

Load feeders and motor starters for use in the control cabinet

SIRIUS 3RM1 motor starters

Overview



3RM13 motor starter with reversing functionality, electronic overload protection and safety-related shutdown

More information

3RM1 motor starters:

- Homepage, see www.siemens.com/sirius-motor-starter-3RM1
- Industry Mall, see www.siemens.com/product?3RM1

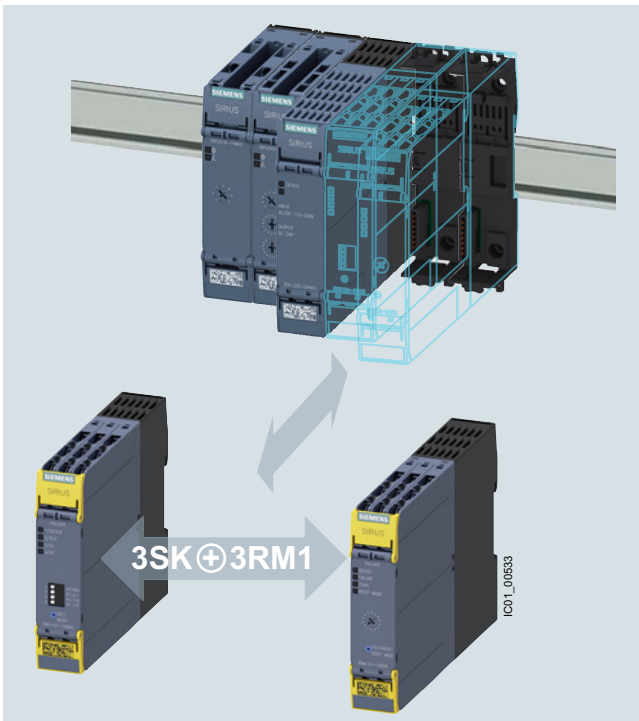
3SK safety relays for protecting the 3RM1 motor starters:

- Homepage, see www.siemens.com/sirius-safety-relays
- Industry Mall, see www.siemens.com/product?3SK

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 kW (at 400 V) and resistive loads up to 10 A at AC voltages up to 500 V.

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 11/13.

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SIRIUS 3RM1 motor starters

Article No. scheme

Product versions		Article number		
Product function	Direct-on-line starters	3RM10	0 <input type="checkbox"/> – <input type="checkbox"/> AA <input type="checkbox"/> 4	with ATEX certification and safety-related shutdown
	Failsafe direct-on-line starters	3RM11	0 <input type="checkbox"/> – <input type="checkbox"/> AA <input type="checkbox"/> 4	
	Reversing starters	3RM12	0 <input type="checkbox"/> – <input type="checkbox"/> AA <input type="checkbox"/> 4	
	Failsafe reversing starters	3RM13	0 <input type="checkbox"/> – <input type="checkbox"/> AA <input type="checkbox"/> 4	
Wide setting range for electronic overload release	0.1 ... 0.5 A	1		For motor standard output 0 ... 0.12 kW ²⁾
	0.4 ... 2.0 A	2		For motor standard output 0.09 ... 0.75 kW ²⁾
	1.6 ... 7.0 A (10 A) ¹⁾	7		For motor standard output 0.55 ... 3 kW ²⁾
Connection method	Screw terminals	1		Spring-loaded terminals (push-in)
	Spring-loaded terminals (push-in)	2		
	Mixed connection method	3		
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⁾ Operation of resistive loads with up to 10 A.

²⁾ Standard three-phase motor, basis 4-pole at 400 V AC; the actual starting and rated data of the motor to be protected must be considered when selecting the units.

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

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 11/13](#))
- 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 1/8](#).

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

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SIRIUS 3RM1 motor starters

Technical specifications

More information

Industry Mall, see www.siemens.com/product?3RM1

Equipment Manual, see

<https://support.industry.siemens.com/cs/ww/en/view/66295730>FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16311/faq>

Type

**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
- During storage
- During transport

°C

-25 ... +60

°C

-40 ... +70

°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 IP on the front

according to IEC 60529

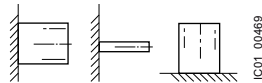
IP20

Touch protection on the front

according to IEC 60529

Finger-safe for vertical touching from the front

Mounting position



Vertical, horizontal, standing (consider derating)

Type

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 [%]

