

# Protection Equipment



**Price groups**  
PG 14O, 41B, 41E, 41F, 41G, 41H, 41J, 42F, 42J, 4N1

## 7/2 Introduction

### Motor starter protectors/ circuit breakers

SIRIUS 3RV2 motor starter protectors/  
circuit breakers up to 40 A

7/7 General data

7/19 For motor protection **NEW**

7/21 For motor protection  
with overload relay function

7/22 For starter combinations

7/23 For transformer protection **NEW**

7/24 For system protection according to  
UL 489/CSA C22.2 No. 5 **NEW**

7/25 For transformer protection according to  
UL 489/CSA C22.2 No.5 **NEW**

Accessories

7/26 - Mountable accessories

7/29 - Busbar accessories

7/32 - Rotary operating mechanisms

7/33 - Mounting accessories

7/37 - Enclosures and front plates

7/40 3RV29 infeed system

SIRIUS 3RV1 motor starter protectors/  
circuit breakers up to 100 A

7/44 General data

7/55 For motor protection

7/56 For motor protection  
with overload relay function

7/57 For starter combinations

7/58 For transformer protection

7/59 For fuse monitoring

7/60 For system protection according to  
UL 489/CSA C22.2 No. 5

7/61 For distance protection

Accessories

7/62 - Mountable accessories

7/65 - Busbar accessories

7/67 - Rotary operating mechanisms

7/69 - Mounting accessories

7/71 - Enclosures and front plates

SIRIUS 3RV1 molded case motor starter  
protectors up to 800 A

7/73 General data

7/78 For motor protection

7/79 For starter combinations

Accessories

7/80 - Mountable accessories

7/81 - Rotary operating mechanisms,  
mounting accessories

## Overload relays

7/82 General data

SIRIUS 3RU2 thermal overload relays

7/89 3RU2 up to 40 A  
for standard applications

7/97 Accessories

SIRIUS 3RU1 thermal overload relays

7/100 3RU11 up to 100 A  
for standard applications

7/108 Accessories

SIRIUS 3RB3 solid-state overload relays

7/110 3RB30, 3RB31 up to 40 A  
for standard applications

7/118 Accessories

SIRIUS 3RB2 solid-state overload relays

7/120 3RB20, 3RB21 up to 630 A  
for standard applications

7/129 Accessories for 3RB20, 3RB21

7/131 3RB22, 3RB23 up to 630 A  
for High-Feature applications

7/139 3RB24 for IO-Link, up to 630 A  
for High-Feature applications

7/145 Current measuring modules for  
3RB22, 3RB23, 3RB24

7/149 Accessories for 3RB22, 3RB23, 3RB24

## Notes:

The 3RV1, 3RU1 and 3RB2 devices  
(sizes S00/S0 to S12) can be found

- in the Catalog Add-On  
IC 10 AO · 2014
- in the DVD box IC 01

- in the Catalog Add-On  
IC 10 AO · 2014  
at the Information and Download  
Center

- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool, e.g. from

- 3RV1 to 3RV2
- 3RU11 to 3RU21
- 3RB20/3RB21 to 3RB30/3RB31

see

[www.siemens.com/sirius/conversion-tool](http://www.siemens.com/sirius/conversion-tool)

# Protection Equipment

## Motor Starter Protectors/Circuit Breakers

### Introduction

### Overview



Type	3RV20	3RV21	3RV23	3RV24	3RV27	3RV28
<b>SIRIUS 3RV2 motor starter protectors/circuit breakers up to 40 A</b>						
<b>Applications</b>						
• System protection	✓ <sup>1)</sup>	✓ <sup>1)</sup>	--	--	✓	✓
• Motor protection	✓	--	--	--	--	--
• Motor protection with overload relay function	--	✓	--	--	--	--
• Starter combinations	--	--	✓	--	--	--
• Transformer protection	--	--	--	✓	✓	✓
<b>Size</b>	S00, S0	S00, S0	S00, S0	S00, S0	S00, S0	S00, S0
<b>Rated current <math>I_n</math></b>						
• Size S00	A Up to 16	Up to 16	Up to 16	Up to 16	Up to 15	Up to 15
• Size S0	A Up to 40	Up to 32	Up to 40	Up to 25	Up to 22	Up to 22
<b>Rated operational voltage <math>U_e</math> according to IEC</b>	V 690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	690 AC	690 AC
<b>Rated frequency</b>	Hz 50/60	50/60	50/60	50/60	50/60	50/60
<b>Trip class</b>	CLASS 10	CLASS 10	--	CLASS 10	--	--
<b>Thermal overload releases</b>	A 0.11 ... 0.16 up to 34 ... 40	A 0.11 ... 0.16 up to 27 ... 32	Without <sup>3)</sup>	A 0.11 ... 0.16 up to 20 ... 25	0.16 ... 22 non-adjustable	0.16 ... 22 non-adjustable
<b>Electronic release</b> A multiple of the rated current	13 times	13 times	13 times	20 times	13 times	20 times
<b>Short-circuit breaking capacity <math>I_{cu}</math> at 400 V AC</b>	kA 20/55/100	55/100	20/55/100	55/100	4)	4)
<b>Pages</b>	7/19, 7/20	7/21	7/22	7/23	7/24	7/25
<b>Accessories</b>						
<b>For sizes</b>	S00 S0	S00 S0	S00 S0	S00 S0	S00 S0	S00 S0
Auxiliary switches	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Signaling switches	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Undervoltage releases	✓ ✓	-- --	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Shunt releases	✓ ✓	-- --	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Isolator modules	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Insulated three-phase busbar system	✓ ✓	-- --	✓ ✓	✓ ✓	-- --	-- --
Busbar adapters	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Door-coupling rotary operating mechanisms	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Link modules	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Enclosures for surface mounting	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Enclosures for flush mounting	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Front plates	✓ ✓	✓ ✓	✓ ✓	✓ ✓	-- --	-- --
Infeed system	✓ ✓	-- --	✓ ✓	✓ ✓	-- --	-- --
Terminal covers for ring terminal lug connections	✓ <sup>5)</sup> ✓ <sup>5)</sup>	-- --	-- --	-- --	-- --	-- --
Sealable scale covers for setting knobs	✓ ✓	✓ ✓	-- --	✓ ✓	-- --	-- --
<b>Pages</b>	7/26 ... 7/43					

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

<sup>1)</sup> For symmetrical loading of the three phases.

<sup>2)</sup> With molded-plastic enclosure 500 V AC. For DC applications see "Technical Specifications" → "DC Short-Circuit Breaking Capacity", page 7/15.

<sup>3)</sup> For overload protection of the motors, appropriate overload relays must be used.

<sup>4)</sup> According to UL 489 at 480 Y/277 V AC: 65 kA or 50 kA.

<sup>5)</sup> Terminal covers are available for 3RV20 motor starter protectors with ring terminal lug connection to ensure finger-safety.



Type	3RV10	3RV11	3RV13	3RV14	3RV16	3RV16	3RV17
<b>SIRIUS 3RV1 motor starter protectors/circuit breakers up to 100 A</b>							
<b>Applications</b>							
• System protection	✓ <sup>1)</sup>	✓ <sup>1)</sup>	--	--	--	--	✓
• Motor protection	✓	--	--	--	--	--	--
• Motor protection with overload relay function	--	✓	--	--	--	--	--
• Starter combinations	--	--	✓	--	--	--	--
• Transformer protection	--	--	--	✓	--	--	✓
• Fuse monitoring	--	--	--	--	✓	--	--
• Voltage transformer circuit breakers for distance protection	--	--	--	--	--	✓	--
<b>Size</b>	S2, S3	S2, S3	S2, S3	S2	S00	S00	S3
<b>Rated current <math>I_n</math></b>							
• Size S00	A --	--	--	--	0.2	Up to 3	--
• Size S2	A Up to 50	Up to 50	Up to 50	Up to 40	--	--	--
• Size S3	A Up to 100	Up to 100	Up to 100	--	--	--	Up to 70
<b>Rated operational voltage <math>U_e</math> according to IEC</b>	V 690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	690 AC <sup>2)</sup>	400 AC	690 AC
<b>Rated frequency</b>	Hz 50/60	50/60	50/60	50/60	50/60	16 <sup>2</sup> / <sub>3</sub> ... 60	50/60
<b>Trip class</b>	CLASS 10, 20	CLASS 10	--	CLASS 10	--	--	--
<b>Thermal overload releases</b>	A 11 ... 16 up to 80 ... 100	A 11 ... 16 up to 80 ... 100	Without <sup>3)</sup>	A 11 ... 16 up to 28 ... 40	0.2	1.4 ... 3	A 10 ... 70 non-adjustable
<b>Electronic release</b> A multiple of the rated current	13 times	13 times	13 times	20 times	6 times	4 ... 7 times	13 times
<b>Short-circuit breaking capacity <math>I_{cu}</math> at 400 V AC</b>	kA 50/100	50/100	50/100	50/100	100	50	4)
<b>Pages</b>	7/55	7/56	7/57	7/58	7/59	7/61	7/60

<b>Accessories</b>							
For sizes	S2 S3	S2 S3	S2 S3	S2	S00	S00	S3
Auxiliary switches	✓ ✓	✓ ✓	✓ ✓	✓	✓	✓	✓ <sup>5)</sup>
Signaling switches	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Undervoltage releases	✓ ✓	-- --	✓ ✓	✓	--	--	✓
Shunt releases	✓ ✓	-- --	✓ ✓	✓	--	--	✓
Isolator modules	✓ --	✓ --	✓ --	✓	--	--	--
Insulated three-phase busbar system	✓ --	✓ --	✓ --	✓	--	--	--
Busbar adapters	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Door-coupling rotary operating mechanisms	✓ ✓	✓ ✓	✓ ✓	✓	--	--	✓
Remote motorized operating mechanisms	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Link modules	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Enclosures for surface mounting	✓ --	✓ --	✓ --	✓	--	--	--
Front plates	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
<b>Pages</b>	7/62 ... 7/72						

✓ Has this function or can use this accessory  
 -- Does not have this function or cannot use this accessory

1) For symmetrical loading of the three phases.

2) With molded-plastic enclosure 500 V AC. For DC applications see "Technical Specifications" → "DC Short-Circuit Breaking Capacity", page 7/50.

3) For overload protection of the motors, appropriate overload relays must be used.

4) Acc. to UL 489  
 - At 480 Y/277 V AC: 65 kA;  
 - At 480 V AC: 65 kA (10 A to 30 A).

5) Only lateral auxiliary switches can be fitted.

# Protection Equipment

## Motor Starter Protectors/Circuit Breakers

### Introduction



Type	3RV10			3RV13					
<b>SIRIUS 3RV1 molded case motor starter protectors up to 800 A</b>									
<b>Applications</b>									
• Motor protection	✓			--					
• Starter combinations	--			✓					
<b>Switching capacity</b>	Standard switching capacity			Standard switching capacity			Increased switching capacity		
<b>Size</b>	3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1373	3RV1383	3RV1364	3RV1374
<b>Rated current <math>I_n</math></b>	A 100 ... 200	400	630	1 ... 32	100 ... 250	400, 630	630, 800	100 ... 250	400
<b>Rated operational voltage <math>U_e</math> according to IEC</b>	690 AC			690 AC					
<b>Rated frequency</b>	Hz 50/60			50/60					
<b>Trip class</b>	CLASS 10A, 10, 20, 30			-- <sup>1)</sup>					
<b>Thermal overload releases</b>	A 40 ... 100 up to A 252 ... 630			Without <sup>1)</sup>					
<b>Electronic release</b> A multiple of the rated current	Adjustable, 6 ... 13 times			Non-adjustable 1 ... 12.5 A: 13 times; Adjustable 20 A, 32 A: 6 ... 12 times		1 ... 10 times			
<b>Short-circuit breaking capacity <math>I_{cu}</math> at 400 V AC</b>	kA 120	120	100	85	120	120	100	200	200
<b>Trip unit (release)</b>	TU 4			TU 1: 1 ... 12.5 A; TU 2: 20 A, 32 A		TU 3			
<b>Pages</b>	7/78			7/79					
<b>Accessories</b>									
<b>For molded case motor starter protectors</b>	3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1373	3RV1383	3RV1364	3RV1374
Auxiliary switches	✓	✓	✓	✓	✓	✓	✓	✓	✓
Undervoltage releases	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shunt releases	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotary operating mechanisms	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection methods									
• Extended terminals on the front	✓	✓	--	✓	✓	✓	--	✓	✓
• Cable terminals on the front	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Rear terminals	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Pages</b>	7/80, 7/81								

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

<sup>1)</sup> For overload protection of the motors, appropriate overload relays must be used.



Type	3RU21	3RB30	3RB31
<b>SIRIUS overload relays up to 40 A</b>			
<b>Applications</b>			
• System protection	✓ <sup>1)</sup>	✓ <sup>1)</sup>	✓ <sup>1)</sup>
• Motor protection	✓	✓	✓
• Alternating current, three-phase	✓	✓	✓
• Alternating current, single-phase	✓	--	--
• Direct current	✓	--	--
<b>Size contactor</b>	S00, S0	S00, S0	S00, S0
<b>Rated operational current <math>I_e</math></b>			
• Size S00	A Up to 16	Up to 16	Up to 16
• Size S0	A Up to 40	Up to 40	Up to 40
<b>Rated operational voltage <math>U_e</math></b>	V 690 AC	690 AC	690 AC
<b>Rated frequency</b>	Hz 50/60	50/60	50/60
<b>Trip class</b>	CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 adjustable
<b>Thermal overload releases</b>	A 0.11 ... 0.16 up to A 34 ... 40	--	--
<b>Electronic overload releases</b>	A -- A	0.1 ... 0.4 up to 10 ... 40	0.1 ... 0.4 up to 10 ... 40
<b>Rating for three-phase motor at 400 V AC</b>	kW 0.04 ... 18.5	0.04 ... 18.5	0.04 ... 18.5
<b>Pages</b>	7/95, 7/96	7/115, 7/116	7/117
<b>Accessories</b>			
<b>For sizes</b>	S00 S0	S00 S0	S00 S0
Terminal supports for stand-alone installation	✓ ✓	✓ ✓	✓ ✓
Mechanical RESET	✓ ✓	✓ ✓	✓ ✓
Cable releases for RESET	✓ ✓	✓ ✓	✓ ✓
Electrical remote RESET	✓ ✓	-- --	Integrated in the unit
Terminal covers for ring terminal lug connections	✓ <sup>2)</sup> ✓ <sup>2)</sup>	-- --	-- --
Sealable covers for setting knobs	✓ ✓	✓ ✓	✓ ✓
<b>Pages</b>	7/97 ... 7/99	7/118, 7/119	7/118, 7/119

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

<sup>1)</sup> The units are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable, and other switching and protection devices in the respective load feeder.

<sup>2)</sup> Terminal covers for ensuring finger-safe touch protection are available for 3RU21 overload relays with ring terminal lug connections for mounting onto contactors.

# Protection Equipment

## Overload Relays

### Introduction



Type		3RU11	3RB20	3RB21	3RB22, 3RB23	3RB24
<b>SIRIUS overload relays up to 630 A</b>						
<b>Applications</b>						
• System protection		✓ <sup>1)</sup>	✓ <sup>1)</sup>	✓ <sup>1)</sup>	✓ <sup>1)</sup>	
• Motor protection		✓	✓	✓	✓	
• Alternating current, three-phase		✓	✓	✓	✓	
• Alternating current, single-phase		✓	--	--	✓	
• Direct current		✓	--	--	--	
<b>Size contactor</b>		S2, S3	S2 ... S12	S2 ... S12	S00 ... S12	
<b>Rated operational current <math>I_e</math></b>						
• Sizes S00 and S0	A	--	--	--	Up to 25 and 45 mm width with current measuring modules 3RB2906-2BG1/3RB2906-2DG1	
• Size S2	A	Up to 50	Up to 50	Up to 50	Up to 100 and 55 mm width with current measuring module 3RB2906-2JG1	
• Size S3	A	Up to 100	Up to 100	Up to 100	Up to 200 and 120 mm width with current measuring modules 3RB2956-2TH2/3RB2956-2TG2	
• Size S6	A	--	Up to 200	Up to 200	Up to 630 and 145 mm width with current measuring module 3RB2966-2WH2	
• Size S10/S12	A	--	Up to 630	Up to 630	Up to 820 with current measuring module 3RB2906-2BG1 and transformer 3UF1868-3GA00	
• Size 14 (3TF68/3TF69)	A	--	--	--		
<b>Rated operational voltage <math>U_e</math></b>	V	690/1 000 AC <sup>2)</sup>	690/1 000 AC <sup>3)</sup>	690/1 000 AC <sup>3)</sup>	690/1 000 AC <sup>4)</sup>	
<b>Rated frequency</b>	Hz	50/60	50/60	50/60	50/60	
<b>Trip class</b>		CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 adjustable	CLASS 5, 10, 20, 30 adjustable	
<b>Thermal overload releases</b>	A	5.5 ... 8 up to 80 ... 100	--	--	--	
<b>Electronic overload releases</b>	A	--	6 ... 25 up to 160 ... 630	6 ... 25 up to 160 ... 630	0.3 ... 3 up to 63 ... 630	
<b>Rating for three-phase motor at 400 V AC</b>	kW	3 to 45	3 ... 11 up to 90 ... 450	3 ... 11 up to 90 ... 450	0.09 ... 1.1 up to 37 ... 450	
<b>Pages</b>		7/105 ... 7/107	7/126, 7/127	7/128	7/137, 7/138, 7/147 7/144, 7/147	
<b>Accessories</b>						
<b>For sizes</b>		S2 S3	S2 S3 S6 S10/S12	S2 S3 S6 S10/S12	S00 S0 S2 S3 S6 S10/S12	
Terminal supports for stand-alone installation		✓ ✓	5) 5) 5) 5)	5) 5) 5) 5)	5) 5) 5) 5) 5) 5)	
Mechanical RESET		✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	-- -- -- -- -- --	
Cable releases for RESET		✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	-- -- -- -- -- --	
Electrical remote RESET		✓ ✓	-- -- -- --	Integrated in the unit	Integrated in the unit	
Terminal covers		✓ ✓	-- ✓ ✓ ✓	-- ✓ ✓ ✓	-- -- -- ✓ ✓ ✓	
Sealable covers for setting knobs		Integrated in the unit	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	
Operator panel for 3RB24 evaluation module		-- --	-- -- -- --	-- -- -- --	✓ ✓ ✓ ✓ ✓ ✓	
<b>Pages</b>		7/108, 7/109	7/129, 7/130	7/129, 7/130	7/148 ... 7/150	

✓ Has this function or can use this accessory  
 -- Does not have this function or cannot use this accessory

<sup>1)</sup> The units are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable, and other switching and protection devices in the respective load feeder.

<sup>2)</sup> Size S3 up to 1 000 V AC.

<sup>3)</sup> Size S2 (only with straight-through transformer), S3, S6, S10, S12 up to 1 000 V AC.

<sup>4)</sup> With reference to the 3RB29.6 current measuring modules.

<sup>5)</sup> Stand-alone installation without accessories is possible.

# Motor Starter Protectors/Circuit Breakers

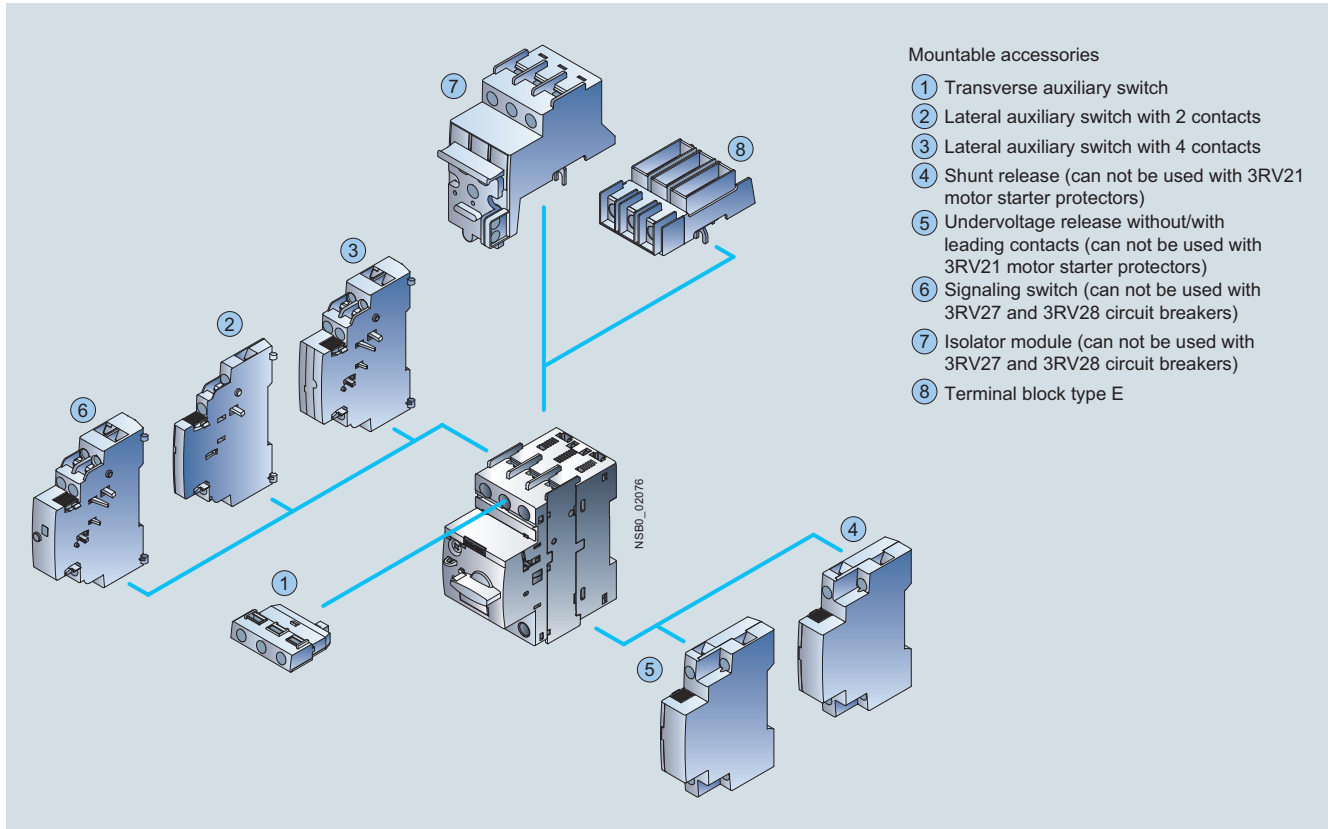
## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

General data

### Overview

The following illustration shows our 3RV2 motor starter protector/circuit breaker with the accessories which can be mounted for the sizes S00 and S0, see also "Introduction" → "Overview", page 7/2.

Accessories see page 7/26 onwards.



#### Mountable accessories

- ① Transverse auxiliary switch
- ② Lateral auxiliary switch with 2 contacts
- ③ Lateral auxiliary switch with 4 contacts
- ④ Shunt release (can not be used with 3RV21 motor starter protectors)
- ⑤ Undervoltage release without/with leading contacts (can not be used with 3RV21 motor starter protectors)
- ⑥ Signaling switch (can not be used with 3RV27 and 3RV28 circuit breakers)
- ⑦ Isolator module (can not be used with 3RV27 and 3RV28 circuit breakers)
- ⑧ Terminal block type E

Mountable accessories for SIRIUS 3RV2 motor starter protectors/circuit breakers



SIRIUS motor starter protector with spring-type terminals, size S0 (left) and SIRIUS motor starter protector with screw terminals, size S00 (right)

The new SIRIUS 3RV2 motor starter protectors/circuit breakers are compact, current limiting motor starter protectors/circuit breakers which are optimized for load feeders. The motor starter protectors/circuit breakers are used for switching and protecting three-phase motors of up to 18.5 kW at 400 V AC and for other loads with rated currents of up to 40 A.

For 3RV1 motor starter protectors/circuit breakers in sizes S2 and S3 up to 100 A see page 7/55 onwards.

The new 3RV2 motor starter protectors are usually approved according to IEC and UL/CSA. 3RV2 motor starter protectors/circuit breakers in sizes S00 and S0 are approved according to UL 508 as:

- "Manual Motor Controllers"
- "Manual Motor Controllers" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controllers (Type E)"  
Please note that for this approval the 3RV20 motor starter protectors must be equipped with additional infeed terminals. For more information see "Accessories", page 7/33.

Corresponding short-circuit values see pages 7/10 to 7/14.

The 3RV27 and 3RV28 motor circuit breakers are approved as circuit breakers according to UL 489; they are a special version of the 3RV2 motor starter protectors.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

#### Type of construction

The 3RV2 motor starter protectors are available in two sizes:

- Size S00 - width 45 mm, max. rated current 16 A, at 400 V AC suitable for three-phase motors up to 7.5 kW
- Size S0 - width 45 mm, max. rated current 40 A, at 400 V AC suitable for three-phase motors up to 18.5 kW

For sizes S2 and S3 of the 3RV1 motor starter protectors up to 100 A see [page 7/55 onwards](#).

#### Circuit breakers acc. to UL 489




The 3RV27 and 3RV28 circuit breakers are available in two sizes:

- Size S00 – width 45 mm, max. rated current 15 A, for 480 Y/277 V AC
- For size S0 – width 45 mm, max. rated current 22 A, at 480 Y/277 V AC

For size S3 of the 3RV1742 circuit breakers up to 70 A see [page 7/60](#).

#### Connection methods

The 3RV2 motor starter protectors/circuit breakers can be supplied with screw terminals, spring-type terminals and ring cable lug connections.

-  Screw terminals
-  Spring-type terminals
-  Ring terminal lug connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

#### "Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV20 motor starter protectors are suitable for overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

EC type test certificate for Category (2) G/D has been submitted. More details on request.

#### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	
	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□	
Motor starter protectors/circuit breakers	3 R V														
SIRIUS 2nd generation	2														
Type of motor starter protector/circuit breaker	□														
Size	□														
Breaking capacity	□														
Setting range for overload release	□ □														
Trip class (CLASS)	□														
Connection methods	□														
With or without auxiliary switch	□														
Special versions	□ □ □ □														
Example	3	R	V	2	0	1	1	-	1	A	A	1	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.



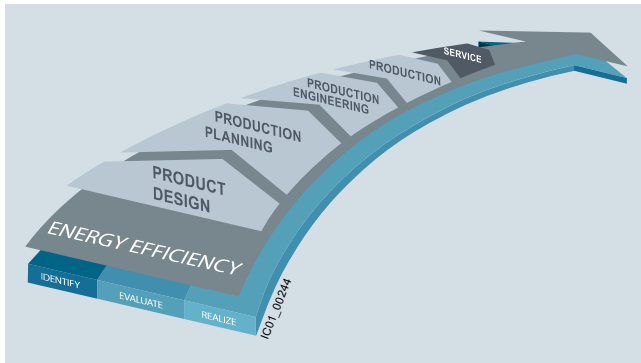
# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

General data

### Benefits

#### 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 – identify, evaluate and realize – 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](http://www.siemens.com/sirius/energysaving)).

3RV2 motor starter protectors/circuit breakers contribute to energy efficiency throughout the plant as follows:

- Minimization of energy losses through optimization of the bimetal trip units
- Reduction of inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

### Application

#### Operating conditions

3RV2 motor starter protectors/circuit breakers are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV2 motor starter protectors/circuit breakers can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see the manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", <http://support.automation.siemens.com/WW/view/en/60279172>.

