the same or lesser ampere rating.

# Type VBII (30-600A) with Flange Mounted Operating Handle

## Features and Ordering Information

### Features

- 30-600A, 600VAC and DC ratings
- 240 & 600V AC switches are UL Recognized under file number E121152, Vol. 3 and CSA certified under file number 154852
- 600V DC Photovoltaic switches are UL Recognized under file number E335018, Vol. 3 and are rated to switch 3 separate 600V DC circuits
- Visible blade quick make and break switching action
- Panel and Flange mounted assemblies facilite installation
- Panel mounted switches are variable depth
- Short circuit rating of 10,000 AIC with class H fuse, and of 200,000 AIC with class R or J fuses. PV switches are rated 10,000 AIC at 600V DC with 600V DC rated class K, J or R fuses.
- Flange mounted handles rated as Type 1, 3R & 12 or 4X are padlockable in the off position with up to (3) padlocks with 5/16 hasps
- Meets UL98 requirements and suitable for both main and branch circuit applications
- A complete line of aux contacts are available
- Load break and horsepower rated
- Defeatable cover interlock standard with all handles
- Meets NFPA79 requirements
- Seismic qualified — complies with the 2010 California Building Code (CBC) — and with the International Building Code (IBC) — Compliance Level SDS = 1.85 g

**VBFS361, VBLK1 & VBH1**

**VBFS363F**

**VBNFS365, VBLK4 & VBH2**



### Ordering Information

1. Determine the ratings required (amps, volts, HP, Fusible, NF), the mounting needed (Panel or Flange), and select the appropriate switch.
2. For panel mounted switches with a rigid operating shaft (30-600A), order panel mounted switch, flange mounted operating handle & rigid linkage kit based on depth required.
3. For panel mounted switches with a Max-Flex operator, order panel mounted switch, Max-Flex Handle & Adapter Kit and drive cable.
4. Select accessories if required.

# Type VBII (30-600A) with Flange Mounted Operating Handle

## Selection

### Switches—for Standard 600V Max AC or DC Applications

| Switch Ampere Rating | Max. AC Voltage Rating | Catalog Number | Horsepower Rating, Switches and 3-Phase④ | | | | | | 600 Volts DC (max)④ |
|---|---|---|---|---|---|---|---|---|---|
| | | | 240 Volts AC | | 480 Volts AC | | 600 Volts AC | | |
| | | | Standard | Max. | Standard | Max. | Standard | Max. | |
| **Fusible Panel Mounted Variable Depth Switches - 3-Pole⑤** | | | | | | | | | |
| 30 | 240 | **VBFS321** | 3 | 7 1/2 | — | — | — | — | — ① |
| 60 | 240 | **VBFS322** | 7 1/2 | 15 | — | — | — | — | — ② |
| 30 | 600 | **VBFS361** | — | — | 5 | 15 | 7 1/2 | 20 | 15 ③ |
| 60 | 600 | **VBFS362** | — | — | 15 | 30 | 15 | 50 | 30 ③ |
| 100 | 600 | **VBFS363** | — | — | 25 | 60 | 30 | 75 | 50 ③ |
| 200 | 600 | **VBFS364** | — | — | 50 | 125 | 60 | 150 | 50 |
| 400 | 600 | **VBFS365** | — | — | 100 | 250 | 125 | 350 | — ⑨ |
| 600 | 600 | **VBFS366** | — | — | 150 | 400 | 200 | 500 | — ⑨ |
| **Non-fusible Panel Mounted Variable Depth Switches - 3-Pole⑤** | | | | | | | | | |
| 30 | 600 | **VBNFS361** | — | 10 | — | 20 | — | 30 | 15 ③ |
| 60 | 600 | **VBNFS362** | — | 20 | — | 50 | — | 60 | 30 ③ |
| 100 | 600 | **VBNFS363** | — | 40 | — | 75 | — | 100 | 50 ③ |
| 200 | 600 | **VBNFS364** | — | 60 | — | 125 | — | 150 | 50 |
| 400 | 600 | **VBNFS365** | — | 125 | — | 250 | — | 300 | — ⑨ |
| 600 | 600 | **VBNFS366** | — | 200 | — | 400 | — | 500 | — ⑨ |
| **Fusible Flange Mounted Switches - 3-Pole⑥⑩** | | | | | | | | | |
| 30 | 240 | **VBFS321F** | 3 | 7 1/2 | — | — | — | — | — ① |
| 60 | 240 | **VBFS322F** | 7 1/2 | 15 | — | — | — | — | — ② |
| 30 | 600 | **VBFS361F** | — | — | 5 | 15 | 7 1/2 | 20 | 15 ③ |
| 60 | 600 | **VBFS362F** | — | — | 15 | 30 | 15 | 50 | 30 ③ |
| 100 | 600 | **VBFS363F** | — | — | 50 | 60 | 30 | 75 | 50 ③ |
| 200 | 600 | **VBFS364F** | — | — | 100 | 125 | 60 | 150 | 50 |
| **Non-fusible Flange Mounted Switches – 3-Pole⑥⑩** | | | | | | | | | |
| 30 | 600 | **VBNFS361F** | — | 10 | — | 20 | — | 30 | 15 ③ |
| 60 | 600 | **VBNFS362F** | — | 20 | — | 50 | — | 60 | 30 ③ |
| 100 | 600 | **VBNFS363F** | — | 40 | — | 75 | — | 100 | 50 ③ |
| 200 | 600 | **VBNFS364F** | — | 60 | — | 125 | — | 150 | 50 |

**Note:** Fusible switches include fuse provisions for Class H Fuses. The load base can be moved to pre-drilled holes for Class J Fuses on all 600V switches. If Class R Fuses are required, add a Class R Fuse Clip Kit.

### Switches—for Photovoltaic Applications, 600VDC Max.⑦

(for use in negative ground systems only)

| Switch Ampere Rating | Catalog Number | Rated Isc per NEC Article 690 |
|---|---|---|
| **Fusible Panel Mounted Variable Depth Switches—3 Pole⑤⑧** | | |
| 30 | **VBFS361PV** | 19.2A |
| 60 | **VBFS362PV** | 38.4A |
| 100 | **VBFS363PV** | 64.0A |
| **Non-Fusible Panel Mounted Variable Depth Switches—3 Pole⑤** | | |
| 30 | **VBNFS361PV** | 24.0A |
| 60 | **VBNFS362PV** | 48.0A |
| 100 | **VBNFS363PV** | 80.0A |
| **Fusible Flange Mounted Variable Depth Switches—3 Pole (Includes Type 1, 3R and 12 Rated Operating Handle)⑥⑧** | | |
| 30 | **VBFS361FPV** | 19.2A |
| 60 | **VBFS362FPV** | 38.4A |
| 100 | **VBFS363FPV** | 64.0A |
| **Non-Fusible Flange Mounted Variable Depth Switches—3 Pole (Includes Type 1, 3R and 12 Rated Operating Handle)⑥** | | |
| 30 | **VBNFS361FPV** | 24.0A |
| 60 | **VBNFS362FPV** | 48.0A |
| 100 | **VBNFS363FPV** | 80.0A |

① Rated 5 HP at 250V DC.
② Rated 10 HP at 250V DC.
③ 600V DC & 600V DC horsepower rating shown requires (2) poles to be connected in series.
④ Std. - applies when non-time delay fuses are used. Max. - applies when time delay fuses are used.
⑤ Includes line base, load base, operating mechanism and line and load lugs. Order operating handle and linkage kits from tables on pages 18/85 or 18/86.
⑥ Includes line base, load base, operating mechanism line and load lugs plastic operating handle and required linkage.
⑦ All photovoltaic switches are rated to be used with 3 separate 600V DC circuits.
⑧ Fusible switches accept Class K or R fuses as standard and Class J fuses by relocating the load base.
⑨ Rated 250V DC max and 50HP at 250V DC.
⑩ Please add letter "M" to the end of catalog number for metal handle.

### Cable Kit

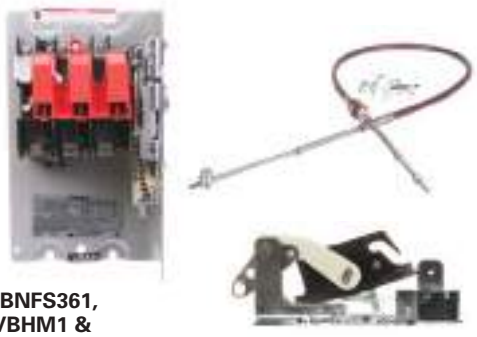
For use with 30-200A panel mounted switches and Max-Flex handle and adapter kit.

| Catalog Number | Description |
|---|---|
| **FHOEC036** | 36" long drive cable |
| **FHOEC048** | 48" long drive cable |

### Max-Flex™ Handle and Adapter Kit

(Type 1, 12, 3R & 4X) Use with 30-200A panel mounted switches and cable kit.

| Catalog Number | Operating Handle Description |
|---|---|
| **Plastic Handles** | |
| **VBHM1** | 30-200A Type 1, 3R, 12 and 4X |
| **Metal Handles** | |
| **VBHM2** | 30-200A Type 1, 3R and 12 |
| **VBHM2X** | 30-200A Type 4X |



**VBNFS361, VBHM1 & FHOEC036**

# Type VBII (30-600A) with Flange Mounted Operating Handle

## Selection & Accessories

### Flange Mounted Operating Handles

For use with Panel Mounted Switches. Plastic handle is included with Flange Mounted Switches as standard.

| Catalog Number | Operating Handle Description |
|---|---|
| **Plastic Handles** | |
| VBH1 | 30-200A Type 1, 3R & 12 |
| VBH14X | 30-200A Type 4X |
| **Metal Handles** | |
| VBH112 | 30-200A Type 1, 3R & 12 |
| VBH14 | 30-200A Type 4X |
| VBH2 | 400A Type 1 & 12 |
| VBH2R | 400 & 600A Type 1, 3R & 12 |
| VBH24X | 400 & 600A Type 4X |

HR612

### Class R Fuse Clip Kits

These kits prevent the installation of Class H and K fuses (one kit required per switch).

#### Class R Fuse Clip Kits

| Catalog Number | Description |
|---|---|
| HR21 | 30A, 240V Kit (HD only) |
| HR612 | 30A, 600V Kit/60A, 240V Kit |
| HR62 | 60A, 600V Kit |
| HR63 | 100A Kit |
| HR64 | 200A Kit |
| HR656 | 400A/600A Kit |

### Internal Door Latch Kits

For use with enclosures with door mounted latching bar. Required when a flange mounted switch is mounted in a Hoffmann or Rittal enclosure provided with an AB cutout.

| Catalog Number | Description |
|---|---|
| DKR2 | 2 point (for use with enclosures less than 40" high) |
| DKR3 | 3 point (for use with enclosures 40" or larger in height) |

### Rigid Linkage Kits

For use with Panel Mounted Switches. Not required for Flange Mounted Switches.

| Catalog Number | Switch Ampere Rating | Enclosure Depth① | |
|---|---|---|---|
| | | Min | Max. |
| VBLK1 | 30-200 | 6.94② | 6.94② |
| VBLK2 | 30-200 | 6.94② | 19.0 |
| VBLK3 | 400 & 600 | 9.00 | 8.75 |
| VBLK4 | 400 & 600 | 9.00 | 19.0 |

HT63

### Class T Fuse Adapter Kits

100-600A fusible switches are field convertible to accept Class T fuses. 400-600A switches are field convertible to accept Class T fuses by moving the load base to a pre-drilled T fuse position.

#### Class T Fuse Adapter Kits③

| Catalog Number | Description |
|---|---|
| HT23 | 100A, 240V Kit |
| HT63 | 100A, 600V Kit |
| HT24 | 200A, 240V Kit |
| HT64▲ | 200A, 600V Kit |

### Class J Fuse Provisions

All 30-600A, 600V fusible switches are field convertible to accept Class J fuses by moving the load base to a pre-drilled J fuse position.

### Window Kits (Type 1, 12, 3R and 4x)

Allows viewing of visible blades and of indicating fuses through 200A.

| Catalog Number | Description |
|---|---|
| VBWK1 | 30A Window Kit |
| VBWK2 | 60 & 100A Window Kit |
| VBWK3 | 200-600A Window Kit |

### NEW Quick Connects

They provide two point control power take-off capability and are normally used on two poles on the line side when it is required to have control power available when the switch is in the OFF position. They provide a mounting provision for standard ¼" quick connect terminal. Installed in the line or load side. 30A VBII switches have lugs UL listed to accept (2) wires per pole as standard so a 30A kit is not required.

| Catalog Number | Description |
|---|---|
| HCQ62 | 60A 2 wire quick connect kit |
| HCQ63 | 100A 2 wire quick connect kit |
| HCQ64 | 200A 2 wire quick connect kit |

HN612

### Neutral Kits④

Standard Neutral Kits can be field installed in 30-100A switches.

#### Neutral Kits

| Switch Ampere Rating | Kit Catalog Number |
|---|---|
| 30A 600V, 60A 240V | HN612 |
| 60A, 600V & 100A | HN623 |

### 200% Neutral Kits④

UL listed 200% Neutrals are available on 60 & 100A switches. They are typically used with non-linear transformers or where increased neutral ampacity/lug capacity is required.

#### 200% Neutral Kits

| Switch Ampere Rating | Kit Catalog Number | Wire Range Line & Load Lugs (Cu/Al) |
|---|---|---|
| 60 & 100A | HN263 | (2) #14-1/0 AWG |

▲ Built to order. Allow 6–8 weeks for delivery.
① Dimensions (min. & max.) from enclosure mounting pan to outside surface of enclosure handle mounting flange.
② 7.12 for 200A switches.
③ One kit per pole required.
④ UL approved (not CSA certified).

HA161234

HA261234

HP61

HLC612

HSK61

## Auxiliary Contacts

The auxiliary contacts are available in 1 normally open and 1 normally closed or 2 normally open and 2 normally closed configurations. Siemens offers a PLC Auxiliary Switch (30-200A) that has very low resistance for low voltage and current typical in PLC circuits. All auxiliary contacts make after and break before main switch contacts.

| Switch Ampere Rating | Aux. Switch Catalog Number | Kit Ampere Rating | | | Kit Horsepower Rating | | |
|---|---|---|---|---|---|---|---|
| | | 125V AC Max. | 250V AC Max. | 28V DC Max. | 125V AC Max. | 250V AC Max. | 28V DC Max. |
| **With 1 NO & 1 NC Isolated Contacts** | | | | | | | |
| 30-200 | **HA161234** | 10 | 10 | — | 1/2 | 3/4 | — |
| 400-600 | **HA165678** | 10 | 10 | — | 1/2 | 3/4 | — |
| **With 2 NO & 2 NC Isolated Contacts** | | | | | | | |
| 30-200 | **HA261234** | 10 | 10 | 7 | 1/2 | 3/4 | — |
| 400-600 | **HA265678** | 10 | 10 | 7 | 1/2 | 3/4 | — |
| **Low Current PLC Type with 1 NO & 1 NC Gold Plated Contacts** | | | | | | | |
| 30-200 | **HA361234** | 10 | 10 | — | 1/2 | 3/4 | — |
| 400-600 | **HA365678** | 10 | 10 | — | 1/2 | 3/4 | — |

## Fuse Puller Kits

Fuse Puller Kits are field installable in 30-100A Type VBII Heavy Duty Switches (one kit required per 3-pole switch).

| Switch Ampere Rating | Fuse Puller Kit Catalog Number |
|---|---|
| 30 | **HP61** |
| 60 | **HP62▲** |
| 100 | **HP63▲** |

## Copper Lug Kits

All switches are UL approved to accept field installed copper lug kits.

| Switch Ampere Rating | Copper Lug Catalog Number | Description |
|---|---|---|
| 30–60 | **HLC612** | (9) Lugs/Kit #14-4 AWG Cu |
| 100 | **HLC63▲** | (9) Lugs/Kit #14-1/0 AWG Cu |
| 200 | **HLC64▲** | (9) Lugs/Kit #6 AWG-300 Kcmil Cu |
| 400–600A | **HLC65678** | (1) Lugs/Kit #1/0 AWG-600 Kcmil Cu |

## Equipment Ground Kits

Equipment Ground Lug Kits are available for all switches.

| Switch Ampere Rating | Catalog Number | Number of Terminals | Wire Range Per Terminal (Cu/Al) |
|---|---|---|---|
| 30–200 | **HG61234** | 2 | #14-4 AWG |
| 400 & 600 | **HG656** | 4 | #6 AWG-250 Kcmil |

## NEW Internal Shield Kits (for fusible switches)

Kits provide a "skirt" that encloses the VBII switch and also a clear plastic inner door to prevent accidental contact with live parts. Test probe holes are provided and fuses can be replaced without removal of kit.

| Switch Ampere Rating | Shield Kit Catalog Number |
|---|---|
| 30A | **HSK61** |
| 60-100A | **HSK623** |
| 200A | **HSK64** |

▲ Built to order. Allow 6–8 weeks for delivery.

## Lugs

30 & 60A switches are suitable for use with 60° or 75°C wire. 100–600A switches are suitable for use with 75°C rated wire. All switches are supplied with factory installed line and load lugs.

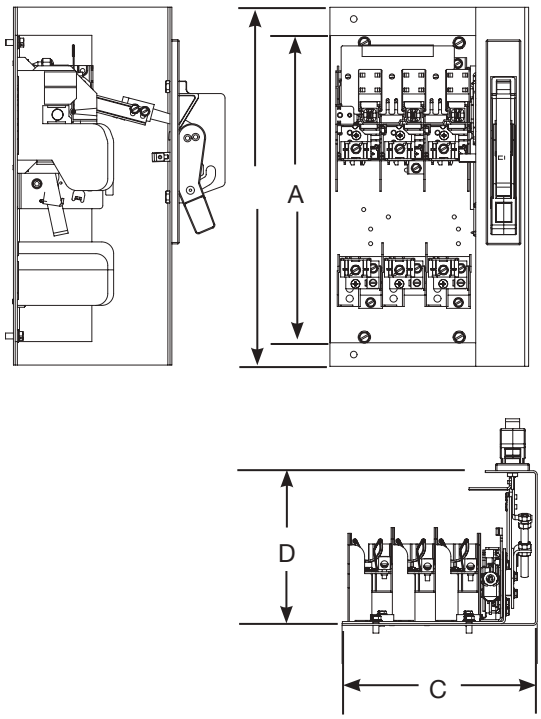
### Wire Ranges (Line, Load and Standard Neutral)

| Switch Ampere Rating | UL Approved Wire Range | Lug Wire Range |
|---|---|---|
| 30 | #14-6 AWG (Cu/Al) | #14-2 AWG (Cu/Al) |
| 60 | #14-2 AWG (Cu/Al) | #14-2 AWG (Cu/Al) |
| 100 | #14-1/0 AWG (Cu/Al) | #14-1/0 AWG (Cu/Al) |
| 200 | #6 AWG-300 Kcmil (Cu/Al) | #6 AWG-300 Kcmil (Cu/Al) |
| 400 | 1/0 AWG-750 Kcmil (Cu/Al) or<br>(2) 1/0 AWG-250 Kcmil (Cu/Al) | (1) 1/0 AWG-750 Kcmil (Cu/Al) or<br>(2) 1/0 AWG-250 Kcmil (Cu/Al) |
| 600 | (2) 1/0 AWG-750 Kcmil (Cu/Al) or<br>(4) 1/0 -250 Kcmil (Cu/Al) | (2) 1/0 AWG-750 Kcmil (Cu/Al) or<br>(4) 1/0 AWG-250 Kcmil (Cu/Al) |

## Approximate Dimensions

Mounting bracket shown with handle installed is supplied with Flange Mounted Switches only. All Panel Mounted Switches have a "L" shaped mounting pan with a line base, load base (if fusible) and mechanism installed.

| | Dimensions | | | | |
|---|---|---|---|---|---|
| Catalog Number | A | B | C① | D (min) | D (max) |
| **Fusible, Panel Mounted** | | | | | |
| VBFS321 | 11.88 | N/A | 7.47 | 6.94 | 19 |
| VBFS322 | 13.12 | N/A | 8.50 | 6.94 | 19 |
| VBFS361, VBFS361PV | 11.88 | N/A | 7.47 | 6.94 | 19 |
| VBFS362, VBFS362PV | 13.12 | N/A | 8.50 | 6.94 | 19 |
| VBFS363, VBFS363PV | 13.12 | N/A | 8.50 | 6.94 | 19 |
| VBFS364 | 17 | N/A | 12.33 | 7.12 | 19 |
| VBFS365 | 26.25 | N/A | 16.50 | 8.63 | 19 |
| VBFS366 | 26.25 | N/A | 16.50 | 8.63 | 19 |
| **Non-fusible, Panel Mounted** | | | | | |
| VBNFS361, VBNFS361PV | 9.79 | N/A | 7.47 | 6.94 | 19 |
| VBNFS362, VBNFS362PV | 9.79 | N/A | 8.50 | 6.94 | 19 |
| VBNFS363, VBNFS363PV | 9.79 | N/A | 8.50 | 6.94 | 19 |
| VBNFS364 | 10.77 | N/A | 12.33 | 7.12 | 19 |
| VBNFS365 | 13 | N/A | 16.50 | 8.63 | 19 |
| VBNFS366 | 13 | N/A | 16.50 | 8.63 | 19 |
| **Fusible, Flange Mounted** | | | | | |
| VBFS321F | 11.88 | 14.08 | 7.47 | 7.27 | N/A |
| VBFS322F | 13.12 | 15.83 | 8.85 | 7.27 | N/A |
| VBFS361F, VBFS361FPV | 11.88 | 14.08 | 7.47 | 7.27 | N/A |
| VBFS362F, VBFS362FPV | 13.12 | 15.83 | 8.85 | 7.27 | N/A |
| VBFS363F, VBFS363FPV | 13.12 | 15.83 | 8.85 | 7.27 | N/A |
| VBFS364F | 17 | 18.20 | 12.68 | 7.57 | N/A |
| **Non-fusible, Flange Mounted** | | | | | |
| VBNFS361F, VBNFS361FPV | 9.79 | 11.78 | 7.47 | 7.27 | N/A |
| VBNFS362F, VBNFS362FPV | 9.79 | 11.78 | 8.85 | 7.27 | N/A |
| VBNFS363F, VBNFS363FPV | 9.79 | 11.78 | 8.85 | 7.27 | N/A |
| VBNFS364F | 10.77 | 11.97 | 12.68 | 7.57 | N/A |



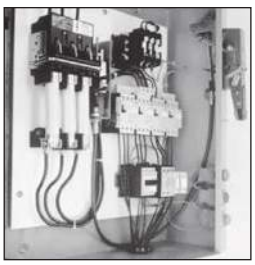

① Dimension C for panel mounted switches indicates the minimum width from the left hand edge of the switch mounting pan to the right hand inside surface of the enclosure.