%

20

Adjustable current response value of the inverse-time delayed overload release

A

0.1 ... 0.5

0.4 ... 2

1.6 ... 7

Type

3RM1.0.-.AA04**3RM1.0.-.AA14**

Control circuit

Type of voltage of the control supply voltage

DC

AC/DC

Control supply voltage

- At DC
- At AC at 50 Hz

V

24

110

V

--

110 ... 230

Frequency of the control supply voltage





Hz

--

50/60

Load feeders and motor starters for use in the control cabinet

SIRIUS 3RM1 motor starters

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	mm ²	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		1 x (0.5 ... 4)
• Finely stranded	mm ²	1 x (0.5 ... 4), 2 x (0.5 ... 1.5)		1 x (0.5 ... 2.5)
- With end sleeve	mm ²	--		1 x (0.5 ... 4)
- Without end sleeve	mm ²	--		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	mm ²	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	mm ²	1 x (0.5 ... 2.5), 2 x (0.5 ... 1)		1 x (0.5 ... 1.0), 2 x (0.5 ... 1.0)
- With end sleeve	mm ²	--		1 x (0.5 ... 1.5), 2 x (0.5 ... 1.5)
- Without end sleeve	mm ²	--		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)		1 x (20 ... 16), 2 x (20 ... 16)

Accessories

More information

Equipment Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/66295730>

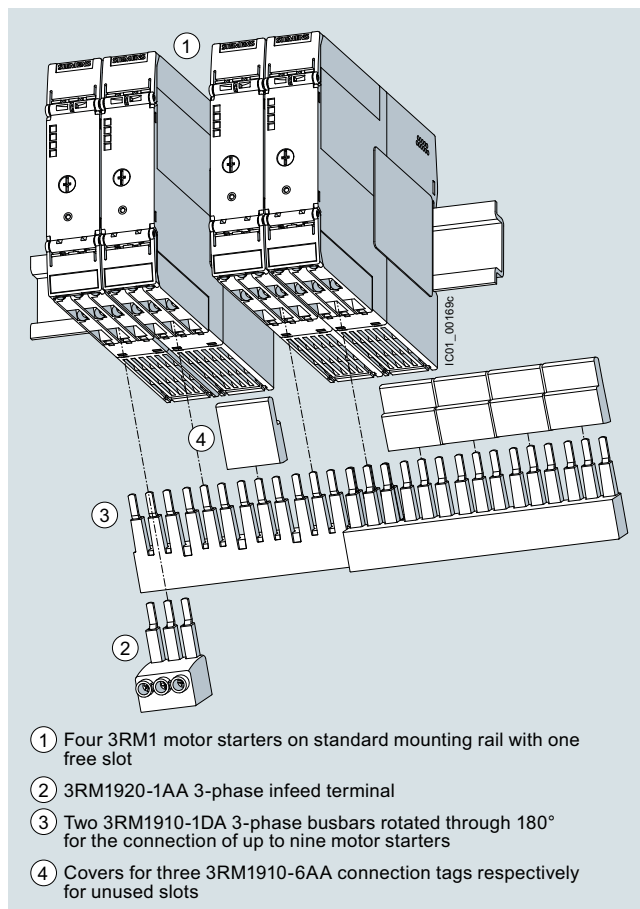
3-phase infeed system (3RM19 3-phase busbar system)

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 3-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 underneath, rotated by 180°.

The 3-phase busbars have touch protection but empty connection tags must be fitted with covers.



3RM19 infeed system with 3-phase infeed terminal: In the above example, two 3-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.