3RV2 motor starter protectors/circuit breakers are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account, see page 7/11.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector/circuit breaker. This also applies to motor starter protectors for transformer protection.

#### Possible uses

The 3RV2 motor starter protectors can be used:

- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For operation in IT systems (IT networks)
- For switching of DC currents
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV27 and 3RV28)

For more information, see

- System manual "SIRIUS Innovations – System Overview", <http://support.automation.siemens.com/WW/view/en/60317357>
- Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", <http://support.automation.siemens.com/WW/view/en/60279172>

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

### Technical specifications

#### Short-circuit breaking capacity $I_{cu}$ , $I_{cs}$ according 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 operating voltages dependent on 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 of this back-up fuse is indicated in the tables. The rated ultimate short-circuit breaking capacity then applies as specified on the fuse.

#### Fuseless design

Motor starter protector/contactors assemblies for short-circuit currents up to 150 kA can be ordered as fuseless load feeders, see Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet".

Motor starter protectors/circuit breakers	Rated current $I_n$	Up to 240 V AC <sup>1)</sup>			Up to 400 V AC <sup>1)</sup> / 415 V AC <sup>2)</sup>			Up to 440 V AC <sup>1)</sup> / 460 V AC <sup>2)</sup>			Up to 500 V AC <sup>1)</sup> / 525 V AC <sup>2)</sup>			Up to 690 V AC <sup>1)</sup>		
		$I_{cu}$	$I_{cs}$	Max. fuse (gG)	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)</sup>	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)</sup>	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)</sup>	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)4)</sup>
Type	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
<b>Size S00</b>																
<b>3RV2.11</b>	0.16 ... 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	100	100	°	100	100	°	100	100	°	100	100	°	10	10	32
	4; 5	100	100	°	100	100	°	100	100	°	100	100	°	6	4	32
	6.3	100	100	°	100	100	°	100	100	°	100	100	°	6	4	50
	8	100	100	°	100	100	°	50	50	63	42	42	63	6	4	50
	10	100	100	°	100	100	°	50	50	80	42	42	63	6	4	50
	12.5	100	100	°	100	100	°	50	50	80	42	42	80	6	4	63
	16	100	100	°	55	30	100	50	10	80	10	5	80	4	4	63
<b>Size S0</b>																
<b>3RV2.21</b>	0.16 ... 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	100	100	°	100	100	°	100	100	°	100	100	°	10	10	32
	4; 5	100	100	°	100	100	°	100	100	°	100	100	°	6	4	32
	6.3	100	100	°	100	100	°	100	100	°	100	100	°	6	4	50
	8	100	100	°	100	100	°	50	50	63	42	42	63	6	4	50
	10	100	100	°	100	100	°	50	50	80	42	42	63	6	4	50
	12.5	100	100	°	100	100	°	50	50	80	42	42	80	6	4	63
	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; 25	100	100	°	55	25	125	50	10	100	10	5	80	4	2	63
	28; 32	100	100	°	55	25	125	30	10	125	10	5	100	4	2	100
	36; 40	100	100	°	20	10	125	12	8	125	6	3	100	3	2	100

° 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.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

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

3RV2 motor starter protectors/circuit breakers are suitable for use in IT systems. The values of  $I_{cu}$  and  $I_{cs}$  apply for the three-pole short circuit. In case of a double ground fault in 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 3RV2 motor starter protectors/circuit breakers.

If the short-circuit current at the place of installation exceeds the motor starter protector/circuit breaker's specified rated short-circuit breaking capacity, you will need to use a back-up fuse. The maximum rated current of this back-up fuse is indicated in the tables. The rated short-circuit breaking capacity then applies as specified on the fuse.

Motor starter protectors/circuit breakers	Rated current $I_n$	Up to 240 V AC <sup>1)</sup>		Up to 400 V AC <sup>1)</sup> /415 V AC <sup>2)</sup>		Up to 500 V AC <sup>1)</sup> /525 V AC <sup>2)</sup>		Up to 690 V AC <sup>1)5)</sup>	
		$I_{cuIT}$	Max. fuse (gG) <sup>3)</sup>	$I_{cuIT}$	Max. fuse (gG) <sup>3)4)</sup>	$I_{cuIT}$	Max. fuse (gG) <sup>3)</sup>	$I_{cuIT}$	Max. fuse (gG) <sup>3)</sup>
Type	A	kA	A	kA	A	kA	A	kA	A
<b>Size S00</b>									
<b>3RV2.11</b>	0.16 ... 0.4	100	°	100	°	100	°	100	°
	0.5	100	°	100	°	100	°	0.5	4
	0.63; 0.8	100	°	100	°	100	°	0.5	6
	1	100	°	100	°	8	10	2	10
	1.25	100	°	100	°	8	16	2	16
	1.6	100	°	100	°	8	20	2	16
	2; 2.5	100	°	8	25	8	25	2	20
	3.2	100	°	8	32	8	32	2	25
	4; 5	100	°	4	32	2	32	2	25
	6.3; 8	100	°	4	50	2	40	1.5	35
	10	100	°	4	50	2	40	1.5	40
	12.5	100	°	4	63	2	50	1.5	40
	16	55	80	4	63	2	50	1.5	40
<b>Size S0</b>									
<b>3RV2.21</b>	0.16 ... 0.4	100	°	100	°	100	°	100	°
	0.5	100	°	100	°	100	°	0.5	4
	0.63; 0.8	100	°	100	°	100	°	0.5	6
	1	100	°	100	°	8	10	2	10
	1.25	100	°	100	°	8	16	2	16
	1.6	100	°	100	°	8	20	2	16
	2; 2.5	100	°	8	25	8	25	2	20
	3.2	100	°	8	32	8	32	2	25
	4; 5	100	°	4	32	2	32	2	25
	6.3; 8	100	°	4	50	2	40	1.5	35
	10	100	°	4	50	2	40	1.5	40
	12.5	100	°	4	63	2	50	1.5	40
	16	55	80	4	63	2	50	1.5	40
	20 ... 25	55	80	4	63	2	50	1.5	50
	28; 32	55	80	2	63	2	63	1.5	63
36; 40	20	80	2	63	2	63	1.5	63	

° 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) Overvoltage category II applies for applications in IT systems  $> 600$  V.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

#### Limiter function with standard devices for 500 V AC and 690 V AC according to IEC 60947-2

The table shows the rated ultimate short-circuit breaking capacity  $I_{cu}$  and the rated service short-circuit breaking capacity  $I_{cs}$  with an upstream standard motor starter protector/circuit breaker that fulfills the limiter function at voltages 500 V AC and 690 V AC.

The short-circuit breaking capacity can be increased significantly with an upstream standard motor starter protector/circuit breaker with limiter function. The motor starter protector/circuit breaker which is connected downstream must be set to the rated current of the load.

With motor starter protector/circuit breaker assemblies, note the clearance to grounded parts and between the motor starter protectors/circuit breakers. Short-circuit proof wiring between the motor starter protectors/circuit breakers must be ensured. The motor starter protectors/circuit breakers can be mounted side by side in a modular arrangement.

Standard motor starter protectors/circuit breakers		Rated current $I_n$	Up to 500 V AC <sup>1)</sup> /525 V AC <sup>2)</sup>		Up to 690 V AC <sup>1)</sup>	
Type	With limiter rated current $I_n$	A	$I_{cu}$ kA	$I_{cs}$ kA	$I_{cu}$ kA	$I_{cs}$ kA
<b>Size S00</b>						
<b>3RV2.11</b>	<b>Size S0:</b> $I_n = 32$ A	2 ... 6.3 8 10 ... 16	-- 100 100	-- 50 50	50 20 20 <sup>3)</sup>	25 10 10 <sup>3)</sup>
	<b>Size S2:</b> <b>3RV1331-4HC10</b> $I_n = 50$ A	10 ... 16	--	--	50	25
<b>Size S0</b>						
<b>3RV2.21</b>	<b>Size S0:</b> $I_n = 32$ A	16 ... 32	100	50	20 <sup>3)</sup>	10 <sup>3)</sup>
	<b>Size S2:</b> <b>3RV1331-4HC10</b> $I_n = 50$ A	16 ... 32	--	--	50	20

-- No limiter required

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Infeed to the limiter is always on the side 1L1/3L2/5L3.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

#### 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 and CSA C22.2 No. 14, they can be used on their own or as load feeders in combination with a contactor.

#### 3RV2 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 circuit breakers 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).

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).

The file numbers for the approval of the 3RV2 as a Manual Motor Controller are as follows:

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

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

-- No approval

<sup>1)</sup> hp rating = Power rating in horse power (maximum motor rating).

<sup>2)</sup> FLA = Full Load Amps/motor full load current.

<sup>3)</sup> Corresponds to "short-circuit breaking capacity" according to UL/CSA.

<sup>4)</sup> The values in brackets only apply to 3RV2.23 motor starter protectors.

#### 3RV20 motor starter protectors (up to 32 A) as "Manual Motor Controller 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 for 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. Approved fuses or a circuit breaker according to UL 489 can be used.

These devices must be dimensioned according to the National Electrical Code.

The 3RV20 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 <sup>1)</sup> for FLA <sup>2)</sup> max.		Rated current $I_n$ A	240 V AC	Up to 480 Y/277 V AC	Up to 600 Y/347 V AC
Type	V	Single-phase	3-phase		UL $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA
<b>Size S00</b>							
<b>3RV2011</b>				0.16 ... 12.5 16	65 65	65 65	30 --
FLA <sup>2)</sup> max.	115	1	2				
16 A, 480 V;	200	2	3				
12.5 A, 600 V	230	2	5				
	460	--	10				
	575/600	--	10				
<b>Size S0</b>							
<b>3RV2021</b>				0.16 ... 12.5 16 ... 25 28; 32	65 65 50	65 65 50	30 -- --
FLA <sup>2)</sup> max.	115	2	5				
32 A, 480 V	200	3	7 1/2				
	230	5	10				
	460	--	20				
	575/600	--	--				

-- No approval

<sup>1)</sup> hp rating = Power rating in horse power (maximum motor rating).

<sup>2)</sup> FLA = Full Load Amps/motor full load current.

<sup>3)</sup> Corresponds to "short-circuit breaking capacity" according to UL.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

#### 3RV20 motor starter protectors (up to 32 A) as "Self-Protected Combination Motor Controller (Type E)"

UL 508 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 size S00 and S0 are approved according to UL 508 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	V	hp rating <sup>1)</sup> for FLA <sup>2)</sup> max.		Rated current $I_n$ A	Up to 240 V AC		Up to 480 Y/277 V AC		Up to 600 Y/347 V AC	
		Single-phase	3-phase		UL $I_{bc}$ <sup>3)</sup> kA	CSA $I_{bc}$ <sup>3)</sup> kA	UL $I_{bc}$ <sup>3)</sup> kA	CSA $I_{bc}$ <sup>3)</sup> kA	UL $I_{bc}$ <sup>3)</sup> kA	CSA $I_{bc}$ <sup>3)</sup> kA
<b>Size S00</b>										
<b>3RV2011 + 3RV2928-1H<sup>4)5)</sup></b>				0.16 ... 12.5 16	65 65	65 65	65 65	65 65	30 --	30 --
FLA <sup>2)</sup> max.	115	1	2							
16 A, 480 V;	200	2	3							
12.5 A, 600 V	230	2	5							
	460	--	10							
	575/600	--	10							
<b>Size S0</b>										
<b>3RV2021 + 3RV2928-1H<sup>4)5)</sup></b>				0.16 ... 12.5 16 ... 25 28; 32	65 65 50	65 65 50	65 65 50	65 65 50	30 -- --	30 -- --
FLA <sup>2)</sup> max.	115	2	5							
32 A, 480 V	200	3	7 1/2							
	230	5	10							
	460	--	20							
	575/600	--	--							

-- No approval

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 can also be used.

#### 3RV27 and 3RV28 motor starter protectors as "circuit breakers"

These motor starter protectors are approved as circuit breakers according to UL 489 and CSA 22.2 No. 5. 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".

3RV27 and 3RV28 motor starter protectors are approved as "circuit breakers" under the following file numbers:

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

Circuit breakers	Rated current $I_n$ A	240 V AC		480 Y/277 V AC		600 Y/347 V AC	
		UL $I_{bc}$ <sup>1)</sup> kA	CSA $I_{bc}$ <sup>1)</sup> kA	UL $I_{bc}$ <sup>1)</sup> kA	CSA $I_{bc}$ <sup>1)</sup> kA	UL $I_{bc}$ <sup>1)</sup> kA	CSA $I_{bc}$ <sup>1)</sup> kA
<b>Size S00</b>							
<b>3RV2711</b>	0.16 ... 12.5 15	65 65	65 65	65 65	65 65	10 --	10 --
<b>3RV2811</b>	0.16 ... 12.5 15	65 65	65 65	65 65	65 65	10 --	10 --
<b>Size S0</b>							
<b>3RV2721</b>	20; 22	50	50	50	50	--	--
<b>3RV2821</b>	20; 22	50	50	50	50	--	--

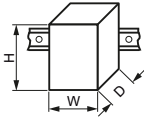
-- No approval

1) Corresponds to "short-circuit breaking capacity" according to UL.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

General data			3RV2.1.	3RV27, 3RV28	3RV2.2.
<b>Type</b>			S00	S00, S0	S0
<b>Size</b>					
<b>Dimensions (W x H x D)</b>			mm	45 x 97 x 91	45 x 97 x 91
• Screw terminals			mm	45 x 109 x 91	45 x 119 x 91
• Spring-type terminals				--	--
<b>Standards</b>					
• 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
• UL 508, CSA C22.2 No.14			Yes	--	Yes
• UL 489, CSA C22.2 No. 5			--	Yes	--
<b>Number of poles</b>			3		
<b>Max. rated current <math>I_{n \max}</math></b> (= max. rated operational current $I_e$ )		A	16	22	40
<b>Permissible ambient temperature</b>					
• Storage/transport		°C	-50 ... +80		
• Operation	$I_n: 0.16 \dots 32 \text{ A}$	°C	-20 ... +70 (current reduction above +60 °C)		
	$I_n: 36 \dots 40 \text{ A}$	°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)		
<b>Permissible rated current at inside temperature of control cabinet</b>					
• +60 °C		%	100		
• +70 °C		%	87		
<b>Permissible rated current at ambient temperature of enclosure</b> (applies for motor starter protector/circuit breaker inside enclosure $\leq 32 \text{ A}$ )					
• +35 °C		%	100		
• +60 °C		%	87		
<b>Rated operational voltage <math>U_e</math></b>					
• Acc. to IEC		V AC	690 (with molded-plastic enclosure 500 V)		
• Acc. to UL/CSA		V AC	600		
<b>Rated frequency</b>		Hz	50/60		
<b>Rated insulation voltage <math>U_i</math></b>		V	690		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>		kV	6		
<b>Utilization category</b>					
• IEC 60947-2 (motor starter protector/circuit breaker)		A	AC-3		
• IEC 60947-4-1 (motor starter)					
<b>Trip class CLASS</b>	Acc. to IEC 60947-4-1		10	--	10
<b>DC short-circuit breaking capacity</b> (time constant $t = 5 \text{ ms}$ )					
• 1 conducting path 150 V DC		kA	10		
• 2 conducting paths in series 300 V DC		kA	10		
• 3 conducting paths in series 450 V DC		kA	10		
<b>Power loss <math>P_p</math> for each motor starter protector/circuit breaker</b>					
Dependent on	$I_n: 0.16 \dots 0.63 \text{ A}$	W	5		
the rated current $I_n$	$I_n: 0.8 \dots 6.3 \text{ A}$	W	6		
(upper setting range)	$I_n: 8 \dots 16 \text{ A}$	W	7		
	$I_n: 16 \text{ A}$	W	--		7
	$I_n: 20 \dots 25 \text{ A}$	W	--		8
	$I_n: 28 \dots 32 \text{ A}$	W	--		11
	$I_n: 36 \dots 40 \text{ A}$	W	--		14
$R_{\text{per conducting path}} = \frac{P}{I^2 \times 3}$					
<b>Shock resistance</b>	Acc. to IEC 60068-2-27	g/ms	25/11 (square and sine pulse)		
<b>Degree of protection</b>	Acc. to IEC 60529		IP20		
<b>Touch protection</b>	Acc. to EN 50274		Finger-safe for vertical contact from the front		
<b>Temperature compensation</b>	Acc. to IEC 60947-4-1	°C	-20 ... +60		
<b>Phase failure sensitivity</b>	Acc. to IEC 60947-4-1		Yes	No	Yes
<b>Explosion protection – Safe operation of motors with "increased safety" type of protection</b>			Yes, only for 3RV20 motor starter protectors		
EC type test certificate number according to directive 94/9/EC (ATEX)			On request		
<b>Isolating function</b>	Acc. to IEC 60947-2		Yes		
<b>Main and EMERGENCY-STOP switch characteristics</b> (with corresponding accessories)	Acc. to EN 60204-1		Yes		
<b>Protective separation between main and auxiliary circuits, required for PELV applications</b>	Acc. to IEC 60947-1				
• Up to 400 V + 10 %			Yes		
• Up to 415 V + 5 % (higher voltages on request)			Yes		
<b>Permissible mounting position</b>			Any, acc. to IEC 60447 start command "I" right-hand side or top		
<b>Mechanical endurance</b>	Operating cycles		100 000		
<b>Electrical endurance</b>	Operating cycles		100 000		
<b>Max. switching frequency per hour (motor starts)</b>	1/h		15		

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data

#### Rated data of the auxiliary switches and signaling switches

			Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC	Signaling switches	Transverse auxiliary switch with	
					1 CO	1 NO + 1 NC, 2 NO
<b>Max. rated voltage</b>						
• Acc. to NEMA (UL)	V AC	600				250
• Acc. to NEMA (CSA)	V AC	600				250
<b>Uninterrupted current</b>	A	10		10	5	2.5
<b>Switching capacity</b>			1 NO + 1 NC, 2 NO, 2 NC; A600, Q300; 2 NO + 2 NC; A300, Q300	A600, Q300	B600, R300	C300, R300

#### Front transverse auxiliary switches

			Switching capacity for different voltages	
			1 CO	1 NO + 1 NC, 2 NO
<b>Rated operational current <math>I_e</math></b>				
• 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		--
<b>Minimum load capacity</b>	V	17		
	mA	1		

#### Front transverse electronic compatible auxiliary switches

			Switching capacity for different voltages	
			1 CO	
<b>Rated operational voltage <math>U_e</math></b>	Alternating voltage	V	125	
<b>Rated operational current <math>I_e/AC-14</math></b>	at $U_e = 125$ V	A	0.1	
<b>Rated operational voltage <math>U_e</math></b>	Direct voltage $L/R$ 200 ms	V	60	
<b>Rated operational current <math>I_e/DC-13</math></b>	at $U_e = 60$ V	A	0.3	
<b>Minimum load capacity</b>	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	
<b>Rated operational current <math>I_e</math></b>				
• 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		
<b>Minimum load capacity</b>	V	17		
	mA	1		



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A




### General data

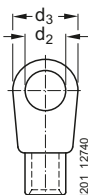
Auxiliary releases		Undervoltage releases		Shunt releases	
<b>Power consumption</b>					
• During pick-up - AC voltages - DC voltages	VA/W	20.2/13	20.2/13		
	W	20	13 ... 80		
• During uninterrupted duty - AC voltages - DC voltages	VA/W	7.2/2.4	--		
	W	2.1	--		
<b>Response voltage</b>					
• Tripping	V	0.35 ... 0.7 x $U_s$	0.7 ... 1.1 x $U_s$		
• Pick-up	V	0.85 ... 1.1 x $U_s$	--		
<b>Opening time maximum</b>					
	ms	20			

### Short-circuit protection for auxiliary and control circuits

<b>Melting fuses</b> operational class gG	A	10
<b>Miniature circuit breakers</b> C characteristic	A	6 (prospective short-circuit current < 0.4 kA)

### Conductor cross-sections of main circuit

Type		3RV2.11	3RV2.21	3RV27, 3RV28
Size		S00	S0	S00, S0
<b>Connection type</b>  Screw terminals				
<b>Terminal screw</b>		M3, Pozidriv size 2	M4, Pozidriv size 2	M4, Pozidriv size 2
<b>Operating devices</b>	mm	∅ 5 ... 6	∅ 5 ... 6	∅ 5 ... 6
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2	2 ... 2.5	2.5 ... 3
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected				
• Solid	mm <sup>2</sup>	2 x (0.75 ... 2.5) <sup>1)</sup> , 2 x 4	2 x (1 ... 2.5) <sup>1)</sup> , 2 x (2.5 ... 10) <sup>1)</sup>	1 ... 10, max. 2 x 10
• Stranded	mm <sup>2</sup>	2 x (0.75 ... 2.5) <sup>1)</sup> , 2 x 4	2 x (1 ... 2.5) <sup>1)</sup> , 2 x (2.5 ... 10) <sup>1)</sup>	1.5 ... 25, max. 10 + 25
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	2 x (1 ... 2.5) <sup>1)</sup> , 2 x (2.5 ... 6) <sup>1)</sup> , 1 x 10	1 ... 16, max. 6 + 16
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>1)</sup> , 2 x (18 ... 12) <sup>1)</sup>	2 x (16 ... 12) <sup>1)</sup> , 2 x (14 ... 8) <sup>1)</sup>	2 x (14 ... 10)
<b>Connection type</b>  Spring-type terminals				
<b>Operating devices</b>	mm	3.0 x 0.5 and 3.5 x 0.5		
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected				
• Solid	mm <sup>2</sup>	2 x (0.5 ... 4)	2 x (1 ... 10)	--
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)	2 x (1 ... 6)	--
• Finely stranded with end sleeves (DIN 46228-11)	mm <sup>2</sup>	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	--
<b>Connection type</b>  Ring terminal lug connections				
<b>Terminal screw</b>		M3, Pozidriv size 2	M4, Pozidriv size 2	--
<b>Operating devices</b>	mm	∅ 5 ... 6	∅ 5 ... 6	--
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2	2 ... 2.5	--
<b>Usable ring terminal lugs</b>				
• DIN 46234 without insulation sleeve	mm	d <sub>2</sub> = min. 3.2, d <sub>3</sub> = max. 7.5	d <sub>2</sub> = min. 4.3, d <sub>3</sub> = max. 12.2	--
• 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				






<sup>1)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

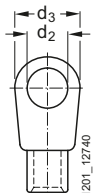
# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### General data




#### Conductor cross-sections for auxiliary and control circuits

Type	3RV2.11	3RV2.21	3RV27, 3RV28
Size	S00	S0	S00, S0
Connection type	 <b>Screw terminals</b>		
Terminal screw	M3, Pozidriv size 2		
Operating devices	mm	∅ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected			
• Solid or stranded	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	
• AWG cables, solid or stranded	AWG	2 x (18 ... 14) <sup>1)</sup> , 2 x (20 ... 16) <sup>1)</sup>	
Connection type	 <b>Spring-type terminals</b>		
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)	
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5)	
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	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	 <b>Ring terminal lug connections</b>		
Terminal screw	M3, Pozidriv size 2		
Operating devices	mm	∅ 5 ... 6	
Tightening torque	Nm	0.8 ... 1.2	
<b>Usable ring terminal lugs</b>	mm	d <sub>2</sub> = min. 3.2, d <sub>3</sub> = 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			



<sup>1)</sup> 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"

Type	3RV2928-1H
Prescribed tightening torque	Nm 2.5 ... 3
<b>Conductor cross-sections</b>	
• Front clamping point connected	
 NSBE_00479 <ul style="list-style-type: none"> <li>- Solid</li> <li>- Finely stranded with end sleeve</li> <li>- Stranded</li> <li>- AWG cables, solid or stranded</li> <li>- Terminal screw</li> </ul>	mm <sup>2</sup> 1 ... 10 mm <sup>2</sup> 1 ... 16 mm <sup>2</sup> 2.5 ... 25 AWG 14 ... 3 M4
• Rear clamping point connected	
 NSBE_00480 <ul style="list-style-type: none"> <li>- Solid</li> <li>- Finely stranded with end sleeve</li> <li>- Stranded</li> <li>- AWG cables, solid or stranded</li> <li>- Terminal screw</li> </ul>	mm <sup>2</sup> 1 ... 10 mm <sup>2</sup> 1 ... 16 mm <sup>2</sup> 1.5 ... 25 AWG 14 ... 6 M4
• Both clamping points connected	
 NSBE_00481 <ul style="list-style-type: none"> <li>- Front clamping point:             <ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>Stranded</li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> </ul> </li> <li>- Rear clamping point:             <ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>Stranded</li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> </ul> </li> </ul>	mm <sup>2</sup> 1 ... 10 mm <sup>2</sup> 1 ... 10 <sup>1)</sup> , 1 ... 6 <sup>1)</sup> mm <sup>2</sup> 2.5 ... 10 AWG 14 ... 6 M4  mm <sup>2</sup> 1 ... 10 mm <sup>2</sup> 1 ... 10 <sup>1)</sup> , 1 ... 16 <sup>1)</sup> mm <sup>2</sup> 2.5 ... 10 AWG 16 ... 3 M4

<sup>1)</sup> The following can be connected when both clamping points are connected:

- Front 1 ... 10 mm<sup>2</sup> and rear 1 ... 10 mm<sup>2</sup>
- Front 1 ... 6 mm<sup>2</sup> and rear 1 ... 16 mm<sup>2</sup>

# Motor Starter Protectors/Circuit Breakers

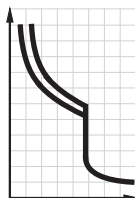
## SIRIUS 3RV2 Motor Starter Protectors up to 40 A