# Type MCS (30-200A) — Switches, Fuse and No Fuse Kits

**Selection**

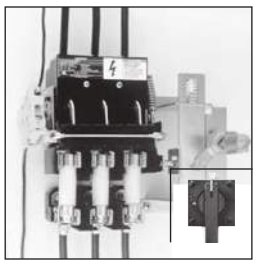
## Features

- 30, 60, 100 and 200 Ampere Switches
- UL Recognized (file # E121152 vol. 1 & 2) and CSA Certified
- Simple Mounting — with an integral switch and over center mechanism
- Horsepower & load break rated
- Compact Size
- Visible Blade Contacts
- Rugged Construction — with a short circuit current rating of 10,000 amps with Class H or 200,000 amps at 600V maximum AC, when fused with Class R or Class J fuses
- Available with three operator handle options, allowing flexible placement of switch
- Field Installable Auxiliary Contacts
- Flexible Fuse Class Configurations
- Flange mounted handles meet NFPA79 requirements



**Type MCS Disconnect Switch with Max-Flex™ handle operator**

**Type MCS Disconnect Switch with fixed-depth, flange-mounted handle**



**Type MCS Disconnect Switch with rotary handle**

## Ordering Information

1. Select the basic switch size you need (30, 60, 100 or 200 ampere).
2. Check the switch selected against the maximum horsepower rating required for our application. "L" or "R" suffix on switch catalog numbers denotes left or right-handed mechanism drive.
3. Choose either fuse or no fuse kit from chart below.
4. Check "Minimum Dimensions" on page 18/90 for installation space requirements.
5. Select from the list of handle operators, the type which best suits your application. Handle operators can be selected from the next page.

### Basic Switches

| Switch Ampere Rating | Maximum Voltage Rating | Catalog Number Right Hand | Catalog Number Left Hand | Maximum Horsepower Rating, 3 Phase④ | | | | | | 250 Volts DC (max)④ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 240 Volts AC | | 480 Volts AC | | 600 Volts AC | | |
| | | | | Standard Fuse | Time Delay Fuse | Standard Fuse | Time Delay Fuse | Standard Fuse | Time Delay Fuse | |
| 30 | 600 | **MCS603R** | **MCS603L** | 3 | 7½ | 5 | 15 | 7½ | 20 | 5 |
| 60 | 600 | **MCS606R** | **MCS606L** | 7½ | 15 | 15 | 30 | 15 | 50 | 10 |
| 100 | 600 | **MCS610R** | **MCS610L▲** | 15 | 30 | 25 | 60 | 30 | 75 | 20 |
| 200 | 600 | **MCS620R** | **MCS620L▲** | 25 | 60 | 50 | 125 | 60 | 150 | 40 |

### Fuse And No Fuse Kits (Includes load base plus line and load fuse clips)①

| Basic Switch Ampere Rating | Switch Catalog Number | Kit Description | No Fuse Kits | | For Class H | For Class J | For Class R | Lug Wire Size |
|---|---|---|---|---|---|---|---|---|
| | | | Standard | Cu Only② | | | | |
| | | | Catalog Number | Catalog Number | Catalog Number ① | Catalog Number ① | Catalog Number ① | |
| 30 | **MCS603R** or **MCS603L** | No Fuse | **TMK606** | — | — | — | — | #14 to #4 AWG Cu/Al |
| | | 30A, 250V | — | — | **FCK203▲** | — | **FCRK203** | |
| | | 30A, 600V | — | — | **FCK206** | **FCJK603** | **FCRK206** | |
| | | 60A, 250V | — | — | **FCK206** | — | **FCRK206** | |
| | | 60A, 600V | — | — | **FCK606** | **FCJK606** | **FCRK606** | |
| 60 | **MCS606R** or **MCS606L** | No Fuse | **TMK606** | — | — | — | — | #14 to #4 AWG Cu/Al |
| | | 60A, 250V | — | — | **FCK206** | — | **FCRK206** | |
| | | 60A, 600V | — | — | **FCK606** | **FCJK606** | **FCRK606** | |
| | | 100A, 250V | — | — | **OFCK661▲** | **OFCK661▲** | ③ | |
| | | 100A, 600V | — | — | **OFCK661▲** | **OFCK661▲** | ③ | |
| 100 | **MCS610R** or **MCS610L** | No Fuse | **TMK610** | **TMK610C** | — | — | — | #14 to #2/0 AWG Cu/Al |
| | | 100A, 250V | — | — | **FCK610** | **FCK610** | ③ | |
| | | 100A, 600V | — | — | **FCK610** | **FCK610** | ③ | |
| | | 200A, 250V | — | — | **OFCK620** | **OFCK620** | ③ | |
| | | 200A, 600V | — | — | **OFCK620** | **OFCK620** | ③ | |
| 200 | **MCS620R** or **MCS620L** | No Fuse | **TMK620** | **TMK620C▲** | — | — | — | #6 to 300 kcmil Cu/Al |
| | | 200A, 250V | — | — | **FCK620** | **FCK620** | ③ | |
| | | 200A, 600V | — | — | **FCK620** | **FCK620** | ③ | |

▲ Built to order. Allow 6–8 weeks for delivery.
① For "copper only" connectors, order as follows: **Fusible**—order standard switch, standard fuse kit and copper only no fuse kit. **Non-Fusible**—order standard switch and copper only no fuse kit.
② Includes both line and load lugs.
③ For Class R fuses order Class H kit from this table and the Class R conversion kit from the next page.
④ HP ratings for time delay fuses and for 250V DC also apply to Non-fusible switches.

### Auxiliary Switch Kits

| Switch Catalog Number | Contact Arrangement | |
|---|---|---|
| | 1 NO/1 NC Catalog Number | 2 NO/2 NC Catalog Number |
| MCS603R | MCSAKR136 | MCSAKR236 |
| MCS603L | MCSAKL136 | MCSAKL236▲ |
| MCS606R | MCSAKR136 | MCSAKR236 |
| MCS606L | MCSAKL136 | MCSAKL236▲ |
| MCS610R | MCSAK116 | MCSAK216 |
| MCS610L | MCSAK116 | MCSAK216 |
| MCS620R | MCSAK126 | MCSAK226 |
| MCS620L | MCSAK126 | MCSAK226 |

### Class R Fuse Conversion Kits

| Fuse Clip Rating | Catalog Number |
|---|---|
| 100A, 600V | SSRK33 |
| 200A, 600V | SSRK34 |

### Fuse Ejector Kits

| Switch Catalog Number | Fuse Ejector Kit Catalog Number |
|---|---|
| MCS610 | FE100▲ |
| MCS620 | FE200▲ |

## Handle Operators

### Fixed Depth, Flange Mounted, Types 1, 3, 3R, 12①⑥

| Switch Catalog Number | Complete Handle Mechanism Catalog Number | Handle Only Catalog Number | Switch Operator Only Catalog Number |
|---|---|---|---|
| MCS603R | FDFS06R | FDH10 | FDS06R |
| MCS603L | FDFS06L | FDH10 | FDS06L |
| MCS606R | FDFS06R | FDH10 | FDS06R |
| MCS606L | FDFS06L | FDH10 | FDS06L |
| MCS610R | FDFS06R | FDH10 | FDS06R |
| MCS610L | FDFS06L | FDH10 | FDS06L |
| MCS620R | FDFS20R | FDH20 | FDS20R |
| MCS620L | FDFS20L | FDH20 | FDS20L |

### Variable Depth, Flange Mounted Max-Flex™, Types 1, 3, 3R, 12②

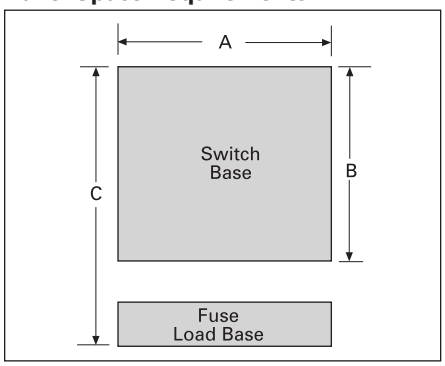
| Switch Catalog Number | Complete Handle Mechanism Catalog Number | Handle Only Catalog Number | Switch Operator Only Catalog Number | Cable Only③ Catalog Number |
|---|---|---|---|---|
| MCS603R | FHOS06036R | FHOHS | FHOS06R | FHOEC036 |
| MCS603L | FHOS06036L | FHOHS | FHOS06L | FHOEC036 |
| MCS606R | FHOS06036R | FHOHS | FHOS06R | FHOEC036 |
| MCS606L | FHOS06036L | FHOHS | FHOS06L | FHOEC036 |
| MCS610R | FHOS06036R | FHOHS | FHOS06R | FHOEC036 |
| MCS610L | FHOS06036L | FHOHS | FHOS06L | FHOEC036 |
| MCS620R | FHOS20036R | FHOHS | FHOS20R | FHOJC036 |
| MCS620L | FHOS20036L | FHOHS | FHOS20L | FHOJC036 |

### Variable Depth Rotary, Through-The-Door-Mounted, Types 1, 12④⑤

| Variable Depth | | | | Shaft Only Variable Depth |
|---|---|---|---|---|
| MCS603R | CRHOS06VD | CRHOH | RHOS06 | RHOSVD |
| MCS606R | CRHOS06VD | CRHOH | RHOS06 | RHOSVD |
| MCS610R | CRHOS06VD | CRHOH | RHOS06 | RHOSVD |
| MCS620R | CRHOS20VD | RHOH | RHOS20 | RHOSVD |

## MCS Disconnect Switch Panel Space Requirements

### Panel Space Requirements




### Minimum Dimensions (inches*)

| Switch Catalog Number | Size | "A" | "B" | "C" | Fuse Class |
|---|---|---|---|---|---|
| MCS603 | 30A/240V | 6.13 | 5.52 | 8.11 | H, K, R |
| | 30A/600V | 6.13 | 5.52 | 10.11 | H, K, R |
| | 30A/600V | 6.13 | 5.52 | 8.48 | J |
| MCS606 | 60A/240V | 6.13 | 5.52 | 7.86 | H, K, R |
| | 60A/600V | 6.13 | 5.52 | 10.38 | H, K, R |
| | 60A/600V | 6.13 | 5.52 | 8.35 | J |
| MCS610 | 100A/240V | 7.38 | 7.59 | 11.85 | H, K, R |
| | 100A/600V | 7.38 | 7.59 | 13.85 | H, K, R |
| | 100A/600V | 7.38 | 7.59 | 10.6 | J |
| MCS620 | 200A/240V | 9.17 | 9.00 | 14.7 | H, K, R |
| | 200A/600V | 9.17 | 9.00 | 17.2 | H, K, R |
| | 200A/600V | 9.17 | 9.00 | 13.32 | J |

"A" – Dimension is measured from each cross bail pin.

"B" – Dimension is measured from line side barrier to load side barrier.

"C" – Dimension is measured from line side terminal of switch to load side terminal of fuse load base.

▲ Built to order. Allow 6–8 weeks for delivery.

①For Type 4 and 4X applications, order handle only Catalog Number
100A - **FDH104** 200A - **FDH204**

②For Type 4 and 4X applications, order handle only Catalog Number **FHOHS4**

③Standard cable length is 36 inches. Alternate lengths are available as follows:

| Length | Amps | Cat. No. |
|---|---|---|
| 48" | 30–100 | **FHOEC048** |
| 60" | 30–100 | **FHOEC060** |
| 48" | 200 | **FHOJC048** |
| 60" | 200 | **FHOJC060** |

④For Type 4 and 4X applications, order handle only Catalog Number **RHOH4**

⑤For Type 3 and 3R applications, order handle only Catalog Number **RHOH**

⑥Min. enclosure depth from mounting pan to handle mounting surfaces: 30-100A 6.44 Inches
200A 10.93 Inches

*For millimeters multiply inches by 25.4.

# Type CFS Compact Fusible Switches

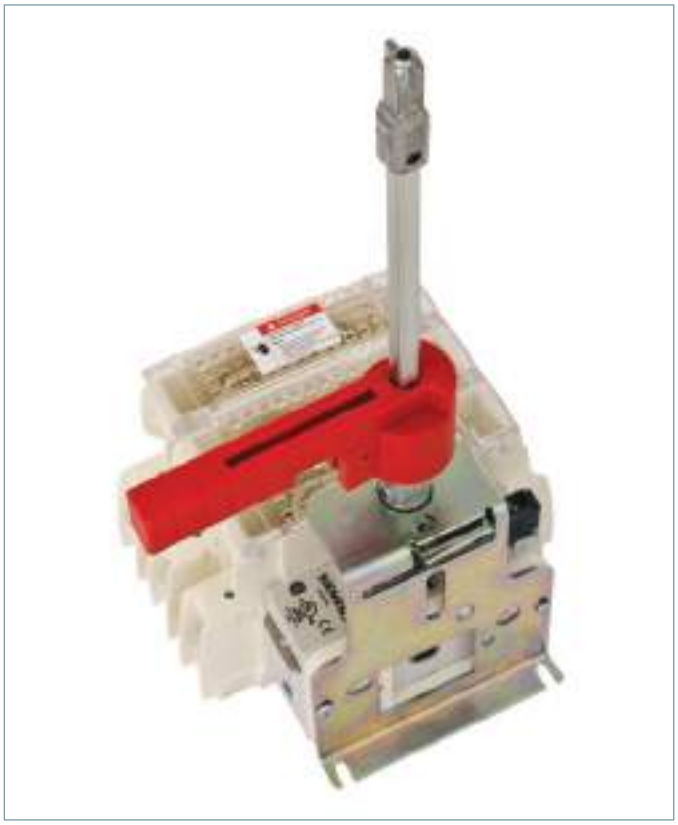
## Description

Siemens Type CFS compact fusible switches meet UL 98 requirements and can be used in either service entrance or branch circuit applications. 30-800A, 3 pole switches are offered and are all rated 600V AC maximum. 30A switches are available with provisions for either Class CC or J fuses. 60A and larger switches provided with Class J fuse provisions can be used in non-fusible applications with field installable no-fuse kits.

All are open style, designed to be panel mounted and are UL listed under file number #E121152 or #E68312 and CSA certified under file number #222227. A variety of door mounted rotary operators are available with Type 1, 3R, 12 or 4/4X ratings.

## NFPA79 Kits

CFSNFPA1 AND CFSNFPA2N kits provide an internal handle and padlocking means to comply with article 5.3.4.2 of the NFPA-2002 standard.



## Catalog Numbering System

**CFS Switches**
*Compact Fusible Switch*

| CFS | 3 | 6 | 1 | J | 5 | N |
|---|---|---|---|---|---|---|

- Number of poles 3 = 3
- Max. Voltage Rating 6 = 600V
- Ampere rating
  - 1 = 30A
  - 2 = 60A
  - 3 = 100A
  - 4 = 200A
  - 5 = 400A
  - 6 = 600A
  - 7 = 800A
- Fuse provisions type
  - C = Class CC
  - J = Class J with right hand mechanism
  - JL = Class J with left hand mechanism
  - L = Class L with right hand mechanism
- Max. AIC rating
  - 5 = 100kA
  - Omit = 200kA J fused
- Version
  - N = New size reduced version
  - N1 = New 100kA 60A switch

**Operating Handles**
*CFS type handle*

| CFSH | 10 | R | 12 | N |
|---|---|---|---|---|

- Shaft cross section
  - 5 = 5 mm
  - 10 = 10 mm
  - 12 = 12 mm
- Handle color and length
  - B = Black & blue, short
  - R = Red & yellow, short
  - BL = Black & blue, long
  - RL = Red & yellow, long
- NEMA type
  - 12 = 1, 3R and 12
  - 4 = 1, 3R, 12 and 4/4X
- Version
  - N = New version

**CFS Operating Shafts**
*CFS type shaft*

| CFSS | 10 | 200 | H | N |
|---|---|---|---|---|

- Shaft cross section
  - 5 = 5 mm
  - 10 = 10 mm
  - 12 = 12 mm
- Shaft length
  - 200 = 200 mm
  - 400 = 400 mm
- Switch compatibility
  - Omit = 30A, 100kA
  - H = 100 or 200 kA
- Version
  - N = New version

# Type CFS Compact Fusible Switches

## Features and Ordering Information

### Features

- 30 - 800A ratings
- UL Listed under file #E121152 & CSA Certified under file #222227
- Door mounted rotary handles with defeatable cover interlock
- Meets UL requirements for both main and branch circuit applications
- Compact size
- 100kA with Class CC fuses or up to 200kA with Class J fuses
- Load break and horsepower rated
- Quick make and break operation
- All handles are padlockable with up to (3) padlocks with 5/16" hasps in the OFF position
- Catalog numbers CFS361C5 & CFS361J5 can be DIN-rail mounted and can be either front or side operated with standard rotary handles..
- All CFS part numbers ending in N can be either front or side operated with standard rotary handles.
- Handles are available in Type 1, 3R, 4/4X & 12 ratings
- NFPA 79 field installed kits are available
- 30-400A, 200kA switches are provided with quick connect terminal provisions for voltage sensing or for 10A max. control circuits

**Switch**

**CFS363JN**
with (2) **CFSAUX1NO**

**Shaft**

**CFSS10200HN**

**Handle**

**CFSH10BL12N**

**Lugs/Accessories**

**CFSL200**

### Ordering information

1. Select the panel mounted switch required based on Ampere, HP and AIC requirements. Switches with a right hand mechanism are standard, 30-100A switches with a left hand mechanism are available.
2. Select handle based on environmental rating required.
3. Select operating shaft (200 or 400mm in length). For enclosure depths of 9.0" or less from panel mounting surface to inside of door use 200mm long shafts. For deeper enclosures use 400mm long shafts. 30A 100kA switches can be used in 10" deep enclosures (panel to inside of door) with 200mm shaft and CFSH5N handles.

Note: Be sure to check shaft and handle compatibility with the switch selected by using information provided in the selection tables.

4. Line & load lugs are provided as standard on 30-100A switches. Terminal kits are available for 200-800A switches if needed.
5. Auxiliary contact are available if needed as follows. 30A switch CFS361J5 will accept up to (2) aux contacts without an aux contact holder. If more than (2) aux contacts are required order aux contacts PLUS aux contact holder kit CFSAUXH1. All other switches will accept up to (4) aux contacts.
6. 30-100A switches are designed to prevent inadvertent contact with live parts and shields are not required. 200 & 400A switches are not supplied with terminal shields. They are available as field installed kits for both line and load terminals. 400-800A switches are supplied as standard with line shields and terminal shroud kits are available for the load side.