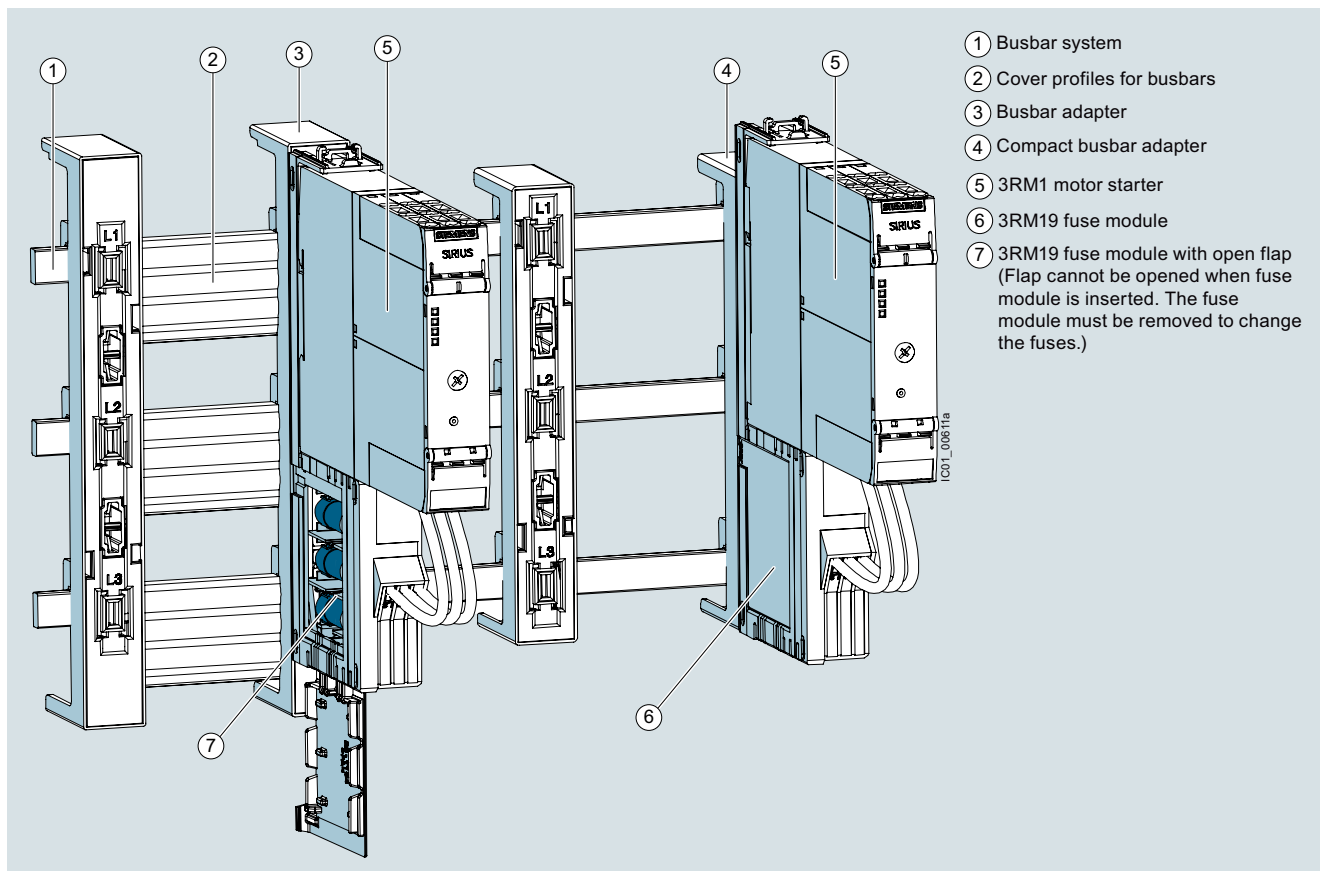
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SIRIUS 3RM1 motor starters

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.



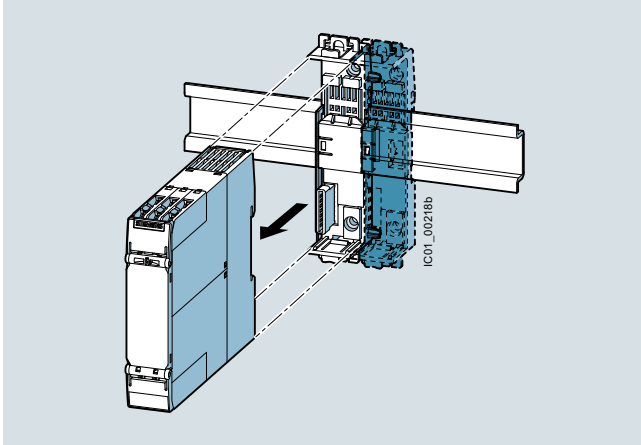
By means of the fuse module, 3RM1 motor starters can be used in busbar systems and 8US compact busbar systems, as well as on mounting rails

Load feeders and motor starters for use in the control cabinet

SIRIUS 3RM1 motor starters

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

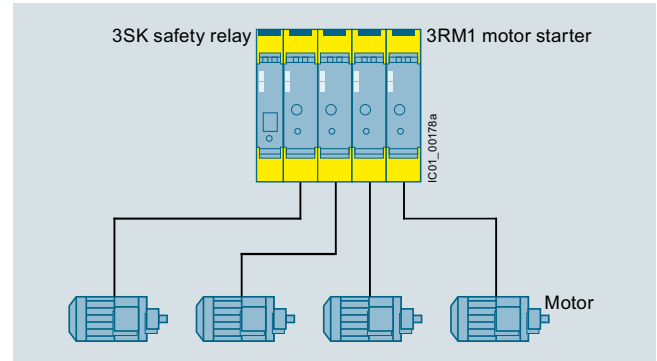
By using device connectors, a maximum of five motor starters can be supplied with 24 V DC control supply voltage. This requires the control supply voltage to be applied to the A1 and A2 terminals of only one motor starter.