For motor protection

### Selection and ordering data

#### CLASS 10, without auxiliary switches<sup>1)</sup>

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



3RV2011-0AA10

3RV2011-0EA20

3RV2021-4AA10

3RV2021-4AA20

Rated current	Suitable for three-phase motors <sup>2)</sup> with P	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals	
$I_n$				$I_{cu}$		Article No.	Price per PU	Article No.	Price per PU
A	kW	A	A	kA					
<b>Size S00</b>									
0.16	0.04	0.11 ... 0.16	2.1	100	▶	3RV2011-0AA10	▶	3RV2011-0AA20	▶
0.2	0.06	0.14 ... 0.2	2.6	100	▶	3RV2011-0BA10	▶	3RV2011-0BA20	▶
0.25	0.06	0.18 ... 0.25	3.3	100	▶	3RV2011-0CA10	▶	3RV2011-0CA20	▶
0.32	0.09	0.22 ... 0.32	4.2	100	▶	3RV2011-0DA10	▶	3RV2011-0DA20	▶
0.4	0.09	0.28 ... 0.4	5.2	100	▶	3RV2011-0EA10	▶	3RV2011-0EA20	▶
0.5	0.12	0.35 ... 0.5	6.5	100	▶	3RV2011-0FA10	▶	3RV2011-0FA20	▶
0.63	0.18	0.45 ... 0.63	8.2	100	▶	3RV2011-0GA10	▶	3RV2011-0GA20	▶
0.8	0.18	0.55 ... 0.8	10	100	▶	3RV2011-0HA10	▶	3RV2011-0HA20	▶
1	0.25	0.7 ... 1	13	100	▶	3RV2011-0JA10	▶	3RV2011-0JA20	▶
1.25	0.37	0.9 ... 1.25	16	100	▶	3RV2011-0KA10	▶	3RV2011-0KA20	▶
1.6	0.55	1.1 ... 1.6	21	100	▶	3RV2011-1AA10	▶	3RV2011-1AA20	▶
2	0.75	1.4 ... 2	26	100	▶	3RV2011-1BA10	▶	3RV2011-1BA20	▶
2.5	0.75	1.8 ... 2.5	33	100	▶	3RV2011-1CA10	▶	3RV2011-1CA20	▶
3.2	1.1	2.2 ... 3.2	42	100	▶	3RV2011-1DA10	▶	3RV2011-1DA20	▶
4	1.5	2.8 ... 4	52	100	▶	3RV2011-1EA10	▶	3RV2011-1EA20	▶
5	1.5	3.5 ... 5	65	100	▶	3RV2011-1FA10	▶	3RV2011-1FA20	▶
6.3	2.2	4.5 ... 6.3	82	100	▶	3RV2011-1GA10	▶	3RV2011-1GA20	▶
8	3	5.5 ... 8	104	100	▶	3RV2011-1HA10	▶	3RV2011-1HA20	▶
10	4	7 ... 10	130	100	▶	3RV2011-1JA10	▶	3RV2011-1JA20	▶
12.5	5.5	9 ... 12.5	163	100	▶	3RV2011-1KA10	▶	3RV2011-1KA20	▶
16	7.5	11 ... 16	208	55	▶	3RV2011-4AA10	▶	3RV2011-4AA20	▶
<b>Size S0</b>									
0.63	0.18	0.45 ... 0.63	8.2	100	B	<b>NEW</b> 3RV2021-0GA10	B	<b>NEW</b> 3RV2021-0GA20	B
0.8	0.18	0.55 ... 0.8	10	100	B	3RV2021-0HA10	B	3RV2021-0HA20	B
1	0.25	0.7 ... 1	13	100	B	3RV2021-0JA10	B	3RV2021-0JA20	B
1.25	0.37	0.9 ... 1.25	16	100	B	3RV2021-0KA10	B	3RV2021-0KA20	B
1.6	0.55	1.1 ... 1.6	21	100	B	3RV2021-1AA10	B	3RV2021-1AA20	B
2	0.75	1.4 ... 2	26	100	B	3RV2021-1BA10	B	3RV2021-1BA20	B
2.5	0.75	1.8 ... 2.5	33	100	B	3RV2021-1CA10	B	3RV2021-1CA20	B
3.2	1.1	2.2 ... 3.2	42	100	B	3RV2021-1DA10	B	3RV2021-1DA20	B
4	1.5	2.8 ... 4	52	100	B	3RV2021-1EA10	B	3RV2021-1EA20	B
5	1.5	3.5 ... 5	65	100	B	3RV2021-1FA10	B	3RV2021-1FA20	B
6.3	2.2	4.5 ... 6.3	82	100	B	3RV2021-1GA10	B	3RV2021-1GA20	B
8	3	5.5 ... 8	104	100	B	3RV2021-1HA10	B	3RV2021-1HA20	B
10	4	7 ... 10	130	100	B	3RV2021-1JA10	B	3RV2021-1JA20	B
12.5	5.5	9 ... 12.5	163	100	B	3RV2021-1KA10	B	3RV2021-1KA20	B
16	7.5	11 ... 16	208	55	▶	3RV2021-4AA10	▶	3RV2021-4AA20	▶
20	7.5	14 ... 20	260	55	▶	3RV2021-4BA10	▶	3RV2021-4BA20	▶
22	11	17 ... 22	286	55	▶	3RV2021-4CA10	▶	3RV2021-4CA20	▶
25	11	20 ... 25	325	55	▶	3RV2021-4DA10	▶	3RV2021-4DA20	▶
28	15	23 ... 28	364	55	▶	3RV2021-4NA10	▶	3RV2021-4NA20	▶
32	15	27 ... 32	400	55	▶	3RV2021-4EA10	▶	3RV2021-4EA20	▶
36 <sup>3)</sup>	18.5	30 ... 36	432	20	▶	3RV2021-4PA10	▶	--	▶
40 <sup>3)</sup>	18.5	34 ... 40	480	20	▶	3RV2021-4FA10	▶	--	▶

<sup>1)</sup> The 3RV20.1-..A.0 motor starter protectors up to 32 A are also available with ring terminal lug connection. The Article No. must be changed in the 11th digit to "4": e.g. 3RV2011-0AA40.

<sup>2)</sup> 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.

<sup>3)</sup> 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.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

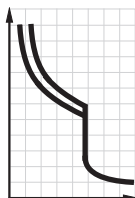
# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors up to 40 A

### For motor protection

#### CLASS 10, with transverse auxiliary switch (1 NO + 1 NC)

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



3RV2011-4AA15  
with integrated transverse  
auxiliary switch



3RV2011-0EA25  
with integrated transverse  
auxiliary switch



3RV2021-4AA15  
with integrated transverse  
auxiliary switch



3RV2021-4AA25  
with integrated transverse  
auxiliary switch

Rated current	Suitable for three-phase motors <sup>1)</sup> with P	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals	
$I_n$				$I_{cu}$		Article No.	Price per PU	Article No.	Price per PU
A	kW	A	A	kA					
<b>Size S00</b>									
0.16	0.04	0.11 ... 0.16	2.1	100	▶	3RV2011-0AA15	▶	3RV2011-0AA25	▶
0.2	0.06	0.14 ... 0.2	2.6	100	▶	3RV2011-0BA15	▶	3RV2011-0BA25	▶
0.25	0.06	0.18 ... 0.25	3.3	100	▶	3RV2011-0CA15	▶	3RV2011-0CA25	▶
0.32	0.09	0.22 ... 0.32	4.2	100	▶	3RV2011-0DA15	▶	3RV2011-0DA25	▶
0.4	0.09	0.28 ... 0.4	5.2	100	▶	3RV2011-0EA15	▶	3RV2011-0EA25	▶
0.5	0.12	0.35 ... 0.5	6.5	100	▶	3RV2011-0FA15	▶	3RV2011-0FA25	▶
0.63	0.18	0.45 ... 0.63	8.2	100	▶	3RV2011-0GA15	▶	3RV2011-0GA25	▶
0.8	0.18	0.55 ... 0.8	10	100	▶	3RV2011-0HA15	▶	3RV2011-0HA25	▶
1	0.25	0.7 ... 1	13	100	▶	3RV2011-0JA15	▶	3RV2011-0JA25	▶
1.25	0.37	0.9 ... 1.25	16	100	▶	3RV2011-0KA15	▶	3RV2011-0KA25	▶
1.6	0.55	1.1 ... 1.6	21	100	▶	3RV2011-1AA15	▶	3RV2011-1AA25	▶
2	0.75	1.4 ... 2	26	100	▶	3RV2011-1BA15	▶	3RV2011-1BA25	▶
2.5	0.75	1.8 ... 2.5	33	100	▶	3RV2011-1CA15	▶	3RV2011-1CA25	▶
3.2	1.1	2.2 ... 3.2	42	100	▶	3RV2011-1DA15	▶	3RV2011-1DA25	▶
4	1.5	2.8 ... 4	52	100	▶	3RV2011-1EA15	▶	3RV2011-1EA25	▶
5	1.5	3.5 ... 5	65	100	▶	3RV2011-1FA15	▶	3RV2011-1FA25	▶
6.3	2.2	4.5 ... 6.3	82	100	▶	3RV2011-1GA15	▶	3RV2011-1GA25	▶
8	3	5.5 ... 8	104	100	▶	3RV2011-1HA15	▶	3RV2011-1HA25	▶
10	4	7 ... 10	130	100	▶	3RV2011-1JA15	▶	3RV2011-1JA25	▶
12.5	5.5	9 ... 12.5	163	100	▶	3RV2011-1KA15	▶	3RV2011-1KA25	▶
16	7.5	11 ... 16	208	55	▶	3RV2011-4AA15	▶	3RV2011-4AA25	▶
<b>Size S0</b>									
16	7.5	11 ... 16	208	55	▶	3RV2021-4AA15	▶	3RV2021-4AA25	▶
20	7.5	14 ... 20	260	55	▶	3RV2021-4BA15	▶	3RV2021-4BA25	▶
22	11	17 ... 22	286	55	▶	3RV2021-4CA15	▶	3RV2021-4CA25	▶
25	11	20 ... 25	325	55	▶	3RV2021-4DA15	▶	3RV2021-4DA25	▶
28	15	23 ... 28	364	55	▶	3RV2021-4NA15	▶	3RV2021-4NA25	▶
32	15	27 ... 32	400	55	▶	3RV2021-4EA15	▶	3RV2021-4EA25	▶
36 <sup>2)</sup>	18.5	30 ... 36	432	20	▶	3RV2021-4PA15	▶	--	▶
40 <sup>2)</sup>	18.5	34 ... 40	480	20	▶	3RV2021-4FA15	▶	--	▶

<sup>1)</sup> 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.

<sup>2)</sup> 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.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

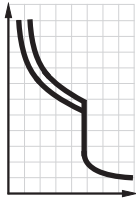
# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors up to 40 A

For motor protection with overload relay function

### Selection and ordering data

**CLASS 10, with overload relay function (automatic RESET), without auxiliary switches**



3RV2111-0FA10



3RV2121-4BA10

Rated current	Suitable for three-phase motors <sup>1)</sup> with P	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
$I_n$				$I_{cu}$		Article No.	Price per PU		
A	kW	A	A	kA					
<b>Size S00<sup>2)</sup></b>									
0.16	0.04	0.11 ... 0.16	2.1	100	A	3RV2111-0AA10	1	1 unit	41E
0.2	0.06	0.14 ... 0.2	2.6	100	A	3RV2111-0BA10	1	1 unit	41E
0.25	0.06	0.18 ... 0.25	3.3	100	A	3RV2111-0CA10	1	1 unit	41E
0.32	0.09	0.22 ... 0.32	4.2	100	A	3RV2111-0DA10	1	1 unit	41E
0.4	0.09	0.28 ... 0.4	5.2	100	A	3RV2111-0EA10	1	1 unit	41E
0.5	0.12	0.35 ... 0.5	6.5	100	A	3RV2111-0FA10	1	1 unit	41E
0.63	0.18	0.45 ... 0.63	8.2	100	A	3RV2111-0GA10	1	1 unit	41E
0.8	0.18	0.55 ... 0.8	10	100	A	3RV2111-0HA10	1	1 unit	41E
1	0.25	0.7 ... 1	13	100	A	3RV2111-0JA10	1	1 unit	41E
1.25	0.37	0.9 ... 1.25	16	100	A	3RV2111-0KA10	1	1 unit	41E
1.6	0.55	1.1 ... 1.6	21	100	A	3RV2111-1AA10	1	1 unit	41E
2	0.75	1.4 ... 2	26	100	A	3RV2111-1BA10	1	1 unit	41E
2.5	0.75	1.8 ... 2.5	33	100	A	3RV2111-1CA10	1	1 unit	41E
3.2	1.1	2.2 ... 3.2	42	100	A	3RV2111-1DA10	1	1 unit	41E
4	1.5	2.8 ... 4	52	100	A	3RV2111-1EA10	1	1 unit	41E
5	1.5	3.5 ... 5	65	100	A	3RV2111-1FA10	1	1 unit	41E
6.3	2.2	4.5 ... 6.3	82	100	A	3RV2111-1GA10	1	1 unit	41E
8	3	5.5 ... 8	104	100	A	3RV2111-1HA10	1	1 unit	41E
10	4	7 ... 10	130	100	A	3RV2111-1JA10	1	1 unit	41E
12.5	5.5	9 ... 12.5	163	100	A	3RV2111-1KA10	1	1 unit	41E
16	7.5	11 ... 16	208	55	A	3RV2111-4AA10	1	1 unit	41E
<b>Size S0<sup>2)</sup></b>									
16	7.5	11 ... 16	208	55	A	3RV2121-4AA10	1	1 unit	41E
20	7.5	14 ... 20	260	55	A	3RV2121-4BA10	1	1 unit	41E
22	11	17 ... 22	286	55	A	3RV2121-4CA10	1	1 unit	41E
25	11	20 ... 25	325	55	A	3RV2121-4DA10	1	1 unit	41E
28	15	23 ... 28	364	55	A	3RV2121-4NA10	1	1 unit	41E
32	15	27 ... 32	400	55	A	3RV2121-4EA10	1	1 unit	41E

<sup>1)</sup> 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.

<sup>2)</sup> Accessories for mounting on the right and 3RV2915 three-phase busbars cannot be used.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

# Motor Starter Protectors/Circuit Breakers

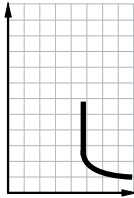
## SIRIUS 3RV2 Motor Starter Protectors up to 40 A

### For starter combinations

#### Selection and ordering data

##### Without auxiliary switches

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



3RV2311-4AC10



3RV2311-0JC20



3RV2321-4AC10



3RV2321-4AC20

Rated current	Suitable for three-phase motors <sup>1)</sup> with P	Thermal overload release <sup>2)</sup>	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals	
$I_n$				$I_{cu}$		Article No.	Price per PU	Article No.	Price per PU
A	kW	A	A	kA					
<b>Size S00</b>									
0.16	0.04	Without	2.1	100	B	3RV23 11-0AC10	B	3RV2311-0AC20	
0.2	0.06	Without	2.6	100	B	3RV2311-0BC10	B	3RV2311-0BC20	
0.25	0.06	Without	3.3	100	B	3RV2311-0CC10	B	3RV2311-0CC20	
0.32	0.09	Without	4.2	100	B	3RV2311-0DC10	B	3RV2311-0DC20	
0.4	0.09	Without	5.2	100	B	3RV2311-0EC10	B	3RV2311-0EC20	
0.5	0.12	Without	6.5	100	B	3RV2311-0FC10	B	3RV2311-0FC20	
0.63	0.18	Without	8.2	100	B	3RV2311-0GC10	B	3RV2311-0GC20	
0.8	0.18	Without	10	100	B	3RV2311-0HC10	B	3RV2311-0HC20	
1	0.25	Without	13	100	B	3RV2311-0JC10	B	3RV2311-0JC20	
1.25	0.37	Without	16	100	B	3RV2311-0KC10	B	3RV2311-0KC20	
1.6	0.55	Without	21	100	B	3RV2311-1AC10	B	3RV2311-1AC20	
2	0.75	Without	26	100	B	3RV2311-1BC10	B	3RV2311-1BC20	
2.5	0.75	Without	33	100	B	3RV2311-1CC10	B	3RV2311-1CC20	
3.2	1.1	Without	42	100	B	3RV2311-1DC10	B	3RV2311-1DC20	
4	1.5	Without	52	100	B	3RV2311-1EC10	B	3RV2311-1EC20	
5	1.5	Without	65	100	B	3RV2311-1FC10	B	3RV2311-1FC20	
6.3	2.2	Without	82	100	B	3RV2311-1GC10	B	3RV2311-1GC20	
8	3	Without	104	100	B	3RV2311-1HC10	B	3RV2311-1HC20	
10	4	Without	130	100	B	3RV2311-1JC10	B	3RV2311-1JC20	
12.5	5.5	Without	163	100	B	3RV2311-1KC10	B	3RV2311-1KC20	
16	7.5	Without	208	55	B	3RV2311-4AC10	B	3RV2311-4AC20	
<b>Size S0</b>									
1.6	0.55	Without	21	100	B	NEW 3RV2321-1AC10	B	NEW 3RV2321-1AC20	
2	0.75	Without	26	100	B	3RV2321-1BC10	B	3RV2321-1BC20	
2.5	0.75	Without	33	100	B	3RV2321-1CC10	B	3RV2321-1CC20	
3.2	1.1	Without	42	100	B	3RV2321-1DC10	B	3RV2321-1DC20	
4	1.5	Without	52	100	B	3RV2321-1EC10	B	3RV2321-1EC20	
5	1.5	Without	65	100	B	3RV2321-1FC10	B	3RV2321-1FC20	
6.3	2.2	Without	82	100	B	3RV2321-1GC10	B	3RV2321-1GC20	
8	3	Without	104	100	B	3RV2321-1HC10	B	3RV2321-1HC20	
10	4	Without	130	100	B	3RV2321-1JC10	B	3RV2321-1JC20	
12.5	5.5	Without	163	100	B	3RV2321-1KC10	B	3RV2321-1KC20	
16	7.5	Without	208	55	B	3RV2321-4AC10	B	3RV2321-4AC20	
20	7.5	Without	260	55	B	3RV2321-4BC10	B	3RV2321-4BC20	
22	11	Without	286	55	B	3RV2321-4CC10	B	3RV2321-4CC20	
25	11	Without	325	55	B	3RV2321-4DC10	B	3RV2321-4DC20	
28	15	Without	364	55	B	3RV2321-4NC10	B	3RV2321-4NC20	
32	15	Without	400	55	B	3RV2321-4EC10	B	3RV2321-4EC20	
36 <sup>3)</sup>	18.5	Without	432	20	B	3RV2321-4PC10		--	
40 <sup>3)</sup>	18.5	Without	480	20	B	3RV2321-4FC10		--	

<sup>1)</sup> 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.

<sup>2)</sup> For overload protection of the motors, appropriate overload relays must be used.

<sup>3)</sup> 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.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors up to 40 A

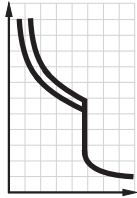
For transformer protection

### Selection and ordering data

#### CLASS 10, without auxiliary switches

Motor starter protectors for the protection of transformers with high inrush current

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



3RV2411-0AA10



3RV2411-0AA20



3RV2421-4AA10



3RV2421-4AA20

Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals	
$I_n$			$I_{cu}$		Article No.	Price per PU	Article No.	Price per PU
A	A	A	kA					
<b>Size S00</b>								
0.16	0.11 ... 0.16	3.3	100	▶	3RV2411-0AA10	A	3RV2411-0AA20	
0.2	0.14 ... 0.2	4.2	100	▶	3RV2411-0BA10	A	3RV2411-0BA20	
0.25	0.18 ... 0.25	5.2	100	▶	3RV2411-0CA10	A	3RV2411-0CA20	
0.32	0.22 ... 0.32	6.5	100	▶	3RV2411-0DA10	A	3RV2411-0DA20	
0.4	0.28 ... 0.4	8.2	100	▶	3RV2411-0EA10	A	3RV2411-0EA20	
0.5	0.35 ... 0.5	10	100	▶	3RV2411-0FA10	A	3RV2411-0FA20	
0.63	0.45 ... 0.63	13	100	▶	3RV2411-0GA10	A	3RV2411-0GA20	
0.8	0.55 ... 0.8	16	100	▶	3RV2411-0HA10	A	3RV2411-0HA20	
1	0.7 ... 1	21	100	▶	3RV2411-0JA10	A	3RV2411-0JA20	
1.25	0.9 ... 1.25	26	100	▶	3RV2411-0KA10	A	3RV2411-0KA20	
1.6	1.1 ... 1.6	33	100	▶	3RV2411-1AA10	A	3RV2411-1AA20	
2	1.4 ... 2	42	100	▶	3RV2411-1BA10	A	3RV2411-1BA20	
2.5	1.8 ... 2.5	52	100	▶	3RV2411-1CA10	A	3RV2411-1CA20	
3.2	2.2 ... 3.2	65	100	▶	3RV2411-1DA10	A	3RV2411-1DA20	
4	2.8 ... 4	82	100	▶	3RV2411-1EA10	A	3RV2411-1EA20	
5	3.5 ... 5	104	100	▶	3RV2411-1FA10	A	3RV2411-1FA20	
6.3	4.5 ... 6.3	130	100	▶	3RV2411-1GA10	A	3RV2411-1GA20	
8	5.5 ... 8	163	100	▶	3RV2411-1HA10	A	3RV2411-1HA20	
10	7 ... 10	208	100	▶	3RV2411-1JA10	A	3RV2411-1JA20	
12.5	9 ... 12.5	260	100	▶	3RV2411-1KA10	A	3RV2411-1KA20	
16	11 ... 16	286	55	▶	3RV2411-4AA10	A	3RV2411-4AA20	
<b>Size S0</b>								
16	11 ... 16	286	55	▶	3RV2421-4AA10	A	3RV2421-4AA20	
20	14 ... 20	325	55	▶	3RV2421-4BA10	A	3RV2421-4BA20	
22	17 ... 22	364	55	▶	3RV2421-4CA10	A	3RV2421-4CA20	
25	20 ... 25	400	55	▶	3RV2421-4DA10	A	3RV2421-4DA20	

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

# Motor Starter Protectors/Circuit Breakers

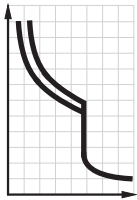
## SIRIUS 3RV2 Circuit Breakers up to 40 A

For system protection  
according to UL 489/CSA C22.2 No. 5

### Selection and ordering data

#### Without auxiliary switches

for system protection and non-motor loads according to UL/CSA



3RV2711-0AD10

Rated current <sup>1)</sup>	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at 480 Y/277 V AC <sup>2)</sup>	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
$I_n$ <sup>1)</sup>		$I >$	$I_{bc}$		Article No.	Price per PU		
A	A	A	kA					
<b>Size S00</b>								
0.16	0.16	2.1	65	C	<b>3RV2711-0AD10</b>	1	1 unit	41E
0.2	0.2	2.6	65	C	<b>3RV2711-0BD10</b>	1	1 unit	41E
0.25	0.25	3.3	65	C	<b>3RV2711-0CD10</b>	1	1 unit	41E
0.32	0.32	4.2	65	C	<b>3RV2711-0DD10</b>	1	1 unit	41E
0.4	0.4	5.2	65	C	<b>3RV2711-0ED10</b>	1	1 unit	41E
0.5	0.5	6.5	65	C	<b>3RV2711-0FD10</b>	1	1 unit	41E
0.63	0.63	8.2	65	C	<b>3RV2711-0GD10</b>	1	1 unit	41E
0.8	0.8	10	65	C	<b>3RV2711-0HD10</b>	1	1 unit	41E
1	1	13	65	C	<b>3RV2711-0JD10</b>	1	1 unit	41E
1.25	1.25	16	65	C	<b>3RV2711-0KD10</b>	1	1 unit	41E
1.6	1.6	21	65	C	<b>3RV2711-1AD10</b>	1	1 unit	41E
2	2	26	65	C	<b>3RV2711-1BD10</b>	1	1 unit	41E
2.5	2.5	33	65	C	<b>3RV2711-1CD10</b>	1	1 unit	41E
3.2	3.2	42	65	C	<b>3RV2711-1DD10</b>	1	1 unit	41E
4	4	52	65	C	<b>3RV2711-1ED10</b>	1	1 unit	41E
5	5	65	65	C	<b>3RV2711-1FD10</b>	1	1 unit	41E
6.3	6.3	82	65	C	<b>3RV2711-1GD10</b>	1	1 unit	41E
8	8	104	65	C	<b>3RV2711-1HD10</b>	1	1 unit	41E
10	10	130	65	C	<b>3RV2711-1JD10</b>	1	1 unit	41E
12.5	12.5	163	65	C	<b>3RV2711-1KD10</b>	1	1 unit	41E
15	15	208	65	C	<b>3RV2711-4AD10</b>	1	1 unit	41E
<b>Size S0</b>					<b>NEW</b>			
20	20	260	50	C	<b>3RV2721-4BD10</b>	1	1 unit	41E
22	22	286	50	C	<b>3RV2721-4CD10</b>	1	1 unit	41E

<sup>1)</sup> Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

<sup>2)</sup> For values for 600 Y/347 V AC see page 7/14.

Lateral and transverse auxiliary switches can be ordered separately (see "Accessories" on page 7/27 onwards).



# Motor Starter Protectors/Circuit Breakers

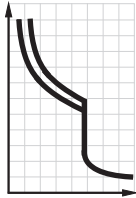
## SIRIUS 3RV2 Circuit Breakers up to 40 A

For transformer protection  
according to UL 489/CSA C22.2 No. 5

### Selection and ordering data

#### Without auxiliary switches

Circuit breakers for system and transformer protection according to UL/CSA, specially designed for transformers with high inrush current



3RV2811-0AD10

Rated current <sup>1)</sup> $I_n^{1)}$	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at 480 Y/277 V AC <sup>2)</sup>	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
A	A	A	kA		Article No.	Price per PU			
<b>Size S00</b>									
0.16	0.16	3.3	65	C	3RV2811-0AD10		1	1 unit	41E
0.2	0.2	4.2	65	C	3RV2811-0BD10		1	1 unit	41E
0.25	0.25	5.2	65	C	3RV2811-0CD10		1	1 unit	41E
0.32	0.32	6.5	65	C	3RV2811-0DD10		1	1 unit	41E
0.4	0.4	8.2	65	C	3RV2811-0ED10		1	1 unit	41E
0.5	0.5	10	65	C	3RV2811-0FD10		1	1 unit	41E
0.63	0.63	13	65	C	3RV2811-0GD10		1	1 unit	41E
0.8	0.8	16	65	C	3RV2811-0HD10		1	1 unit	41E
1	1	21	65	C	3RV2811-0JD10		1	1 unit	41E
1.25	1.25	26	65	C	3RV2811-0KD10		1	1 unit	41E
1.6	1.6	33	65	C	3RV2811-1AD10		1	1 unit	41E
2	2	42	65	C	3RV2811-1BD10		1	1 unit	41E
2.5	2.5	52	65	C	3RV2811-1CD10		1	1 unit	41E
3.2	3.2	65	65	C	3RV2811-1DD10		1	1 unit	41E
4	4	82	65	C	3RV2811-1ED10		1	1 unit	41E
5	5	104	65	C	3RV2811-1FD10		1	1 unit	41E
6.3	6.3	130	65	C	3RV2811-1GD10		1	1 unit	41E
8	8	163	65	C	3RV2811-1HD10		1	1 unit	41E
10	10	208	65	C	3RV2811-1JD10		1	1 unit	41E
12.5	12.5	260	65	C	3RV2811-1KD10		1	1 unit	41E
15	15	286	65	C	3RV2811-4AD10		1	1 unit	41E
<b>Size S0</b>									
20	20	325	50	C	3RV2821-4BD10		1	1 unit	41E
22	22	364	50	C	3RV2821-4CD10		1	1 unit	41E

<sup>1)</sup> Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

<sup>2)</sup> For values for 600 Y/347 V AC see page 7/14.

Lateral and transverse auxiliary switches can be ordered separately (see "Accessories" on page 7/27 onwards).