# Type CFS Compact Fusible Switches

## Shaft and Handle Selection

### Fusible switches, 3-pole 600V AC Max. 30-100A & 600-800A switches are also rated 250V DC Max when poles are field connected in series⑤

| Switch Ampere Rating | Catalog Number | Fuse Provisions Provided | Max Horsepower Ratings 240V 3Ø AC | 480V 3Ø AC | 600V 3Ø AC | 250V DC | AC Short Circuit Rating |
|---|---|---|---|---|---|---|---|
| **Standard – With Right Hand Mounted Mechanism** | | | | | | | |
| 30① | **CFS361C5** | Class CC | 7.5 | 15 | 20 | 5③ | 100kA |
| 30① | **CFS361J5** | Class J | 7.5 | 15 | 20 | 5③ | 100kA |
| 30① | **CFS361JN** | Class J | 7.5 | 15 | 20 | 5③ | 200kA |
| 60① | **CFS362JN1** | Class J | 15 | 30 | 50 | 10③ | 100kA |
| 60① | **CFS362JN** | | 15 | 30 | 50 | 10③ | |
| 100① | **CFS363JN** | | 30 | 60 | 75 | 20③ | |
| 200② | **CFS364JN**④ | Class J | 60 | 125 | 150 | — | 200kA |
| 400② | **CFS365JN**④ | | 125 | 250 | 350 | — | |
| 600② | **CFS366J**⑧⑨ | | 200 | 400 | 500 | — | |
| 800② | **CFS367L**⑧⑨ | Class L | 200 | 400 | 500 | — | 200kA |
| **Optional – With Left Hand Mounted Mechanism**④ | | | | | | | |
| 30① | **CFS361JLN** | Class J | 7.5 | 15 | 20 | 5③ | 200kA |
| 60① | **CFS362JLN** | | 15 | 30 | 50 | 10③ | |
| 100① | **CFS363JLN** | | 30 | 60 | 75 | 20③ | |

### Operating Shafts for 30-400A Switches⑤

| Catalog number | Shaft length in. (mm) | Switch & handle compatibility |
|---|---|---|
| **CFSS5200N** | 7.9 (200) | 5mm x 5mm for use with CFS361C5 & CFS361J5 switches & with "CFSH5" handles only |
| **CFSS5400N** | 15.7 (400) | |
| **CFSS5200HN** | 7.9 (200) | 5mm x 5mm for use with all "CFSH10" handles & with CFS361C5 & CFS361J5 switches only |
| **CFSS5400HN** | 15.7 (400) | |
| **CFSS10200HN** | 7.9 (200) | 10mm x 10mm for use with all "CFSH10" handles & with all 30-400A switches except CFS361C5 & CFS361J5 |
| **CFSS10400HN** | 15.7 (400) | |

### Compact rotary operating handles — door mounted (for use with CFS361C5 & CFS361J5 switches only)⑥

| Catalog number | Color | UL Type | Operating shaft compatibility |
|---|---|---|---|
| **CFSH5B12N** **CFSH5R12N** | Blue & Black Yellow & Red | 1, 3R & 12 | CFSS5200N or CFSS5400N |
| **CFSH5B4N** **CFSH5R4N** | Blue & Black Yellow & Red | 1, 3R, 12 & 4/4X | |

### Rotary Operating Handles - Door Mounted (for use with CFSS5200HN, CFSS5400HN, CFSS10200HN & CFSS10400HN)

| Catalog number | Color | Description |
|---|---|---|
| **Type 1, 3R & 12**⑦ | | |
| **CFSH10B12N** | Blue & Black | Heavy duty pistol grip (2.75" long for use with 30A switches & CFS362JN1) |
| **CFSH10R12N** | Yellow & Red | |
| **CFSH10BL12N** | Blue & Black | Heavy duty pistol grip (4.92" long for 30-400A switches) |
| **CFSH10RL12N** | Yellow & Red | |
| **Type 1, 3R, 4/4X & 12**⑦ | | |
| **CFSH10B4N** | Blue & Black | Heavy duty pistol grip (2.75" long for use with 30A switches & CFS362JN1) |
| **CFSH10R4N** | Yellow & Red | |
| **CFSH10BL4N** | Blue & Black | Heavy duty pistol grip (4.92" long for 30-400A switches) |
| **CFSH10RL4N** | Yellow & Red | |

**CFS361J5**

**CFSS5400N**

**CFSH5B12N**

① Line and load lugs included.
② Line and load lugs are not included. Order from table on next page if required.
③ DC HP rating shown requires (3) poles to be connected in series.
④ **CFS364JN** & **CFS365JN** can be rotated 180º for left hand operation as standard.
⑤ Catalog numbers **CFS361C5** & **CFS361J5** accept 5mm x 5mm operating shafts. All other 30-400A switches accept 10mm x 10mm operating shafts.
⑥ Compact pistol grip design (2.75" long) with defeatable cover interlock. Cover can be opened when handle is padlocked in the OFF position.
⑦ Defeatable cover interlock provided. Cover cannot be opened when handle is padlocked in the OFF position.
⑧ 4 pole 600 & 800A switches, **CFS466J** & **CFS467L** are also available.
⑨ **CFS366J** and **CFS367L** are rated 250 & 600V DC when (2) poles are connected in series.

### 600 & 800A Rotary Operating Handles - Door Mounted (8.27" long)⑦

| Catalog number | Color | UL Type |
|---|---|---|
| **CFSH12BL12** | Blue & Black | 1, 3R & 12 |
| **CFSH12RL12** | Yellow & Red | 1, 3R & 12 |
| **CFSH12BL4** | Blue & Black | 1, 3R, 12 & 4/4X |
| **CFSH12RL4** | Yellow & Red | 1, 3R, 12 & 4/4X |

### 600 & 800A Operating Shafts (Cross Section 12mm x 12mm)

| Catalog number | Shaft length in. (mm) | Enclosure depth (switch mounting surface to door OD) |
|---|---|---|
| **CFSS12200H** | 12.59 (320) | 10.43 – 16.68 in. |
| **CFSS12400H** | 15.75 (400) | 10.43 – 19.84 in. |

**CFSL200 & 400**

### Type CFS Fusible Switch Accessories

| Catalog number | Description |
|---|---|
| **Terminals**① | |
| **CFSL200** | 200A lug kit (6 lugs per kit) #6-3/0 |
| **CFSL400N** | 400A lug kit (6 lugs per kit) #2-600kcmil (for CFS365JN only) |
| **CNFSL400D** | 400A lug kit (6 lugs per kit, 2 wires per lug) #6-350kcmil |
| **CFSL400** | 600-800A lug kit (6 lugs per kit, 2 wires per lug) #2-600kcmil⑨ |
| **Shorting bars (no fuse kits)** | |
| **CFSSB60** | 60A shorting bar kit (3 links per kit) |
| **CFSSB100** | 100A shorting bar kit (3 links per kit) |
| **CFSSB200** | 200A shorting bar kit (3 links per kit) |
| **CFSSB400** | 400A shorting bar kit (3 links per kit) |
| **CFSSB680** | 600 & 800A shorting bar kit (1 link per kit) |
| **Auxiliary contacts (NEMA ratings AC A600 DC N600)** | |
| **CFSAUXH1**② | Aux contact holder (CFS361C5 & CFS361J5) |
| **CFSAUX1NO** | Aux contact 1 NO (30-800A Sws) |
| **CFSAUX1NC** | Aux contact 1 NC (30-800A Sws) |
| **CFS11AUX** | 1NO, 1NC aux contact kit (side mount for 200kA switches) |
| **CFS22AUX** | 2NO, 2NC aux contact kit (side mount for 200kA switches) |
| **Terminal shrouds (line or load)** | |
| **CFSTS200N**⑧ | 200A shroud kit (line or load 3-pole kit) |
| **CFSTS400N**⑧ | 400A shroud kit (line or load 3-pole kit for CFS365JN only) |
| **CFSTS680**⑥ | 600/800A 3-pole shroud kit |
| **CFSTS6804**⑥ | 600/800A 4-pole shroud kit |
| **30A compact switch kits** | |
| **CFSPLK** | Shaft padlocking kit for 30A compact switch when door is opend |
| **CFSH5CDM** | Direct mount handle kit for CFS361C5 |
| **CFSH5JDM** | Direct mount handle kit for CFS361J5 |

**CFSAUX1NC**

**CFSSB100 – CFSSB400**

### NFPA 79 kits (if auxiliary contacts are needed, see table above)

Kits provide an operating shaft suitable for use with all heavy duty handles (not for use with CFSH5 handles).
Kits also provide an internal operating handle and an internal OFF padlocking provision.

| | |
|---|---|
| **CFSNFPA1**④ | For use with CFS361C5 & CFS361J5 |
| **CFSNFPA2N**⑤ | For use with CFS361JN, CFS361CN, CFS362JN1, CFS362JN, CFS363JN & CFS364JN |
| **CFSNFPA3N**⑤ | For use with CFS365JN only |

① Supplied as standard on 30-100A switches
② **CFS361C5** will accept (4) aux contacts without an aux contact holder. **CFS361J5** will accept (2) aux contacts without an aux contact holder.
③ Supplied as standard on all but 30A, 100kA compact switches.
④ 12.6 in. (320 mm) long operating shaft included
⑤ 12.7 in. (323 mm) long operating shaft included
⑥ Line side terminal shrouds supplied with switch
⑦ Defeatable cover interlock included. Cover cannot be opened when the handle is padlocked in the OFF position.
⑧ Neither line or load terminal shrouds are supplied as standard with new style 200 & 400A switches.
⑨ 2 kits needed for 800A, total 12 lugs to cover line and load sides

## UL & CSA Technical Characteristics And Panel Space Requirements

| Catalog Number | Amps | Fuse Class | Ac Short Circuit Rating | Electrical Endurance | Mechanical Endurance | Panel Space Requirements - in. (mm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Height | Width | Depth① |
| **CFS361C5** | 30 | CC | 100kA | 6000 | 10000 | 4.56 (116) | 3.78 (96) | 6.00 (152) |
| **CFS361J5** | 30 | J | 100kA | 6000 | 10000 | 4.56 (116) | 4.15 (105) | 6.00 (152) |
| **CFS361JN** | 30 | J | 200kA | 6000 | 10000 | 5.35 (136) | 5.89 (150) | 6.00 (152) |
| **CFS361JLN** | 30 | J | 200kA | 6000 | 10000 | 5.35 (136) | 5.89 (150) | 6.00 (152) |
| **CFS362JN1** | 60 | J | 100kA | 6000 | 10000 | 5.35 (136) | 5.89 (150) | 6.00 (152) |
| **CFS362JN** | 60 | J | 200kA | 6000 | 10000 | 7.32 (186) | 5.89 (150) | 6.00 (152) |
| **CFS362JLN** | 60 | J | 200kA | 6000 | 10000 | 7.32 (186) | 5.89 (150) | 6.00 (152) |
| **CFS363JN** | 100 | J | 200kA | 6000 | 10000 | 7.32 (186) | 5.89 (150) | 6.00 (152) |
| **CFS363JLN** | 100 | J | 200kA | 6000 | 10000 | 7.32 (186) | 5.89 (150) | 6.00 (152) |
| **CFS364JN** | 200 | J | 200kA | 6000 | 8000 | 11.46 (291) | 7.72 (196) | 6.00 (152) |
| **CFS365JN** | 400 | J | 200kA | 1000 | 6000 | 15.35 (390) | 10.19 (259) | 8.00 (203) |
| **CFS366J** | 600 | J | 200kA | 1000 | 5000 | 11.81 (300) | 14.33 (364) | 11.00 (280) |
| **CFS466J** | 600 | J | 200kA | 1000 | 5000 | 11.81 (300) | 18.03 (458) | 11.00 (280) |
| **CFS367L** | 800 | L | 200kA | 500 | 3500 | 11.81 (300) | 14.33 (364) | 11.00 (280) |
| **CFS467L** | 800 | L | 200kA | 500 | 3500 | 11.81 (300) | 18.03 (458) | 11.00 (280) |

## Wire Ranges Line & Load Lugs

| Switch | Amperage Rating | UL Approved Wire Size (75º C) |
|---|---|---|
| **CFS361J5** | 30 | (1)#14-10 |
| **CFS361C5** | 30 | (1)#14-10 |
| **CFS361JN** | 30 | (1)#14-6 |
| **CFS362JN1** | 60 | (1)#14-6 |
| **CFS362JN** | 60 | (1)#12-1 |
| **CFS363JN** | 100 | (1)#12-1 |
| **CFS364JN** | 200 | (1)#3/0 |
| **CFS365JN** | 400 | (1)600MCM |
| **CFS366J** | 600 | (2)350 MCM |
| **CFS367L** | 800 | (2)600 MCM |

## Auxiliary Contact Capability When An NFPA79 Kit Is Used

| Switch | NFPA79 Kit | Aux Contacts That Can Be Installed |
|---|---|---|
| **CFS361C5** | **CFSNFPA1** | (2) Total, CFSAUX1NO or CFSAUX1NC |
| **CFS361J5** | | (1) CFSAUX1NO or (1) CFSAUX1NC |
| **CFS361JN**<br>**CFS362JN1**<br>**CFS362JN**<br>**CFS363JN**<br>**CFS364JN** | **CFSNFPA2N** | (2) Total, CFSAUX1NO or CFSAUX1NC② |
| **CFS365JN** | **CFSNFPA3N** | (2) Total, CFSAUX1NO or CFSAUX1NC② |

① Minimum dimensions from mounting surface to inside of cover. Dimensions shown can be decreased if aux contacts are not required.

② For additional auxiliary contacts use side mounted **CFS11AUX** or **CFS22AUX**.

# Type CNFS Compact Non-Fusible Switches

## Description

Siemens Type CNFS compact non-fusible switches meet UL 98 requirements and can be used in either service entrance or branch circuit applications. They are available in 30-800A, 3-pole switches and are all rated 600VAC maximum.

All are open style, designed to be panel mounted and are UL listed under file number #E121152 or #E68312 and CSA certified under file number #222227. A variety of door mounted rotary operators are available with Type 1, 3R, 12 or 4/4X ratings.

These non-fusible switches are UL listed under file #E201138 and CSA certified under file #112964. They also conform to IEC standard 60947-3.

## Catalog Numbering System

**CNFS Switches**
*Compact Non-Fusible Switch*

| CNFS | 3 | 6 | 1 | N |
|---|---|---|---|---|

- Number of poles 3 = 3
- Max. Voltage Rating 6 = 600V
- Ampere rating
  - 1 = 30A
  - 2 = 60A
  - 3 = 100A
  - 4 = 200A
  - 5 = 400A
  - 6 = 600A
  - 7 = 800A
- Design type
  - N = Compact design

# Type CNFS Compact Non-Fusible Switches



## Features

- 30 - 800A ratings
- UL Listed under file #E201138 & CSA Certified under file #112964 or #703166
- Options to have door mounted pistol handles with defeatable cover interlock or direct mounted handles.
- Meets UL 98 requirements
- Compact size
- All short circuit protection ratings require the use of Class J fuses in the circuit.
- Load break and horsepower rated
- Quick make and break operation
- All external handles and direct handles for 600-800A switches are padlockable with up to (3) padlocks with 5/16" hasps in the OFF postition. Direct handles for 30-100A switches are padlockable with (1) padlock with 3/16" hasps in the OFF position.
- All switches are able to be panel mounted. Catalog numbers CNFS361N, CNFS362N, & CNFS363N can also be DIN-rail mounted and can either be front or side operated with standard pistol handles.
- Handles are available in Type 1, 3R, 4/4X & 12 ratings

### Shaft

**CFSS10200HN**

### Handle

**CFSH10BL12N**

### Lugs/Accessories

**CFSL200**

## Ordering information

1. Select the panel mounted switch required based on Ampere, HP and AIC requirements. Switches with a right hand mechanism are standard.
2. Select handle based on environmental rating required.
3. For door mounted handles, select operating shaft based on enclosure depth. For enclosure depths of 9.00" or less from panel mounting surface to inside of door use up to 200 mm long shafts. From 9.00" to 13.00" use up to 320 mm long shafts. For deeper enclosures use up to 400 mm long shafts. For direct mount handles, no shaft is needed.

Note: Be sure to check shaft and handle compatibility with the switch selected by using information provided in the selection tables.

4. Line & load lugs are provided as standard on 30-100A switches. Terminal kits are available for 200-800A switches if needed.
5. Auxiliary contacts are available if needed. Each switch will accept up to (2) aux contact modules, containing (2) contacts in each.
6. 30-100A Series N switches are designed to prevent inadvertent contact with live parts and shields are not required but are offered as terminal shrouds. 100-400A switches are not supplied with terminal shields. They are available as separate field installed kits for both line and load terminals by amperage rating. Line side terminal screens are provided for 600-800A switches.

### Type CNFS compact non-fusible switches

| Switch Ampere Rating | Catalog Number | Max Horsepower Ratings | | | Short Circuit Rating | |
|---|---|---|---|---|---|---|
| | | 240V 3Ø AC | 480V 3Ø AC | 600V 3Ø AC | @ 480VAC | @ 600VAC |
| 30 | **CNFS361N**① | 10 | 20 | 25 | 100 | 100 |
| 60 | **CNFS362N**① | 20 | 40 | 50 | 100 | 100 |
| 100 | **CNFS363N**① | 20 | 50 | 50 | 100 | 25 |
| 200 | **CNFS364N**② | 75 | 150 | 200 | 200 | 200 |
| 400 | **CNFS365N**② | 125 | 250 | 350 | 200 | 200 |
| 600 | **CNFS366N**② | 200 | 400 | 350 | 200 | 200 |
| 800 | **CNFS367N**② | 200 | 500 | 500 | 100 | 100 |

**CNFS363N**

### Direct mount rotary handles for compact non-fusible switches

| Catalog Number | Color | Use with compact non-fusible switches |
|---|---|---|
| **CNFSHD1** | Blue | CNFS361N, CNFS362N, CNFS363N |
| **CNFSHD2** | Black | CNFS364N, CNFS365N |
| **CNFSHD3** | Black | CNFS366N, CNFS367N |

### Operating shafts for compact non-fusible switches

| Catalog Number | Shaft length in. (mm) | Switch and handle compatibility |
|---|---|---|
| **CNFSS52001** | 7.9 (200) | 5mm x 5mm for use with CNFS361N, CNFS362N and CNFS363N switches and with "CNFSH5" handles only |
| **CNFSS53201** | 12.6 (320) | |
| **CNFSS54001** | 15.7 (400) | |
| **CFSS10200HN** | 7.9 (200) | 10mm x 10mm for use with "CFSH10" handles and with CNFS364N and CNFS365N switches only |
| **CNFSS103202** | 12.6 (320) | |
| **CFSS10400HN** | 15.7 (400) | |
| **CNFSS152003** | 7.9 (200) | 15mm x 15mm for use with "CFSH12" handles and with CNFS366N and CNFS367N switches only |
| **CNFSS153203** | 12.6 (320) | |
| **CNFSS154003** | 15.7 (400) | |

**CNFSS154003**

### Compact rotary operating handles for non-fusible switches – door mounted

| Catalog Number | Color | UL Type | Operating shaft compatibility | Use with non-fusible compact switches |
|---|---|---|---|---|
| **CNFSH5BP121** | Black | NEMA 1, 3R, 12 | CNFSS52001, CNFSS53201, CNFSS54001 | CNFS361N, CNFS362N, CNFS363N |
| **CNFSH5RP121** | Red/Yellow | NEMA 1, 3R, 12 | | |
| **CNFSH5BP41** | Black | NEMA 4/4X | | |
| **CNFSH5RP41** | Red/Yellow | NEMA 4/4X | | |
| **CFSH10BL12N** | Black | NEMA 1, 3R, 12 | CFSS10200HN, CNFSS103202, CFSS10400HN | CNFS364N, CNFS365N |
| **CFSH10RL12N** | Red/Yellow | NEMA 1, 3R, 12 | | |
| **CFSH10BL4N** | Black | NEMA 4/4X | | |
| **CFSH10RL4N** | Red/Yellow | NEMA 4/4X | | |
| **CFSH12BL12** | Black | NEMA 1, 3R, 12 | CNFSS152003, CNFSS153203, CNFSS154003 | CNFS366N, CNFS367N |
| **CFSH12RL12** | Red/Yellow | NEMA 1, 3R, 12 | | |
| **CFSH12BL4** | Black | NEMA 4/4X | | |
| **CFSH12RL4** | Red/Yellow | NEMA 4/4X | | |

**CFSH12RL12**

① Line and load lugs are included.
② Line and load lugs are not included. Order from table on following pages if needed.
③ All switches can be rotated 180° for left hand operation as standard.
④ Flange mounting is not available for non-fusible switches.