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 11/13).



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 3/120
- For motor suppression modules that are fitted in the main circuit, see page 8/94

Note:

For more information, see <https://support.industry.siemens.com/cs/ww/en/view/109758696>.

Load feeders and motor starters for use in the control cabinet

IE3/IE4 ready SIRIUS 3RM1 motor starters

Selection and ordering data

More information

Industry Mall, see www.siemens.com/product?3RM1

	Operational power for three-phase motor at 400 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*	PG
			At DC	At AC at 50 Hz						
	kW	A	V	V	d					

Direct-on-line starters



3RM1001-1AA04

0 ... 0.12	0.1 ... 0.5	24	--	▶	3RM1001-□AA04	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	24	--	▶	3RM1002-□AA04	1	1 unit	41D
0.55 ... 3	1.6 ... 7	24	--	▶	3RM1007-□AA04	1	1 unit	41D
0 ... 0.12	0.1 ... 0.5	110	110 ... 230	X	3RM1001-□AA14	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	110	110 ... 230	X	3RM1002-□AA14	1	1 unit	41D
0.55 ... 3	1.6 ... 7	110	110 ... 230	X	3RM1007-□AA14	1	1 unit	41D

Reversing starters



3RM1201-1AA04

0 ... 0.12	0.1 ... 0.5	24	--	▶	3RM1201-□AA04	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	24	--	▶	3RM1202-□AA04	1	1 unit	41D
0.55 ... 3	1.6 ... 7	24	--	▶	3RM1207-□AA04	1	1 unit	41D
0 ... 0.12	0.1 ... 0.5	110	110 ... 230	X	3RM1201-□AA14	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	110	110 ... 230	2	3RM1202-□AA14	1	1 unit	41D
0.55 ... 3	1.6 ... 7	110	110 ... 230	X	3RM1207-□AA14	1	1 unit	41D

Failsafe direct-on-line starters



3RM1101-1AA04

0 ... 0.12	0.1 ... 0.5	24	--	2	3RM1101-□AA04	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	24	--	▶	3RM1102-□AA04	1	1 unit	41D
0.55 ... 3	1.6 ... 7	24	--	▶	3RM1107-□AA04	1	1 unit	41D
0 ... 0.12	0.1 ... 0.5	110	110 ... 230	X	3RM1101-□AA14	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	110	110 ... 230	X	3RM1102-□AA14	1	1 unit	41D
0.55 ... 3	1.6 ... 7	110	110 ... 230	X	3RM1107-□AA14	1	1 unit	41D

Failsafe reversing starters



3RM1301-1AA04

0 ... 0.12	0.1 ... 0.5	24	--	▶	3RM1301-□AA04	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	24	--	▶	3RM1302-□AA04	1	1 unit	41D
0.55 ... 3	1.6 ... 7	24	--	▶	3RM1307-□AA04	1	1 unit	41D
0 ... 0.12	0.1 ... 0.5	110	110 ... 230	X	3RM1301-□AA14	1	1 unit	41D
0.09 ... 0.75	0.4 ... 2	110	110 ... 230	X	3RM1302-□AA14	1	1 unit	41D
0.55 ... 3	1.6 ... 7	110	110 ... 230	X	3RM1307-□AA14	1	1 unit	41D

Type of electrical connection

- Screw terminals for main circuit, screw terminals for control circuit
- Spring-loaded terminals (push-in) for main circuit, spring-loaded terminals (push-in) for control circuit
- Screw terminals for main circuit, spring-loaded terminals (push-in) for control circuit

1
2
3

¹⁾ The actual starting and rated data of the motor to be protected must be considered when selecting the units.