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Mountable accessories

#### 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](#).

<p><b>Front side</b></p> <p><u>Note:</u></p> <ul style="list-style-type: none"> <li>A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker.</li> </ul>	<p><b>Transverse auxiliary switches, electronic compatible transverse auxiliary switches</b></p> <p>1 NO + 1 NC or 2 NO or 1 CO</p>	<p>An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors/circuit breakers remains unchanged.</p>
<p><b>Left-hand side</b></p> <p><u>Notes:</u></p> <ul style="list-style-type: none"> <li>A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker.</li> <li>Lateral auxiliary switches (two contacts) and signaling switches can be mounted separately or together.</li> <li>The signaling switch cannot be used for the 3RV27 and 3RV28 circuit breakers.</li> </ul>	<p><b>Lateral auxiliary switches (2 contacts)</b></p> <p>1 NO + 1 NC or 2 NO or 2 NC</p> <p><b>Lateral auxiliary switches (4 contacts)</b></p> <p>2 NO + 2 NC</p>	<p>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.</p> <p>The width of the lateral auxiliary switch with two contacts is 9 mm.</p> <p>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.</p> <p>The width of the lateral auxiliary switch with four contacts is 18 mm.</p>
	<p><b>Signaling switches</b></p> <p>Tripping 1 NO + 1 NC Short circuit 1 NO + 1 NC</p>	<p>One signaling switch can be mounted on the left side of each motor starter protector.</p> <p>The signaling switch has two contact systems.</p> <p>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 handle.</p> <p>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.</p> <p>The overall width of the signaling switch is 18 mm.</p>
<p><b>Right-hand side</b></p> <p><u>Notes:</u></p> <ul style="list-style-type: none"> <li>One auxiliary release can be mounted per motor starter protector/circuit breaker.</li> <li>Accessories cannot be mounted at the right-hand side of the 3RV21 motor starter protectors for motor protection with overload relay function.</li> </ul>	<p><b>Auxiliary releases</b></p> <p>Shunt releases</p> <p>or</p> <p>Undervoltage releases</p> <p>or</p> <p>Undervoltage releases with leading auxiliary contacts 2 NO</p>	<p>For remote-controlled tripping of the motor starter protector/circuit breaker. The release coil should only be energized for short periods (see circuit diagrams).</p> <p>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.</p> <p>Particularly suitable for EMERGENCY-STOP disconnection by way of corresponding EMERGENCY-STOP pushbuttons according to DIN EN 60204-1.</p> <p>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.</p> <p>The overall width of the auxiliary release is 18 mm.</p>
<p><b>Top</b></p> <p><u>Notes:</u></p> <ul style="list-style-type: none"> <li>The isolator module cannot be used for the 3RV27 and 3RV28 circuit breakers.</li> <li>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.</li> </ul>	<p><b>Isolator modules</b></p>	<p>Isolator modules can be mounted to the upper connection side of the motor starter protectors.</p> <p>The supply cable is connected to the motor starter protector through the isolator module.</p> <p>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.</p>

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

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

Accessories  
Mountable accessories

### Selection and ordering data

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

Version	For motor starter protectors/ circuit breakers	DT	Screw terminals 	DT	Spring-type terminals 	
Size			Article No.	Price per PU	Article No.	Price per PU
<b>Auxiliary switches<sup>1)</sup></b>						
	<b>Transverse auxiliary switches</b> for front mounting	S00, S0	▶ 3RV2901-1D ▶ 3RV2901-1E ▶ 3RV2901-1F		▶ -- ▶ 3RV2901-2E ▶ 3RV2901-2F	
3RV2901-1E	1 CO 1 NO + 1 NC <sup>2)</sup> 2 NO					
	<b>Electronic compatible transverse auxiliary switches</b> mountable on the front, for operation in dusty atmosphere and in electronic circuits with low operating currents	S00, S0	▶ 3RV2901-1G		▶ --	
3RV2901-2E	1 CO					
						
3RV2901-1G						
	<b>Covers for transverse auxiliary switches</b>	S00, S0	▶ 3RV2901-0H		▶ --	
3RV2901-0H						
	<b>Lateral auxiliary switches</b> mountable on the left	S00, S0	▶ 3RV2901-1A ▶ 3RV2901-1B ▶ 3RV2901-1C ▶ 3RV2901-1J		▶ 3RV2901-2A ▶ 3RV2901-2B ▶ 3RV2901-2C ▶ --	
3RV2901-1A	1 NO + 1 NC <sup>2)</sup> 2 NO 2 NC 2 NO + 2 NC					
						
3RV2901-2A						
<b>Signaling switches<sup>3)</sup></b>						
	<b>Signaling switches<sup>2)</sup></b>	S00, S0	▶ 3RV2921-1M		▶ 3RV2921-2M	
3RV2921-1M	One signaling switch can be mounted on the left per motor starter protector. Separate tripped and short-circuit alarms, 1 NO + 1 NC each					
						
3RV2921-2M						
<b>Isolator modules<sup>3)</sup></b>						
	<b>Isolator modules</b>	S00, S0	▶ 3RV2928-1A		▶ --	
3RV2928-1A with padlock	Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position					

<sup>1)</sup> Each motor starter protector/circuit breaker can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch.

<sup>2)</sup> The 3RV29 auxiliary and signaling switches with 1 NO + 1 NC are also available with ring terminal lug connection. The Article No. must be changed in the 8th digit to "4": e.g. 3RV2901-4E.

<sup>3)</sup> This accessory cannot be used for the 3RV27 and 3RV28 circuit breakers.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Mountable accessories

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



3RV2902-1AV0





3RV2902-2AV0



3RV2922-1CP0



3RV2902-2DB0

Rated control supply voltage $U_s$						For motor starter protectors/circuit breakers	DT	Screw terminals 		Spring-type terminals 	
AC 50 Hz	AC 60 Hz	AC 50/60 Hz	AC/DC 50/60 Hz, DC	DC	Size			Article No.	Price per PU	Article No.	Price per PU
		100 % ON period <sup>1)</sup>	5 s ON period <sup>2)</sup>								
V	V	V	V	V	Size						
<b>Auxiliary releases<sup>3)</sup></b>											
<b>Undervoltage releases</b>											
--	--	--	--	24	S00, S0	A	3RV2902-1AB4		--		
24	--	--	--	--	S00, S0	A	3RV2902-1AB0		--		
110	120	--	--	--	S00, S0	A	3RV2902-1AF0		--		
--	208	--	--	--	S00, S0	A	3RV2902-1AM1		--		
230	240	--	--	--	S00, S0	4) ▶	3RV2902-1AP0	▶	3RV2902-2AP0		
400	440	--	--	--	S00, S0	4) ▶	3RV2902-1AV0	▶	3RV2902-2AV0		
415	480	--	--	--	S00, S0	A	3RV2902-1AV1		--		
500	600	--	--	--	S00, S0	A	3RV2902-1AS0		--		
<b>Undervoltage releases with leading auxiliary contacts 2 NO</b>											
230	240	--	--	--	S00, S0	A	3RV2922-1CP0	A	3RV2922-2CP0		
400	440	--	--	--	S00, S0	A	3RV2922-1CV0	A	3RV2922-2CV0		
415	480	--	--	--	S00, S0	4) A	3RV2922-1CV1	A	3RV2922-2CV1		
<b>Shunt releases</b>											
--	--	20 ... 24	20 ... 70	--	S00, S0	▶	3RV2902-1DB0	▶	3RV2902-2DB0		
--	--	90 ... 110	70 ... 190	--	S00, S0	4) A	3RV2902-1DF0	A	3RV2902-2DF0		
--	--	210 ... 240	190 ... 330	--	S00, S0	4) ▶	3RV2902-1DP0	▶	3RV2902-2DP0		
--	--	350 ... 415	330 ... 500	--	S00, S0	A	3RV2902-1DV0		--		
--	--	500	500	--	S00, S0	A	3RV2902-1DS0		--		

<sup>1)</sup> 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.

<sup>2)</sup> The voltage range is valid for 5 s ON period at AC 50/60Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

<sup>3)</sup> One auxiliary release can be mounted on the right per motor starter protector/circuit breaker (does not apply to 3RV21 motor starter protectors with overload relay function).

<sup>4)</sup> The 3RV29 auxiliary releases are also available with ring terminal lug connection. The Article No. must be changed in the 8th digit to "4": e.g. 3RV2902-4AP0.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

Accessories  
Busbar accessories

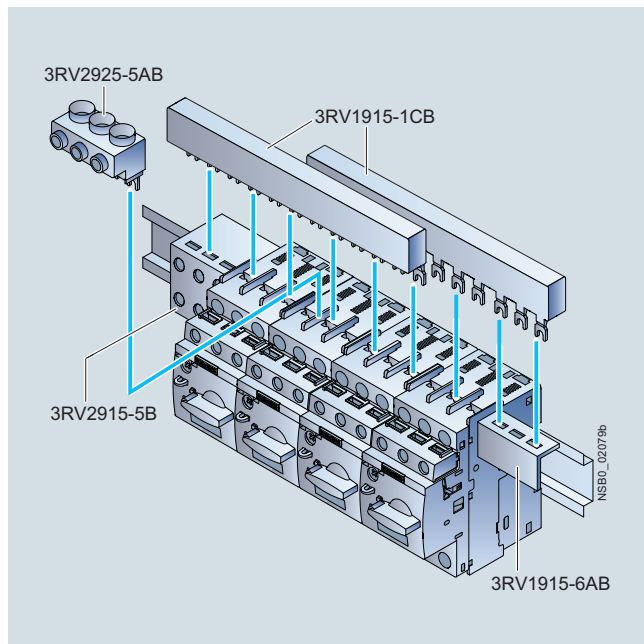
### Overview

#### Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV2 motor starter protectors/circuit breakers with screw terminals. They can be used for the different types of motor starter protector up to 32 A. The 3RV1915 three-phase busbar systems are generally unsuitable for the 3RV21 motor starter protectors for motor protection with overload relay function and 3RV27 and 3RV28 circuit breakers according to UL 489/CSA C22.2 No. 5.

The busbars are suitable for between two and five motor starter protectors/circuit breakers. 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/circuit breaker.

A combination of motor starter protectors/circuit breakers of different sizes is possible. The motor starter protectors/circuit breakers are supplied by appropriate infeed 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/circuit breakers.

The three-phase busbar systems can also be used to construct "Type E Starters" according to UL/CSA. Special infeed terminals must be used for this purpose, however (see "Selection and Ordering Data", page 7/30).

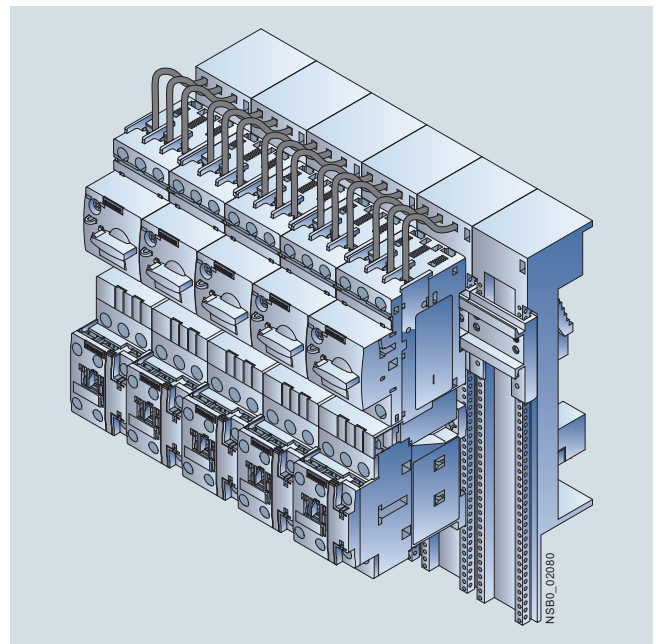
#### 8US busbar adapters for 60 mm systems

The motor starter protectors/circuit breakers 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/circuit breakers 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., see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".



SIRIUS load feeders with busbar adapters snapped onto busbars





# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Busbar accessories

#### Selection and ordering data

	Modular spacing mm	Number of motor starter protectors that can be connected			Rated current $I_n$ at 690 V A	For motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG		
		Without lateral accessories	With lateral auxiliary switch	With auxiliary release										
<b>Three-phase busbars<sup>1)2)</sup></b>														
 3RV1915-1AB	45 <sup>3)</sup>	2	--	--	63	S00, S0	▶	<b>3RV1915-1AB</b> <b>3RV1915-1BB</b> <b>3RV1915-1CB</b> <b>3RV1915-1DB</b>				1	1 unit	41E
		3				S00, S0	▶					1	1 unit	41E
		4				S00, S0	▶					1	1 unit	41E
		5				S00, S0	▶					1	1 unit	41E
 3RV1915-1BB	55 <sup>4)</sup>	--	2	--	63	S00, S0	▶	<b>3RV1915-2AB</b> <b>3RV1915-2BB</b> <b>3RV1915-2CB</b> <b>3RV1915-2DB</b>				1	1 unit	41E
			3			S00, S0	▶					1	1 unit	41E
			4			S00, S0	▶					1	1 unit	41E
 3RV1915-1CB	63 <sup>5)</sup>	--	--	2	63	S00, S0	▶	<b>3RV1915-3AB</b> <b>3RV1915-3CB</b>				1	1 unit	41E
				4		S00, S0	▶					1	1 unit	41E
 3RV1915-1DB														




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 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			Tightening torque Nm	For motor starter protectors/circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG		
	Solid or stranded mm <sup>2</sup>	Finely stranded with end sleeve mm <sup>2</sup>	AWG cables, solid or stranded AWG										
<b>Three-phase infeed terminals</b>													
 3RV2925-5AB	<b>Connection from top</b>			3 ... 4	S00, S0	▶	<b>3RV2925-5AB</b>				1	1 unit	41E
	<b>Connection from below</b>												
 3RV2915-5B	This terminal is connected in place of a switch, please take the space requirement into account.			Input: 4, Output: 2 ... 2.5	S00, S0	▶	<b>3RV2915-5B</b>				1	1 unit	41E
	2.5 ... 25	2.5 ... 16	10 ... 4										
<b>Three-phase infeed terminals for constructing "Type E Starters"</b>													
 3RV2925-5EB	2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	A	<b>3RV2925-5EB</b>				1	1 unit	41E

Version	For motor starter protectors/circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	---	----	-------------	--------------	-------------------	-----	----

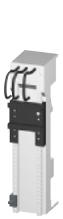
<b>Covers for connection tags</b>									
 3RV1915-6AB	Touch protection for empty positions			S00, S0	▶	<b>3RV1915-6AB</b>	1	10 units	41E

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

Accessories  
Busbar accessories

### Busbar adapters



8US1251-5DS10



8US1251-5DT11



8US1250-5AS10



8US1250-5AT10

For motor starter protectors/circuit breakers	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
<b>Busbar adapters for 60 mm systems</b>											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
• For motor starter protectors/circuit breakers with screw terminals											
S00/S0	25	12	200	45	690	▶	<b>8US1251-5DS10</b>		1	1 unit	140
S0	32	10	260	45	690	▶	<b>8US1251-5NT10</b>		1	1 unit	140
• For motor starter protectors/circuit breakers with spring-type terminals											
S00/S0	25	12	200	45	690	▶	<b>8US1251-5DS11</b>		1	1 unit	140
S00/S0	25	12	260	45	690	▶	<b>8US1251-5DT11</b>		1	1 unit	140
S0	32	10	260	45	690	▶	<b>8US1251-5NT11</b>		1	1 unit	140
<b>Accessories</b>											
<b>Device holders</b>	--	--	200	45	--	▶	<b>8US1250-5AS10</b>		1	1 unit	140
For lateral mounting to busbar adapters	--	--	260	45	--	▶	<b>8US1250-5AT10</b>		1	1 unit	140
<b>Side modules</b>	--	--	200	9	--	A	<b>8US1998-2BJ10</b>		1	10 units	140
For widening of busbar adapters											
<b>Spacers</b>	--	--	--	--	--	▶	<b>8US1998-1BA10</b>		1	10 units	140
For fixing the load feeder onto the busbar adapter											
<b>Vibration and shock kits</b>	--	--	--	--	--	▶	<b>8US1998-1CA10</b>		1	2 units	140
For high vibration and shock loads											

For additional busbar adapters see [Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology"](#).

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

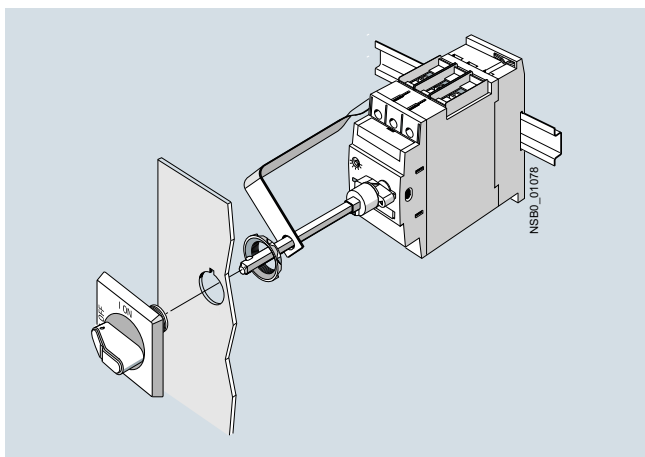
### Accessories

#### Rotary operating mechanisms

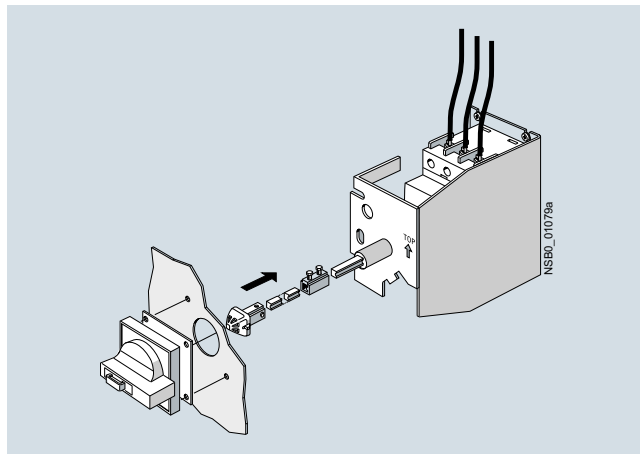
#### Overview

##### 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.



SIRIUS 3RV2926-0K door-coupling rotary operating mechanism



SIRIUS 3RV2926-2B door-coupling rotary operating mechanisms for arduous conditions

7

#### Selection and ordering data

Version	Color of handle	Version of extension shaft mm	For MSPs/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	-----------------	----------------------------------	---------------------------------------	----	-------------	--------------	-------------------	-----	----

##### Door-coupling rotary operating mechanisms



3RV2926-0B

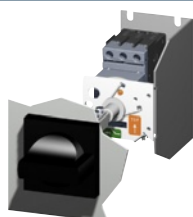
The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm).

The door-coupling rotary operating mechanisms are designed to degree of protection IP64. The door locking device prevents accidental 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.

<b>Door-coupling rotary operating mechanisms</b>	Black	130 330	S00, S0 S00, S0	▶	<b>3RV2926-0B</b> <b>3RV2926-0K</b>		1 1	1 unit 1 unit	41E 41E
--	-------	------------	--------------------	---	--	--	--------	------------------	------------

<b>EMERGENCY-STOP door-coupling rotary operating mechanisms</b>	Red/yellow	130 330	S00, S0 S00, S0	▶	<b>3RV2926-0C</b> <b>3RV2926-0L</b>		1 1	1 unit 1 unit	41E 41E
---	------------	------------	--------------------	---	--	--	--------	------------------	------------

##### Door-coupling rotary operating mechanisms for arduous conditions



3RV2926-2B

The door-coupling rotary operating mechanisms consist of a knob, 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.

The door-coupling rotary operating mechanisms are designed to degree of protection IP65. 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.

Laterally mountable auxiliary releases and two-pole auxiliary switches can be used.

The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.

<b>Door-coupling rotary operating mechanisms</b>	Gray	300	S00, S0	▶	<b>3RV2926-2B</b>		1	1 unit	41E
--	------	-----	---------	---	-------------------	--	---	--------	-----

<b>EMERGENCY-STOP door-coupling rotary operating mechanisms</b>	Red/yellow	300	S00, S0	▶	<b>3RV2926-2C</b>		1	1 unit	41E
---	------------	-----	---------	---	-------------------	--	---	--------	-----



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

Accessories  
Mounting accessories

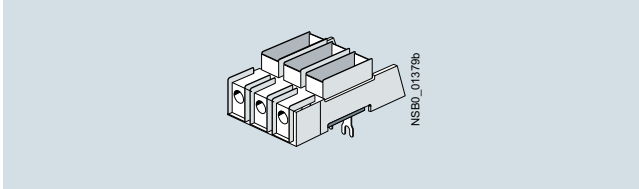
### Overview

#### Accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508

The 3RV20 motor starter protectors with screw terminals are approved according to UL 508 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 terminal blocks.

The 3RV2928-1H terminal block is simply screwed onto the basic unit.



SIRIUS 3RV2928-1H terminal block

Another way to obtain the increased clearance and creepage distances for Type E is to mount the 3RV2928-1K phase barriers.

Special three-phase infeed terminals are required for constructing "Type E Starters" with an insulated three-phase busbar system (see "Busbar Accessories", page 7/30).

The 3RV29 infeed system also enables the assembly of "Type E Starters", see page 7/40 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 protectors/circuit breakers Size	3RT2 contactors; 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors Size	Link modules	
			Screw terminals	Spring-type terminals
<b>Link modules for connecting switching devices to 3RV2 motor starter protectors/circuit breakers<sup>1)</sup></b>				
3RT2 contactors with AC or DC coil	S00	S00	3RA1921-1DA00	3RA2911-2AA00
	S0	S00		--
3RT2 contactors with AC coil	S0	S0	3RA2921-1AA00	3RA2921-2AA00
	S00	S0		--
3RT2 contactors 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		--
3RF34 solid-state contactors	S00/S0	S00	3RA2921-1BA00	--
<b>Hybrid link modules for connecting contactors with spring-type terminals to 3RV2 motor starter protectors/circuit breakers with screw terminals<sup>1)2)</sup></b>				
3RT2 contactors with AC or DC coil	S00	S00	3RA2911-2FA00	--
	S0	S0	3RA2921-2FA00	--

#### Note:

Link modules and hybrid link modules up to max. 32 A can be used.

<sup>1)</sup> The link modules and the hybrid link modules cannot be used for 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

<sup>2)</sup> The motor starter protector/circuit breaker to contactor hybrid link modules are only suitable for constructing direct-on-line starters.

# Motor Starter Protectors/Circuit Breakers


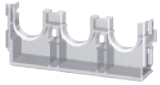





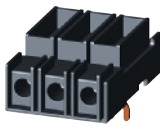
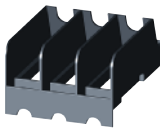
## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Mounting accessories

#### Selection and ordering data

##### Accessories

Version	For motor starter protectors/ circuit breakers	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Covers</b>							
 3RV2908-0P	<b>Scale covers</b> Sealable, for covering the set current scale	3RV20, 3RV21, 3RV24: S00, S0	▶ <b>3RV2908-0P</b>		100	10 units	41E
 3RV2928-4AA00	<b>Covers for devices with ring terminal lug connection</b> (ensure finger-safety)		<b>Ring terminal lug connections</b> 				
	• Main current level	3RV20: S00, S0	B <b>3RV2928-4AA00</b>		1	1 unit	41E
	• For transverse auxiliary switches		B <b>3RV2908-4AA10</b>		1	1 unit	41E
 3RV2908-4AA10							
<b>Fixing accessories</b>							
 3RV2928-0B	<b>Push-in lugs</b> For screwing the motor starter protector/ circuit breaker onto mounting plates  For each motor starter protector/circuit breaker, two units are required.	S00, S0	A <b>3RV2928-0B</b>		100	10 units	41E
<b>Tools for opening spring-type terminals</b>							
 3RA2908-1A	<b>Screwdrivers</b> For all SIRIUS devices with spring-type terminals  Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	S00, S0	A <b>3RA2908-1A</b>	<b>Spring-type terminals</b> 	1	1 unit	41B
<b>Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508</b>							
 3RV2928-1H	<b>Terminal blocks type E</b> For extended clearance and creepage distances (1 and 2 inch)	S00, S0	▶ <b>3RV2928-1H</b>		1	1 unit	41E
 3RV2928-1K	<b>Phase barriers</b> For extended clearance and creepage distances (1 and 2 inch)	S00, S0	▶ <b>3RV2928-1K</b>		1	1 unit	41E

##### Note:

UL 508 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 in 3RV20 motor starter protectors.

The terminal block or phase barriers cannot be used in combination with the 3RV19.5 three-phase busbars.

For construction with three-phase busbars see ["Busbar Accessories" page 7/29 onwards](#).

# Motor Starter Protectors/Circuit Breakers

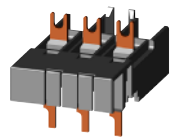
## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

Accessories  
Mounting accessories

### Link modules

Actuating voltage of contactor	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	3RT2 contactors	3RV2 motor starter protectors					

#### Link modules for motor starter protector to contactor<sup>1)</sup>



3RA2921-1AA00

For mechanical and electrical connection between motor starter protector and contactor with screw terminals

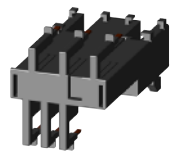
##### Single-unit packaging

AC/DC	S00	S00/S0	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AC	S0	S00/S0	▶	<b>3RA1921-1DA00</b>		1	1 unit	41B
AC	S0	S00/S0	▶	<b>3RA2921-1AA00</b>		1	1 unit	41B
DC	S0	S00/S0	A	<b>3RA2921-1BA00</b>		1	1 unit	41B

##### Multi-unit packaging

AC/DC	S00	S00/S0	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AC	S0	S00/S0	▶	<b>3RA1921-1D</b>		1	10 units	41B
AC	S0	S00/S0	▶	<b>3RA2921-1A</b>		1	10 units	41B
DC	S0	S00/S0	A	<b>3RA2921-1B</b>		1	10 units	41B

##### Screw terminals



3RA2911-2AA00

For mechanical and electrical connection between motor starter protector and contactor with spring-type terminals

##### Single-unit packaging

AC/DC	S00	S00	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AC/DC	S00	S00	▶	<b>3RA2911-2AA00</b>		1	1 unit	41B
AC <sup>2)</sup>	S0	S0	▶	<b>3RA2921-2AA00</b>		1	1 unit	41B
DC	S0	S0	▶	<b>3RA2921-2AA00</b>		1	1 unit	41B

##### Multi-unit packaging

AC/DC	S00	S00	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AC/DC	S00	S00	▶	<b>3RA2911-2A</b>		1	10 units	41B
AC <sup>2)</sup>	S0	S0	▶	<b>3RA2921-2A</b>		1	10 units	41B
DC	S0	S0	▶	<b>3RA2921-2A</b>		1	10 units	41B

##### Spring-type terminals



3RA2911-1CA00

##### Spacers<sup>2)</sup>

For compensating the height on AC contactors

Single-unit packaging	S0	S0	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Single-unit packaging	S0	S0	A	<b>3RA2911-1CA00</b>		1	1 unit	41B
Multi-unit packaging	S0	S0	A	<b>3RA2911-1C</b>		1	5 units	41B

#### Note:

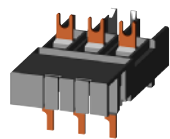
Link modules up to max. 32 A can be used.

<sup>1)</sup> 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/circuit breakers.

<sup>2)</sup> A spacer for height compensation on AC contactors size S0 is optionally available.

Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RW30, 3RW40 soft starters; 3RF34 solid-state contactors	3RV2 motor starter protectors					

#### Link modules for motor starter protector to soft starter<sup>1)</sup> and motor starter protector to solid-state contactor



3RA2921-1BA00

Connection between motor starter protector and soft starter / solid-state contactor with screw terminals

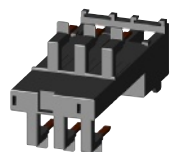
##### Single-unit packaging

S00	S00/S0	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
S00	S00/S0	A	<b>3RA2921-1BA00</b>		1	1 unit	41B
S0	S00/S0	A	<b>3RA2921-1BA00</b>		1	1 unit	41B

##### Multi-unit packaging

S00	S00/S0	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
S00	S00/S0	A	<b>3RA2921-1B</b>		1	10 units	41B
S0	S00/S0	A	<b>3RA2921-1B</b>		1	10 units	41B

##### Screw terminals



3RA2921-2GA00

Connection between motor starter protector and soft starter spring-type terminals

##### Single-unit packaging

S00	S00	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
S00	S00	▶	<b>3RA2911-2GA00</b>		1	1 unit	41B
S0	S0	▶	<b>3RA2921-2GA00</b>		1	1 unit	41B

##### Multi-unit packaging

S00	S00	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
S00	S00	▶	<b>3RA2911-2G</b>		1	10 units	41B
S0	S0	▶	<b>3RA2921-2G</b>		1	10 units	41B

##### Spring-type terminals



#### Note:

Link modules up to max. 32 A can be used.

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

# Motor Starter Protectors/Circuit Breakers

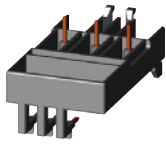
## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Mounting accessories

Actuating voltage of contactor	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	3RT2 contactors	3RV2 motor starter protectors					

#### Hybrid link modules from motor starter protector to contactor<sup>1)2)</sup>



3RA2911-2FA00

Mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals

#### Single-unit packaging

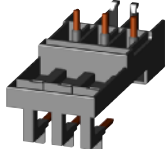
AC/DC S00 S00 ▶ **3RA2911-2FA00**

AC<sup>2)</sup>/DC S0 S0 ▶ **3RA2921-2FA00**

#### Multi-unit packaging

AC/DC S00 S00 ▶ **3RA2911-2F**

AC<sup>2)</sup>/DC S0 S0 ▶ **3RA2921-2F**



3RA2921-2FA00

#### Spacers<sup>3)</sup>

For compensating the height on AC contactors

Single-unit packaging S0 S0 A **3RA2911-1CA00**

Multi-unit packaging S0 S0 A **3RA2911-1C**



3RA2911-1CA00

#### Note:

Link modules up to max. 32 A can be used.

<sup>1)</sup> 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/circuit breakers.

<sup>2)</sup> The motor starter protector to contactor hybrid link modules are only suitable for constructing direct-on-line starters.

<sup>3)</sup> A spacer for height compensation on AC contactors size S0 is optionally available.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

Accessories  
Enclosures and front plates

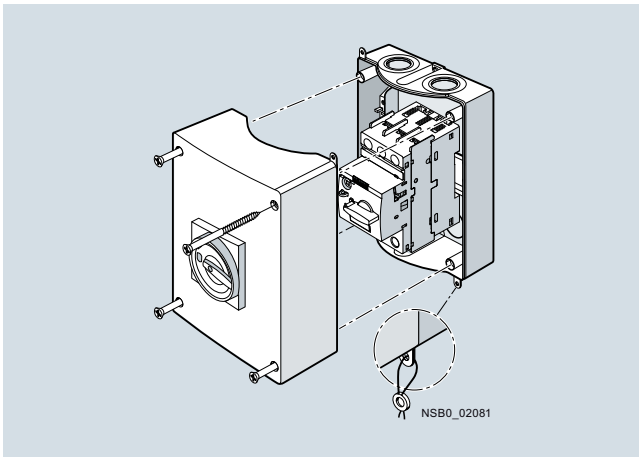
### Overview

#### Enclosures

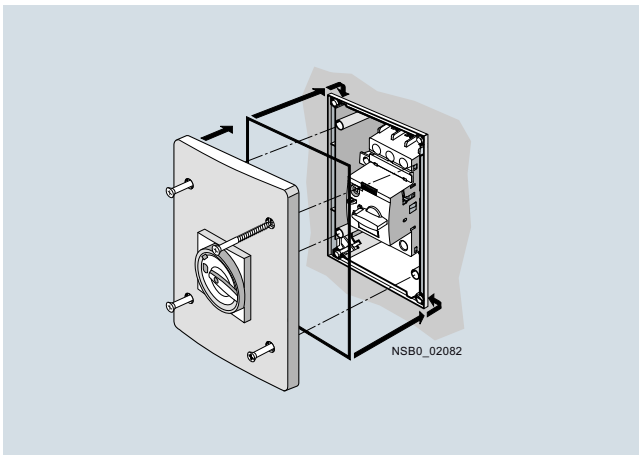
For stand-alone installation of 3RV20 to 3RV24 motor starter protectors size S00 ( $I_{n\max} = 16\text{ A}$ ) and S0 ( $I_{n\max} = 32\text{ A}$ ), cast aluminum enclosures for surface mounting and molded-plastic enclosures for flush mounting are available in various dimensions.

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

The enclosures for surface mounting have the degree of protection IP55; the enclosures for flush mounting also comply with the degree of protection IP55 at the front (the flush-mounted section complies with IP20).



Enclosures for surface mounting



Enclosures for flush 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.

The narrow enclosure can accommodate a motor starter protector without accessories, with transverse auxiliary switch and with lateral auxiliary switch. There is no provision for installing a motor starter protector with a signaling switch.

With the motor starter protectors size S00 and S0, the molded-plastic enclosures are equipped with a rotary operating mechanism.

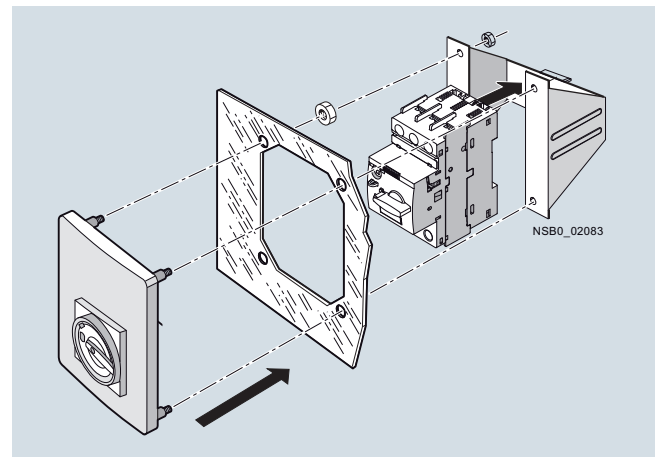
The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

In the OFF setting, all rotary operating mechanisms can be locked with up to three padlocks.

#### Front plates

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for 3RV20 to 3RV24 motor starter protectors size S00 and S0 are available for this purpose.

A holder for the motor starter protectors size S00 and S0, into which the motor starter protectors can be snapped, is available for the front plates.



Front plate (including holder) for sizes S00 and S0




# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Enclosures and front plates

#### Selection and ordering data

Version	Degree of protection	Integrated terminals	Width mm	For 3RV20 to 3RV24 motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Molded-plastic enclosures for surface mounting<sup>1)</sup></b>											
 3RV1923-1FA00	<b>With rotary operating mechanism,</b> lockable in 0 position	IP55	N and PE/ground	54 (for switch + lateral auxiliary switch)	S00, S0	▶	<b>3RV1923-1CA00</b>	1	1 unit	41E	
				72 (for switch + lateral auxiliary switch <sup>2)</sup> + auxiliary release)	S00, S0	▶	<b>3RV1923-1DA00</b>	1	1 unit	41E	
	<b>With EMERGENCY-STOP rotary operating mechanism,</b> lockable in 0 position	IP55	N and PE/ground	54 (for switch + lateral auxiliary switch)	S00, S0	▶	<b>3RV1923-1FA00</b>	1	1 unit	41E	
				72 (for switch + lateral auxiliary switch <sup>2)</sup> + auxiliary release)	S00, S0	▶	<b>3RV1923-1GA00</b>	1	1 unit	41E	
	<b>Cast aluminum enclosures for surface mounting<sup>1)</sup></b>										
	 3RV1923-1DA01	<b>With rotary operating mechanism,</b> lockable in 0 position	IP65	PE <sup>3)</sup>	72 (for switch + lateral auxiliary switch <sup>2)</sup> + auxiliary release)	S00, S0	▶	<b>3RV1923-1DA01</b>	1	1 unit	41E
<b>With EMERGENCY-STOP rotary operating mechanism,</b> lockable in 0 position		IP65	PE <sup>3)</sup>	72 (for switch + lateral auxiliary switch <sup>2)</sup> + auxiliary release)	S00, S0	▶	<b>3RV1923-1GA01</b>	1	1 unit	41E	
<b>Molded-plastic enclosures for flush mounting<sup>4)</sup></b>											
 3RV1923-2DA00	<b>With rotary operating mechanism,</b> lockable in 0 position	IP55 (front side)	N and PE/ground	72 (for switch + lateral auxiliary switch <sup>2)</sup> + auxiliary release)	S00, S0	A	<b>3RV1923-2DA00</b>	1	1 unit	41E	
	<b>With EMERGENCY-STOP rotary operating mechanism,</b> lockable in 0 position	IP55 (front side)	N and PE/ground	72 (for switch + lateral auxiliary switch <sup>2)</sup> + auxiliary release)	S00, S0	A	<b>3RV1923-2GA00</b>	1	1 unit	41E	

<sup>1)</sup> The rear cable glands cannot be used on 3RV2.11-...2. and 3RV2.21-...2. devices with spring-type terminals.

<sup>2)</sup> Only valid for lateral auxiliary switches with two auxiliary contacts.

<sup>3)</sup> If required, an additional N terminal can be mounted (e.g. 8WA1011-1BG11).

<sup>4)</sup> Not suitable for 3RV2.11-...2. and 3RV2.21-...2. devices with spring-type terminals.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### Accessories

#### Enclosures and front plates

Version	Degree of protection	For 3RV20 to 3RV24 motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	----------------------	--	----	-------------	--------------	-------------------	-----	----

#### Front plates



3RV1923-4B + 3RV1923-4G

<b>Molded-plastic front plates with rotary operating mechanism</b> , lockable in 0 position For actuation of 3RV2 motor starter protectors in any enclosure	IP55 (front side)	S00, S0	▶	<b>3RV1923-4B</b>		1	1 unit	41E
<b>Molded-plastic front plates with EMERGENCY-STOP rotary operating mechanism</b> , red/yellow, lockable in 0 position EMERGENCY-STOP actuation of 3RV2 motor starter protectors in any enclosure	IP55 (front side)	S00, S0	A	<b>3RV1923-4E</b>		1	1 unit	41E
<b>Holders for front plates</b> Holder is mounted on front plate, motor starter protector with and without accessories is snapped in.	--	S00, S0	▶	<b>3RV1923-4G</b>		1	1 unit	41E

Version	Rated control supply voltage $U_s$	For 3RV20 to 3RV24 motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	------------------------------------	--	----	-------------	--------------	-------------------	-----	----

#### Indicator lights



3RV1903-5B

<b>Indicator lights</b> For all enclosures and front plates	110 ... 120 220 ... 240 380 ... 415 480 ... 500	S00, S0	C	<b>3RV1903-5B</b>		1	1 unit	41E
• With LED lamp for versions 110 ... 120 V, with glow lamp for versions 220 ... 500 V			C	<b>3RV1903-5C</b>		1	1 unit	41E
• With colored lenses red, green, yellow, orange and clear			C	<b>3RV1903-5E</b>		1	1 unit	41E
			C	<b>3RV1903-5G</b>		1	1 unit	41E

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### 3RV29 infeed system

#### Overview

The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete load feeders with a screw or spring-type connection in sizes S00 and S0 (exception: this system cannot be used for the 3RV21, 3RV27 and 3RV28 motor starter protectors/circuit breakers).

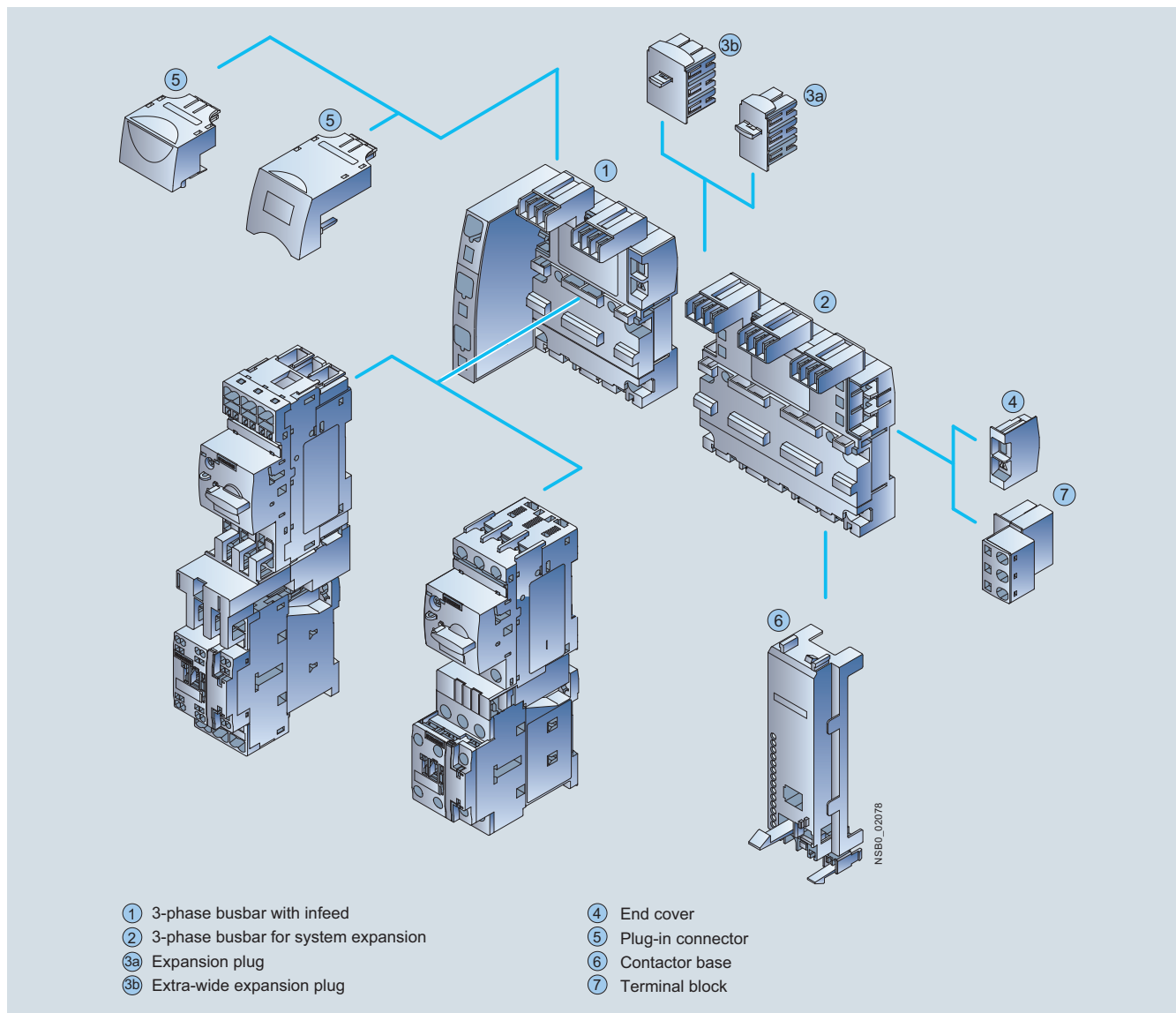
The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed). This infeed with spring-type terminals is mounted on the right or left depending on the version and can be supplied with a maximum conductor cross-section of 25 mm<sup>2</sup> (with end sleeve). 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 IEC 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 outfeed 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.

The 3RV29 infeed system is approved in accordance with IEC to 500 V. 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).



SIRIUS 3RV29 infeed systems



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### 3RV29 infeed system

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

A three-phase busbar with infeed unit is required for connecting the incoming supply. These modules comprise one infeed module and two 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 to spring-type terminals. They permit an infeed with conductor cross-sections of up to 25 mm<sup>2</sup> 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 support expansion of the system. There is a choice of modules with two or three 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 3RV2917-5BA00 expansion plug; the electrical characteristics (e.g. a current carrying capacity of 63 A) are identical.

The 3RV2917-5E expansion plug is 10 mm wider than the 3RV2917-5BA00 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 for screw or spring-type terminals.

#### ⑥ **Contactor base**

Load feeders can be assembled in the system using the S00 and S0 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 load feeders 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 S0 contactor bases are also suitable for soft starters size S00 and S0 with screw terminal.

The infeed system is designed for mounting onto a TH 35 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 load feeders, 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 feeders of sizes S00 and S0, the corresponding 3RA1921-1...., 3RA2911-2...., 3RA2921-1.... or 3RA2921-2.... link modules should generally be used.

#### ⑦ **Terminal block**

The 3RV2917-5D terminal block enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components. The three phases can be fed out of the system using the terminal block; 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 outfeeder 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. In addition, the 45 mm wide TH 35 3RV1917-7B standard mounting rail option for screwing onto the support plate facilitates plugging the single-phase, two-phase and three-phase components onto the infeed system.

# Motor Starter Protectors/Circuit Breakers

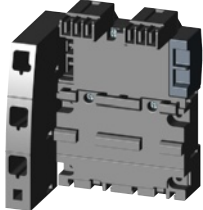
## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

### 3RV29 infeed system

#### Selection and ordering data

Type	Version	For 3RV20, 3RV23, 3RV24 motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
------	---------	--	----	-------------	--------------	-------------------	-----	----

#### Three-phase busbars with infeed



3RV2917-1A

#### Three-phase busbars with infeed

incl. 3RV2917-6A end cover

For 2 motor starter protectors with screw or spring-type terminals

- With infeed on the left
- With infeed on the right

S00, S0

A

3RV2917-1A

1

1 unit

41E

S00, S0

A

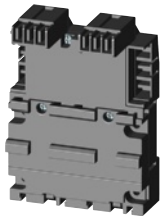
3RV2917-1E

1

1 unit

41E

#### Three-phase busbars for system expansion



3RV2917-4A

#### Three-phase busbars

incl. 3RV2917-5BA00 expansion plug

For motor starter protectors with screw or spring-type terminals

- For 2 motor starter protectors
- For 3 motor starter protectors

S00, S0

A

3RV2917-4A

1

1 unit

41E

S00, S0

A

3RV2917-4B

1

1 unit

41E

#### Plug-in connectors



3RV2917-5AA00

#### Plug-in connectors

to make contact with the motor starter protectors

- For spring-type terminals

- Single-unit packaging

S00<sup>1)</sup>

A

#### Spring-type terminals



3RV2917-5AA00

1

1 unit

41E

3RV2927-5AA00

1

1 unit

41E

- Multi-unit packaging

S00<sup>1)</sup>

A

3RV2917-5A

1

10 units

41E

3RV2927-5A

1

10 units

41E



3RV2917-5CA00

- For screw terminals

- Single-unit packaging

S00<sup>1)</sup>

A

#### Screw terminals



3RV2917-5CA00

1

1 unit

41E

3RV1927-5AA00

1

1 unit

41E

- Multi-unit packaging

S00<sup>1)</sup>

A

3RV2917-5C

1

10 units

41E

3RV1927-5A

1

10 units

41E

<sup>1)</sup>  $I > 14$  A, please note derating; see Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", <http://support.automation.siemens.com/WW/view/en/60279172>.

<sup>2)</sup>  $I > 16$  A, please note derating; see Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", <http://support.automation.siemens.com/WW/view/en/60279172>.

Type	Version	For contactors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
------	---------	----------------	----	-------------	--------------	-------------------	-----	----

#### Contactors bases



3RV2927-7AA00

#### Contactors bases

for mounting direct-on-line or reversing starters

Single-unit packaging

S00

A

3RV2917-7AA00

1

1 unit

41E

S0

A

3RV2927-7AA00

1






1 unit

41E

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A

3RV29 infeed system

Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Terminal blocks</b>							
	<b>Terminal blocks</b> For integration of single-phase, two-phase and three-phase components	Single-unit packaging	A	<b>3RV2917-5D</b>	1	1 unit	41E
3RV2917-5D							
<b>TH 35 standard mounting rails, width 45 mm</b>							
	<b>TH 35 standard mounting rails</b> acc. to IEC 60715, width 45 mm For mounting onto three-phase busbars	Single-unit packaging	A	<b>3RV1917-7B</b>	1	1 unit	41E
3RV1917-7B							
<b>Extra-wide expansion plugs</b>							
	<b>Extra-wide expansion plugs</b> As accessory	Single-unit packaging	A	<b>3RV2917-5E</b>	1	1 unit	41E
3RV2917-5E							
<b>Expansion plugs</b>							
	<b>Expansion plugs<sup>1)</sup></b> As spare part	Single-unit packaging	A	<b>3RV2917-5BA00</b>	1	1 unit	41E
3RV2917-5BA00							
<b>End covers</b>							
	<b>End covers<sup>2)</sup></b> As spare part	Multi-unit packaging	A	<b>3RV2917-6A</b>	100	10 units	41E
3RV2917-6A							

<sup>1)</sup> The expansion plug is included in the scope of supply of the 3RV2917-4. three-phase busbars for system expansion.

<sup>2)</sup> The end cover is included in the scope of supply of the 3RV2917-1. three-phase busbars with infeed system.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

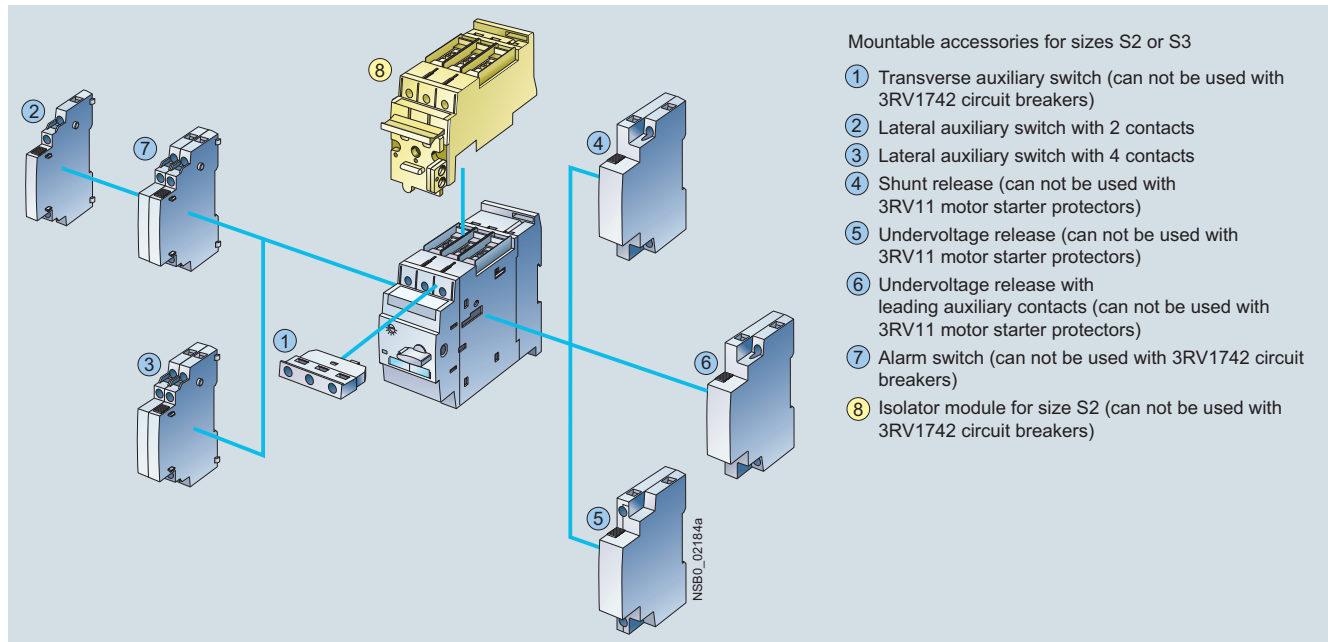
#### Overview

The following illustration shows our 3RV1 motor starter protector/circuit breaker with the accessories which can be mounted for the sizes S2 and S3, see also "Introduction" → "Overview", page 7/3.

"Accessories" see page 7/62 onwards.

#### Note:

- The 3RV1 devices (sizes S00/S0 to S3) can be found
- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
  - in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
  - in the interactive catalog CA 01
  - in the Industry Mall



SIRIUS 3RV1 motor starter protector/circuit breaker sizes S2 and S3 with mountable accessories



SIRIUS motor starter protector size S2

3RV1 motor starter protectors/circuit breakers are compact, current limiting motor starter protectors/circuit breakers which are optimized for load feeders. The motor starter protectors/circuit breakers are used according to IEC 60947-2 for switching and protecting three-phase motors of up to 45 kW at 400 V AC and for other loads with rated currents of up to 100 A.

3RV2 motor starter protectors/circuit breakers sizes S00 and S0 up to 40 A see page 7/19 onwards.

3RV1 motor starter protectors/circuit breakers are generally approved according to IEC and UL/CSA.

3RV1 motor starter protectors in sizes S2 and S3 are approved according to UL 508 as:

- "Manual Motor Controllers"
- "Manual Motor Controllers" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controllers (Type E)"  
Please note that for this approval the 3RV10 motor starter protectors in size S3 must be equipped with additional infeed terminals.

The 3RV1742 are approved as circuit breakers according to UL 489; they are a special variant of the 3RV1 motor starter protectors.

Corresponding short-circuit values see pages 7/46 to 7/49.

#### Type of construction

The 3RV1 motor starter protectors/circuit breakers are available in four sizes:

- Size S00 - width 45 mm, max. rated current 12 A, at 400 V AC suitable for three-phase motors up to 5.5 kW
- Size S0 - width 45 mm, max. rated current 25 A, at 400 V AC suitable for three-phase motors up to 11 kW
- Size S2 - width 55 mm, max. rated current 50 A, at 400 V AC suitable for three-phase motors up to 22 kW
- Size S3 - width 70 mm, max. rated current 100 A, at 400 V AC suitable for three-phase motors up to 45 kW

Sizes S00 and S0 of the 3RV2 motor starter protectors/circuit breakers up to 40 A see page 7/19 onwards.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

Circuit breakers acc. to UL 489

The 3RV1742 circuit breakers are available in size S3 (width 70 mm):

- Maximum rated current 70 A at 480 Y/277 V AC
- Maximum rated current 10 A to 30 A at 480 V AC

For sizes S00 and S0 of the 3RV27 and 3RV28 circuit breakers up to 22 A see pages 7/24 and 7/25.

### Connection methods

The SIRIUS 3RV1 motor starter protectors/circuit breakers can be supplied with screw terminals and spring-type terminals.



Screw terminals



Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

### "Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV10 motor starter protectors are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	
	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□	
Motor starter protectors/circuit breakers	3 R V														
SIRIUS 1st generation	1														
Type of motor starter protector/circuit breaker	□														
Size	□														
Breaking capacity	□														
Setting range for overload release	□ □														
Trip class (CLASS)	□														
Connection methods	□														
With or without auxiliary switch	□														
Special versions	□ □ □ □														
Example	3	R	V	1	0	3	1	-	4	A	A	1	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.

## Application

### Operating conditions

3RV1 motor starter protectors/circuit breakers are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV1 motor starter protectors/circuit breakers can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers", <http://support.automation.siemens.com/WW/view/en/65032586>.

3RV1 motor starter protectors/circuit breakers are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account, see page 7/47.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector/circuit breaker. This also applies to motor starter protectors for transformer protection.