### Auxiliary contacts for use with non-fusible switches

| Catalog Number | Number of Contacts | Use with Non-fusible Contact Switches |
|---|---|---|
| **CNFS1AUX1** | 1 Normally Open + 1 Normally Closed | CNFS361N, CNFS362N, CNFS363N |
| **CNFS2AUX1** | 2 Normally Closed | |
| **CNFS1AUX2** | 1st Auxiliary Contact: 1 Normally Open + 1 Normally Closed | CNFS364N, CNFS365N, CNFS366N, CNFS367N |
| **CNFS2AUX2** | 2nd Auxiliary Contact: 1 Normally Open + 1 Normally Closed | |

**CNFS1AUX1**

### Terminal shrouds for use with non-fusible switches

| Catalog Number | Shroud Location | Use with Non-fusible Contact Switches |
|---|---|---|
| **CNFSTS100** | Top and Bottom | CNFS361N, CNFS362N, CNFS363N |
| **CNFSTSC200T** | Top | CNFS364N |
| **CNFSTSC200B** | Bottom | |
| **CNFSTSC400T** | Top | CNFS365N |
| **CNFSTSC400B** | Bottom | |
| **CNFSTSC600B** | Bottom | CNFS366N |
| **CNFSTSC800B** | Bottom | CNFS367N |

**CNFSTSC400T**

### Terminal lug kits for use with non-fusible switches

| Catalog Number | Wire Sizes | Use with Non-fusible Contact Switches |
|---|---|---|
| Included | #10-2/0 | CNFS361N, CNFS362N, CNFS363N |
| **CFSL200** | #6-300MCM | CNFS364N |
| **CFSL400N** | #2-600MCM | CNFS365N |
| **CNFSL400D** | #6-350MCM, 2 wires per lug | CNFS356N |
| **CFSL400** | #6-350MCM, 2 wires per lug | CNFS366N, CNFS367N① |

**CFSL200 & 400**

① 2 kits needed for 800A, total 12 lugs to cover line and load sides.

## Notes

# Appendix – General Information

## Contents

**UL and CSA file and guide numbers** 19/2

**On-line References for Industrial Control Products** 19/3

**General Information**

NEMA enclosure descriptions 19/4
IEC enclosure descriptions 19/5
IEC contactor utilization categories 19/6
Control circuit classifications 19/7
Ampere ratings for 3 phase AC induction motors 19/8
Metric to US conversions 19/9
Electical formulas and grounding requirements 19/10
NEMA and IEC terminal markings 19/11
Electrical symbols 19/12
Control circuit schematics 19/13
Control circuit schematics and wiring diagrams 19/14
Pilot control 19/15

**International Control Equipment**

Quick reference list 19/16

**Spring Loaded Terminal Technique** 19/17

**Standard Terms & Conditions of Sale** 19/18

# Standards and Approvals

## UL and CSA file numbers and guide card numbers

Most control equipment listed in this catalog is designed, manufactured and tested in accordance with the relevant UL and CSA standards as listed on pages 19/2 and 19/3.

| Equipment | SEC | CSA | | UL-listed | | | UL-recognized | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Guide No. | File No. | Guide No. | c UL | File No. | Guide No. | c | File No. |
| 3RV motor starter protectors | 1 | Class 3211 05 | LR 12730 | NLRV | NLRV7 | E 47705 | — | — | — |
| 3RV as self-protected controller (Type E) | 1 | Class 3211 08 | LR 12730 | NKJH | NKJH7 | E 156943 | — | — | — |
| 3RV17, 18, 27 & 28 as circuit breakers | 1 | Class 1432 01 | LR 12730 | DIVQ | DIVQ7 | E 235044 | — | — | — |
| 3RA13 & 23 reversing contactors | 2 | Class 3211 04 | LR 12730 | NLDX | NLDX7 | E 31519 | NLDX2 | NLDX8 | E 31519 |
| 3RH control relays | 2 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RT contactors | 2 | Class 3211 04 | LR 12730 | NLDX | NLDX7 | E 31519 | NLDX2 | NLDX8 | E 31519 |
| 3TB contactors | 2 | Class 3211 04 | LR 12730 | NLDX | NLDX7 | E 31519 | NLDX2 | — | E 31519 |
| 3TC4 DC Contactors | 2 | — | — | NLDX | NLDX7 | E 31519 | — | — | — |
| 3TC5 DC Contactors | 2 | | | NLDX | — | E 31519 | | | |
| 3TF6 contactors | 2 | Class 3211 04 | LR 12730 | NLDX | NLDX7 | E 31519 | NLDX2 | — | E 31519 |
| 3TX7 surge suppressors | 2 | Class 3211 03 | LR 12730 | — | — | — | NKCR2 | NKCR8 | E 31519 |
| 3RB20 / 21 solid-state overload relay | 3 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RB22, 23 & 24 solid-state overload relay | 3 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RB30 / 31 solid-state overload relay | 3 | | | NKCR | NKCR7 | E 44653 | | | |
| 3RU21 thermal overload relay | 3 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3UF7 SIMOCODE intelligent overload relay | 3 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RA*1 & *2 combination starters | 4 | Class 3211 05 | LR12730 | NLDX | NLDX7 | E 31519 | — | — | — |
| 3RA6 compact starter as manual motor controller | 4 | Class 3211 05 | LR 12730 | NLRV | NLRV7 | E 47705 | — | — | — |
| 3RA6 compact starter as self protected controller (Type E) | 4 | Class 3211 08 | LR 12730 | NKJH | NKJH7 | E 156943 | — | — | — |
| 3RE4 enclosed IEC contactors & starters | 4 | — | — | NLDX | NLDX7 | E14900 | — | — | — |
| 8US1 busbar components | 5 | | | NMTR | NMTR7 | E328403 | | | |
| 8US1 busbar adapter shoes | 5 | [2] | [2] | — | — | — | NMTR2 | NMTR8 | E 328403 |
| FB busbar adapter system | 5 | [2] | [2] | — | — | — | NMTR2 | NMTR8 | E 160776 |
| 3RK1308 ET 200SP motor starters | 6 | Class 3211 06 | LR 12730 | NMFT | NMFT7 | E143112 | — | — | — |
| 3RM1 hybrid motor starter | 6 | | | NMFT | NMFT7 | E 143112 | | | |
| 3RW30 Soft starters | 7 | Class 3211 06 | LR 12730 | NMFT | NMFT7 | E 143112 | — | — | — |
| 3RW30/31 Soft starters | 7 | Class 3211 06 | LR 12730 | NMFT | NMFT7 | E 143112 | — | — | — |
| 3RW40/44 Soft starters | 7 | Class 3211 06 | — | NMFT | NMFT7 | E 143112 | — | — | — |
| 3RW5 soft starters | 7 | Class 3211 06 | LR 12730 | NMFT | NMFT7 | E143112 | — | — | — |
| 73 enclosed soft starters | 7 | — | — | NJAV | NJAV7 | E 43399 | — | — | — |
| 74 combination soft starters | 7 | — | — | NJAV | NJAV7 | E 43399 | — | — | — |
| 3RF20, 21 & 22 | 8 | | | NMFT | NMFT7 | E 143112 | NRNT2 | NRNT8 | E44653 |
| 3RF23 & 24 | 8 | | | NRNT | NRNT7 | E44653 | | | |
| 3RF24 & 34 solid-state contactors | 8 | Class 3211 07 | LR12730 | NMFT | — | E 143112 | — | — | — |
| 11 manual starters | 9 | Class 3211 | LR 6535 | NLVR | NLRV7 | E 10590 | — | — | — |
| 14, 22, 30, 40, 43 starters & contactors | 9 | Class 3211 | LR 6535 | NLDX | NLDX7 | E 14900 | — | — | — |
| 17, 18, 25, 26, 32 combination starters | 9 | Class 3211 | LR 6535 | NKJH | NKJH7 | E 185287 | — | — | — |
| 36, 37 reduced voltage starters | 9 | Class 3211 | LR 6535 | NLDX | NLDX7 | E 14900 | — | — | — |
| 83, 84, 85, 87, 88 pump control panels | 9 | Class 3211 | LR 6535 | NKJH | NKJH7 | E 185287 | — | — | — |
| 42 definite purpose contactors | 9 | — | — | — | — | — | NLDX2 | NLDX8 | E14900 |
| 45 definite purpose contactors | 9 | — | — | — | — | — | NLDX2 | NLDX8 | E14900 |
| 48, 958 overload relays ESP200 | 9 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 49 field kits | 9 | Class 3211 | ELR 535 | NLDX | — | E 14900 | NLDX2 | — | E 14900 |
| CLM lighting contactors | 9 | | | NRNT | NRNT7 | E 27683 | | | |
| LC lighting contactors - open | 9 | | | NLDX | NLDX7 | E 14900 | | | |
| LC lighting contactors - enclosed | 9 | | | NRNT | NRNT7 | E 27683 | | | |
| LEN00B, C, D, E lighting - open | 9 | | | NLDX | | E 31519 | | | |
| LEN00F, G, H, lighting - open | 9 | | | NRNT | NRNT7 | E 27683 | | | |
| LE lighting contactors - enclosed | 9 | | | NRNT | NRNT7 | E 27683 | | | |
| MMS manual switches | 9 | | | NLRV | | E10590 | NLRV2 | — | E 10590 |
| SMF manual starters | 9 | | | NLRV | | E10590 | NLRV2 | — | E 10590 |
| 3SB2 16mm pushbuttons and indicator lights | 10 | Class 3211 03 | LR 12730 | — | — | — | NKCR2 | — | E 44653 |
| 3SU1 22mm pushbuttons and indicator lights | 10 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 52 30 mm pilot devices | 10 | Class 3211 | LR 6535 | NKCR | NKCR7 | E 22655 | — | — | — |
| 8WD signal columns | | | | NMTR | NMTR7 | E 148698 | | | |
| 3RN1 thermistor motor protection | 11 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RP2 electronic time-delay relay | 11 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |

[1] c UL listing for Canada, instead of CSA certification.
[2] c recognition for Canada, instead of CSA certification.

# Standards and Approvals

## UL and CSA file numbers and guide card numbers / On-line resources for Industrial Control products

| Equipment | SEC | CSA | | UL-listed | | | UL-recognized | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Guide No. | File No. | Guide No. | | File No. | Guide No. | | File No. |
| 3RQ coupling relays & interfaces | 11 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RS10, 11, 20 & 21 temperature monitoring relay | 11 | — | — | NKCR | NKCR7 | E 44653 | — | — | — |
| 3RS18 coupling relays | 11 | | | NKCR | NKCR7 | E 44653 | | | |
| 3RS70 signal converters | 11 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3TG10 power relay | 11 | 1) | 1) | NLDX | NLDX7 | E 31519 | — | — | — |
| 3TX71 plug-in relays | 11 | — | — | — | — | — | NLDX2 | NLDX8 | E 14900 |
| 3TX71 sockets | 11 | — | — | — | — | — | SWIV2 | SWIV8 | E 196786 |
| 3UG monitoring relay | 11 | 1) | 1) | NKCR | NKCR7 | E 44653 | — | — | — |
| 7PV time-delay relay | 11 | Class 2211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| LZS plug-in relays | 11 | - | - | - | - | - | SWIV2 | SWIV8 | E196546 |
| 8WA1 Terminal blocks | 12 | — | — | — | — | — | XCFR2 | — | E 80027 |
| 8WA2 & 8WH Terminal blocks | 12 | Class 3211 | LR50181 | — | — | — | XCFR2 | XCFR8 | E 80027 |
| 3RK3 MSS | 13 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| 3SE03 North American NEMA) limit switches | 13 | — | — | NKCR | — | E 47512 | — | — | — |
| 3SE2 hinge switches | 13 | | | NKCR | NKCR7 | E 44653 | | | |
| 3SE5 limit switches | 13 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | NKCR2 | NKCR8 | E 44653 |
| 3SE6 magnetic monitoring system | 13 | | | NKCR | NKCR2 | E 44653 | | | |
| 3SE7 rope pull switches | 13 | 1) | 1) | NKCR | - | E 44653 | — | — | — |
| 3SK safety relays | 13 | | | NKCR | NKCR7 | E 44653 | | | |
| 3TK28 safety relay | 13 | 1) | 1) | NKCR | NKCR7 | E 44653 | — | — | — |
| AS-Interface components for control circuits, e.g. AS-Interface modules, gateways | 14 | Class 3211 03 | LR 12730 | NKCR | NKCR7 | E 44653 | — | — | — |
| AS-Interface components for power cir-cuits, e.g. AS-Interface motor starters, PROFIBUS motor starters | 14 | Class 3211 04 | LR 12730 | NLDX | NLDX7 | E 31519 | — | — | — |
| 6ED1 programmable relays | 15 | | | NRAQ | NRAQ7 | E 217227 | | | |
| 6EP1 DC power supplies | 15 | 1) | 1) | NRAQ | NRAQ7 | E 143289 | NRAQ2 | NRAQ8 | E 143289 |
| 6GK5 ethernet switches | 15 | | | NWGQ | NWGQ7 | E 115352 | | | |
| 5SJ4 circuit breakers | 16 | — | — | DIVQ | DIVQ7 | E 243414 | — | — | — |
| 5ST Aux switch, fault signal contact, shunt trip,busbar | 16 | — | — | DIHS | DIHS7 | E 321559 | DIHS2 | DIHS8 | E 321559 |
| 5SY4 supplementary protectors | 16 | 2) | 2) | — | — | — | QVNU2 | QVNU8 | E 116386 |
| 3NW70 Fuse Holder | 16 | — | — | — | — | — | IZLT2 | IZLT8 | E 171267 |
| 3NW75 Class CC Fuse Holder | 16 | — | — | IZLT | IZLT7 | E 171267 | — | — | — |
| 3VA circuit breakers | 17 | Class 1432 01 | LR 13077 | DIVQ | DIVQ7 | E364397 | — | — | — |
| Sentron circuit breakers | 17 | Class 1432-01 | LR 13077 | DIVQ | DIVQ7 | E 10848 | DKPU2 | — | 3) E10848 |
| VL circuit breakers | 17 | Class 1432-01 | LR 13077 | DIVQ | DIVQ7 | E 10848 | DKPU2 | — | 3) E10848 |
| WL circuit breakers | 17 | — | — | DIVQ | DIVQ7 | E 231263 | — | — | — |
| 3LD2 disconnect switches | 18 | 1) | 230576 | NLRV | NLRV7 | E 47705 | — | — | — |
| CFS fusible disconnect switches | 18 | — | 222227 | WHTY | — | E 121152 | WHTY2 | — | E 121152 |
| LBR and LBT disconnect switches | 18 | — | 1) | NLRV | — | E 191706 | — | — | — |
| MCS disconnect switches | 18 | — | 154852 | — | — | — | WHTY2 | — | E 121152 |
| VBII disconnect switches | 18 | — | 154852 | — | — | — | WHTY2 | — | E 121152 |
| VBII safety switches | 18 | — | 4) | WIAX | WIAX7 | E 4776 | — | — | — |

1) c ® listing for Canada, instead of CSA certification.
2) c recognition for Canada, instead of CSA certification.
3) Instantaneous only circuit breakers (ETI or MCP).
4) CSA labeled Sws available on request.

## On-Line Resources for Industrial Control Products

**Controls Website**
- with links to all sites listed below plus much more

www.usa.siemens.com/controls

**Siemens Industrial Controls Catalog**
- with updates to the print Catalog

www.usa.siemens.com/iccatalog

**Siemens Industry Mall**
- Quickly search for Siemens control products
- Configure products for your application
- Create and export a complete Bill of Material for your system
- Find helpful technical Information, such as:
  * Instruction Sheets & Manuals * 2D & 3D Dimension Drawings

www.usa.siemens.com/industrymall

**Industrial Control Panels for North America**
- Learn the secrets of control panel design
- Improve efficiency in construction and operation of your control panels

www.usa.siemens.com/controlpaneldesign

**Short Circuit Current Ratings (SCCR) to meet UL508A & NEC**
- Find the latest High Short Circuit testing for combinations of Siemens Power Distribution & Control Products

http://www.usa.siemens.com/sccr

**Siemens Service and Support Website**
- Get answers to technical and application questions
- Receive training on the latest innovations

http://support.automation.siemens.com/US

# General Information

## NEMA enclosure descriptions

**NEMA Standard Publications**

**No. 250-1979**

**Type 1**

Type 1 enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment in locations where unusual service conditions do not exist. The enclosures shall meet the rod entry and rust resistance design tests.

**Type 3**

Type 3 enclosures are intended for outdoor use, primarily to provide a degree of protection against windblown dust, rain and sleet, and to be undamaged by the formation of ice on the enclosure. They shall meet rain, external icing, dust, and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

**Type 3R**

Type 3R enclosures are intended for outdoor use, primarily to provide a degree of protection against falling rain, and to be undamaged by the formation of ice on the enclosure. They shall meet rod entry, rain, external icing, and rust resistance design tests. They are not intended to provide protection against conditions such as dust, internal condensation, or internal icing.

**Type 4**

Type 4 enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose directed water, and to be undamaged by the formation of ice on the enclosure. They shall meet hosedown, external icing, and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

**Type 4X**

Type 4X enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water, and to be undamaged by the formation of ice on the enclosure. They shall meet hose-down, external icing, and corrosion resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

Shall be manufactured of American Iron and Steel Institute Type 304 Stainless steel, polymerics, or materials with equivalent corrosion resistance to provide a degree of protection against specific corrosive agents.

**Type 6**

Type 6 enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against the entry of water during occasional temporary submersion at a limited depth.

Type 6P enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.

**Type 7**

Type 7 enclosures are for indoor use in locations classified as Class I, Groups C or D, as defined in the National Electrical Code.

Type 7 enclosures shall be capable of withstanding the pressures resulting from an internal explosion of specified gases and contain such an explosion sufficiently that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting explosive gas-air mixtures in the surrounding atmosphere. Enclosures shall meet explosion, hydrostatic, and temperature design tests.

**Type 9**

Type 9 enclosures are intended for indoor use in locations classified as Class II Groups E, F or G, as defined in the National Electrical Code.

Type 9 enclosures shall be capable of preventing the entrance of dust. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting or discoloring dust on the enclosure or igniting dust-air mixtures in the surrounding atmosphere. Enclosures shall meet dust penetration and temperature design tests, and aging of gaskets (if used).

**Class I**—Flammable gases or vapors.

**Class II**—Combustible dust.

**Class III**—Ignitable fibers or flyings.

**Division I**—Normal situation; the hazard would be expected to be present in everyday repair and maintenance.

**Division II**—Abnormal situation; the material is expected to be confined within closed containers or closed systems and will be present only during accidental rupture, breakage or unusual faulty operation.

**Groups**

**Class I**—Gases and vapors are designed for use in groups C and D, depending on the ignition temperature of the substance, its explosion pressure and other flammable characteristics.

**Class II**—Dust locations are designed for use in groups E, F, and G, according to the ignition temperature and conductivity of the hazardous substance.

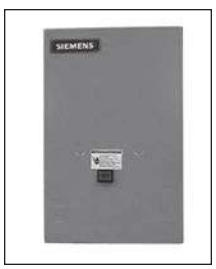
**Type 12**

Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids. They shall meet drip, dust, and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation.

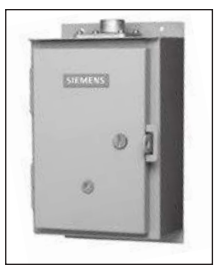
Siemens NEMA 12 may be field modified for outdoor use. NEMA 3 requires the use of watertight conduit hubs. NEMA 3R requires the use of watertight conduit hubs at a level above the lowest live part and drain holes of 1⁄8" diameter shall be added at the bottom of the enclosure.

**Type 13**

Type 13 enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil and non-corrosive coolant. They shall meet oil explosion and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation.



Type 1



Type 3/3R

Type 4/4X

Type 4X

Type 3, 4, 7 & 9

Type 12 & 13

# General Information

## IEC enclosure descriptions

### Comparison of NEMA Enclosures

This table summarizes the information provided on the previous page.

| Provides a Degree of Protection Against the Following Environmental Conditions | 1 | 3R | 4 | 4X | 12 | 13 |
|---|---|---|---|---|---|---|
| Incidental contact with the enclosed equipment | × | × | × | × | × | × |
| Rain, snow, and sleet | — | × | × | × | — | — |
| Windblown dust | — | — | × | × | — | — |
| Falling dirt | × | — | × | × | × | × |
| Falling liquids and light splashing | — | — | × | × | × | × |
| Circulating dust, lint, fibers, and flyings | — | — | × | × | × | × |
| Settling airborne dust, lint, fibers, and flyings | — | — | × | × | × | × |
| Hosedown and splashing water | — | — | × | × | — | — |
| Oil and coolant seepage | — | — | — | — | × | × |
| Oil or coolant spraying and splashing | — | — | — | — | — | × |
| Corrosive agents | — | — | — | × | — | — |

### IEC Environmental Enclosure Ratings for Global Applications

IEC enclosures use a two digit numbering system to define the degree of protection they provide. The first digit specifies the degree of protection against incidental contact and penetration of solid objects. The second digit specifies the level of protection against the ingress of water.