Load feeders and motor starters for use in the control cabinet




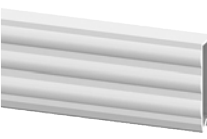



SIRIUS 3RM1 motor starters

Product designation		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		d					
3-phase infeed system for 3RM1 with screw terminals							
 3RM1920-1AA	3-phase infeed terminals • For 3-phase busbars	▶	3RM1920-1AA		1	1 unit	41D
 3RM1910-1AA	3-phase busbars • For 2 motor starters	▶	3RM1910-1AA		1	1 unit	41D
 3RM1910-1BA	• For 3 motor starters	▶	3RM1910-1BA		1	1 unit	41D
 3RM1910-1DA	• For 5 motor starters	▶	3RM1910-1DA		1	1 unit	41D
 3RM1910-6AA	Covers For 3 connection tags of the 3-phase busbars	▶	3RM1910-6AA		1	10 units	41D
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	41D
	Fuse module without fuse¹⁾	2	3RM1930-1AA		1	1 unit	41D
Adapters							
 8US1216-0AS00	Adapters for 60 mm busbar systems 22.5 mm x 200 mm x 41.5 mm <u>Note:</u> 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	14O
 8US1616-0AK02	Adapters for 60 mm compact busbar systems 22.5 mm x 160 mm x 41.5 mm <u>Note:</u> 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	14O

¹⁾ For details of alternative fuses, see [Equipment Manual](#).

Load feeders and motor starters for use in the control cabinet

SIRIUS 3RM1 motor starters

Product designation		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		d					
Adapters							
	Adapter for 35 mm DIN mounting rails	5	8US1716-0RK00		1	1 unit	140
	22.5 mm x 185 mm x 23.5 mm						
Cover profiles¹⁾²⁾							
Cover profiles for busbars							
	12 mm x 5 mm x 1 000 mm	2	8US1922-2CA00		1	10 units	140
	40 mm or 60 mm center-to-center busbar clearance depending on busbar system						
	15 mm x 5 mm x 1 000 mm	2	8US1922-2AA00		1	10 units	140
	20 mm x 5 mm x 1 000 mm 25 mm x 5 mm x 1 000 mm 30 mm x 5 mm x 1 000 mm 40 mm or 60 mm center-to-center busbar clearance depending on busbar system						
	12 mm x 10 mm x 1 000 mm	2	8US1922-2BA00		1	10 units	140
	15 mm x 10 mm x 1 000 mm 20 mm x 10 mm x 1 000 mm 25 mm x 10 mm x 1 000 mm 30 mm x 10 mm x 1 000 mm 60 mm center-to-center busbar clearance						
Device connectors							
	Device connectors	2	3ZY1212-2EA00		1	1 unit	41L
	For 3RM1 motor starters, 24 V DC, 22.5 mm						
	Device daisy chain connectors	2	3ZY1212-2AB00		1	1 unit	41L
	For 3RM1 motor starters 24 V DC, 22.5 mm For gaps without motor starters in assemblies						
	Device termination connectors	2	3ZY1212-2FA00		1	1 unit	41L
	For 3RM1 motor starters, 24 V DC, 22.5 mm						

¹⁾ The cover profiles for busbars can be used for maintaining minimum spacing between the load feeders.

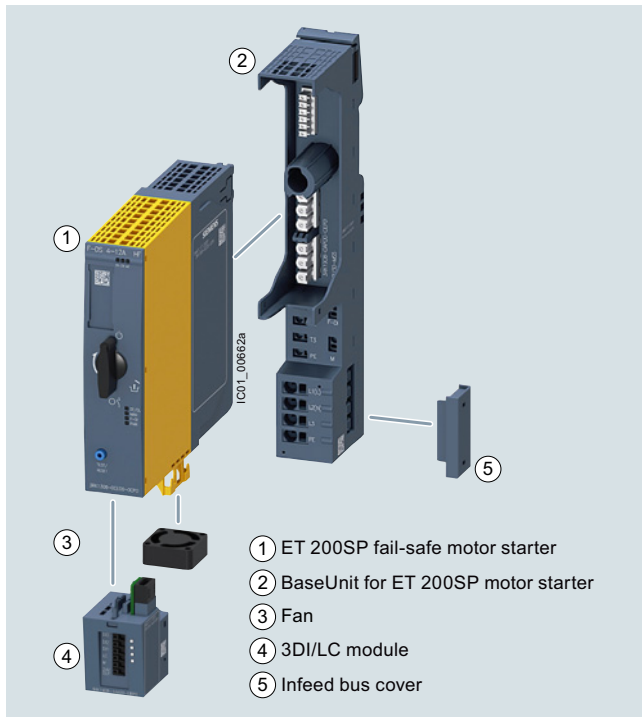
²⁾ For further accessories for the configuration of a busbar system, see Catalog LV 10.