### Possible uses

The 3RV1 motor starter protectors/circuit breakers can be used:

- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For fuse monitoring
- For operation in IT systems (IT networks)
- For switching of DC currents
- As voltage transformer circuit breakers
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV1742)

For more details see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers" <http://support.automation.siemens.com/WW/view/en/65032586>.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

### Technical specifications

#### Short-circuit breaking capacity $I_{cu}$ , $I_{cs}$ according 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 3RV1 motor starter protectors/circuit breakers with different operating 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 of this back-up fuse is indicated in the tables. The rated ultimate short-circuit breaking capacity then applies as specified on the fuse.

#### Fuseless design

Motor starter protector/contactors assemblies for short-circuit currents up to 100 kA can be ordered as fuseless load feeders, see Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet".

Motor starter protectors/circuit breakers	Rated current $I_n$	Up to 240 V AC <sup>1)</sup>			Up to 400 V AC <sup>1)/</sup> 415 V AC <sup>2)</sup>			Up to 440 V AC <sup>1)/</sup> 460 V AC <sup>2)</sup>			Up to 500 V AC <sup>1)/</sup> 525 V AC <sup>2)</sup>			Up to 690 V AC <sup>1)</sup>		
		$I_{cu}$	$I_{cs}$	Max. fuse (gG)	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)</sup>	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)</sup>	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)</sup>	$I_{cu}$	$I_{cs}$	Max. fuse (gG) <sup>3)4)</sup>
Type	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
<b>Size S00</b>																
<b>3RV1611-0BD10</b>	0.2	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
<b>Size S2</b>																
<b>3RV1.31</b>	16	100	100	°	50	25	100	50	25	100	12	6	63	5	3	63
	20	100	100	°	50	25	100	50	25	100	12	6	80	5	3	63
	25	100	100	°	50	25	100	50	15	100	12	6	80	5	3	63
	32	100	100	°	50	25	125	50	15	125	10	5	100	4	2	63
	40; 45	100	100	°	50	25	160	50	15	125	10	5	100	4	2	63
50	100	100	°	50	25	160	50	15	125	10	5	100	4	2	80	
<b>Size S3</b>																
<b>3RV1.41</b>	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
<b>Size S3, with increased switching capacity</b>																
<b>3RV1.42/ 3RV1742<sup>5)</sup></b>	16 / 10	100	100	°	100	50	°	100	50	°	30	15	80	12	7	63
	20 / 15	100	100	°	100	50	°	100	50	°	30	15	80	12	7	63
	25 / 20	100	100	°	100	50	°	100	50	°	30	15	80	12	7	63
	32 / 25	100	100	°	100	50	°	100	50	°	22	11	100	12	7	63
	40 / 30	100	100	°	100	50	°	100	50	°	18	9	160	12	6	80
	50 / 35 ... 40	100	100	°	100	50	°	100	50	°	15	7.5	160	10	5	100
	63 / 45 ... 50	100	100	°	100	50	°	70	50	200	15	7.5	160	7.5	4	100
	75 / 60	100	100	°	100	50	°	70	50	200	10	5	160	6	3	125
	90 / 70	100	100	°	100	50	°	70	50	200	10	5	160	6	3	160
	100 / --	100	100	°	100	50	°	70	50	200	10	5	160	6	3	160

° 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.

5) The values for the 3RV1742 circuit breakers have been tested only up to 400 V/415 V AC; values  $> 440$  V AC on request.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

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

3RV1 motor starter protectors/circuit breakers are suitable for operation in IT systems. The values of  $I_{cu}$  and  $I_{cs}$  apply for the three-pole short circuit. In case of a double ground fault in different phases at the input and output side of a motor starter protector/circuit breaker, the special short-circuit breaking capacity  $I_{cuIT}$  applies. The specifications in the table apply to 3RV1 motor starter protectors/circuit breakers.

If the short-circuit current at the place of installation exceeds the motor starter protector/circuit breaker's specified rated short-circuit breaking capacity, you will need to use a back-up fuse. The maximum rated current of this back-up fuse is indicated in the tables. The rated short-circuit breaking capacity then applies as specified on the fuse.

Motor starter protectors/circuit breakers	Rated current $I_n$	Up to 240 V AC <sup>1)</sup>		Up to 400 V AC <sup>1)/415 V AC<sup>2)</sup></sup>		Up to 500 V AC <sup>1)/525 V AC<sup>2)</sup></sup>		Up to 690 V AC <sup>1)5)</sup>	
		$I_{cuIT}$	Max. fuse (gG) <sup>3)</sup>	$I_{cuIT}$	Max. fuse (gG) <sup>3)4)</sup>	$I_{cuIT}$	Max. fuse (gG) <sup>3)</sup>	$I_{cuIT}$	Max. fuse (gG) <sup>3)</sup>
Type	A	kA	A	kA	A	kA	A	kA	A
<b>Size S00</b>									
<b>3RV1611-0BD10</b>	0.2	100	°	100	°	100	°	100	°
<b>Size S2</b>									
<b>3RV1.31</b>	16	50	100	8	100	6	80	5	63
	20; 25	50	125	8	100	6	80	5	63
	32	50	125	6	125	4	100	3	80
	40 ... 50	50	160	6	125	4	100	3	80
<b>Size S3</b>									
<b>3RV1.41</b>	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
<b>Size S3, with increased switching capacity</b>									
<b>3RV1.42</b>	16 ... 32	100	°	12	63	6	50	6	50
	40	100	°	12	80	6	63	6	63
	50	100	°	10	100	4	80	4	80
	63	100	°	7.5	100	4	80	4	80
	75	100	°	6	125	3	100	3	100
	90; 100	100	°	6	160	3	125	3	125

° 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) Overvoltage category II applies for applications in IT systems  $> 600$  V.

#### Limiter function with standard devices for 500 V AC and 690 V AC according to IEC 60947-2

The table shows the rated ultimate short-circuit breaking capacity  $I_{cu}$  and the rated service short-circuit breaking capacity  $I_{cs}$  with an upstream standard motor starter protector that fulfills the limiter function at voltages 500 V AC and 690 V AC.

The short-circuit breaking capacity can be increased significantly with an upstream standard motor starter protector with limiter function. The motor starter protector which is connected downstream must be set to the rated current of the load.

With motor starter protector assemblies, note the clearance to grounded parts and between the motor starter protectors. Short-circuit proof wiring between the motor starter protectors must be ensured. The motor starter protectors can be mounted side by side in a modular arrangement.

Standard motor starter protectors		Rated current $I_n$	Up to 500 V AC <sup>1)/525 V AC<sup>2)</sup></sup>		Up to 690 V AC <sup>1)</sup>	
Type	With limiter rated current $I_n$		$I_{cu}$	$I_{cs}$	$I_{cu}$	$I_{cs}$
Type	Type	A	kA	kA	kA	kA
<b>Size S2</b>						
<b>3RV1031</b>	<b>3RV1331-4HC10</b>	16 ... 50	100	50	50	25
	$I_n = 50$ A					
<b>Size S3</b>						
<b>3RV1041/3RV10 42</b>	<b>3RV1341-4HC10</b>	32 ... 50	100	50	50	25
	$I_n = 50$ A					
	<b>3RV1341-4MC10</b>	50 ... 100	100	50	50	25
	$I_n = 100$ A					

1) 10 % overvoltage.

2) 5 % overvoltage.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

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

Motor starter protectors/circuit breakers of the 3RV1 series are approved for UL/CSA, and according to UL 508 and CSAC 22.2 No. 14, they can be used on their own or as load feeders in combination with a contactor.

These motor starter protectors/circuit breakers 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).

#### 3RV1 motor starter protectors/circuit breakers as "Manual Motor Controllers"

If used as a "Manual Motor Controller", the motor starter protector/circuit breaker 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).

The file numbers for the approval of the 3RV1 as a Manual Motor Controller are as follows:

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

Motor starter protectors		hp rating <sup>1)</sup> for FLA <sup>2)</sup> max.		Rated current $I_n$ A	240 V AC		480 V AC		600 V AC	
Type	V	Single-phase	Three-phase		UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA
<b>Size S00</b>										
<b>3RV1611-0BD10</b>				0.2	65	65	65	65	10	10
<b>Size S2</b>										
<b>3RV1031, 3RV1131, 3RV1331</b>				16 ... 50	65	65	65	65	25	25
FLA <sup>2)</sup> max.	115	3	--							
50 A, 600 V	200	7 1/2	15							
NEMA size 2	230	10	20							
	460	--	40							
	575/600	--	50							
<b>Size S3</b>										
<b>3RV1041/3RV1042, 3RV1142, 3RV1341/3RV1342</b>				16 ... 75 90; 100	65 65	65 65	65 65	65 65	30 10	30 10
FLA <sup>2)</sup> max.	115	7 1/2	--							
99 A, 600 V	200	20	30							
NEMA size 3	230	20	40							
	460	--	75							
	575/600	--	100							

<sup>1)</sup> hp rating = Power rating in horse power (maximum motor rating).

<sup>2)</sup> FLA = Full Load Amps/motor full load current.

<sup>3)</sup> Corresponds to "short-circuit breaking capacity" according to UL/CSA.

#### 3RV10 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 for 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. Approved fuses or a circuit breaker according to UL 489 can be used.

These devices must be dimensioned according to the National Electrical Code.

The 3RV10 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 <sup>1)</sup> for FLA <sup>2)</sup> max.		Rated current $I_n$ A	240 V AC	Up to 480 Y/277 V AC	Up to 600 Y/347 V AC
Type	V	Single-phase	Three-phase		UL $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA
<b>Size S2</b>							
<b>3RV1031</b>				16 ... 50	65	65	25
FLA <sup>2)</sup> max.	115	3	--				
50 A, 600 V	200	7 1/2	15				
NEMA size 2	230	10	20				
	460	--	40				
	575/600	--	50				
<b>Size S3</b>							
<b>3RV104.</b>				16 ... 75 90; 100	65 65	65 65	30 --
FLA <sup>2)</sup> max.	115	7 1/2	--				
100 A, 480 V	200	20	30				
75 A, 600 V	230	20	40				
	460	--	75				
NEMA size 3	575/600	--	75				

-- No approval

<sup>1)</sup> hp rating = Power rating in horse power (maximum motor rating).

<sup>2)</sup> FLA = Full Load Amps/motor full load current.

<sup>3)</sup> Corresponds to "short-circuit breaking capacity" according to UL.



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

#### 3RV10 motor starter protectors as "Self-Protected Combination Motor Controllers (Type E)"

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

Therefore, 3RV10 motor starter protectors of size S3 are approved according to UL 508 in combination with the 3RT1946-4GA07 terminal block listed below.

The basic units of the 3RV10 motor starter protectors size S2 comply with the required clearance and creepage distances.

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 3RV10 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 <sup>1)</sup> for FLA <sup>2)</sup> max.		Rated current $I_n$ A	Up to 240 V AC		Up to 480 Y/277 V AC		Up to 600 Y/347 V AC	
Type	V	Single-phase	Three-phase		UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA
<b>Size S2</b>										
<b>3RV1031</b>				16 ... 50	65	65	65	65	25	25
FLA <sup>2)</sup> max.	115	3	--							
50 A, 600 V	200	7 1/2	15							
NEMA size 2	230	10	20							
	460	--	40							
	575/600	--	50							
<b>Size S3</b>										
<b>3RV1041 + 3RT1946-4GA07<sup>4)</sup></b>				16 ... 75 90; 100	65 65	65 65	65 65	65 65	30 --	30 --
FLA <sup>2)</sup> max.	115	10	--							
100 A, 480 V	200	20	30							
75 A, 600 V	230	20	40							
	460	--	75							
NEMA size 3	575/600	--	75							

-- No approval

1) hp rating = Power rating in horse power (maximum motor rating).

2) FLA = Full Load Amps/motor full load current.

<sup>3)</sup> Corresponds to "short-circuit breaking capacity" according to UL/CSA.

<sup>4)</sup> Not required for CSA.

#### 3RV1742 motor starter protectors as "Circuit Breakers"

These motor starter protectors are approved as circuit breakers according to UL 489 and CSA 22.2 No. 5. 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 3RV1742 motor starter protectors are approved as "Circuit Breakers" under the following file numbers:

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

Circuit breakers	Rated current $I_n$ A	240 V AC		480 Y/277 V AC		480 V AC		600 Y/347 V AC		
		UL $I_{bc}^{(1)}$ kA	CSA $I_{bc}^{(1)}$ kA	UL $I_{bc}^{(1)}$ kA	CSA $I_{bc}^{(1)}$ kA	UL $I_{bc}^{(1)}$ kA	CSA $I_{bc}^{(1)}$ kA	UL $I_{bc}^{(1)}$ kA	CSA $I_{bc}^{(1)}$ kA	
<b>Size S3</b>										
<b>3RV1742</b>		10 ... 30	65	65	65	65	65	20	20	
		35 ... 60	65	65	65	--	--	20	20	
		70	65	65	65	--	--	10	10	

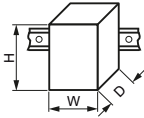


-- No approval

<sup>1)</sup> Corresponds to "short-circuit breaking capacity" according to UL.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

General data			3RV161. <sup>1)</sup>	3RV1.3.	3RV1.4.	3RV1742
<b>Type</b>			S00	S2	S3	S3
<b>Size</b>						
<b>Dimensions (W x H x D)</b>		mm	45 x 90 x 70	55 x 140 x 144	70 x 165 x 169	70 x 168 x 169
<b>Standards</b>						
• 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			No
• UL 508, CSA C22.2 No.14			Yes			No
• UL 489, CSA C22.2 No. 5			No			Yes
<b>Number of poles</b>			3			
<b>Max. rated current <math>I_{n \max}</math> (= max. rated operational current <math>I_o</math>)</b>		A	12	50	100	70
<b>Permissible ambient temperature</b>						
• Storage/transport		°C	-50 ... +80			
• Operation		°C	-20 ... +70 (current reduction above +60 °C)			
<b>Permissible rated current at inside temperature of control cabinet</b>						
• +60 °C		%	100			
• +70 °C		%	87			
<b>Permissible rated current at ambient temperature of enclosure (applies for motor starter protector inside enclosure)</b>						
• +35 °C		%	100			
• +60 °C		%	87			
<b>Rated operational voltage <math>U_e</math></b>						
• Acc. to IEC		V AC	690 (with molded-plastic enclosure 500 V)			
• Acc. to UL/CSA		V AC	600			
<b>Rated frequency</b>		Hz	50/60			
<b>Rated insulation voltage <math>U_i</math></b>		V	690			
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>		kV	6			
<b>Utilization category</b>						
• IEC 60947-2 (motor starter protector/circuit breaker)		A				
• IEC 60947-4-1 (motor starter)		AC-3				--
<b>Trip class CLASS</b>	Acc. to IEC 60947-4-1		10	10/20		--
<b>DC short-circuit breaking capacity</b> (time constant $t = 5$ ms)						
• 1 conducting path 150 V DC		kA	10			
• 2 conducting paths in series 300 V DC		kA	10			
• 3 conducting paths in series 450 V DC		kA	10			
<b>Power loss <math>P_p</math> for each motor starter protector/circuit breaker</b>						
Dependent on the rated current $I_n$ (upper setting range)						
$R_{\text{per conducting path}} = \frac{P}{I^2 \times 3}$						
$I_n$ : 16 ... 25 A		W	--	12	--	
$I_n$ : 32 A		W	--	15	--	
$I_n$ : 40 ... 50 A		W	--	20	--	
$I_n$ : 16 ... 63 A		W	--		20	
$I_n$ : 75 and 90 A		W	--		30	
$I_n$ : 100 A		W	--		38	
$I_n$ : 10 A		W	--			8
$I_n$ : 15 ... 35 A		W	--			12
$I_n$ : 40 ... 70 A		W	--			21
<b>Shock resistance</b>	Acc. to IEC 60068-2-27	g/ms	25/11 (square and sine pulse)			
<b>Degree of protection</b>	Acc. to IEC 60529		IP20 (IP00 terminal compartment)			
<b>Touch protection</b>	Acc. to EN 50274		Finger-safe for vertical contact from the front			
<b>Temperature compensation</b>	Acc. to IEC 60947-4-1	°C	-20 ... +60			
<b>Phase failure sensitivity</b>	Acc. to IEC 60947-4-1		Yes			No
<b>Explosion protection – Safe operation of motors with "increased safety" type of protection</b>			Yes, for 3RV10 (CLASS 10)			No
EC type test certificate number according to directive 94/9/EC (ATEX)			DMT 02 ATEX F 001  II (2) GD, DMT 02 ATEX F 001 N1  II (2) GD			
<b>Isolating function</b>	Acc. to IEC 60947-2		Yes			
<b>Main and EMERGENCY-STOP switch characteristics</b> (with corresponding accessories)	Acc. to EN 60204-1		Yes			
<b>Protective separation between main and auxiliary circuits, required for PELV applications</b>	Acc. to IEC 60947-1					
• Up to 400 V + 10 %			Yes			
• Up to 415 V + 5 % (higher voltages on request)			Yes			
<b>Permissible mounting position</b>			Any, acc. to IEC 60447 start command "I" right-hand side or top			
<b>Mechanical endurance</b>	Operating cycles		100 000	50 000		
<b>Electrical endurance</b>	Operating cycles		100 000	25 000		
<b>Max. switching frequency per hour (motor starts)</b>	1/h		15			



<sup>1)</sup> "Technical Specifications" for 3RV16 voltage transformer circuit breakers see page 7/52.

For short-circuit breaking capacity  $I_{cu}$ ,  $I_{cs}$  see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers"  
<http://support.automation.siemens.com/WW/view/en/65032586>.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

Conductor cross-sections of main circuit				
Type		3RV1611 <sup>4)</sup>	3RV1.3.	3RV1.4./ 3RV1742
Connection type		 Screw terminals	 Screw terminals with box terminal	
Terminal screw		Pozidriv size 2		4 mm Allen screw
Prescribed tightening torque	Nm	0.8 ... 1.2	3 ... 4.5	4 ... 6
<b>Conductor cross-sections</b> (1 or 2 conductors can be connected)				
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>5)</sup> 2 x (0.75 ... 2.5) <sup>5)</sup>	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>5)</sup> 2 x (0.75 ... 2.5) <sup>5)</sup>	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>5)</sup> 2 x (0.75 ... 2.5) <sup>5)</sup>	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	2 x (18 ... 2), 1 x (18 ... 2)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
<b>Ribbon cable conductors</b> (Number x Width x Thickness)	mm	--	2 x (6 x 9 x 0.8)	
<b>Removable box terminals<sup>1)</sup></b>				
• With copper bars <sup>2)</sup>		--		18 x 10
• With cable lugs <sup>3)</sup>		--		up to 2 x 70
1) Cable lug and busbar connection possible after removing the box terminals.		4) "Technical Specifications" for 3RV16 voltage transformer circuit breakers see page 7/52.		
2) If bars larger than 12 mm x 10 mm are connected, a 3RT1946-4EA1 cover is needed to comply with the phase clearance.		5) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.		
3) When connecting conductors which are larger than 25 mm <sup>2</sup> , the 3RT1946-4EA1 cover must be used to keep the phase clearance.				

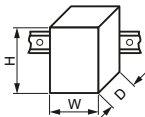
Rated data of the auxiliary switches and signaling switches				
Type 3RV19		Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC; Signaling switches	Transverse auxiliary switches with 1 CO	1 NO + 1 NC, 2 NO
<b>Max. Rated voltage</b>				
• Acc. to NEMA (UL)	V AC	600		250
• Acc. to NEMA (CSA)	V AC	600		250
<b>Uninterrupted current</b>	A	10	5	2.5
<b>Switching capacity</b>		A600 Q300	B600 R300	C300 R300


# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

#### Voltage transformer circuit breakers

General data		3RV1611-1AG14	3RV1611-1CG14	3RV1611-1DG14
<b>Type</b>		S00	S00	S00
<b>Size</b>		45 x 90 x 70	45 x 90 x 70	45 x 90 x 70
<b>Dimensions (W x H x D)</b>		mm		
<b>Rated current <math>I_n</math></b>	A	1.4	2.5	3
<b>Ambient temperature</b>				
• During storage/transport	°C	-50 ... +80		
• During operation	°C	-20 ... +60 (up to +70°C is possible with current reduction)		
<b>Rated operational voltage <math>U_e</math></b>	V	400		
<b>Rated frequency</b>	Hz	16.66 ... 60		
<b>Rated insulation voltage <math>U_i</math></b>	V	690		
<b>Short-circuit breaking capacity <math>I_{cu}</math> at 400 V AC</b>	kA	50		
<b>Set value of the thermal overload release</b>	A	1.4	2.5	3
<b>Response value of the instantaneous overcurrent release</b>	A	6 ± 20 %	10.5 ± 20 %	20 ± 20 %
<b>Tripping time of the instantaneous overcurrent release</b>	ms	Approx. 6 at 12 A	Approx. 6 at 20 A	Approx. 6 at 40 A
<b>Internal resistance</b>				
• In cold state	Ω	> 0.25 ± 6.5 %		
• In heated state	Ω	> 0.30 ± 6.5 %		
<b>Shock resistance</b> acc. to IEC 68 Part 2-27	g	15		
<b>Degree of protection</b> acc. to IEC 60529		IP20		
<b>Touch protection</b> acc. to EN 50274		Finger-safe for vertical contact from the front		
<b>Endurance</b>				
• Mechanical	Operating cycles	10 000		
• Electrical	Operating cycles	10 000		
<b>Permissible mounting position</b>		Any		

Type	3RV1611-1AG14	3RV1611-1CG14	3RV1611-1DG14
<b>Conductor cross-sections, main circuit, 1 or 2 conductors</b>			
<b>Connection type</b>	 Screw terminals		
<b>Terminal screw</b>	Pozidriv size 2		
<b>Conductor cross-sections</b>			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup> , max. 4	
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	
• Stranded	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup> , max. 4	
<b>Auxiliary switches for blocking the distance protection</b>			
<b>With defined lateral assignment for blocking distance protection</b>		1 CO (for use as 1 NO or 1 NC)	
<b>Rated operational voltage <math>U_e</math></b>	Alternating voltage	V	250
<b>Rated operational current <math>I_e</math>/AC-14</b>	At $U_e = 250$ V	A	0.5
	At $U_e = 125$ V	A	1
<b>Rated operational voltage <math>U_e</math></b>	Direct voltage L/R 200 ms	V	250
<b>Rated operational current <math>I_e</math>/DC-13</b>	At $U_e = 250$ V	A	0.27
	At $U_e = 125$ V	A	0.44
<b>Short-circuit protection for auxiliary circuit</b>			
<b>Melting fuses</b> operational class gG	A	10	
<b>Miniature circuit breakers</b> C characteristic	A	6 (prospective short-circuit current < 0.4 kA)	
<b>Auxiliary switches for other signaling purposes</b>			

For technical specifications see the next page.

<sup>1)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

#### Mountable accessories

Front transverse auxiliary switches		Switching capacity for different voltages	
		1 CO	1 NO + 1 NC, 2 NO
<b>Rated operational current <math>I_e</math></b>			
• At AC-15, alternating voltage	- 24 V	A	4
	- 230 V	A	3
• At AC-12 = $I_{th}$ , alternating voltage	- 24 V	A	10
	- 230 V	A	10
• At DC-13, direct voltage $L/R$ 200 ms	- 24 V	A	1
	- 48 V	A	--
	- 60 V	A	--
	- 110 V	A	0.22
	- 220 V	A	0.1
<b>Minimum load capacity</b>		V	17
		mA	1

Front transverse electronic compatible auxiliary switches		Switching capacity for different voltages	
		1 CO	
<b>Rated operational voltage <math>U_e</math></b>	Alternating voltage	V	125
<b>Rated operational current <math>I_e/AC-14</math></b>	At $U_e = 125$ V	A	0.1
<b>Rated operational voltage <math>U_e</math></b>	Direct voltage $L/R$ 200 ms	V	60
<b>Rated operational current <math>I_e/DC-13</math></b>	At $U_e = 60$ V	A	0.3
<b>Minimum load capacity</b>		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	
<b>Rated operational current <math>I_e</math></b>			
• 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, 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
<b>Minimum load capacity</b>		V	17
		mA	1

Auxiliary releases		Undervoltage releases		Shunt releases	
<b>Power consumption</b>					
• 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	--	
<b>Response voltage</b>					
• Tripping	V	0.35 ... 0.7 x $U_s$		0.7 ... 1.1 x $U_s$	
• Pick-up	V	0.85 ... 1.1 x $U_s$		--	
<b>Opening time maximum</b>	ms	20			

# Motor Starter Protectors/Circuit Breakers



## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### General data

#### Short-circuit protection for auxiliary and control circuits

<b>Melting fuses</b> operational class gG	A	10
<b>Miniature circuit breakers</b> C characteristic	A	6 (prospective short-circuit current < 0.4 kA)

#### Conductor cross-sections for auxiliary and control circuits

Connection type		 Screw terminals
<b>Terminal screw</b>		Pozidriv size 2
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2
<b>Conductor cross-sections</b> (1 or 2 conductors can be connected)		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> / 2 x (0.75 ... 2.5) <sup>1)</sup>
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> / 2 x (0.75 ... 2.5) <sup>1)</sup>
• Stranded	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> / 2 x (0.75 ... 2.5) <sup>1)</sup>
• AWG cables	AWG	2 x (18 ... 14)
Connection type		 Spring-type terminals <sup>2)3)</sup>
<b>Conductor cross-sections</b> (1 or 2 conductors can be connected)		
• Solid	mm <sup>2</sup>	2 x (0.25 ... 2.5)
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve	mm <sup>2</sup>	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

<sup>1)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

<sup>2)</sup> With conductor cross-sections  $\leq 1 \text{ mm}^2$ , an "insulation stop" must be used; see Chapter 3 "Controls – Contactors and Contactor Assemblies".  
→ "Accessories".

<sup>3)</sup> Corresponding opening tool 3RA2908-1A see "Accessories", page 7/70.