**Example:** An IP65 enclosure is dust tight and protected against water jets. An IP66 enclosure is dust tight and protected against powerful water jets.

| First Numeral | | Second Numeral | |
|---|---|---|---|
| **Protection of persons against access to hazardous parts and protection against penetration of solid foreign objects.** | | **Protection against ingress of water under test conditions specified in IEC 529.** | |
| 0 | Non-protected | 0 | Non-protected |
| 1 | Back of hand; objects greater than 50 mm in diameter | 1 | Vertically falling drops of water |
| 2 | Finger; objects greater than 12.5 mm in diameter | 2 | Vertically falling drops of water with enclosure tilted 15 degrees |
| 3 | Tools or objects greater than 2.5 mm in diameter | 3 | Spraying water |
| 4 | Tools or objects greater than 1 mm in diameter | 4 | Splashing water |
| 5 | Dust-protected (Dust may enter but must not interfere with operation of the equipment or impair safety) | 5 | Water jets |
| 6 | Dust tight (No dust observable inside enclosure at end of test) | 6 | Powerful water jets |
| | | 7 | Temporary submersion |
| | | 8 | Continuous submersion |

### Comparison of NEMA Type Numbers to IEC Classification Designations

This table shows the IP classification designation to which NEMA enclosures may be applied. The table cannot be used to convert IEC designations to NEMA type numbers.

| NEMA Enclosure Type Number | IEC Enclosure Classification Designation |
|---|---|
| 1 | IP10 |
| 3 | IP54 |
| 3R | IP54 |
| 4 and 4X | IP56 |
| 6 and 6P | IP67 |
| 12 | IP52 |
| 13 | IP54 |

# General Information

## IEC contactor utilization catagories

Contactors designed for international applications are tested and rated per IEC 947-4. The IEC rating system is broken down into different utilization categories that define the value of the current that the contactor must make, maintain, and break. The following category definitions are the most commonly used for IEC Contactors.

Ratings for Siemens contactors per these categories can be found in Section 3.

### AC Categories

#### *AC-1*

This applies to all AC loads where the power factor is at least 0.95. These are primarily non-inductive or slightly inductive loads. Breaking remains easy.

#### *AC-3*

This category applies to squirrel cage motors where the breaking of the power contacts would occur while the motor is running. On closing, the contactor experiences an inrush which is 5 to 8 times the nominal motor current, and at this instant, the voltage at the terminals is approximately 20% of the line voltage. Breaking remains easy.

#### *AC-4*

This applies to the starting and breaking of a squirrel cage motor during an inch or plug reverse. On energization, the contactor closes on an inrush current approximately 5 to 8 times the nominal current. On de-energization, the contactor breaks the same magnitude of nominal current at a voltage that can be equal to the supply voltage. Breaking is severe.

### DC Categories

#### *DC-1*

This applies to all DC loads where the time constant (L/R) is less than or equal to one msec. These are primarily noninductive or slightly inductive loads.

#### *DC-2*

This applies to the breaking of shunt motors while they are running. On closing, the contactor makes the inrush current around 2.5 times the nominal rated current. Breaking is easy.

#### *DC-3*

This applies to the starting and breaking of a shunt motor during inching or plugging. The time constant shall be less than or equal to 2 msec. On energization, the contactor sees current similar to that in Category DC-2. On de-energization, the contactor will break around 2.5 times the starting current at a voltage that may be higher than the line voltage. This would occur when the speed of the motor is low because the back e.m.f. is low. Breaking is severe.

#### *DC-5*

This applies to the starting and breaking of a series motor during inching or plugging. The time constant being less than or equal to 7.5 msec. On energization, the contactor sees about 2.5 times the nominal full load current. On de-energization, the contactor breaks the same amount of current at a voltage which can be equal to the line voltage. Breaking is severe.

### Special Contactor Utilization Categories

Some contactors also have ratings for the following specialty utilization categories.

For specific applications, please contact your local Siemens sales office.

| Kind of Current | Utilization Categories | Typical Applications |
|---|---|---|
| AC | AC-2 | Slip-ring motors: starting, switching off |
| | AC-5a | Switching of electric discharge lamp controls |
| | AC-5b | Switching of incandescent lamps |
| | AC-6a | Switching of transformers, welders |
| | AC-6b | Switching of capacitor banks |
| | AC-7a | Slightly inductive loads in household appliances and similar applications |
| | AC-7b | Motor-loads for household applications |
| | AC-8a | Hermetic refrigerant compressor motor[1]) control with manual resetting of overload releases |
| | AC-8b | Hermetic refrigerant compressor motor[1]) control with automatic resetting of overload releases |
| DC | DC-6 | Switching of incandescent lamps |

### Electrical Quantities Symbols According to DIN, VDE and IEC

| Symbol | Characteristic Electrical Quantity |
|---|---|
| $U_i$ | Rated insulation voltage to DIN VDE 0110/DIN VDE 0660 |
| $U_e$ | Rated operational voltage |
| $U_c$ | Rated control voltage (IEC 947-1) at which an operating mechanism or release is rated, e.g. coil voltage to DIN VDE 0660 Part 102 |
| $U_s$ | Rated control supply voltage (Control voltage) to DIN VDE 0660 Part 102, IEC 947-1 |
| $U$ | No-load voltage to IEC 947-2, -3, -5 |
| $U_r$ | Power-frequency recovery voltage (IEC 947-.) |
| $U_o$ | Transformer no-load voltage to DIN VDE 0532 |
| $U_k$ | Short-circuit impedance voltage to DIN VDE 0532 |
| $U_{kr}$ | Rated value of the impedance voltage in % to DIN VDE 0102, 01.90 |
| $I_n$ | Rated current to IEC 947-. |
| $I_{th}$ | Eight-hour-current to DIN VDE 0660, conventional free-air thermal current to IEC 947- (defined as eight-hour-current) thermally equivalent short-time current (r.m.s. value) to DIN VDE 0103 |
| $I_{the}$ | Conventional enclosed thermal current |
| $I_u$ | Rated uninterrupted current to IEC 947-1 |
| $I_e$ | Rated operational current |
| $I_s$ | Selectivity (discrimination) limit current (DIN VDE 0660, IEC 947-1) |
| $I_{cm}$ | Rated short-circuit making capacity to IEC 947-1 |
| $I_{cn}$ | Rated short-circuit breaking capacity to IEC 947-1 |
| $I_{cm}$ | Rated ultimate short-circuit breaking capacity to IEC 947-1 |

| Symbol | Characteristic Electrical Quantity |
|---|---|
| $I_{cw}$ | Rated short-time current withstand capacity to IEC 947-1 |
| $I_p$ | Test current (general) to DIN VDE 0660, prospective current to DIN VDE 0636 |
| $I_n$ | Breaking current (r.m.s. value) to DIN VDE 0102 |
| $i_p$ | Peak short-circuit current (maximum instantaneous value) to DIN VDE 0102 |
| $I_k$ | Sustained (symmetrical) short-circuit current (r.m.s. value), DIN VDE 0102. Rated short-time withstand current to DIN VDE 0660 |
| $i_p$ | Let-through current of fuses and rapidly operating switching devices (maximum instantaneous value during the break time) to DIN VDE 0102 |
| $I_o$ | No-load current at the input side of a transformer (unloaded output side) to DIN VDE 0532 |
| $I_x$ | Current carrying capacity (ampacity) |
| $I_{sr}$ | Rated rotor operational current (DIN VDE 0660, IEC 947-1) |
| $I_r$ | Setting current ("current setting") to DIN VDE 0660 |
| $I_R$ | Take-over current |
| R | Ohmic resistance |
| $S''_k$ | Initial symmetrical AC short-circuit power (simplified: apparent short-circuit power) |
| X | Reactance, reactive impedance |
| Z | Impedance (apparent resistance) |
| x | Factor to determine the peak short-circuit current ip |

1)Hermetic refrigerant compressor motor is a combination consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant.

# General Information

## NEMA and IEC control circuit classifications

### AC-Control Circuit Classifications—NEMA

NEMA designates Control Circuit Rating with a code letter (for current) and a voltage code.

**Ratings & Test Values for AC Control Circuit Contacts at 50 or 60Hz**

| Contact Rating Designation | Thermal Continuous Test Current, Amperes | Maximum Current, Amperes | | | | | | | | Voltamperes | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 120 Volts | | 240 Volts | | 480 Volts | | 600 Volts | | | |
| | | Make | Break | Make | Break | Make | Break | Make | Break | Make | Break |
| A150 | 10 | 60 | 6 | — | — | — | — | — | — | 7200 | 720 |
| A300 | 10 | 60 | 6 | 30 | 3 | — | — | — | — | 7200 | 720 |
| A600 | 10 | 60 | 6 | 30 | 3 | 15 | 1.5 | 12 | 1.2 | 7200 | 720 |
| B150 | 5 | 30 | 3 | — | — | — | — | — | — | 3600 | 360 |
| B300 | 5 | 30 | 3 | 15 | 1.5 | — | — | — | — | 3600 | 360 |
| B600 | 5 | 30 | 3 | 15 | 1.5 | 7.5 | 0.75 | 6 | 0.6 | 3600 | 360 |
| C150 | 2.5 | 15 | 1.5 | — | — | — | — | — | — | 1800 | 180 |
| C300 | 2.5 | 15 | 1.5 | 7.5 | 0.75 | — | — | — | — | 1800 | 180 |
| C600 | 2.5 | 15 | 1.5 | 7.5 | 0.75 | 3.75 | 0.375 | 3 | 0.3 | 1800 | 180 |
| D150 | 1 | 3.6 | 0.6 | — | — | — | — | — | — | 432 | 72 |
| D300 | 1 | 3.6 | 0.6 | 1.8 | 0.3 | — | — | — | — | 432 | 72 |
| E150 | 0.5 | 1.8 | 0.3 | — | — | — | — | — | — | 216 | 36 |

### DC-Control Circuit Classifications—NEMA

**Rating codes for DC Control Circuit Contacts**

| Contact Rating Designation[1]) | Thermal Continuous Test Current, Amperes | Maximum Make or Break[2]) Current, Amperes | | | Maximum Make or Break Voltamperes at 300 Volts or Less |
|---|---|---|---|---|---|
| | | 125 Volt | 250 Volt | 301 to 600 Volt | |
| N150 | 10 | 2.2 | — | — | 275 |
| N300 | 10 | 2.2 | 1.1 | — | 275 |
| N600 | 10 | 2.2 | 1.1 | 0.4 | 275 |
| P150 | 5 | 1.1 | — | — | 138 |
| P300 | 5 | 1.1 | 0.55 | — | 138 |
| P600 | 5 | 1.1 | 0.55 | 0.2 | 138 |
| Q150 | 2.5 | 0.55 | — | — | 69 |
| Q300 | 2.5 | 0.55 | 0.27 | — | 69 |
| Q600 | 2.5 | 0.55 | 0.27 | 0.1 | 69 |
| R150 | 1 | 0.22 | — | — | 28 |
| R300 | 1 | 0.22 | 0.11 | — | 28 |

### Control Circuit Classifications—IEC[3])

IEC 947-5-1 Uses Utilization Categories AC-15 to Specify Control Circuit Ranges.

Current at each voltage is specified by the manufacturer, not by the standard.

| AC Control Circuit Utilization Categories per IEC 947-5-1 | Make | | Break | |
|---|---|---|---|---|
| | $I/I_e$ | $U/U_e$ | $I/I_e$ | $U/U_e$ |
| AC-12 | 1 | 1 | 1 | 1 |
| AC-13 | 2 | 1 | 1 | 1 |
| AC-14 | 6 | 1 | 1 | 1 |
| AC-15 | 10 | 1 | 1 | 1 |

| DC Control Circuit Utilization Categories per IEC 947-5-1 | Make | | Break | |
|---|---|---|---|---|
| | $I/I_e$ | $U/U_e$ | $I/I_e$ | $U/U_e$ |
| DC-12 | 1 | 1 | 1 | 1 |
| DC-13 | 1 | 1 | 1 | 1 |
| DC-14 | 10 | 1 | 1 | 1 |

### Example of a Typical IEC Control Circuit Ratings Table[4])

**AC**

| $I_e$/AC-12 (Continuous Amps) | $U_e$ AC Voltage | $I_e$/AC-15 Amps |
|---|---|---|
| 10 | 24V | 6A |
| | 110V | 6A |
| | 220/230V | 6A |
| | 380/440V | 4A |

**DC**

| Voltage | $I_e$/DC-12 | $I_e$/DC-13 |
|---|---|---|
| 24 | 6A | 3A |
| 60 | 5A | 1.5A |
| 110 | 2.5A | 0.7A |
| 230 | 1A | 0.3A |

1)The numerical suffix designates the maximum voltage design values, which are to be 600, 300, and 150 volts for suffixes 600, 300, and 150 respectively. Test voltage shall be 600, 250, or 125 volts. MLLDLL.

2)For maximum ratings at 300 volts or less, the maximum make and break ratings are to be obtained by dividing the volt-ampere rating by the application voltage, but the current value is not to exceed the thermal continuous test current.

3) $I_e$ Rated operational current
$U_e$ Rated operational voltage
I Current to be made or broken
U Voltage before make

4)Example: A control circuit contact having an AC-15 rating of 6 amps at 230 volts is capable of making 60 amps and breaking 6 amps at 230 volts. KRE.

# General Information

## Ampere ratings for 3 phase AC induction motors

### 3 Phase

**Amperes 60Hz**

| Hp | Syn Speed RPM | 200 Volts | 230 Volts | 460 Volts | 575 Volts |
|---|---|---|---|---|---|
| | 1800 | 1.09 | 0.95 | 0.48 | 0.38 |
| ¼ | 1200 | 1.61 | 1.40 | 0.70 | 0.56 |
| | 900 | 1.84 | 1.60 | 0.80 | 0.64 |
| | 1800 | 1.37 | 1.19 | 0.60 | 0.48 |
| ⅓ | 1200 | 1.83 | 1.59 | 0.80 | 0.64 |
| | 900 | 2.07 | 1.80 | 0.90 | 0.72 |
| | 1800 | 1.98 | 1.72 | 0.86 | 0.69 |
| ½ | 1200 | 2.47 | 2.15 | 1.08 | 0.86 |
| | 900 | 2.74 | 2.38 | 1.19 | 0.95 |
| | 1800 | 2.83 | 2.46 | 1.23 | 0.98 |
| ¾ | 1200 | 3.36 | 2.82 | 1.46 | 1.17 |
| | 900 | 3.75 | 3.26 | 1.63 | 1.30 |
| | 3600 | 3.22 | 2.80 | 1.40 | 1.12 |
| 1 | 1800 | 4.09 | 3.56 | 1.78 | 1.42 |
| | 1200 | 4.32 | 3.76 | 1.88 | 1.50 |
| | 900 | 4.95 | 4.30 | 2.15 | 1.72 |
| | 3600 | 5.01 | 4.36 | 2.18 | 1.74 |
| 1 ½ | 1800 | 5.59 | 4.86 | 2.43 | 1.94 |
| | 1200 | 6.07 | 5.28 | 2.64 | 2.11 |
| | 900 | 6.44 | 5.60 | 2.80 | 2.24 |
| | 3600 | 6.44 | 5.60 | 2.80 | 2.24 |
| 2 | 1800 | 7.36 | 6.40 | 3.20 | 2.56 |
| | 1200 | 7.87 | 6.84 | 3.42 | 2.74 |
| | 900 | 9.09 | 7.90 | 3.95 | 3.16 |
| | 3600 | 9.59 | 8.34 | 4.17 | 3.34 |
| 3 | 1800 | 10.8 | 9.40 | 4.70 | 3.76 |
| | 1200 | 11.7 | 10.2 | 5.12 | 4.10 |
| | 900 | 13.1 | 11.4 | 5.70 | 4.55 |
| | 3600 | 15.5 | 13.5 | 5.76 | 5.41 |
| 5 | 1800 | 16.6 | 14.4 | 7.21 | 5.78 |
| | 1200 | 18.2 | 15.8 | 7.91 | 6.32 |
| | 900 | 18.3 | 15.9 | 7.92 | 6.33 |
| | 3600 | 22.4 | 19.5 | 9.79 | 7.81 |
| 7 ½ | 1800 | 24.7 | 21.5 | 10.7 | 8.55 |
| | 1200 | 25.1 | 21.8 | 10.9 | 8.70 |
| | 900 | 26.5 | 23.0 | 11.5 | 9.19 |
| | 3600 | 29.2 | 25.4 | 12.7 | 10.1 |
| 10 | 1800 | 30.8 | 25.8 | 13.4 | 10.7 |
| | 1200 | 32.2 | 28.0 | 14.0 | 11.2 |
| | 900 | 35.1 | 30.5 | 15.2 | 12.2 |
| | 3600 | 41.9 | 36.4 | 18.2 | 14.5 |
| 15 | 1800 | 45.1 | 39.2 | 19.6 | 15.7 |
| | 1200 | 47.6 | 41.4 | 20.7 | 16.5 |
| | 900 | 51.2 | 44.5 | 22.2 | 17.8 |
| | 3600 | 58.0 | 50.4 | 25.2 | 20.1 |
| 20 | 1800 | 58.9 | 51.2 | 25.6 | 20.5 |
| | 1200 | 60.7 | 52.8 | 26.4 | 21.1 |
| | 900 | 63.1 | 54.9 | 27.4 | 21.9 |

**Amperes 60Hz**

| Hp | Syn Speed RPM | 200 Volts | 230 Volts | 460 Volts | 575 Volts |
|---|---|---|---|---|---|
| | 3600 | 69.9 | 60.8 | 30.4 | 24.3 |
| 25 | 1800 | 74.5 | 64.8 | 32.4 | 25.9 |
| | 1200 | 75.4 | 65.6 | 32.8 | 26.2 |
| | 900 | 77.4 | 67.3 | 33.7 | 27.0 |
| | 3600 | 84.8 | 73.7 | 36.8 | 29.4 |
| 30 | 1800 | 86.9 | 75.6 | 37.8 | 30.2 |
| | 1200 | 90.6 | 78.8 | 39.4 | 31.5 |
| | 900 | 94.1 | 81.8 | 40.9 | 32.7 |
| | 3600 | 111 | 96.4 | 48.2 | 38.5 |
| 40 | 1800 | 116 | 101 | 50.4 | 40.3 |
| | 1200 | 117 | 102 | 50.6 | 40.4 |
| | 900 | 121 | 105 | 52.2 | 41.7 |
| | 3600 | 138 | 120 | 60.1 | 48.2 |
| 50 | 1800 | 143 | 124 | 62.2 | 49.7 |
| | 1200 | 145 | 126 | 63.0 | 50.4 |
| | 900 | 150 | 130 | 65.0 | 52.0 |
| | 3600 | 164 | 143 | 71.7 | 57.3 |
| 60 | 1800 | 171 | 149 | 74.5 | 59.4 |
| | 1200 | 173 | 150 | 75.0 | 60.0 |
| | 900 | 177 | 154 | 77.0 | 61.5 |
| | 3600 | 206 | 179 | 89.6 | 71.7 |
| 75 | 1800 | 210 | 183 | 91.6 | 73.2 |
| | 1200 | 212 | 184 | 92.0 | 73.5 |
| | 900 | 222 | 193 | 96.5 | 77.5 |
| | 3600 | 266 | 231 | 115 | 92.2 |
| 100 | 1800 | 271 | 236 | 118 | 94.8 |
| | 1200 | 275 | 239 | 120 | 95.6 |
| | 900 | 290 | 252 | 126 | 101 |
| | 3600 | — | 292 | 146 | 116 |
| 125 | 1800 | — | 293 | 147 | 117 |
| | 1200 | — | 298 | 149 | 119 |
| | 900 | — | 305 | 153 | 122 |
| | 3600 | — | 343 | 171 | 137 |
| 150 | 1800 | — | 348 | 174 | 139 |
| | 1200 | — | 350 | 174 | 139 |
| | 900 | — | 365 | 183 | 146 |
| | 3600 | — | 458 | 229 | 184 |
| 200 | 1800 | — | 452 | 226 | 181 |
| | 1200 | — | 460 | 230 | 184 |
| | 900 | — | 482 | 241 | 193 |
| | 3600 | — | 559 | 279 | 223 |
| 250 | 1800 | — | 568 | 284 | 227 |
| | 1200 | — | 573 | 287 | 229 |
| | 900 | — | 600 | 300 | 240 |
| 300 | 1800 | — | 278 | 339 | 271 |
| | 1200 | — | 684 | 342 | 274 |
| 400 | 1800 | — | 896 | 448 | 358 |

Full load ampere ratings of motors vary depending upon a number of factors. The full load currents listed above are “average values” for horsepower rated motors of several manufacturers at the most commonly rated voltages and speeds. These “average values” along with the similar values listed in the N.E.C. should be used as a guide only for selecting suitable components for the motor branch circuit. The rated full load current shown on the motor nameplate may vary considerably from the listed value, depending on the specified motor design.

**Note: RPM shown for 60Hz motors. For 50Hz motors, multiply the 60HZ FLA value by 1.2.**

**Overload Relay Selection Multi-Speed/Part-Winding/Wye-Delta**

Special attention should be given to the selection of the overload relay adjustment range for multi-speed, part-winding and wye-delta controllers, as follows:

**Multi-Speed Controllers:** Each speed requires a separate set of overloads. The adjustment range must be selected on the basis of the full-load current for each particular speed.

**Part-Winding Controllers:** Each winding of the motor must have its own set of overloads. The adjustment range should be selected on the basis of one-half the motor full-load current; that is, the full load current of each winding current.