Load feeders and motor starters for use in the control cabinet

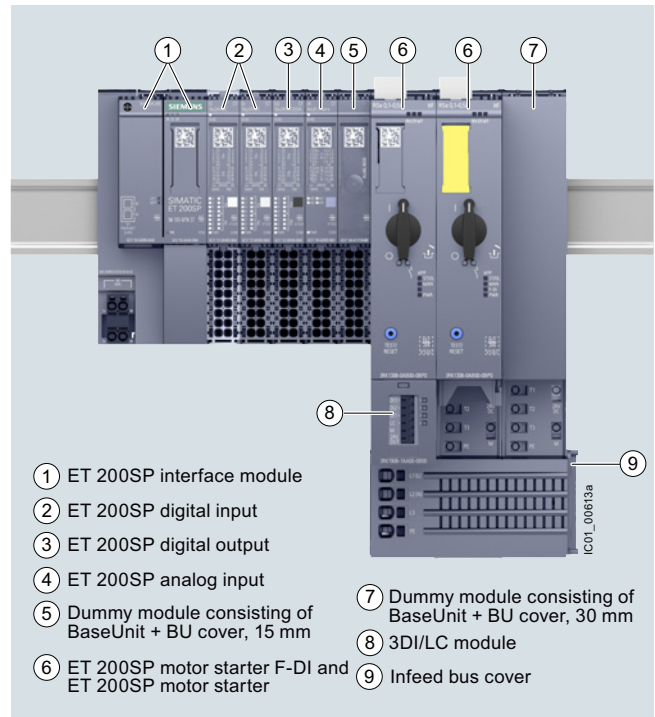
SIRIUS 3RM1 motor starters

Product designation		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		d					
Removable terminals							
 3ZY1122-1BA00	Terminals for main circuit, 2-pole						
	• Version with screw terminals, up to 1 x 4 mm ² or 2 x 2.5 mm ²	2	Screw terminals 		1	6 units	41L
			3ZY1122-1BA00				
	• Version with spring-loaded terminals (push-in), up to 1 x 4 mm ² or 2 x 1.5 mm ² (both in one end sleeve)	2	Spring-loaded terminals (push-in) 		1	6 units	41L
			3ZY1122-2BA00				
 3ZY1131-1BA00	Terminals for control circuit, 3-pole						
	• Version with screw terminals, up to 2 x 1.5 mm ² or 1 x 2.5 mm ²	2	Screw terminals 		1	6 units	41L
			3ZY1131-1BA00				
	• Version with spring-loaded terminals (push-in), up to 2 x 1.5 mm ²	2	Spring-loaded terminals (push-in) 		1	6 units	41L
			3ZY1131-2BA00				
Further accessories							
 3ZY1311-0AA00	Push-in lugs for wall mounting 2 lugs per device are required		2	3ZY1311-0AA00	1	10 units	41L
 3ZY1321-2AA00	Sealable covers, 22.5 mm For simple protection against unauthorized access		2	3ZY1321-2AA00	1	5 units	41L
 3ZY1440-1AA00	Coding pins for removable terminals For mechanical coding of the terminals		2	3ZY1440-1AA00	1	12 units	41L
 3ZY1450-1AB00	Hinged cover Replacement cover, without terminal labeling, 22.5 mm wide						
	• Titanium gray	2	3ZY1450-1AB00		1	5 units	41L
	• Yellow	2	3ZY1450-1BB00		1	5 units	41L
 3RK1911-6EA00	Motor suppression module						
	• Square	15	3RK1911-6EA00		1	1 unit	42D
	• Round	15	3RK1911-6EB00		1	1 unit	42D
 3RA2908-1A	Screwdrivers For all SIRIUS devices with spring-loaded terminals Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated		2	Spring-loaded terminals  3RA2908-1A	1	1 unit	41B

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/sirius-motor-starter-et200sp
 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
- Homepage, see www.siemens.com/et200sp

ET 200SP motor starters

ET 200SP is a scalable and extremely flexible modular I/O system with IP20 degree of protection.

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 1- and 3-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 of the 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 8/103](#).

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 features" in the Equipment Manual](#).

Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

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 3/120](#)
- For motor suppression modules that are fitted in the main circuit, [see page 8/103](#)

Note:

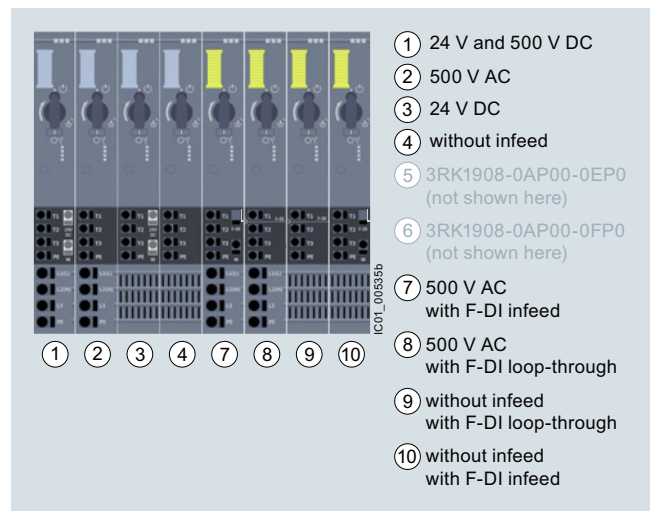
For more information, [see https://support.industry.siemens.com/cs/ww/en/view/109758696](https://support.industry.siemens.com/cs/ww/en/view/109758696).

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 "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



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 a loop-through.

The rugged design and keyed connection technology enables use in harsh industrial conditions.

The BaseUnits are available with various infeeds for the motor starters.

Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

Article No. scheme

Product versions		Article number	
Motor starters		3RK1308 - 0 <input type="checkbox"/> <input type="checkbox"/> 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-phase or three-phase asynchronous motors, single-phase AC motors, single-phase asynchronous motors, at 400 V AC and 500 V AC; the actual starting and rated data of the motor to be protected must be considered when selecting the units.

Product versions		Article number	
BaseUnit		3RK1908 - 0 A P 0 0 - 0 <input type="checkbox"/> 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 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

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)
- Technology has lower inherent power losses than speed-controlled drive systems, so that less cooling (and smaller footprint) are possible

- 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 1/8](#).

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

Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

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.

For more information see <https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10321271?tree=CatalogTree>.

Technical specifications

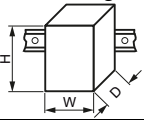
More information

Industry Mall, see www.siemens.com/product?3RK1308

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>

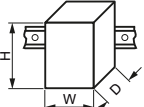
ET 200SP motor starters

Type		3RK1308-0.A00-0CP0	3RK1308-0.B00-0CP0	3RK1308-0.C00-0CP0	3RK1308-0.D00-0CP0	3RK1308-0.E00-0CP0
Product category		Motor starters				
General technical specifications						
Width x height x depth	mm	30 x 142 x 150				
						
Design of the switching contact		Hybrid				
Design of the motor protection		Electronic				
Installation altitude at height above sea level, maximum	m	4 000, derating, see Manual				
Mounting position		Vertical, horizontal, (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				
Degree of protection IP on the front according to IEC 60529		IP20				
Touch protection on the front according to IEC 60529		Finger-safe				
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 OFF / 5 / 10 adjustable				

Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

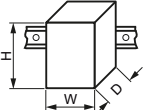
BaseUnits for motor starters

Type	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							
Degree of protection IP on the front according to IEC 60529	IP20							
Touch protection on the front according to IEC 60529	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	--	--	--
- 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	--	--	--	--	--	--	--
- 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							

Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

3DI/LC control module

Type	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	mm²	0.2 ... 1.5	
• Finely stranded with end sleeve	mm²	0.25 ... 1.5	
• Finely stranded without end sleeve	mm²	0.2 ... 1.5	
AWG number as coded connectable conductor cross-section for auxiliary contacts	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		