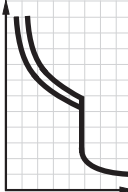
# Motor Starter Protectors/Circuit Breakers




## SIRIUS 3RV1 Motor Starter Protectors up to 100 A

For motor protection

## Selection and ordering data


## CLASS 10, without auxiliary switches



Rated current	Suitable for three-phase motors <sup>1)</sup> with P	Setting range for thermal overload release	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	
$I_n$				$I_{cu}$		Article No.	Price per PU			
A	kW	A	A	kA						
<b>Size S2</b>										
	16	7.5	11 ... 16	208	50	▶	3RV1031-4AA10	1	1 unit	41E
	20	7.5	14 ... 20	260	50	▶▶	3RV1031-4BA10	1	1 unit	41E
	25	11	18 ... 25	325	50	▶▶	3RV1031-4DA10	1	1 unit	41E
	32	15	22 ... 32	416	50	▶▶	3RV1031-4EA10	1	1 unit	41E
	40	18.5	28 ... 40	520	50	▶	3RV1031-4FA10	1	1 unit	41E
	45	22	36 ... 45	585	50	▶▶	3RV1031-4GA10	1	1 unit	41E
	50	22	40 ... 50	650	50	▶▶	3RV1031-4HA10	1	1 unit	41E


3RV1031-4HA10

## Size S3

	40	18.5	28 ... 40	520	50	▶	3RV1041-4FA10	1	1 unit	41E
	50	22	36 ... 50	650	50	▶▶	3RV1041-4HA10	1	1 unit	41E
	63	30	45 ... 63	819	50	▶▶	3RV1041-4JA10	1	1 unit	41E
	75	37	57 ... 75	975	50	▶▶	3RV1041-4KA10	1	1 unit	41E
	90	45	70 ... 90	1 170	50	▶▶	3RV1041-4LA10	1	1 unit	41E
	100	45	80 ... 100	1 235	50	▶▶	3RV1041-4MA10	1	1 unit	41E


3RV1041-4LA10

## Size S3, with increased switching capacity

	16	7.5	11 ... 16	208	100	▶	3RV1042-4AA10	1	1 unit	41E
	20	7.5	14 ... 20	260	100	▶▶	3RV1042-4BA10	1	1 unit	41E
	25	11	18 ... 25	325	100	▶▶	3RV1042-4DA10	1	1 unit	41E
	32	15	22 ... 32	416	100	▶▶	3RV1042-4EA10	1	1 unit	41E
	40	18.5	28 ... 40	520	100	▶▶	3RV1042-4FA10	1	1 unit	41E
	50	22	36 ... 50	650	100	▶▶	3RV1042-4HA10	1	1 unit	41E
	63	30	45 ... 63	819	100	▶▶	3RV1042-4JA10	1	1 unit	41E
	75	37	57 ... 75	975	100	▶▶	3RV1042-4KA10	1	1 unit	41E
	90	45	70 ... 90	1 170	100	▶▶	3RV1042-4LA10	1	1 unit	41E
	100	45	80 ... 100	1 235	100	▶▶	3RV1042-4MA10	1	1 unit	41E


3RV1042-4JA10

## CLASS 20, without auxiliary switches

<b>Size S2</b>										
	16	7.5	11 ... 16	208	50	A	3RV1031-4AB10	1	1 unit	41E
	20	7.5	14 ... 20	260	50	A	3RV1031-4BB10	1	1 unit	41E
	25	11	18 ... 25	325	50	A	3RV1031-4DB10	1	1 unit	41E
	32	15	22 ... 32	416	50	A	3RV1031-4EB10	1	1 unit	41E
	40	18.5	28 ... 40	520	50	A	3RV1031-4FB10	1	1 unit	41E
	45	22	36 ... 45	585	50	A	3RV1031-4GB10	1	1 unit	41E
	50	22	40 ... 50	650	50	A	3RV1031-4HB10	1	1 unit	41E

3RV1031-4AB10

## Size S3, with increased switching capacity

	40	18.5	28 ... 40	520	100	A	3RV1042-4FB10	1	1 unit	41E
	50	22	36 ... 50	650	100	A	3RV1042-4HB10	1	1 unit	41E
	63	30	45 ... 63	819	100	A	3RV1042-4JB10	1	1 unit	41E
	75	37	57 ... 75	975	100	A	3RV1042-4KB10	1	1 unit	41E
	90	45	70 ... 90	1 170	100	A	3RV1042-4LB10	1	1 unit	41E
	100	45	80 ... 100	1 235	100	A	3RV1042-4MB10	1	1 unit	41E

3RV1042-4KB10

<sup>1)</sup> 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.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

Multi-unit/reusable packaging available on request.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors up to 100 A

For motor protection with overload relay function

### Selection and ordering data

**CLASS 10, with overload relay function (automatic RESET), without auxiliary switches**

	Rated current	Suitable for three-phase motors <sup>1)</sup> with P	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	$I_n$			$I >$	$I_{cu}$		Article No.				
	A	kW	A	A	kA						
<b>Size S2<sup>2)</sup></b>											
	16	7.5	11 ... 16	208	50	A	<b>3RV1131-4AA10</b>		1	1 unit	41E
	20	7.5	14 ... 20	260	50	A	<b>3RV1131-4BA10</b>		1	1 unit	41E
	25	11	18 ... 25	325	50	A	<b>3RV1131-4DA10</b>		1	1 unit	41E
	32	15	22 ... 32	416	50	A	<b>3RV1131-4EA10</b>		1	1 unit	41E
	40	18.5	28 ... 40	520	50	A	<b>3RV1131-4FA10</b>		1	1 unit	41E
	45	22	36 ... 45	585	50	A	<b>3RV1131-4GA10</b>		1	1 unit	41E
50	22	40 ... 50	650	50	A	<b>3RV1131-4HA10</b>		1	1 unit	41E	
<b>Size S3, with increased switching capacity<sup>2)</sup></b>											
	16	7.5	11 ... 16	208	100	A	<b>3RV1142-4AA10</b>		1	1 unit	41E
	20	7.5	14 ... 20	260	100	A	<b>3RV1142-4BA10</b>		1	1 unit	41E
	25	11	18 ... 25	325	100	A	<b>3RV1142-4DA10</b>		1	1 unit	41E
	32	15	22 ... 32	416	100	A	<b>3RV1142-4EA10</b>		1	1 unit	41E
	40	18.5	28 ... 40	520	100	A	<b>3RV1142-4FA10</b>		1	1 unit	41E
	50	22	36 ... 50	650	100	A	<b>3RV1142-4HA10</b>		1	1 unit	41E
	63	30	45 ... 63	819	100	A	<b>3RV1142-4JA10</b>		1	1 unit	41E
	75	37	57 ... 75	975	100	A	<b>3RV1142-4KA10</b>		1	1 unit	41E
	90	45	70 ... 90	1 170	100	A	<b>3RV1142-4LA10</b>		1	1 unit	41E
3RV1142-4AA10	100	45	80 ... 100	1 235	100	A	<b>3RV1142-4MA10</b>		1	1 unit	41E

<sup>1)</sup> 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.

<sup>2)</sup> Accessories (auxiliary releases) for mounting on the right cannot be used.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).



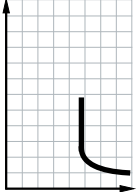





# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors up to 100 A

For starter combinations

### Selection and ordering data

#### Without auxiliary switches

	Rated current	Suitable for three-phase motors <sup>1)</sup> with P	Thermal overload release <sup>2)</sup>	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	$I_n$				$I_{cu}$		Article No.	Price per PU		
	A	kW	A	A	kA					
<b>Size S2</b>										
	16	7.5	Without	208	50	A	<b>3RV1331-4AC10</b>	1	1 unit	41E
	20	7.5	Without	260	50	A	<b>3RV1331-4BC10</b>	1	1 unit	41E
	25	11	Without	325	50	A	<b>3RV1331-4DC10</b>	1	1 unit	41E
	32	15	Without	416	50	A	<b>3RV1331-4EC10</b>	1	1 unit	41E
	40	18.5	Without	520	50	A	<b>3RV1331-4FC10</b>	1	1 unit	41E
	45	22	Without	585	50	A	<b>3RV1331-4GC10</b>	1	1 unit	41E
50	22	Without	650	50	A	<b>3RV1331-4HC10</b>	1	1 unit	41E	
3RV1331-4AC10										
<b>Size S3</b>										
	40	18.5	Without	520	50	A	<b>3RV1341-4FC10</b>	1	1 unit	41E
	50	22	Without	650	50	A	<b>3RV1341-4HC10</b>	1	1 unit	41E
	63	30	Without	819	50	A	<b>3RV1341-4JC10</b>	1	1 unit	41E
	75	37	Without	975	50	A	<b>3RV1341-4KC10</b>	1	1 unit	41E
	90	45	Without	1 170	50	A	<b>3RV1341-4LC10</b>	1	1 unit	41E
	100	45	Without	1 235	50	A	<b>3RV1341-4MC10</b>	1	1 unit	41E
3RV1341-4JC10										
<b>Size S3, with increased switching capacity</b>										
	16	7.5	Without	208	100	A	<b>3RV1342-4AC10</b>	1	1 unit	41E
	20	7.5	Without	260	100	A	<b>3RV1342-4BC10</b>	1	1 unit	41E
	25	11	Without	325	100	A	<b>3RV1342-4DC10</b>	1	1 unit	41E
	32	15	Without	416	100	A	<b>3RV1342-4EC10</b>	1	1 unit	41E
	40	18.5	Without	520	100	A	<b>3RV1342-4FC10</b>	1	1 unit	41E
	50	22	Without	650	100	A	<b>3RV1342-4HC10</b>	1	1 unit	41E
	63	30	Without	819	100	A	<b>3RV1342-4JC10</b>	1	1 unit	41E
	75	37	Without	975	100	A	<b>3RV1342-4KC10</b>	1	1 unit	41E
	90	45	Without	1 170	100	A	<b>3RV1342-4LC10</b>	1	1 unit	41E
	100	45	Without	1 235	100	A	<b>3RV1342-4MC10</b>	1	1 unit	41E
3RV1342-4JC10										

<sup>1)</sup> 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.

<sup>2)</sup> For overload protection of the motors, appropriate overload relays must be used.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

Multi-unit/reusable packaging available on request.

# Motor Starter Protectors/Circuit Breakers

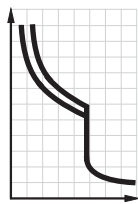
## SIRIUS 3RV1 Motor Starter Protectors up to 100 A

**For transformer protection**

### Selection and ordering data

#### CLASS 10, without auxiliary switches

Motor starter protectors for the protection of transformers with high inrush current



Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
$I_n$		$I >$	$I_{cu}$		Article No.	Price per PU		
A	A	A	kA					

#### Size S2



3RV1431-4DA10

16	11 ... 16	325	50	▶	<b>3RV1431-4AA10</b>	1	1 unit	41E
20	14 ... 20	416	50	▶	<b>3RV1431-4BA10</b>	1	1 unit	41E
25	18 ... 25	520	50	▶	<b>3RV1431-4DA10</b>	1	1 unit	41E
32	22 ... 32	660	50	▶	<b>3RV1431-4EA10</b>	1	1 unit	41E
40	28 ... 40	836	50	▶	<b>3RV1431-4FA10</b>	1	1 unit	41E

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

Multi-unit/reusable packaging available on request.

7

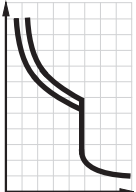



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors up to 100 A

For fuse monitoring

### Selection and ordering data

#### Without auxiliary switches

	Rated current	Thermal overload releases	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
	$I_n$			$I_{cu}$		Article No.	Price per PU		
	A	A	A	kA					

#### Size S00



3RV1611-0BD10


0.2	0.2	1.2	100	▶	<b>3RV1611-0BD10</b>		1	1 unit	41E
-----	-----	-----	-----	---	----------------------	--	---	--------	-----

#### Note:

The auxiliary switch required for signaling must be ordered separately.

Multi-unit/reusable packaging available on request.

### Accessories

Version	Contacts	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
			Article No.	Price per PU		

#### Mountable auxiliary switches (essential accessories)



3RV1901-1E

<b>Transverse auxiliary switches</b> With screw terminals, mountable on front	1 NO + 1 NC	▶	<b>3RV1901-1E</b>		1	1 unit	41E
--	-------------	---	-------------------	--	---	--------	-----



3RV1901-1A

<b>Lateral auxiliary switches</b> With screw terminals, mountable on the left	1 NO + 1 NC	▶	<b>3RV1901-1A</b>		1	1 unit	41E
--	-------------	---	-------------------	--	---	--------	-----

Additional auxiliary switches and other accessories see "Accessories" on page 7/63 onwards.

# Motor Starter Protectors/Circuit Breakers

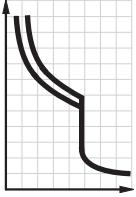



## SIRIUS 3RV1 Circuit Breakers up to 100 A

For system protection  
according to UL 489/CSA C22.2 No. 5

### Selection and ordering data

#### Without auxiliary switches

Circuit breakers for system protection and non-motor loads according to UL/CSA

	Rated current <sup>1)</sup>	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at		DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
	$I_n^{1)}$			$I_{bc}$	$I_{bc}$	$I_{bc}$	Article No.	Price per PU			
	A	A	A	kA	kA						
<b>Size S3</b>											
	10	10	150	65	65	B	<b>3RV1742-5AD10</b>		1	1 unit	41E
	15	15	225	65	65	B	<b>3RV1742-5BD10</b>		1	1 unit	41E
	20	20	260	65	65	B	<b>3RV1742-5CD10</b>		1	1 unit	41E
	25	25	325	65	65	B	<b>3RV1742-5DD10</b>		1	1 unit	41E
	30	30	390	65	65	B	<b>3RV1742-5ED10</b>		1	1 unit	41E
	35	35	455	65	--	B	<b>3RV1742-5FD10</b>		1	1 unit	41E
	40	40	520	65	--	B	<b>3RV1742-5GD10</b>		1	1 unit	41E
	45	45	585	65	--	B	<b>3RV1742-5HD10</b>		1	1 unit	41E
	50	50	650	65	--	B	<b>3RV1742-5JD10</b>		1	1 unit	41E
	60	60	780	65	--	B	<b>3RV1742-5LD10</b>		1	1 unit	41E
3RV1742-5FD10	70	70	910	65	--	B	<b>3RV1742-5QD10</b>		1	1 unit	41E

<sup>1)</sup> Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

<sup>2)</sup> For values for 600 Y/347 V AC see page 7/49.

Transverse auxiliary switches must not be mounted, lateral auxiliary switches can be ordered separately (see "Accessories" on page 7/63 onwards).

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors up to 100 A

**For distance protection**

### Selection and ordering data

#### Voltage transformer motor starter protectors with transverse auxiliary switches (1 CO)

	Rated current	Thermal overload releases	Instantaneous overcurrent release	Auxiliary switch integrated in the motor starter protector, transverse	Short-circuit breaking capacity at 400 V AC	DT	<b>Screw terminals</b>	⊕	PU (UNIT, SET, M)	PS*	PG
	$I_n$		$I >$		$I_{cu}$		Article No.		Price per PU		
	A	A	A		kA						

#### Size S00



3RV1611-1.G14

1.4	1.4	6	1 CO	50	B	<b>3RV1611-1AG14</b>	1	1 unit	41E
2.5	2.5	10.5	1 CO	50	▶	<b>3RV1611-1CG14</b>	1	1 unit	41E
3	3	20	1 CO	50	▶	<b>3RV1611-1DG14</b>	1	1 unit	41E

### Accessories

Version	Contacts	DT	<b>Screw terminals</b>	⊕	PU (UNIT, SET, M)	PS*	PG
			Article No.		Price per PU		

#### Mountable auxiliary switches for other signaling purposes



3RV1901-1A

<b>Lateral auxiliary switches</b> With screw terminals, mountable on the left	1 NO + 1 NC	▶	<b>3RV1901-1A</b>	1	1 unit	41E
--	-------------	---	-------------------	---	--------	-----

Additional auxiliary switches and other accessories see "Accessories" on page 7/63 onwards.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### Accessories

#### Mountable accessories

#### Overview

##### Mounting location and function

The 3RV1 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 7/44](#).

#### Front side

##### Notes:

- A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector.
- Transverse auxiliary switches must not be used for the 3RV1742 circuit breakers.

#### Transverse auxiliary switches, electronic compatible transverse auxiliary switches

1 NO + 1 NC  
or  
2 NO  
or  
1 CO

An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors remains unchanged.

#### Left-hand side

##### Notes:

- A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker.
- Lateral auxiliary switches (two contacts) and signaling switches can be mounted separately or together.
- The signaling switch cannot be used for the 3RV1742 circuit breakers.

#### Lateral auxiliary switches (2 contacts)

1 NO + 1 NC  
or  
2 NO  
or  
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.

The width of the lateral auxiliary switch with two contacts is 9 mm.

#### Lateral auxiliary switches (4 contacts)

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.

The width of the lateral auxiliary switch with four contacts is 18 mm.

#### Signaling switches for sizes S2 and S3

Tripping 1 NO + 1 NC  
Short circuit 1 NO + 1 NC

One signaling switch can be mounted on the left side of each motor starter protector.

The signaling switch has two contact systems.

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 handle.

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.

The overall width of the signaling switch is 18 mm.

#### Right-hand side

##### Notes:

- One auxiliary release can be mounted per motor starter protector/circuit breaker.
- Accessories cannot be mounted at the right-hand side of the 3RV11 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.

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 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.

The overall width of the auxiliary release is 18 mm.

#### Top

##### Notes:

- The isolator module cannot be used for the 3RV1742 circuit breakers.
- 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 for size S2

Isolator modules can be mounted to the upper terminal end of the size S2 motor starter protectors.

The supply cable is connected to the motor starter protector through the isolator module.

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, [see page 7/3](#).

# Motor Starter Protectors/Circuit Breakers




## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

Accessories  
Mountable accessories

### Selection and ordering data

Version	Contacts	For motor starter protectors/ circuit breakers	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
				Article No.	Price per PU		
				Size			
<b>Auxiliary switches<sup>1)</sup></b>							
 3RV1901-1E	<b>Transverse auxiliary switches</b> With screw terminals, mountable on front	1 CO 1 NO + 1 NC 2 NO	S00, S0, S2, S3 ▶ ▶ ▶	<b>3RV1901-1D</b> <b>3RV1901-1E</b> <b>3RV1901-1F</b>	1 1 1	1 unit 1 unit 1 unit	41E 41E 41E
 3RV1901-1G	<b>Electronic compatible transverse auxiliary switches</b> With screw terminals, front mountable, for operation in dusty atmosphere and in solid-state circuits with low operating currents	1 CO	S00, S0, S2, S3 A	<b>3RV1901-1G</b>	1	1 unit	41E
 3RV1901-0H	<b>Covers for transverse auxiliary switches</b>	--	S00, S0, S2, S3 ▶	<b>3RV1901-0H</b>	1	10 units	41E
 3RV1901-1A	<b>Lateral auxiliary switches</b> With screw terminals, mountable on the left	1 NO + 1 NC 2 NO 2 NC 2 NO + 2 NC	S00, S0, S2, S3 ▶ ▶ ▶ A	<b>3RV1901-1A</b> <b>3RV1901-1B</b> <b>3RV1901-1C</b> <b>3RV1901-1J</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	41E 41E 41E 41E
 3RV1901-1J							

<sup>1)</sup> Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch. Transverse auxiliary switches must not be used for the 3RV1742 circuit breakers.

Version	Contacts	For motor starter protectors/ circuit breakers	DT	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG
				Article No.	Price per PU		
				Size			
<b>Auxiliary switches<sup>1)</sup></b>							
 3RV1901-2E	<b>Transverse auxiliary switches</b> With spring-type terminals, mountable on the front	1 NO + 1 NC 2 NO	S00, S0, S2, S3 ▶ ▶	<b>3RV1901-2E</b> <b>3RV1901-2F</b>	1 1	1 unit 1 unit	41E 41E
 3RV1901-2A	<b>Lateral auxiliary switches</b> With spring-type terminals, mountable on the left	1 NO + 1 NC 2 NO 2 NC	S00, S0, S2, S3 ▶ ▶ ▶	<b>3RV1901-2A</b> <b>3RV1901-2B</b> <b>3RV1901-2C</b>	1 1 1	1 unit 1 unit 1 unit	41E 41E 41E



<sup>1)</sup> Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. Transverse auxiliary switches must not be used for the 3RV1742 circuit breakers.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### Accessories

#### Mountable accessories

Version	For motor starter protectors	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Size		Article No.	Price per PU			
<b>Signaling switches<sup>1)</sup></b>						
	<b>Signaling switches</b> One signaling switch can be mounted on the left per motor starter protector.	Separate tripped and short-circuit alarms, 1 NO + 1 NC each	S2, S3	▶	<b>3RV1921-1M</b>	1 1 unit 41E
3RV1921-1M						
<b>Isolator modules<sup>1)</sup></b>						
	<b>Isolator module</b>	Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position	S2	▶	<b>3RV1938-1A</b>	1 1 unit 41E
3RV1938-1A with padlock						

<sup>1)</sup> This accessory cannot be used for the 3RV1742 circuit breakers.

Rated control supply voltage $U_s$					For motor starter protectors/circuit breakers	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
AC 50 Hz	AC 60 Hz	AC 50/60 Hz	AC/DC 50/60 Hz, DC 5 s ON period <sup>2)</sup>	DC	Size	Article No.	Price per PU			
V	V	V	V	V						
<b>Auxiliary releases<sup>3)</sup></b>										
<b>Undervoltage releases</b>										
--	--	--	--	24	S2, S3	A	<b>3RV1902-1AB4</b>	1	1 unit	41E
24	--	--	--	--	S2, S3	A	<b>3RV1902-1AB0</b>	1	1 unit	41E
110	120	--	--	--	S2, S3	A	<b>3RV1902-1AF0</b>	1	1 unit	41E
--	208	--	--	--	S2, S3	A	<b>3RV1902-1AM1</b>	1	1 unit	41E
230	240	--	--	--	S2, S3	▶	<b>3RV1902-1AP0</b>	1	1 unit	41E
400	440	--	--	--	S2, S3	▶	<b>3RV1902-1AV0</b>	1	1 unit	41E
415	480	--	--	--	S2, S3	A	<b>3RV1902-1AV1</b>	1	1 unit	41E
500	600	--	--	--	S2, S3	A	<b>3RV1902-1AS0</b>	1	1 unit	41E
<b>Undervoltage releases with leading auxiliary contacts 2 NO</b>										
230	240	--	--	--	S2, S3	A	<b>3RV1922-1CP0</b>	1	1 unit	41E
400	440	--	--	--	S2, S3	A	<b>3RV1922-1CV0</b>	1	1 unit	41E
415	480	--	--	--	S2, S3	A	<b>3RV1922-1CV1</b>	1	1 unit	41E
<b>Shunt releases</b>										
--	--	20 ... 24	20 ... 70	--	S2, S3	▶	<b>3RV1902-1DB0</b>	1	1 unit	41E
--	--	90 ... 110	70 ... 190	--	S2, S3	A	<b>3RV1902-1DF0</b>	1	1 unit	41E
--	--	210 ... 240	190 ... 330	--	S2, S3	▶	<b>3RV1902-1DP0</b>	1	1 unit	41E
--	--	350 ... 415	330 ... 500	--	S2, S3	A	<b>3RV1902-1DV0</b>	1	1 unit	41E
--	--	500	500	--	S2, S3	A	<b>3RV1902-1DS0</b>	1	1 unit	41E

<sup>1)</sup> 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.

<sup>2)</sup> The voltage range is valid for 5 s ON period at AC 50/60Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

<sup>3)</sup> One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV11 motor starter protectors with overload relay function).



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

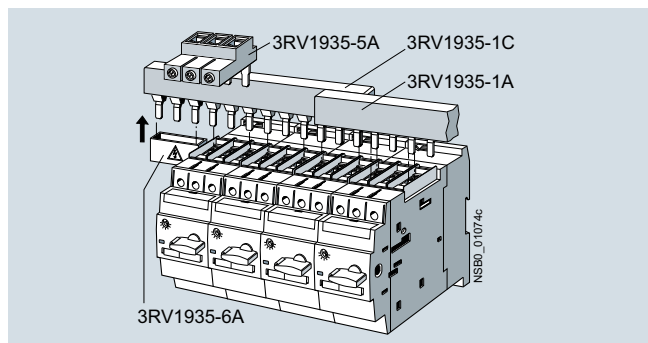
### Accessories Busbar accessories

#### Overview

##### Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV1 motor starter protectors/circuit breakers with screw terminals. Different versions are available for size S2 and can be used for the various different types of motor starter protectors/circuit breakers. The 3RV1915 three-phase busbars are not suitable for 3RV11 motor starter protectors for motor protection with overload relay function.

The busbars are suitable for between two and four 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/circuit breaker.



SIRIUS three-phase busbar system size S2

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/circuit breakers.

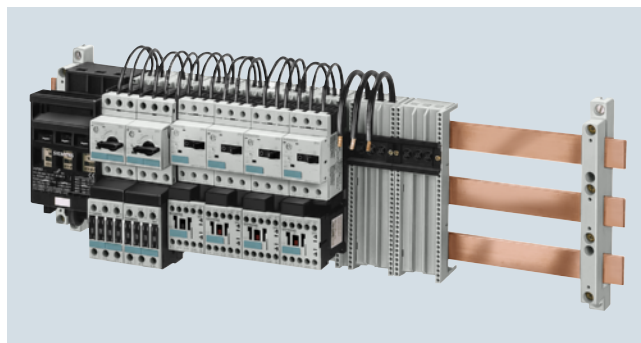
The three-phase busbar systems can also be used to construct "Type E Starters" size S2 according to UL/CSA. Special infeed terminals must be used for this purpose however (see page 7/66).

##### 8US busbar adapters for 40 mm and 60 mm systems

The motor starter protectors/circuit breakers are mounted directly with the aid of busbar adapters on busbar systems with 40 mm and 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. Busbar adapters for busbar systems with 40 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 15 mm, while those 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 4 to 5 mm or 10 mm thick.

The motor starter protectors/circuit breakers 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., see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".



SIRIUS load feeders with busbar adapters snapped onto busbars

#### Selection and ordering data

Modular spacing	Number of motor starter protectors that can be connected			Rated current $I_n$ at 690 V	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Without lateral accessories	With lateral auxiliary switch	With auxiliary release								
mm				A	Size						
<b>Three-phase busbars</b>											
For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection											
55 <sup>1)</sup>	2	--	--	108	S2	▶	<b>3RV1935-1A</b>		1	1 unit	41E
	3				S2	▶▶	<b>3RV1935-1B</b>		1	1 unit	41E
	4				S2	▶▶▶	<b>3RV1935-1C</b>		1	1 unit	41E
75 <sup>2)</sup>	--	2	2	108	S2	▶	<b>3RV1935-3A</b>		1	1 unit	41E
		3	3		S2	▶▶	<b>3RV1935-3B</b>		1	1 unit	41E
		4	4		S2	▶▶▶	<b>3RV1935-3C</b>		1	1 unit	41E

1) Not suitable for 3RV11 motor starter protectors for motor protection with overload relay function.  
 2) For 3RV1 motor starter protectors with accessories mounted on the side. Auxiliary releases and lateral auxiliary/signaling switches cannot be used in combination.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### Accessories

#### Busbar accessories

Conductor cross-section			Tightening torque	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded								
mm <sup>2</sup>	mm <sup>2</sup>	AWG	Nm	Size						
<b>Three-phase infeed terminals</b>										
<b>Connection from top</b>										
2.5 ... 50	1.5 ... 35	14 ... 0	4	S2	▶	<b>3RV1935-5A</b>		1	1 unit	41E
<b>Three-phase infeed terminals for constructing "Type E Starters"</b>										
<b>Connection from top</b>										
10 ... 50	--	8 ... 0	4.5 ... 6	S2	▶	<b>3RV1935-5E</b>		1	1 unit	41E
<b>Covers for connection tags</b>										
Version			For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
Size										
Touch protection for empty positions			S2	▶	<b>3RV1935-6A</b>		1	5 units	41E	

### 8US busbar adapters



8US1061-5FK08



8US1111-4SM00



8US1261-5FM08



8US1211-4TR00

For motor starter protectors/circuit breakers	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
<b>Busbar adapters for 40 mm systems</b>											
For flat copper profiles according to DIN 46433 Width: 12 mm and 15 mm Thickness: 5 mm and 10 mm											
S2	56	8	139	55	690	▶	<b>8US1061-5FK08</b>		1	1 unit	14O
S3	100	4	182	70	400 <sup>1)</sup>	▶	<b>8US1111-4SM00</b>		1	1 unit	14O
S3	100	4	182	72	415 ... 690 <sup>2)</sup>	▶	<b>8US1011-4TM00</b>		1	1 unit	14O
<b>Busbar adapters for 60 mm systems</b>											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
S2	56	8	182	55	690	▶	<b>8US1261-5FM08</b>		1	1 unit	14O
S3	100	4	182	70	400 <sup>1)</sup>	▶	<b>8US1111-4SM00</b>		1	1 unit	14O
S3	100	4	182	72	415 ... 690 <sup>2)</sup>	▶	<b>8US1211-4TM00</b>		1	1 unit	14O
S3 <sup>3)</sup>	70 <sup>4)</sup>	4	215	72	600 <sup>4)</sup>	A	<b>8US1211-4TR00</b>		1	1 unit	14O

<sup>1)</sup> At rated voltage  
≤ 400 V: short-circuit breaking capacity 50 kA,  
> 400 to 460 V: short-circuit breaking capacity 25 kA.