**Wye-Delta Controllers:** Only one set of overloads is required. Since the overload relay is located electrically “inside the delta connection,” the adjustment range must be selected on the basis of the full-load motor current (delta connection) divided by 1.73.

**Single Phase:** See page 9/120 for ampere ratings of single phase AC induction motors.

# General Information

## Metric to US conversions

### Wire Conversion Table

**Comparison of Cross-sectional Areas to Metric and US Standards**

| Metric Cross-sectional Areas (in line with VDE) | American Wire Gauge | |
|---|---|---|
| Cross-sectional Area mm² | Equivalent Metric C.S.A. mm² | AWG or MCM |
| | 0.635 | 19 AWG |
| 0.75 | 0.823 | 18 |
| | 1.04 | 17 |
| | 1.31 | 16 |
| 1.5 | 1.65 | 15 |
| | 2.08 | 14 |
| 2.5 | 2.62 | 13 |
| | 3.31 | 12 |
| 4 | 4.17 | 11 |
| | 5.26 | 10 |
| 6 | 6.63 | 9 |
| | 8.37 | 8 |
| 10 | 10.55 | 7 |
| | 13.30 | 6 |
| 16 | 16.77 | 5 |
| | 21.15 | 4 |
| 25 | 26.67 | 3 |
| | 33.63 | 2 |
| 35 | 42.41 | 1 |
| 50 | 53.48 | 1/0 |
| | 67.43 | 2/0 |
| 70 | 85.03 | 3/0 |
| 95 | 107.20 | 4/0 |
| 120 | 126.64 | 250 MCM |
| 150 | 152.00 | 300 |
| | 177.35 | 350 |
| 185 | 202.71 | 400 |
| 240 | 253.35 | 500 |
| 300 | 304.00 | 600 |
| | 354.71 | 700 |
| 400 | 405.35 | 800 |
| 500 | 506.71 | 1000 |
| 625 | | |

### Other Conversions

| | | |
|---|---|---|
| **Power Conversions** | | |
| 1 kilowatt (kW) | = | 1.341 horsepower (hp) |
| 1 horsepower (hp) | = | 0.7457 kilowatt (kW) |
| **Dimensions Conversions** | | |
| 1 inch (in.) | = | 25.4 millimeters (mm) |
| 1 inch (in.) | = | 2.54 centimeters (cm) |
| 1 centimeter (cm) | = | 0.3937 inches (in.) |
| 1 meter (m) | = | 39.37 inches (in.) |
| **Weight Conversions** | | |
| 1 ounce (oz.) | = | 28.35 grams (g) |
| 1 pound (lb.) | = | 0.454 kilograms (kg) |
| 1 kilogram (kg) | = | 2.205 pounds (lbs.) |
| **Temperature Conversions** | | |
| 100 Celsius | = | 212 Fahrenheit |
| 80 Celsius | = | 176 Fahrenheit |
| 60 Celsius | = | 140 Fahrenheit |
| 40 Celsius | = | 104 Fahrenheit |
| 20 Celsius | = | 68 Fahrenheit |
| 0 Celsius | = | 32 Fahrenheit |
| **Torque** | | |
| 1 Newton-meter (Nm) | = | 8.85 pound-inches (lb. in.) |

# General Information

## Electrical formulas and grounding requirements

### Electrical Formulas for Finding Amperes, Horsepower, Kilowatts and kVA

| To Find | Single-Phase | Alternating Current Two-Phase[1]), Four-Wire | Three-Phase | Direct Current |
|---|---|---|---|---|
| Kilowatts | $\frac{I \times E \times pf}{1000}$ | $\frac{I \times E \times 2 \times pf}{1000}$ | $\frac{I \times E \times 1.73 \times pf}{1000}$ | $\frac{I \times E}{1000}$ |
| kVA | $\frac{I \times E}{1000}$ | $\frac{I \times E \times 2}{1000}$ | $\frac{I \times E \times 1.73}{1000}$ | — |
| Horsepower (Output) | $\frac{I \times E \times \% EFF \times pf}{746}$ | $\frac{I \times E \times 2 \times \% EFF \times pf}{746}$ | $\frac{I \times E \times 1.73 \times \% EFF \times pf}{746}$ | $\frac{I \times E \times \% EFF}{746}$ |
| Amperes when Horsepower is Known | $\frac{HP \times 746}{E \times \% EFF \times pf}$ | $\frac{HP \times 746}{2 \times E \times \% EFF \times pf}$ | $\frac{HP \times 746}{1.73 \times E \times \% EFF \times pf}$ | $\frac{HP \times 746}{E \times \% EFF}$ |
| Amperes when Kilowatts is Known | $\frac{KW \times 1000}{E \times pf}$ | $\frac{KW \times 1000}{2 \times E \times pf}$ | $\frac{KW \times 1000}{1.73 \times E \times pf}$ | $\frac{KW \times 1000}{E}$ |
| Amperes when kVA is Known | $\frac{kVA \times 1000}{E}$ | $\frac{kVA \times 1000}{2 \times E}$ | $\frac{kVA \times 1000}{1.73 \times E}$ | — |

### Average Efficiency and Power Factor Values of Motors

When the actual efficiencies and power factors of the motors to be controlled are not known, the following approximations may be used.

**Efficiencies[3])**

| Type | Power Factor |
|---|---|
| DC motors, 35 horsepower and less | 80% to 85% |
| DC motors, above 35 horsepower | 85% to 90% |
| Synchronous motors (at 100% power factor) | 92% to 95% |
| "Apparent" Efficiencies (= Efficiency × Power Factor); Three-phase induction motors, 25 horsepower and less | 70% |
| Three-phase induction motors above 25 horsepower | 80% |

### Fault-Current Calculation on Low-Voltage AC Systems

In order to determine the maximum interrupting rate of the circuit breakers in a distribution system, it is necessary to calculate the current which could flow under a three-phase bolted short circuit condition. For a three-phase system the maximum available fault current at the secondary side of the transformer can be obtained by use of the formula:

$$I_{SC} = \frac{kVA \times 100}{KV \times \sqrt{3} \times \% Z}$$

where:

$I_{SC}$ = Symmetrical RMS amperes of fault current.

kVA = Kilovolt-ampere rating of transformers.

KV = Secondary voltage in kilovolts.

% Z = Percent impedance of primary line and transformer.

### Minimum Size Grounding Conductors for Grounding Raceways and Equipment (From NEC Table 250–95)[2])

| Rating or Setting of Automatic Overcurrent Device in Circuit Ahead of Equipment, Conduit etc., Not Exceeding (Amperes) | Size | |
|---|---|---|
| | Copper Wire Number | Aluminum or Copper Clad Aluminum Wire Number |
| 15 | 14 | 12 |
| 20 | 12 | 10 |
| 30 | 10 | 8 |
| 40 | 10 | 8 |
| 60 | 10 | 8 |
| 100 | 8 | 6 |
| 200 | 6 | 4 |
| 300 | 4 | 2 |
| 400 | 3 | 1 |
| 500 | 2 | 1/0 |
| 600 | 1 | 2/0 |
| 800 | 1/0 | 3/0 |
| 1000 | 2/0 | 4/0 |
| 1200 | 3/0 | 250 kcmil |
| 1600 | 4/0 | 350 kcmil |
| 2000 | 250 kcmil | 400 kcmil |
| 2500 | 350 kcmil | 600 kcmil |
| 3000 | 400 kcmil | 600 kcmil |
| 4000 | 500 kcmil | 800 kcmil |
| 5000 | 700 kcmil | 1200 kcmil |
| 6000 | 800 kcmil | 1200 kcmil |

### Grounding Electrode Conductor for AC Systems (From NEC Table 250–94)[2])

| Size of Largest Service Entrance Conductor or Equivalent Area for Parallel Conductors | | Size of Grounding Electrode Conductor | |
|---|---|---|---|
| Copper | Aluminum or Copper Clad Aluminum | Copper | Aluminum or Copper Clad Aluminum |
| 2 or smaller | 1/0 or smaller | 8 | 6 |
| 1 or 1/0 | 2/0 or 3/0 | 6 | 4 |
| 2/0 or 3/0 | 4/0 or 250 kcmil | 4 | 2 |
| Over 3/0 to 350 kcmil | Over 250 kcmil to 500 kcmil | 2 | 1/0 |
| Over 350 kcmil to 600 kcmil | Over 500 kcmil to 900 kcmil | 1/0 | 3/0 |
| Over 600 kcmil to 1100 kcmil | Over 900 kcmil to 1750 kcmil | 2/0 | 4/0 |
| Over 1100 kcmil | Over 1750 kcmil | 3/0 | 250 kcmil |

1)In three-wire, two-phase circuits the current in the common conductor is 1.41 times that in either other conductor.
E = Volts I = Amperes
% EFF = Percent Efficiency pf = Power Factor

2)Additional information and exceptions are stated in Article 250—Grounding, National Electric Code.

3)These figures may be decreased slightly for single-phase and two-phase induction motors.

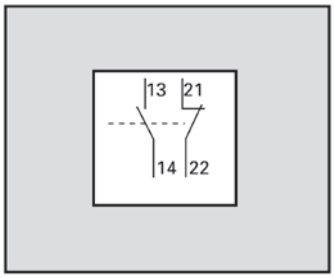
## Symbols and Terminal Markings—IEC

Per DIN standards, the terminals of auxiliary contacts on contactors and control devices are marked with a two digit number. Terminals that belong together are marked with the same location digit (first digit).

The second digits (called the function digits) identify the function of each contact per the following designation.

| Type of Contact | Function Digits |
|---|---|
| Normally Open | 3 and 4 |
| Normally Closed | 1 and 2 |
| Normally Open (Special Function) | 5 and 6 i.e. Time-Delay or Overload |
| Normally Closed (Special Function) | 7 and 8 Contacts |

**Example:**




**1.** The numbers 13 and 14 represent an auxiliary contact

**2.** The number 1 identifies that this is the first contact in the sequence

**3.** The numbers 3 and 4 identify this as a normally open contact

**4.** The numbers 21 and 22 represent another auxiliary contact

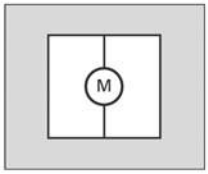
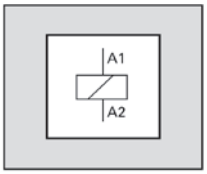
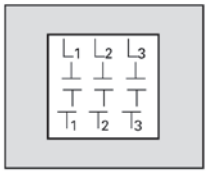
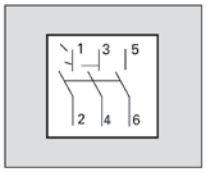
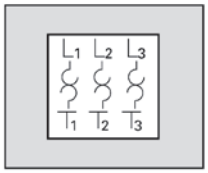
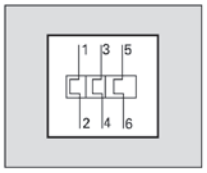
**5.** The number 2 identifies that this is the second contact in the sequence

**6.** The numbers 1 and 2 identify this as a normally closed contact

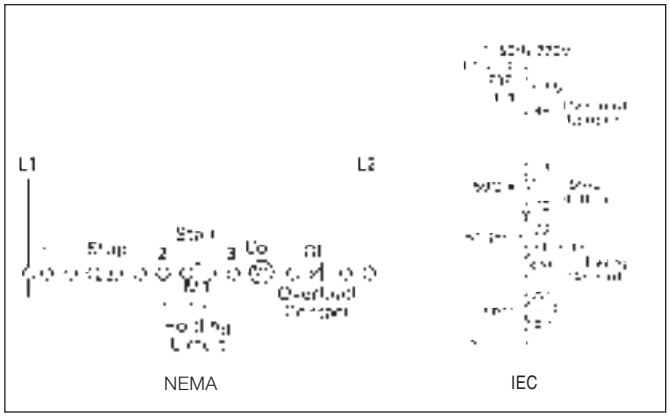
### Symbols and Terminal Markings

| Control Circuits | NEMA | IEC |
|---|---|---|
| Normally Open (NO) | | |
| Normally Closed (NC) | | |
| Time Delay Circuits | | |
| On Delay Normally Open (Timed Closed) | | |
| Normally Closed (Timed Open) | | |
| Off Delay Normally Open (Timed Open) | | |
| Normally Closed (Timed Closed) | | |

### NEMA and IEC Comparisons Contactor/Starter Markings

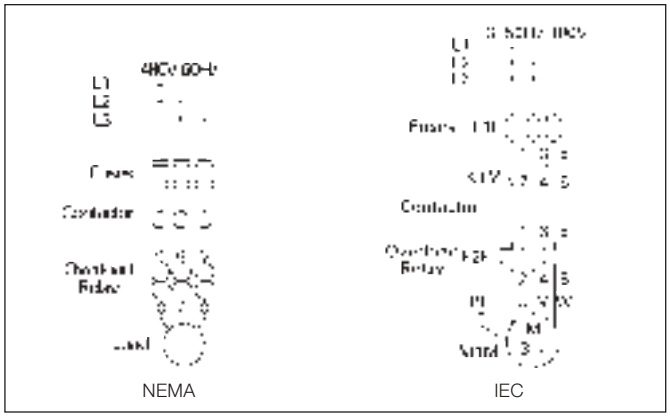
| | NEMA | IEC |
|---|---|---|
| Coils |   | M — Defined by type of coil. No Standard terminal designation.   |
| Power Contacts 3-Pole Device |   | Line Side Connections / Load Side Connections   |
| Overload Relay |   | Line Side Connections / Load Side Connections   |

### Control Circuit Schematic




NEMA IEC

### Power Circuit Schematic

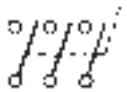


NEMA IEC

# General Information

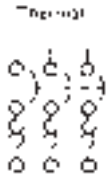
## Electrical symbols

**Disconnect**

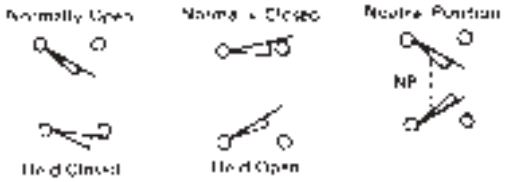


**Circuit Interrupter**

**Circuit Breaker**

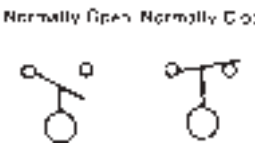


**Limit Switch**—Spring Return

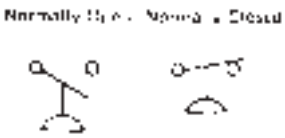



**Maintained**

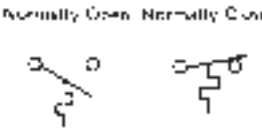
**Liquid Level**



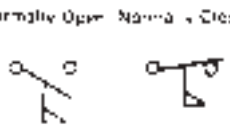
**Vacuum & Pressure**



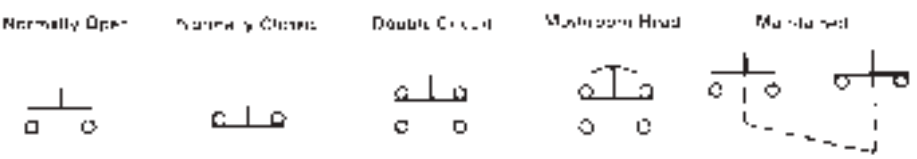
**Temperature Activated**



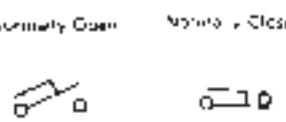
**Flow (Air, Water, etc.)**



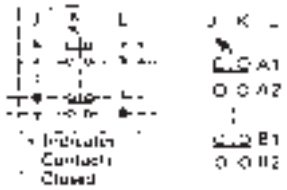
**Push Buttons**



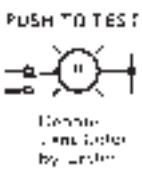
**Foot Switch**



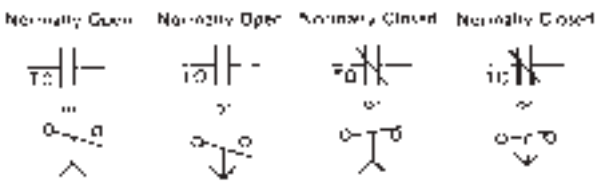
**Selector Switch**



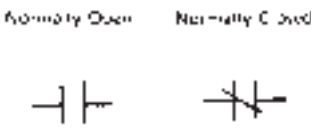
**Lamps**



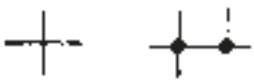

**Time Delay Contact**



**General Contacts**

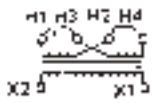


**Conductors**



**Magnet Coil**

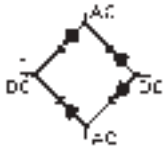
**Control Transformer**




**Meter**

**Ground**

**Full Wave Rectifier**




**Horn, Siren**

**Bell, Buzzer**

**Motor**

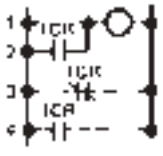
**Overload Relay**

**Fuse**

Auto Transformer

**Resistor**

**Location of Relay Contacts**




ICR (2 - 3 - 4)
Numbers in parentheses designate the location of relay contacts. A line underneath a location number signifies a normally closed contact.

## Control circuit schematics

**Figure 1** Three Wire Control Giving Low Voltage Protection Using Single Two Button Station

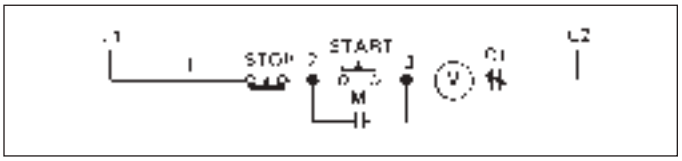



**Figure 2** Three Wire Control Giving Low Voltage Protection Using Multiple Two Button Stations

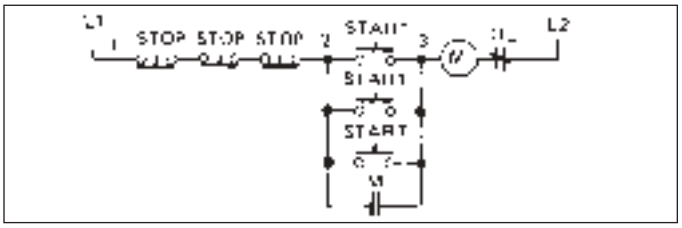



**Figure 3** Three Wire Control Giving Low Voltage Protection with Safe-Run Selector Switch

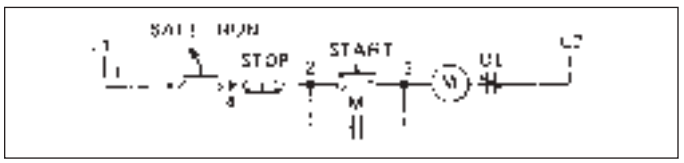



**Figure 4** Three Wire Control for Jog or Run Using Start Stop Push Buttons and Jog-Run Selector Switch

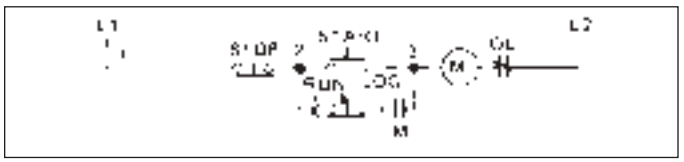



**Figure 5** Control for Jog or Run Using Stop Push Button and Jog-Run Selector Push Selector Switch. Selector Push Contacts are Shown for "Run" (Three Wire Operation). Rotate Switch Sleeve and Selector Contact Opens Between "2" and "Stop" Button (Two Wire Operation)

**Figure 6** Three Wire Control for Jogging, Start, Stop Using Push Buttons

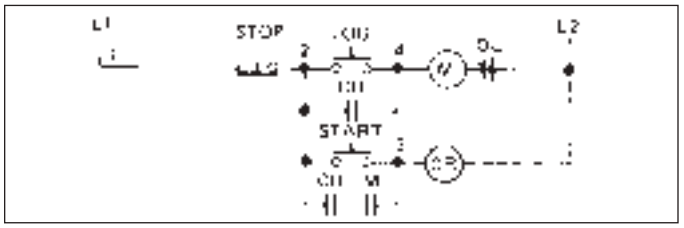



**Figure 7** Two Wire Control Giving Low Voltage Release Only Using Hand-Off-Auto Selector Switch

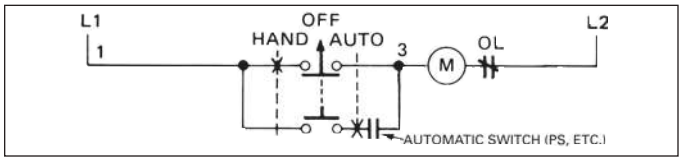



**Figure 8** Two Wire Control for Reversing Jogging Using Single Two Button Station

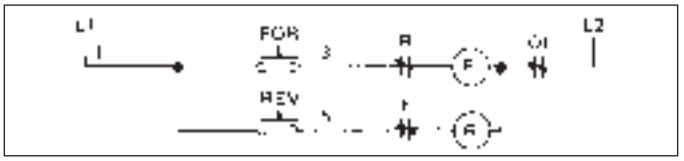



**Figure 9** Three Wire Control for Instant Reversing Applications Using Single Three Button Station

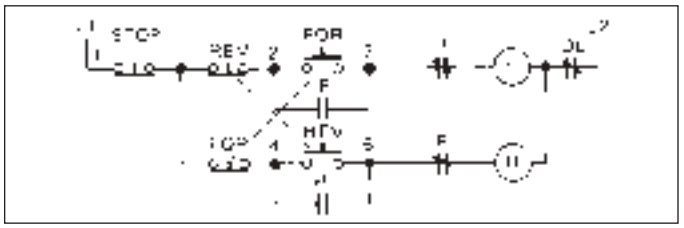



**Figure 10** Three Wire Control for Reversing After Stop Using Single Three Button Station

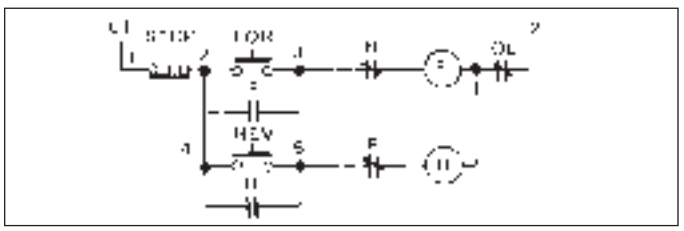



**Figure 11** Control for Three Speed with Selective Circuitry to Insure the Stop Button is Pressed Before Going to a Lower Speed