Load feeders and motor starters for use in the control cabinet

IE3/IE4 ready

ET 200SP motor starters

Selection and ordering data

	Adjustable current response value of the inverse-time delayed overload release	Max. current carrying capacity at startup	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	A	d					
Motor starters								
<i>Direct-on-line starters</i>								
	0.1 ... 0.4	4	2	3RK1308-0AA00-0CP0		1	1 unit	42D
	0.3 ... 1	10	▶	3RK1308-0AB00-0CP0		1	1 unit	42D
	0.9 ... 3	30	▶	3RK1308-0AC00-0CP0		1	1 unit	42D
	2.8 ... 9	90	▶	3RK1308-0AD00-0CP0		1	1 unit	42D
	4 ... 12	100	▶	3RK1308-0AE00-0CP0		1	1 unit	42D
<i>Reversing starters</i>								
	0.1 ... 0.4	4	2	3RK1308-0BA00-0CP0		1	1 unit	42D
	0.3 ... 1	10	▶	3RK1308-0BB00-0CP0		1	1 unit	42D
	0.9 ... 3	30	▶	3RK1308-0BC00-0CP0		1	1 unit	42D
	2.8 ... 9	90	▶	3RK1308-0BD00-0CP0		1	1 unit	42D
	4 ... 12	100	2	3RK1308-0BE00-0CP0		1	1 unit	42D
<i>Fail-safe direct-on-line starters</i>								
	0.1 ... 0.4	4	2	3RK1308-0CA00-0CP0		1	1 unit	42D
	0.3 ... 1	10	▶	3RK1308-0CB00-0CP0		1	1 unit	42D
	0.9 ... 3	30	▶	3RK1308-0CC00-0CP0		1	1 unit	42D
	2.8 ... 9	90	▶	3RK1308-0CD00-0CP0		1	1 unit	42D
	4 ... 12	100	▶	3RK1308-0CE00-0CP0		1	1 unit	42D
<i>Fail-safe reversing starters</i>								
	0.1 ... 0.4	4	2	3RK1308-0DA00-0CP0		1	1 unit	42D
	0.3 ... 1	10	▶	3RK1308-0DB00-0CP0		1	1 unit	42D
	0.9 ... 3	30	2	3RK1308-0DC00-0CP0		1	1 unit	42D
	2.8 ... 9	90	▶	3RK1308-0DD00-0CP0		1	1 unit	42D
	4 ... 12	100	2	3RK1308-0DE00-0CP0		1	1 unit	42D

Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

Type of product	Operational voltage of the AC infeed	Supply voltage of the DC infeed	SD	Push-in terminals	PU (UNIT, SET, M)	PS*	PG
	V	V	d	Article No.	Price per PU		

BaseUnits¹⁾



3RK1908-0AP00-0AP0

For motor starters

• With AC/DC infeed	500	24	►	3RK1908-0AP00-0AP0	1	1 unit	42D
• With DC infeed	--	24	2	3RK1908-0AP00-0BP0	1	1 unit	42D
• With AC infeed	500	--	2	3RK1908-0AP00-0CP0	1	1 unit	42D
• Without infeed	--	--	►	3RK1908-0AP00-0DP0	1	1 unit	42D

For fail-safe motor starters

• With AC infeed, With F-DI infeed	500	--	2	3RK1908-0AP00-0GP0	1	1 unit	42D
• With AC infeed, With F-DI loop-through	500	--	2	3RK1908-0AP00-0HP0	1	1 unit	42D
• Without AC/DC infeed, With F-DI loop-through	--	--	2	3RK1908-0AP00-0JP0	1	1 unit	42D
• Without AC/DC infeed, With F-DI infeed	--	--	2	3RK1908-0AP00-0KP0	1	1 unit	42D

¹⁾ The voltage is looped-through from BaseUnits with infeed to subsequent BaseUnits without infeed.

Type of product	Supply voltage at DC rated value	Loop through the potential group from the left	SD	Push-in terminals	PU (UNIT, SET, M)	PS*	PG
	V		d	Article No.	Price per PU		

BaseUnits



6ES7193-6BP00-0BA0

For dummy modules

• Dark, looping through the potential group	24	Yes	1	6ES7193-6BP00-0BA0	1	1 unit	255
• Light, opening a new potential group	24	No	1	6ES7193-6BP00-0DA0	1	1 unit	255

Control supply voltage at DC, rated value	Product function	SD	Push-in terminals	PU (UNIT, SET, M)	PS*	PG
	Local control Digital inputs parameterizable		Article No.	Price per PU		
V		d				

3DI/LC control module



3RK1908-1AA00-0BP0

20.4 ... 28.8	Yes	Yes	►	3RK1908-1AA00-0BP0	1	1 unit	42D
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Load feeders and motor starters for use in the control cabinet

ET 200SP motor starters

	Product designation	Type of product	SD d	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories								
	BU cover 15 mm	for BaseUnits Type A0 or A1	1	6ES7133-6CV15-1AM0		1	5 units	255
	BU cover 30 mm	For protection of empty slots, 30 mm	2	3RK1908-1CA00-0BP0		1	1 unit	42D
	Infeed bus cover (1 bag containing 10 covers)	For ET 200SP	2	3RK1908-1DA00-2BP0		1	1 unit	42D
	Additional mounting base unit (1 bag containing 5 additional mounting units)	Mechanical, for ET 200SP	2	3RK1908-1EA00-1BP0		1	1 unit	42D
	Fan	Can be used for 3RK1308	▶	3RW4928-8VB00		1	1 unit	42G
	Motor suppression module • Square		15	3RK1911-6EA00		1	1 unit	42D
	• Round		15	3RK1911-6EB00		1	1 unit	42D
	Starter Kit	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	42D