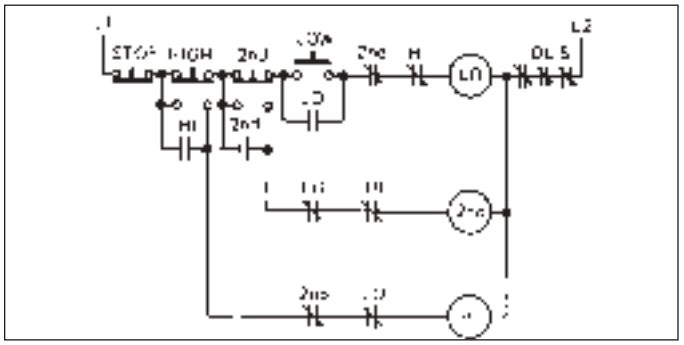
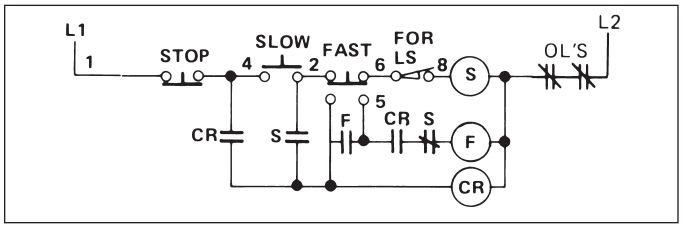



**Figure 12** Three Wire Control for Two Speed with a Compelling Relay to Insure Starting on Slow Speed



# General Information

## Control circuit schematics and wiring diagrams with transformers

**Figure 13** Control for Three Speed with a Compelling Relay to Insure Starting on Low Speed

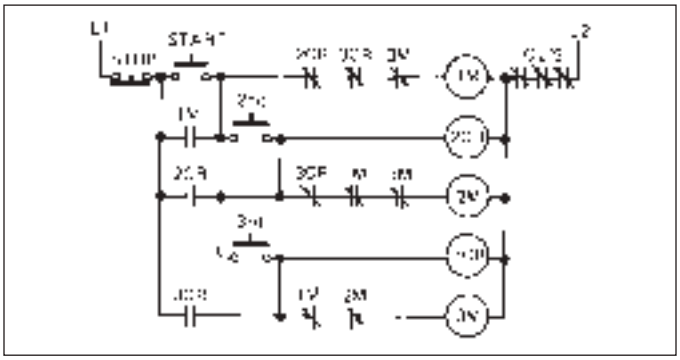


**Figure 14** Control for Two Speed to Provide Automatic Acceleration from Low to High Speed

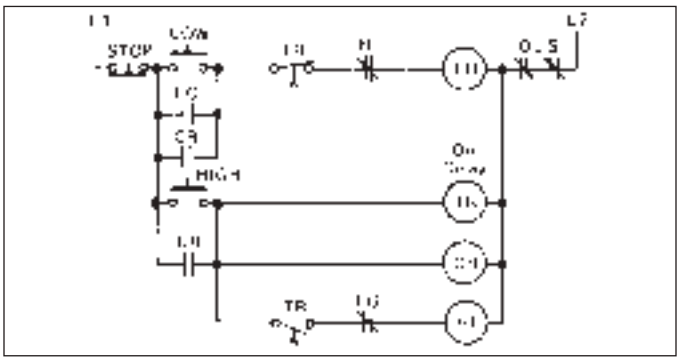


**Figure 15** Control for Two Speed to Provide Automatic Deceleration from High to Low Speed

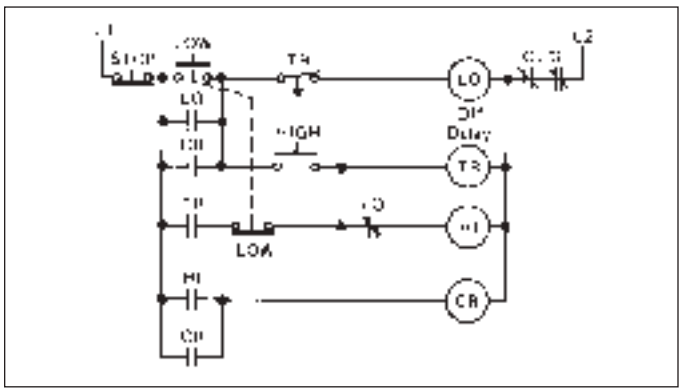
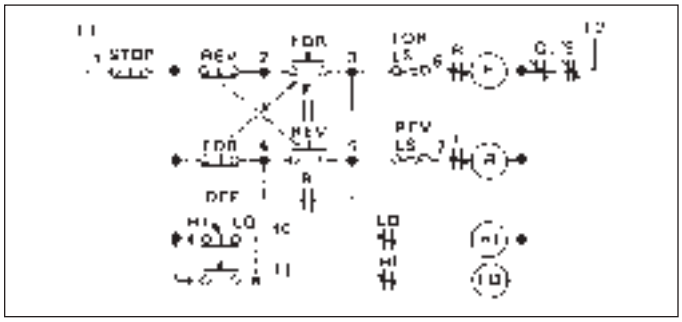
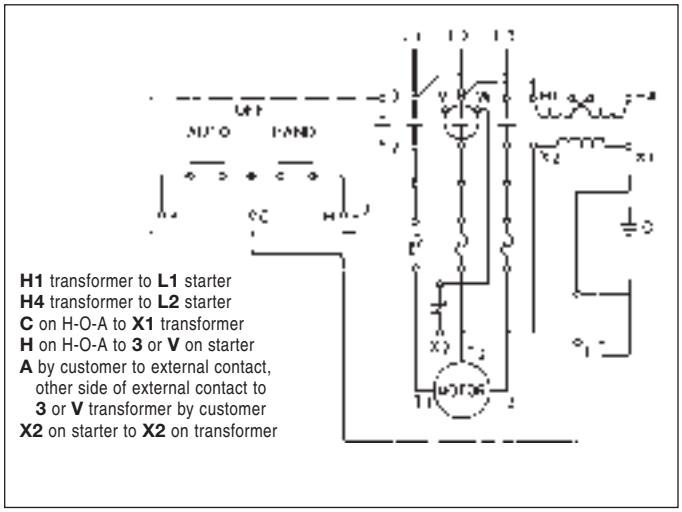


**Figure 16** Control for Two Speed Reversing Starter Using Forward, Reverse, Stop Push Buttons and High-Low-Off Selector Switch

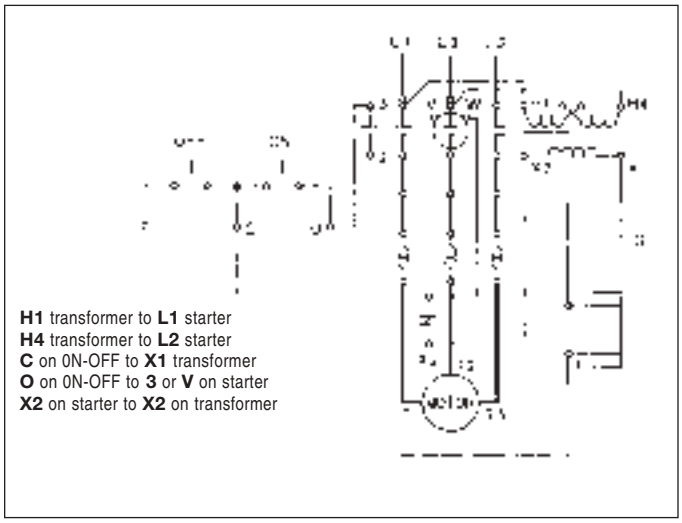


**Size 0–2½ Starter with Transformer and 3 Position Selector Switch**



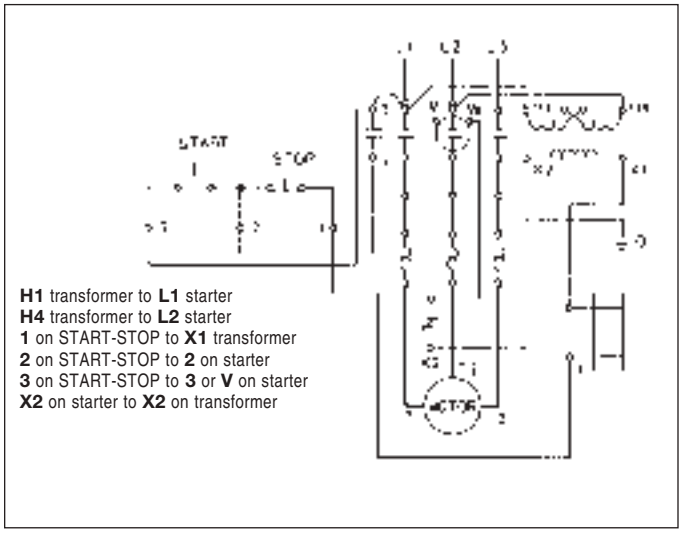
**H1** transformer to **L1** starter
**H4** transformer to **L2** starter
**C** on H-O-A to **X1** transformer
**H** on H-O-A to **3** or **V** on starter
**A** by customer to external contact, other side of external contact to **3** or **V** transformer by customer
**X2** on starter to **X2** on transformer

**Size 0–2½ Starter with Transformer and 2 Position Selector Switch**



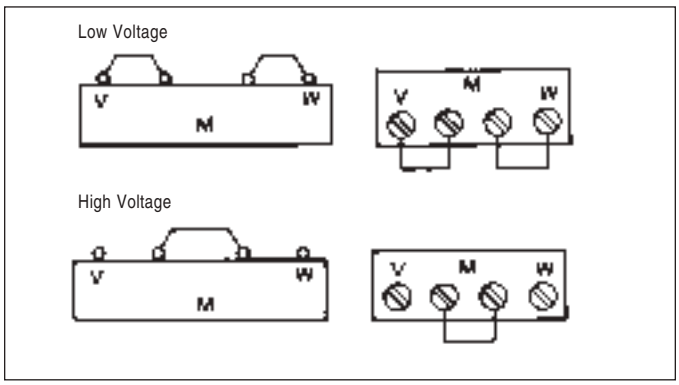
**H1** transformer to **L1** starter
**H4** transformer to **L2** starter
**C** on 0N-OFF to **X1** transformer
**O** on 0N-OFF to **3** or **V** on starter
**X2** on starter to **X2** on transformer

**Size 0–2½ Starter with Transformer and START-STOP Push Button**

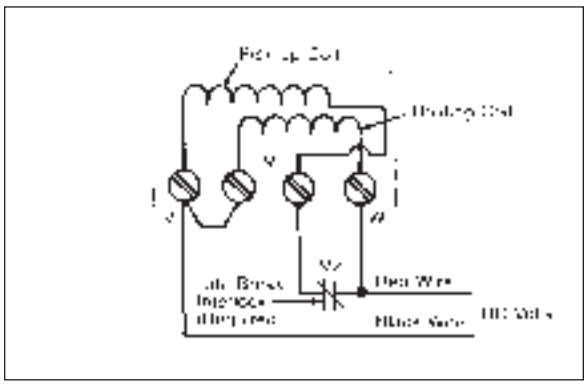


**H1** transformer to **L1** starter
**H4** transformer to **L2** starter
**1** on START-STOP to **X1** transformer
**2** on START-STOP to **2** on starter
**3** on START-STOP to **3** or **V** on starter
**X2** on starter to **X2** on transformer

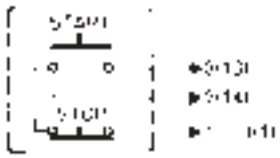
**AC Coil—NEMA Size 0–4**




**DC Coil—NEMA Size 0–4**

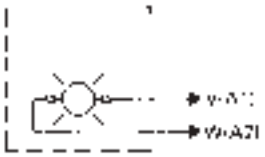


**Non Reversing Pilot Control** Terminal Markings shown in ( ) indicate IEC Style. For separate control voltage source remove Jumper A shown individual in wiring diagrams. Connect separate voltage source to terminal 1 on the pilot device as shown and to the terminal **X2** on the overload relay, or **W(A2)** on the coil if there is no overload.

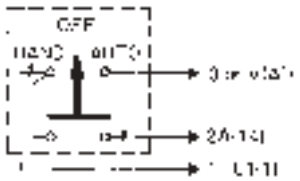


Momentary Contact Push Button Stations

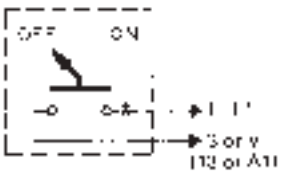
Two or More Momentary Contact Push Button Stations



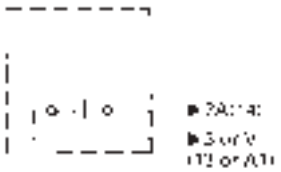
Indicating Light



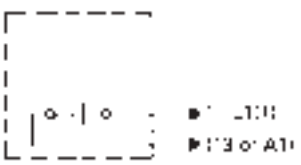

Selector Switch for Hand-Off-Auto Control




Selector Switch for Two Wire Maintained Control

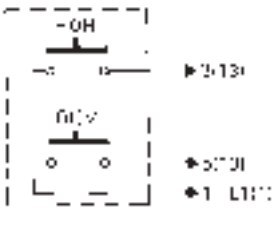


Remote Automatic Switch or Pilot Device for Use with Selector Switch

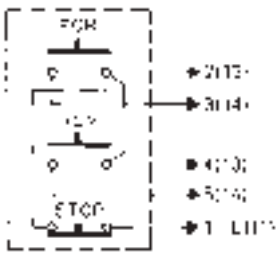


Maintained Contact Pilot Device for Two Wire Control

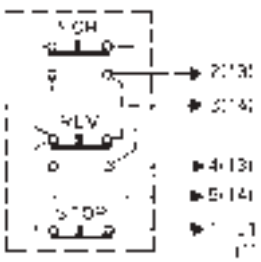
**Reversing Pilot Control** For Separate control voltage source remove Jumper A shown in individual wiring diagrams. Connect separate voltage source to terminal 1 on the pilot device as shown and to the terminal **X2** on the overload relay, or **W(A2)** on the coil if there is no overload.



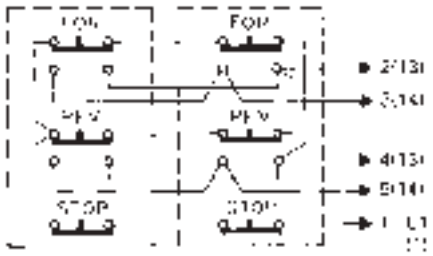
Momentary Contact



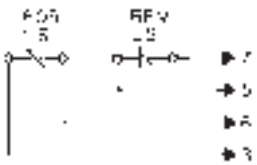

Connections for Single Push Button Stations, Reversing After Stop




Connections for Single Push Button Stations, Instant Reversing




Connections for Multiple Push Button Stations




Connections for Limit Switch
Remove Jumpers between
3 & 6 and 5 & 7 on Starter

# International Control Equipment (ICE)

## Quick reference list

Siemens is a manufacturer of equipment for the global market and manufactures products for global applications. The products listed in Sections 1 through 18 of this catalog are the products best suited for application in the U.S., Canada and Mexico.

There are a host of other Industrial Control products that can be made available for export applications or for replacement in OEM equipment imported in to the U.S. The most common Siemens components are listed in the table below. We refer to these as Industrial Control Equipment components or ICE products.

If you are trying to identify a Siemens ID that is not listed in the Catalog Number Index on pages 0/12 to 0/15 of this catalog or in the table below, please contact our Call Center at 800-241-4453 or 423-262-5700. The Siemens Call Center maintains an extensive data base on all Siemens Operating Companies, and they can direct you for the appropriate support.

| Catalog Number Prefix | Description |
|---|---|
| **2CC** | Low-Pressure Axial Ventilator Fan |
| **2CF7** | Medium-Pressure Radial-flow Fan |
| **2CQ** | Medium-Pressure Axial Ventilator Fan |
| **2CT** | Low-Pressure Axial Ventilator Fan |
| **3KA** | Disconnect Switch |
| **3KE** | Disconnect Switch |
| **3KL** | Load Disconnect Switch w/Fuses |
| **3KM** | Load Disconnect Switch w/Fuses |
| **3KX** | 3KE4 Accessories |
| **3KY** | 3KL Accessories |
| **3NA** | LV HRC Fuses |
| **3NC** | SITOR Semiconductor fuse-links to 1000 V [1] |
| **3ND1** | LV HRC Fuses |
| **3ND2** | LV HRC Fuses |
| **3NE** | SITOR Semiconductor fuse-links to 2500 V [1] |
| **3NG1** | LV HRC Fuses |
| **3NH** | Fuse Bases |
| **3NJ** | Fused Disconnect Switch |
| **3NP** | Fused Disconnect Switch |
| **3NW1** | Fuse Material to BS and NF Standards [1] |
| **3NW6** | Cylindrical Fuses |
| **3NW8** | Fuse Material to BS and NF Standards |
| **3NX** | Accessories and spare parts for NH-fuses |
| **3NY** | 3NP Accessories |
| **3TK** | Specialty Contactor |
| **3UL22** | Summation Current Transformers |
| **3VU2** | Phase Out Announced |
| **3VX** | Circuit Breaker Accessories and Components |
| **3WX** | 3W Accessories |
| **3WY1** | 3WF Accessories |
| **3WY2** | 3WE Accessories |
| **3WY3** | 3WN Accessories |
| **4AC** | Bell transformers, power supply units |
| **4AJ** | Standard Transformers |
| **4AM** | Control Transformer |
| **4AN** | Single-phase transformers YUI 1 (UI) |
| **4AP** | Transformer for rectifier operation |
| **4AT** | Safety Isolation Transformer, 1 phase |
| **4AU** | Safety Isolation Transformer, 3 phase |
| **4AV** | Special Transformers and DC power supplies |
| **4AW** | Ring core transformers |
| **4AX** | Non-Siemens transformers |
| **4AY** | Transformer housings, accessories and spare parts |
| **4BT** | Transformer > 16 kVA, 1 Phase |
| **4BU** | Transformer > 16 kVA, 3 Phase |
| **4BV** | Special Transformers |
| **4BX** | Transformer, 3-phase |
| **4CH** | Variac 1 Phase |
| **4CJ** | Variac 3 Phase |
| **4CP** | Pillar-type, Variac, 1ph |
| **4CQ** | Pillar-type, Variac, 3ph |
| **4EA** | Reactance Coils with Iron-Core Reactors |
| **4EF** | Reactance Coils with Iron-Core Reactors |
| **4EJ** | Reactance Coils with Iron-Core Reactors |
| **4EM** | Single-phase reactance coils YEI 1 (EI) |
| **4EN9** | Choke |
| **4EP** | Line Reactor |
| **4ET** | Single-phase reactance coils YUI 1 (UI) |
| **4EU** | Three-phase reactance coils YUI 2 (3UI) |
| **4EV** | RFI Suppression Choke |
| **4FB** | Power supplies |
| **4FK** | Magnetic Voltage Regulator 1 phase |
| **4FL** | Transformer Voltage Regulator |
| **4NC** | Window-type Current Transformer |
| **4PK** | Reactance coils with layer winding of copper flat wire |
| **5SA** | DIAZED Fuse Links (E16) Miniature Fuses [1] |
| **5SB** | DIAZED Fuse Links, Size II and III [1] |
| **5SC** | DIAZED Fuse Links, Size IV and V [1] |
| **5SD** | DIAZED Fuses |
| **5SE** | Fuses [1] |
| **5SF** | DIAZED Fuse Base |
| **5SG** | NEOZED & MINIZED Fuse Disconnectors |
| **5SH** | DIAZED Fuse Accessories |
| **5SM** | Residual Current Protective Devices [1] |
| **5SQ** | Miniature Circuit Breaker |
| **5SU** | Ground Fault and Line-Prot. Circuit Breaker |
| **5SV8** | SFJ Fault and Line-Prot. Circuit Breaker |
| **5SW** | Wall Enclosure |
| **5SZ** | Ground Fault Circuit Breakers |
| **5TE** | Toggle Switch |
| **5TG** | Signal Light |
| **5TT** | Switch Relay |
| **7KM** | Meters |
| **7KT** | Time meters, impulsing meters and accessories |
| **7LF** | Digital time switches and accessories |
| **7LQ** | Quarz-controlled time switches |
| **7PV** | Timers |
| **7ZX** | Instruction Manual [1] |
| **8JH** | Distribution Enclosure Accessories |
| **8UB** | Handle Accessories |
| **8WC** | Distribution System Accessories |
| **8ZX** | Instruction Sheets [1] |
| **LZX** | Plug-in Relays [1] |

1) Standard Control Product - Not Considered ICE Product.

## Spring Loaded Terminals

As an alternative to screw-type terminals, many products may be supplied with spring loaded terminals. With this screwless connection technique, the wires are clamped securely against shock and vibration by a spring clamp. Solid, stranded and finely-stranded wires can be connected with or without end sleeves.

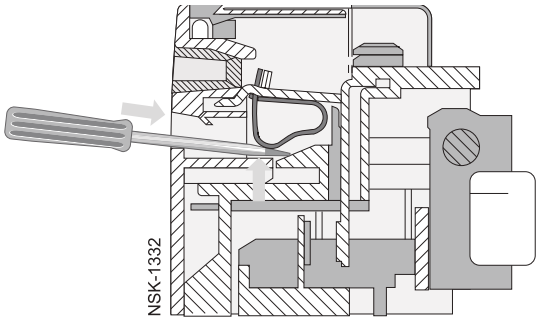
Each terminal connection is equipped with two independently operated spring clamps. Each spring can accept one wire. The clamping force of the spring automatically adjusts to the size of the wire and compensates for any deformation of the wire, such as settling of the strands. The flat clamping face of the spring presses the wire against the current bar without damaging the wire. To prevent stranded or finely-stranded wire from being divided, the end can be tinned or amalgamated using ultrasound.

The terminal is opened by inserting the screwdriver. The wire is then inserted and will remain clamped after the screwdriver is removed (see below). The chromium-nickel steel of the spring clamp provides corrosion-resistant contact of the wire-end in the clamp.

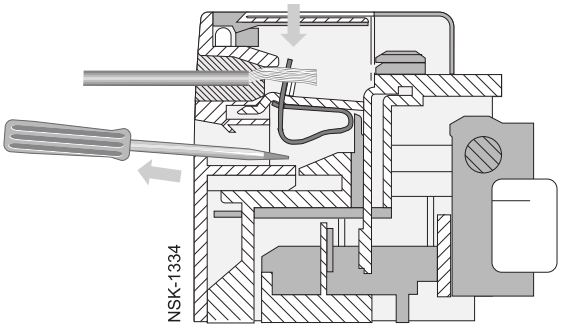
Advantages:

- Quick: The connection is made easily without the need to add on wire end sleeves or torque down terminal screws—reducing wiring time
- Reliable: The terminal is gas-tight and resistant to shock and vibration—for maximum contact reliability
- Maintenance-free: With the spring loaded terminals, there is no need to inspect the connections following transport—eliminating time-consuming and costly inspection

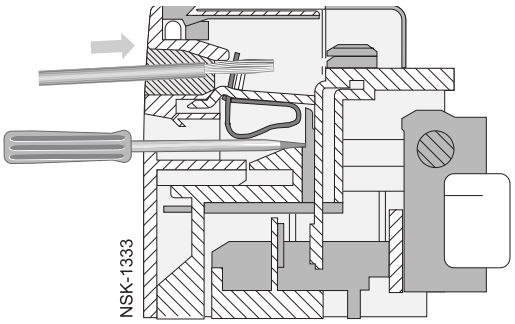
Step 1:
Insert screwdriver;
spring opens.




Step 2:
The screwdriver holds the spring open;
insert the wire.




Step 3:
Remove the screwdriver; the spring
closes and the wire is securely clamped.



# Siemens Industry, Inc. (Seller)

## Standard terms and conditions of sale

**1. APPLICABLE TERMS.** These terms govern the sale of Products by Siemens. Whether these terms are included in an offer or an acceptance by Siemens, such offer or acceptance is conditioned on Buyer's assent to these terms. Any additional, different or conflicting terms contained in Buyer's request for proposal, specifications, purchase order or any other written or oral communication from Buyer shall not be binding in any way on Siemens. Siemens failure to object to any such additional, different or conflicting terms shall not operate as a waiver of these terms.

**2. PRICING & PAYMENT.** The prices shall be: (a.) as stated in Siemens' proposal, or if none are stated, (b.) Siemens' standard prices in effect at the time of release for shipment. In the event of a price increase or decrease, the price of Products on order shall be adjusted to reflect such increase or decrease. This does not apply to a shipment held by request of Buyer. Products already shipped are not subject to price increase or decrease.

Discounts, if any, are as specified on the latest discount sheets issued from time to time. Cash discounts are not applicable to notes or trade acceptances, to prepaid transportation charges when added to Siemens' invoices or to discountable items if there are undisputed past due items on the account. Cash discounts shall only be allowed on that portion of the invoice paid within the normal discount period.

(a) Payment - Unless otherwise stated, all payments shall be net 30 days from invoice date payable in United States Dollars.

(b) Credit Approval - All orders are subject to credit approval by Siemens. The amount of credit or terms of payment may be changed or credit withdrawn by Siemens at any time for any reason without advance notice. Siemens may, in its discretion, withhold further manufacture or shipment; require immediate cash payments for past and future shipments; or require other security satisfactory to Siemens before further manufacture or shipment is made; and may, if shipment has been made, recover the Products from the carrier, pending receipt of such assurances.

(c) Installment Shipment - If these terms require or authorize delivery of Products in separate shipments to be separately accepted by Buyer, Buyer may only refuse such portion of such shipment that fails to comply with the requirements of these terms. Buyer may not refuse to receive any lot or portion of hereunder for failure of any other lot or portion of a lot to be delivered or to comply with these terms, unless such right of refusal is expressly provided for on the face hereof. Buyer shall pay for each lot in accordance with the terms hereof. Payment shall be made for the Products without regard to whether Buyer has made or may make any inspection of the Products. Products held for Buyer are at Buyer's sole risk and expense.

(d) Taxes, Shipping, Packing, Handling - Except to the extent expressly stated in these terms, Siemens' prices do not include any freight, storage, insurance, taxes, excises, fees, duties or other government charges related to the Product, and Buyer shall pay such amounts or reimburse Siemens for any amounts Siemens pays. If Buyer claims a tax or other exemption or direct payment permit, it shall provide Siemens with a valid exemption certificate or permit and indemnify, defend and hold Siemens harmless from any taxes, costs and penalties arising out of same. Siemens' prices include the costs of its standard domestic packing only. Any deviation from this standard packing (domestic or export), including U.S. Government sealed packing, shall result in extra charges. To determine such extra charges, consult Siemens' sales offices. Any and all increases, changes, adjustments or surcharges (including, without limitation, fuel surcharges) which may be in connection with the freight charges, rates or classification included as part of these terms, shall be for the Buyer's account. Orders of less than $400 are subject to a $25 handling fee.

(e) Finance Charge - Buyer agrees to pay FINANCE CHARGES on the unpaid balance of all overdue invoices, less any applicable payments and credits, from the date each invoice is due and payable at an ANNUAL PERCENTAGE RATE of EIGHTEEN PERCENT (18%), or the highest applicable and lawful rate on such unpaid balance, whichever is lower.

(f) Disputed Invoice - In the event Buyer disputes any portion or all of an invoice, it shall notify Siemens in writing of the amount in dispute and the reason for its disagreement within 21 days of receipt of the invoice. The undisputed portion shall be paid when due, and FINANCE CHARGE on any unpaid portion shall accrue, from the date due until the date of payment, to the extent that such amounts are finally determined to be payable to Siemens.

(g) Collection – Upon Buyer's default of these terms, Siemens may, in addition to any other rights or remedies at contract or law, subject to any cure right of Buyer, declare the entire balance of Buyer's account immediately due and payable or foreclose any security interest in Products delivered. If any unpaid balance is referred for collection, Buyer agrees to pay Siemens, to the extent permitted by law, reasonable attorney fees in addition to all damages otherwise available, whether or not litigation is commenced or prosecuted to final judgment, plus any court costs or expenses incurred by Siemens, and any FINANCE CHARGES accrued on any unpaid balance owed by Buyer.

**3. DELIVERY; TITLE; RISK OF LOSS.** Product shall be delivered F.O.B. Siemens point of shipment with title to the Product and risk of loss or damage for the Product passing to Buyer at that point. Buyer shall be responsible for all transportation, insurance and related expenses including any associated taxes, duties or documentation. Siemens may make partial shipments. Shipping dates are approximate only and Siemens shall not be liable for any loss or expense (consequential or otherwise) incurred by Buyer or Buyer's customers if Siemens fails to meet the specified delivery schedule. A 5% handling charge will be added to the price for all Product furnished from a local branch.

**4. DEFERMENT AND CANCELLATION.** Buyer shall have no deferment rights and Buyer shall be liable for cancellation charges, which shall include without limitation a) payment of the full product price for any finished Product or works in progress; b) payment for raw materials ordered pursuant to a firm purchase order; and c) such other direct costs incurred by Siemens as a result of such cancellation.

**5. FORCE MAJEURE / DELAYS.** If Siemens suffers delay in performance due to any cause beyond its reasonable control, including without limitation acts of God, strikes, labor shortage or disturbance, fire, accident, war or civil disturbance, delays of carriers, failure of normal sources of supply, or acts of government, the time of performance shall be extended a period of time equal to the period of the delay and its consequences. Siemens will give to Buyer notice within a reasonable time after Siemens becomes aware of any such delay

**6. BUYER'S REQUIREMENTS.** Timely performance by Siemens is contingent upon Buyer's supplying to Siemens all required technical information and data, including drawing approvals, and all required commercial documentation.

**7. LIMITED WARRANTY.** (a.) Limited Product Warranty Statements. For each Product purchased from Siemens or an authorized reseller, Siemens makes the following limited warranties: (i) the Product is free from defects in material and workmanship, (ii) the Product materially conforms to Siemens' specifications that are attached to, or expressly incorporated by reference into, these terms, and (iii) at the time of delivery, Siemens has title to the Product free and clear of liens and encumbrances (collectively, the "Limited Warranties"). Warranties with respect to software which may be furnished by Seller as part of the Product, if any, are expressly set forth elsewhere in these terms. The Limited Warranties set forth herein do not apply to any software furnished by Siemens. If software is furnished by Siemens, then the attached Software License/Warranty Addendum shall apply.

(b.) Conditions to the Limited Warranties. The Limited Warranties are conditioned on (i) Buyer storing, installing, operating and maintaining the Product in accordance with Siemens' instructions, (ii) no repairs, modifications or alterations being made to the Product other than by Siemens or its authorized representatives, (iii) using the Product within any conditions or in compliance with any parameters set forth in specifications that are attached to, or expressly incorporated by reference into, these terms, (iv) Buyer discontinuing use of the Product after it has, or should have had, knowledge of any defect in the Product, (v) Buyer providing prompt written notice of any warranty claims within the warranty period described below, (vi) at Siemens' discretion, Buyer either removing and shipping the Product or non-conforming part thereof to Siemens, at Buyer's expense, or Buyer granting Siemens access to the Products at all reasonable times and locations to assess the warranty claims, and (vii) Buyer not being in default of any payment obligation to Siemens under these terms.

(c.) Exclusions from Limited Warranty Coverage. The Limited Warranties specifically exclude any equipment comprising part of the Product that is not manufactured by Siemens or not bearing its nameplate. To the extent permitted, Siemens herby assigns any warranties made to Siemens for such equipment. Siemens shall have no liability to Buyer under any legal theory for such equipment or any related assignment of warranties. Additionally, any Product that is described as being experimental, developmental, prototype, or pilot is specifically excluded from the Limited Warranties and is provided to Buyer "as is" with no warranties of any kind. Also excluded from the Limited Warranties are normal wear and tear items including any expendable items that comprise part of the Product, such as fuses and light bulbs and lamps.

# Siemens Industry, Inc. (Seller)

## Standard terms and conditions of sale

(d.) Limited Warranty Period. Buyer shall have 12 months from initial operation of the Product or 18 months from shipment, whichever occurs first, to provide Siemens with prompt, written notice of any claims of breach of the Limited Warranties. Continued use or possession of the Product after expiration of the warranty period shall be conclusive evidence that the Limited Warranties have been fulfilled to the full satisfaction of Buyer, unless Buyer has previously provided Siemens with notice of a breach of the Limited Warranties.

(e.) Remedies for Breach of Limited Warranty. Buyer's sole and exclusive remedies for any breach of the Limited Warranties are limited to Siemens' choice of repair or replacement of the Product, or non-conforming parts thereof, or refund of all or part of the purchase price. The warranty on repaired or replaced parts of the Product shall be limited to the remainder of the original warranty period. Unless otherwise agreed to in writing by Siemens, (i) Buyer shall be responsible for any labor required to gain access to the Product so that Siemens can assess the available remedies and (ii) Buyer shall be responsible for all costs of installation of repaired or replaced Products. All exchanged Products replaced under this Limited Warranty will become the property of Siemens.

(f.) Transferability. The Limited Warranties shall be transferable during the warranty period to the initial end-user of the Product.

THE LIMITED WARRANTIES SET FORTH IN THIS SECTION ARE SIEMENS' SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO THE LIMITS OF LIABILITY SET FORTH IN SECTION 8 BELOW. SIEMENS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING AND USAGE OF TRADE.

**8. LIMITATION OF LIABILITY.** NEITHER SIEMENS, NOR ITS SUPPLIERS, SHALL BE LIABLE, WHETHER IN CONTRACT, WARRANTY, FAILURE OF A REMEDY TO ACHIEVE ITS INTENDED OR ESSENTIAL PURPOSES, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR ANY OTHER LEGAL THEORY, FOR LOSS OF USE, REVENUE, SAVINGS OR PROFIT, OR FOR COSTS OF CAPITAL OR OF SUBSTITUTE USE OR PERFORMANCE, OR FOR INDIRECT, SPECIAL, LIQUIDATED, PUNITIVE, EXEMPLARY, COLLATERAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE, OR FOR CLAIMS BY BUYER FOR DAMAGES OF BUYER'S CUSTOMERS. SIEMENS' MAXIMUM LIABILITY UNDER THIS CONTRACT SHALL BE THE ACTUAL PURCHASE PRICE RECEIVED BY SIEMENS FOR THE PRODUCT AT ISSUE OR ONE MILLION DOLLARS, WHICHEVER IS LESS. BUYER AGREES THAT THE EXCLUSIONS AND LIMITATIONS SET FORTH IN THIS ARTICLE ARE SEPARATE AND INDEPENDENT FROM ANY REMEDIES WHICH BUYER MAY HAVE HEREUNDER AND SHALL BE GIVEN FULL FORCE AND EFFECT WHETHER OR NOT ANY OR ALL SUCH REMEDIES SHALL BE DEEMED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE. THESE LIMITATIONS OF LIABILITY ARE EFFECTIVE EVEN IF SIEMENS HAS BEEN ADVISED BY THE BUYER OF THE POSSIBILITY OF SUCH DAMAGES.

**9. PATENT AND COPYRIGHT INFRINGEMENT.** Siemens will, at its own expense, defend or at its option settle any suit or proceeding brought against Buyer in so far as it is based on an allegation that any Product (including parts thereof), or use thereof for its intended purpose, constitutes an infringement of any United States patent or copyright, if Siemens is promptly provided notice and given authority, information, and assistance in a timely manner for the defense of said suit or proceeding. Siemens will pay the damages and costs awarded in any suit or proceeding so defended. Siemens will not be responsible for any settlement of such suit or proceeding made without its prior written consent. In case the Product, or any part thereof, as a result of any suit or proceeding so defended is held to constitute infringement or its use by Buyer is enjoined, Siemens will, at its option and its own expense, either: (a) procure for Buyer the right to continue using said Product; (b) replace it with substantially equivalent non-infringing Product; or (c) modify the Product so it becomes non-infringing.

Siemens will have no duty or obligation to Buyer under this Article to the extent that the Product is (a) supplied according to Buyer's design or instructions wherein compliance therewith has caused Siemens to deviate from its normal course of performance, (b) modified by Buyer or its contractors after delivery, (c) combined by Buyer or its contractors with devices, methods, systems or processes not furnished hereunder and by reason of said design, instruction, modification, or combination a suit is brought against Buyer. In addition, if by reason of such design, instruction, modification or combination, a suit or proceeding is brought against Siemens, Buyer shall protect Siemens in the same manner and to the same extent that Siemens has agreed to protect Buyer under the provisions of the Section above.

THIS ARTICLE IS AN EXCLUSIVE STATEMENT OF ALL THE DUTIES OF THE PARTIES RELATING TO PATENTS AND COPYRIGHTS, AND DIRECT OR CONTRIBUTORY PATENT OR COPYRIGHT AND OF ALL THE REMEDIES OF BUYER RELATING TO ANY CLAIMS, SUITS, OR PROCEEDINGS INVOLVING PATENTS AND COPYRIGHTS.

**10. COMPLIANCE WITH LAWS.** Buyer agrees to comply with all applicable laws and regulations relating to the purchase, resale, exportation, transfer, assignment, disposal or use of the goods.

**11. CHANGES IN WORK.** Siemens shall not implement any changes in the scope of work unless Buyer and Siemens agree in writing to the details of the change and any resulting price, schedule or other contractual modifications. Any change to any law, rule, regulation, order, code, standard or requirement which requires any change hereunder shall entitle Siemens to an equitable adjustment in the prices and any time of performance.

**12. NON-WAIVER OF DEFAULT.** Each shipment made hereunder shall be considered a separate transaction. In the event of any default by Buyer, Siemens may decline to make further shipments. If Siemens elects to continue to make shipments, Siemens' actions shall not constitute a waiver of any default by Buyer or in any way affect Siemens' legal remedies for any such default. Any waiver of Siemens to require strict compliance with the provisions of this contract shall be in writing and any failure of Siemens to require such strict compliance shall not be deemed a waiver of Siemens' right to insist upon strict compliance thereafter.

**13. FINAL WRITTEN AGREEMENT; MODIFICATION OF TERMS.** These terms, together with any quotation, purchase order or acknowledgement issued or signed by Siemens, comprise the complete and exclusive agreement between the parties (the "Agreement") and supersede any terms contained in Buyer's documents, unless separately signed by Siemens. These terms may only be modified by a written instrument signed by authorized representatives of both parties.

**14. ASSIGNMENT.** Neither party may assign the Agreement, in whole or in part, nor any rights or obligations hereunder without the prior written consent of the other; provided however that Siemens may assign its rights and obligations under these terms to its affiliates and Siemens may grant a security interest in the Agreement and/or assign proceeds of the Agreement without Buyer's consent.

**15. APPLICABLE LAW AND JURISDICTION.** These terms are governed and construed in accordance with the laws of the State of Delaware, without regard to its conflict of laws principles. The application of the United Nations Convention on Contracts for the International Sale of Goods is excluded. BUYER WAIVES ALL RIGHTS TO A JURY TRIAL IN ANY ACTION OR PROCEEDING RELATED IN ANY WAY TO THESE TERMS.

**16. SEVERABILITY.** If any provision of these terms is held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions will not in any way be affected or impaired, and such provision will be deemed to be restated to reflect the original intentions of the parties as nearly as possible in accordance with applicable law.

**17. EXPORT COMPLIANCE.** Buyer acknowledges that Siemens is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal, and usage of the Products provided under the Contract, including any export license requirements. Buyer agrees that such Products shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Siemens of its obligations hereunder that compliance with such export laws and regulations be maintained at all times. BUYER AGREES TO INDEMNIFY AND HOLD SIEMENS HARMLESS FROM ANY AND ALL COSTS, LIABILITIES, PENALTIES, SANCTIONS AND FINES RELATED TO NON-COMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.

## Notes

**Industrial Controls**
**Product Catalog**

Published by
Siemens Industry, Inc.
Smart Infrastructure
3617 Parkway Lane
Peachtree Corners, GA 30092

For more information, please contact
our Customer Support Center.
Phone: 1-800-241-4453
E-mail: **info.us@siemens.com**

Subject to change without prior notice
Order No.: CPPC-06000-0724

All rights reserved
Printed in USA
©2024 Siemens Industry, Inc.

**www.usa.siemens.com/controls**

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.

(Catalog PDF was last modified on 06/16/25)