<sup>2)</sup> Short-circuit breaking capacity 415/500/525 V AC:  
- up to  $I_n = 25$  A: max. 30 kA  
- up to  $I_n = 90$  A: max. 16 kA  
- up to  $I_n = 100$  A: max. 6 kA  
Short-circuit breaking capacity 690 V AC:  
- max. 12 kA.

<sup>3)</sup> This busbar adapter is approved specially for 3RV1742 circuit breakers for applications according to UL/CSA.

<sup>4)</sup> Values according to UL/CSA  
- Rated current: 70 A at 600 V AC;  
- Short-circuit breaking capacity:  
480 V AC: 65 kA, up to  $I_n = 30$  A;  
480 Y/277 V AC: 65 kA,  
600 Y/347 V AC: 20 kA.

For additional busbar adapters see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

# Motor Starter Protectors/Circuit Breakers

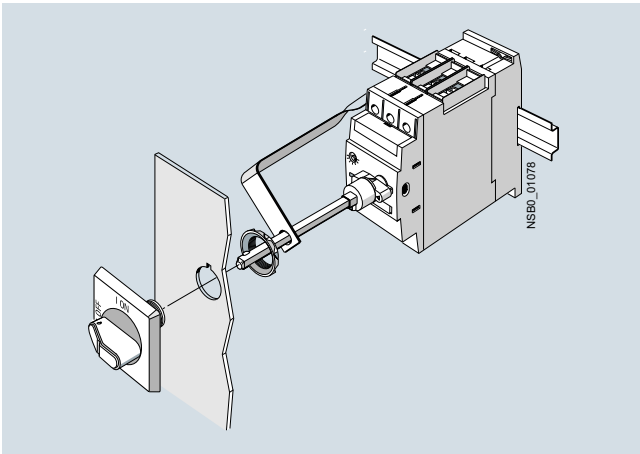
## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

Accessories  
Rotary operating mechanisms

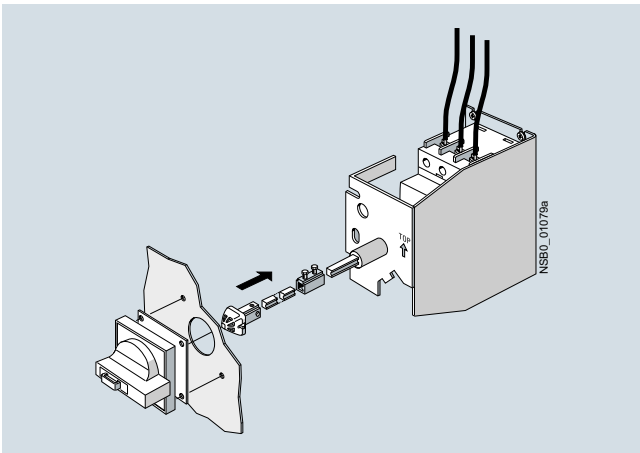
### Overview

#### 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.



SIRIUS 3RV1926-0K door-coupling rotary operating mechanism



SIRIUS 3RV2936-2B door-coupling rotary operating mechanism for arduous conditions

#### Remote motorized operating mechanisms

3RV1 motor starter protectors/circuit breakers are manually operated controls. They automatically trip in case of an overload or short circuit. Intentional remote-controlled tripping is possible by means of a shunt release or an undervoltage release. Reclosing is only possible directly at the motor starter protector/circuit breaker.

The remote motorized operating mechanism allows the motor starter protectors/circuit breakers to be opened and closed by electrical commands. This enables a load or an installation to be isolated from the network or reconnected to it from an operator panel.

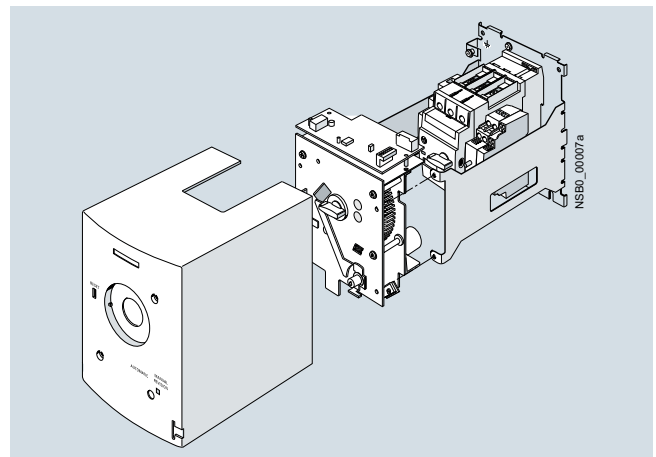
If the motor starter protector/circuit breaker is tripped as a result of overload or short circuit, it will be in tripped position. For reclosing, the remote motorized operating mechanism must first be set manually or electrically to the 0 position (electrically by means of the Open command). Then it can be reclosed.

The remote motorized operating mechanism is available for motor starter protectors/circuit breakers of size S2 ( $I_{n \max} = 50 \text{ A}$ ) and S3 ( $I_{n \max} = 100 \text{ A}$ ) that are designed for control voltages of 230 V AC and 24 V DC. The motor starter protector/circuit breaker is fitted into the remote motorized operating mechanism as shown in the drawing.

In the "MANUAL" position, the motor starter protector/circuit breaker in the remote motorized operating mechanism can continue to be switched manually on site. In the "AUTOMATIC" position, the motor starter protector/circuit breaker is switched by means of electrical commands. The switching command must be applied for a minimum of 100 ms. The remote motorized operating mechanism closes the motor starter protector/circuit breaker after a maximum of 1 s. On voltage failure during the switching operation it is ensured that the motor starter protector/circuit breaker remains in the "OPEN" or "CLOSED" position. In the "MANUAL" and "OFF" position, the remote motorized operating mechanism can be locked with a padlock.

#### RESET function

The RESET button on the motorized operating mechanism serves to reset any 3RV1921-1M signaling switch that might be installed.



SIRIUS 3RV19.6-3A.. remote motorized operating mechanism

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### Accessories

#### Rotary operating mechanisms

#### Technical specifications

Remote motorized operating mechanisms		
Type	3RV1936, 3RV1946	
<b>Max. power consumption</b>		
• At $U_s = 24$ V DC	W	48
• At $U_s = 230$ V AC	VA	170
<b>Operating range</b>	0.85 ... 1.1 x $U_s$	
<b>Minimum command duration</b> at $U_s$	s	0.1
<b>Max. command duration</b>	Unlimited (uninterrupted operation)	
<b>Max. total break time</b> , remote-controlled	s	2
<b>Ready to reclose</b> after approx.	s	2.5
<b>Switching frequency</b>	1/h	25
<b>Internal back-up fuse</b>		
• 230 V AC	A	0.8
• 24 V DC	A	1.6
<b>Connection type of control cables</b>	Plug-in connectors with screw terminals	
<b>Shock resistance acc. to IEC 60068-2-27</b>	g/ms	25/11 (square and sine pulse)

#### Selection and ordering data

Version	Color of handle	Version of extension shaft mm	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	-----------------	----------------------------------	---	----	-------------	--------------	-------------------	-----	----

#### Door-coupling rotary operating mechanisms



3RV2926-0B

The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm).

The door-coupling rotary operating mechanisms are designed to degree of protection IP64. The door locking device prevents accidental 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 3 padlocks.

<b>Door-coupling rotary operating mechanisms</b>	Black	130	S2, S3	▶	<b>3RV2926-0B</b>		1	1 unit	41E
		330	S2, S3	▶	<b>3RV2926-0K</b>		1	1 unit	41E
<b>EMERGENCY STOP door-coupling rotary operating mechanisms</b>	Red/yellow	130	S2, S3	▶	<b>3RV2926-0C</b>		1	1 unit	41E
		330	S2, S3	▶	<b>3RV2926-0L</b>		1	1 unit	41E

#### Door-coupling rotary operating mechanisms for arduous conditions



3RV2936-2B

The door-coupling rotary operating mechanisms consist of a knob, 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.

The door-coupling rotary operating mechanisms are designed to degree of protection IP65. 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.

Laterally mountable auxiliary releases and two-pole auxiliary switches can be used.

The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.

<b>Door-coupling rotary operating mechanisms</b>	Gray	300	S2, S3	▶	<b>3RV2936-2B</b>		1	1 unit	41E
				▶	<b>3RV2946-2B</b>		1	1 unit	41E
<b>EMERGENCY STOP door-coupling rotary operating mechanisms</b>	Red/yellow	300	S2, S3	▶	<b>3RV2936-2C</b>		1	1 unit	41E
				▶	<b>3RV2946-2C</b>		1	1 unit	41E

Version	Rated control supply voltage $U_s$	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	------------------------------------	---	----	-------------	--------------	-------------------	-----	----

#### Remote motorized operating mechanisms



3RV19.6-3A..

<b>Remote motorized operating mechanisms</b>	AC 50/60 Hz, 230 V	S2	X	<b>3RV1936-3AP0</b>		1	1 unit	41E
		S2	X	<b>3RV1936-3AB4</b>		1	1 unit	41E
	AC 50/60 Hz, 230 V	S3	X	<b>3RV1946-3AP0</b>		1	1 unit	41E
		S3	X	<b>3RV1946-3AB4</b>		1	1 unit	41E

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

Accessories  
Mounting accessories

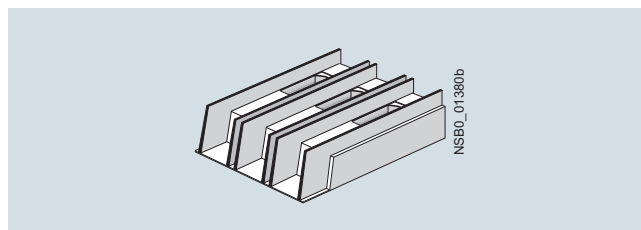
### Overview

#### Terminal blocks for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508

The 3RV10 motor starter protector/circuit breaker sizes S2 and S3 are approved according to UL 508 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 terminal blocks.

- Size S2: The basic unit is already compliant with the increased clearance and creepage distance requirements.
- Size S3: The standard box terminal must be replaced by the 3RT1946-4GA07 terminal block.







Terminal block (Type E) SIRIUS 3RT1946-4GA07

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

Three-phase infeed terminals are required for constructing "Type E Starters" with an insulated busbar system (see "Busbar Accessories", page 7/66).

### Selection and ordering data

#### Accessories

Version	For motor starter protectors/circuit breakers	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size							
<b>Covers</b>							
	<b>Terminal covers for box terminals</b>	S2 S3	B ▶	<b>3RT1936-4EA2</b> <b>3RT1946-4EA2</b>	1 1	1 unit 1 unit	41B 41B
	<b>Terminal covers</b>	S3	B	<b>3RT1946-4EA1</b>	1	1 unit	41B
	<b>Scale covers</b>	S2, S3	▶	<b>3RV1908-0P</b>	100	10 units	41E
3RV1 (size S3) with 3RT1946-4EA1 (left) 3RV1908-0P (right)							
<b>Fixing accessories</b>							
	<b>Push-in lugs</b>	S00	A	<b>3RB1900-0B</b>	100	10 units	41F
3RB1900-0B							
<b>Terminal blocks for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508</b>							
	<b>Note:</b>	UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". The following terminal blocks must be used therefore in 3RV10 motor starter protector size S3.					
3RT1946-4GA07							
The 3RV10 motor starter protector in size S2 conforms with the required clearance and creepage distances without a terminal block. The terminal blocks are not required for use according to CSA.							
With size S3, these terminal blocks cannot be used in combination with a transverse auxiliary switch.							
For construction with three-phase busbars see "Busbar Accessories" page 7/65 onwards.							
<b>Terminal block type E</b>							
for extended clearance and creepage distances (1 and 2 inch)							
S3 B <b>3RT1946-4GA07</b> 1 1 unit 41B							
<b>Auxiliary terminals, 3-pole</b>							
	For connection of auxiliary and control cables to the main conductor connections (for one side)	S3	B	<b>3RT1946-4F</b>	1	1 unit	41B
3RT1946-4F							


# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

### Accessories

#### Mounting accessories

#### Link modules

Actuating voltage of contactor	Size	Motor starter protectors/circuit breakers	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
	Contactors			Article No.	Price per PU		

#### Link modules from motor starter protector/circuit breaker to contactor

For mechanical and electrical connection between motor starter protector/circuit breaker and contactor with screw terminals

##### Single-unit packaging

AC	S2	S2	▶	<b>3RA1931-1AA00</b>	1	1 unit	41B
	S3	S3	▶	<b>3RA1941-1AA00</b>	1	1 unit	41B
DC	S2	S2	▶	<b>3RA1931-1BA00</b>	1	1 unit	41B
	S3	S3	▶	<b>3RA1941-1BA00</b>	1	1 unit	41B




3RA1931-1AA00

##### Multi-unit packaging

AC	S2	S2	▶	<b>3RA1931-1A</b>	1	5 units	41B
	S3	S3	▶	<b>3RA1941-1A</b>	1	5 units	41B
DC	S2	S2	▶	<b>3RA1931-1B</b>	1	5 units	41B
	S3	S3	▶	<b>3RA1941-1B</b>	1	5 units	41B



3RA1941-1AA00

Version	Size	Color	For motor starter protectors/circuit breakers	DT	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG
			Size		Article No.	Price per PU		

#### Tools for opening spring-type terminals

<b>Screwdrivers</b> For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/black, partially insulated	S2, S3	A	<b>3RA2908-1A</b>	1	1 unit	41B
--	--	--	--------	---	-------------------	---	--------	-----



3RA2908-1A

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A

Accessories  
Enclosures and front plates

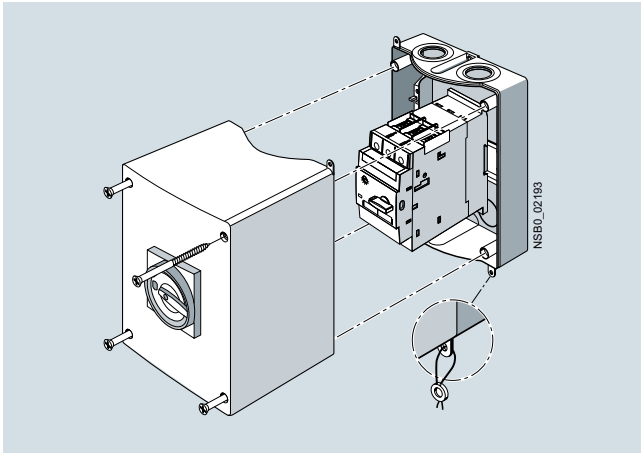
### Overview

#### Enclosures

For stand-alone installation of motor starter protector size S2 ( $I_{n\max} = 50\text{ A}$ ), molded-plastic enclosures for surface mounting are available.

When installed in a molded-plastic enclosure 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.

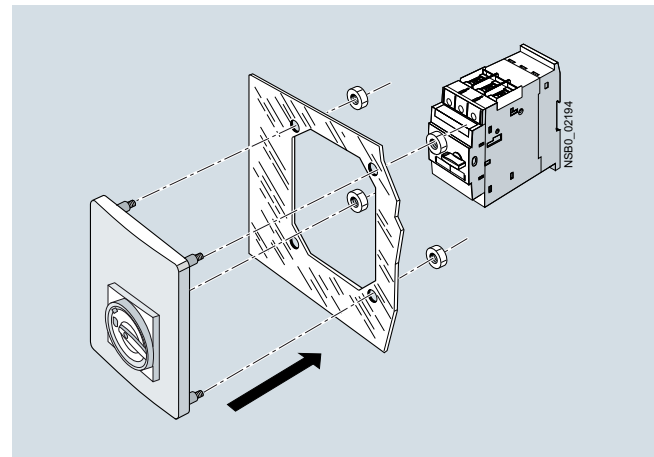
The molded-plastic enclosures of the size S2 motor starter protectors are fitted with a rotary operating mechanism.

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/circuit breaker sizes S2 and S3 are available for this purpose.



Front plate for size S2



# Motor Starter Protectors/Circuit Breakers


## SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A


### Accessories

#### Enclosures and front plates

#### Selection and ordering data

Version	Degree of protection	Integrated terminals	Width mm	For motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Molded-plastic enclosures for surface mounting</b>											
 3RV1933-1DA00	<b>With rotary operating mechanism,</b> lockable in 0 position	IP55	N and PE/ground	82 (for switch + lateral auxiliary switch + auxiliary release)	S2	A	<b>3RV1933-1DA00</b>		1	1 unit	41E
 3RV1933-1GA00	<b>With EMERGENCY-STOP rotary operating mechanism,</b> lockable in 0 position	IP55	N and PE/ground	82 (for switch + lateral auxiliary switch + auxiliary release)	S2	A	<b>3RV1933-1GA00</b>		1	1 unit	41E

Version	Degree of protection	For motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Front plates</b>									
 3RV1923-4B	<b>Molded-plastic front plates with rotary operating mechanism,</b> lockable in 0 position For actuation of 3RV1 motor starter protectors in any enclosure	IP55 (front side)	S2, S3	<b>3RV1923-4B</b>		1	1 unit	41E	
	<b>Molded-plastic front plates with EMERGENCY-STOP rotary operating mechanism,</b> red/yellow, lockable in 0 position EMERGENCY-STOP actuation of 3RV1 motor starter protectors in any enclosure	IP55 (front side)	S2, S3	A	<b>3RV1923-4E</b>		1	1 unit	41E

Version	Rated control supply voltage $U_s$ V	For motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Indicator lights</b>									
 3RV1903-5B	<b>Indicator lights</b> For all enclosures and front plates	110 ... 120 220 ... 240 380 ... 415 480 ... 500	S2	C C C C	<b>3RV1903-5B</b> <b>3RV1903-5C</b> <b>3RV1903-5E</b> <b>3RV1903-5G</b>		1 1 1 1	1 unit 1 unit 1 unit 1 unit	41E 41E 41E 41E
	• With LED lamp for versions 110 ... 120 V, with glow lamp for versions 220 ... 500 V								
	• With colored lenses red, green, yellow, orange and clear								



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

General data

## Overview



SIRIUS 3RV1063-7AL10 molded case motor starter protector

The 3RV10 and 3RV13 molded case motor starter protectors for up to 800 A are compact, current-limiting motor starter protectors which can be used above all in motor feeders for special voltages of 440 V, 480 V, 550 V and 690 V. They are used for switching and protecting three-phase motors and other loads with rated currents up to 800 A.

Note:

For motor feeders above 100 A and at 400 V and 500 V, the 3VL molded case circuit breakers must be used, [see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology"](#).

**Type of construction**

The molded case motor starter protectors are available in 4 widths:

- 3RV1353 – width 90 mm, max. rated current 32 A, at 550 V AC suitable for three-phase motors up to 22 kW
- 3RV1.6. – width 105 mm, max. rated current 250 A, at 690 V AC suitable for three-phase motors up to 160 kW
- 3RV1.7. – width 140 mm, max. rated current 630 A, at 690 V AC suitable for three-phase motors up to 315 kW
- 3RV1.83 – width 210 mm, max. rated current 800 A, at 690 V AC suitable for three-phase motors up to 500 kW

The 3RV1 molded case motor starter protectors for up to 800 A can be mounted in horizontal, vertical or lying arrangement directly on a mounting plate or mounting rail. Their rated data are not affected as the result.

The phase barriers for better insulation between the phases are included in the scope of supply, and it is essential to use them.

The motor starter protectors can be supplied through top and bottom terminals without impairing their function, enabling them to be installed in any type of switchgear without any further steps.

**Connection methods**

SIRIUS 3RV1 motor starter protectors are available with screw terminals.



The 3RV1 molded case motor starter protectors for up to 800 A are suitable solely for screw connection. This is indicated in the corresponding tables by the symbols shown on orange backgrounds.

**Article No. scheme**

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□
<b>Molded case motor starter protectors</b>	<b>3 R V</b>													
<b>SIRIUS 1st generation</b>	<b>1</b>													
<b>Type of motor starter protector</b>														
<b>Size</b>														
<b>Breaking capacity</b>														
<b>Setting range for overload release</b>														
<b>Trip class (CLASS)</b>														
<b>Connection methods</b>														
<b>With or without auxiliary switch</b>														
<b>Special versions</b>														
<b>Example</b>	<b>3 R V</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>-</b>	<b>7</b>	<b>A</b>	<b>L</b>	<b>1</b>	<b>0</b>			

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.

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

### General data

#### Benefits

- High short-circuit breaking capacity in the feeder
- Optimum usability in motor feeders for the special voltages 440 V, 480 V, 550 V and 690 V
- Compact design
- The releases are available both in purely magnetic (up to 32 A) and in solid-state versions (100 A to 800 A).
- Available for motor or starter protection (short-circuit protection alone)

#### Application

##### Operating conditions

The 3RV1 molded case motor starter protectors for up to 800 A can be operated at ambient temperatures between -25 °C and +70 °C. They can be used according to IEC 60721-2-1 in the most difficult environmental conditions with a hot and damp climate.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable molded case motor starter protectors.

The 3RV1 molded case motor starter protectors up to 800 A have not been tested for use with frequency converters. The possibility of premature tripping in such applications cannot therefore be ruled out.

##### Possible uses

The 3RV1 molded case motor starter protectors for up to 800 A are suitable as switching and protection devices for motors. The following versions are available:

- For motor protection; the overload and short-circuit releases are designed for optimized protection and direct-on-line starting of induction squirrel-cage motors. The motor starter protectors have an electronic release which not only provides short-circuit and overload protection but is also sensitive to phase failure and phase unbalance and offers protection in the event of rotor blockage.
- For starter combinations; these molded case motor starter protectors are used for short-circuit protection in combinations of circuit breaker, motor contactor and overload relay. They are equipped with a purely magnetic release (up to 32 A) or a solid-state release (100 A to 800 A).

##### Standards and specifications

The electronic releases for motor protection comply with IEC 60947-4-1. Isolating features are also compliant with IEC 60947-2.

The 3RV1 molded case motor starter protectors comply in addition with IEC 60068-2-6 (shock and vibration strength) and are certified for the specifications of the most important marine classification societies:

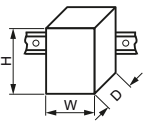
- RINA
- Det Norske Veritas
- Bureau Veritas
- Lloyds Register of Shipping
- Germanischer Lloyd
- American Bureau of Shipping

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

General data

## Technical specifications

General data		3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1364	3RV1373	3RV1374	3RV1383	
<b>Type</b>											
<b>Dimensions</b>											
• W	mm	105	140	210	90	105	105	140	140	210	
• H	mm	205	205	268	130	205	205	205	205	268	
• D	mm	139	139	159	102	139	139	139	139	159	
<b>Standard</b>		IEC 60947-2, EN 60947-2									
<b>Motor protection</b>		✓									
<b>Starter combinations</b>		--				✓					
<b>Rated current <math>I_n</math></b>	A	160	400	630	160	250		400, 630		630, 800	
<b>Number of poles</b>		3									
<b>Rated operational voltage <math>U_e</math> 50 ... 60 Hz AC</b>	V	690									
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	V	8									
<b>Rated insulation voltage <math>U_i</math></b>	V	1 000			800		1 000				
<b>Test voltage at industrial frequency for 1 min</b>	V	3 500			3 000		3 500				
<b>Rated ultimate short-circuit breaking capacity <math>I_{cu}</math></b>											
• At 220/230 V AC, 50 ... 60 Hz	kA	200			120	200					
• At 380/415 V AC, 50 ... 60 Hz	kA	120		100	85	120	200	120	200	100	
• At 440 V AC, 50 ... 60 Hz	kA	100		80	75	100	180	100	180	80	
• At 500 V AC, 50 ... 60 Hz	kA	85		65	50	85	150	85	150	65	
• At 550 V AC, 50 ... 60 Hz	kA	--			35	--					
• At 690 V AC, 50 ... 60 Hz	kA	70		30	10	70	80	70	80	30	
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math> (% of <math>I_{cu}</math>)</b>											
• At 220/230 V AC, 50 ... 60 Hz	%	100		75	100					75	
• At 380/415 V AC, 50 ... 60 Hz	%	100		75		100				75	
• At 440 V AC, 50 ... 60 Hz	%	100		75		100				75	
• At 500 V AC, 50 ... 60 Hz	%	100		75		100		100 <sup>1)</sup> / 75 <sup>2)</sup>	100	75	
• At 690 V AC, 50 ... 60 Hz	%	100		75		100		100 <sup>1)</sup> / 50 <sup>2)</sup>	100	75	
<b>Rated short-circuit making capacity (415 V)</b>	kA	264		220	187	264	440	264	440	220	
<b>Break time (415 V at <math>I_{cu}</math>)</b>	ms	5	6	7	3	5		6		7	
<b>Category (IEC 60947-2)</b>	A		B (400 A), A (630 A)	B	A			B (400 A), A (630 A)		B	
<b>Isolating features</b>		✓									
<b>Trip class CLASS</b>		10A, 10, 20, 30				--					
<b>Releases</b>											
• Magnetic type		--			✓		--				
• Electronic (motor protection)		✓			-- <sup>3)</sup>						
• Electronic (starter combinations)		--					✓				
<b>Permissible ambient temperature</b>											
• Operation	°C	-25 ... +70 <sup>4)</sup>									
• Storage	°C	-40 ... +70									
<b>Mechanical endurance</b>											
• Operating cycles		20 000			25 000		20 000				
• Operating cycles per hour		240	120		240			120			
<b>Electrical endurance</b>											
• Operating cycles		8 000	7 000	5 000	8 000			7 000		5 000	
• Operating cycles per hour (415 V AC)		120	60		120			60			

✓ Has this function

-- Does not have this function

1) Value applies for 3RV1373-7JN10 molded case motor starter protectors.

2) Value applies for 3RV1373-7JN10 molded case motor starter protectors.

3) For overload protection of the motors, appropriate overload relays must be used.

4) From 50 °C, please note derating, see "Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers", <http://support.automation.siemens.com/WW/view/en/35681600>.

# Motor Starter Protectors/Circuit Breakers

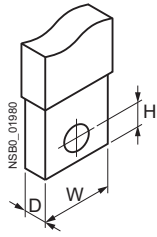
## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

### General data

#### Main circuit terminals

Type	3RV1353	3RV1.6.	3RV1.7.	3RV1083-7JL10, 3RV1383-7JN10	3RV1383-7KN10
------	---------	---------	---------	---------------------------------	---------------

#### Terminal dimensions



#### Front-accessible standard terminals

##### Busbars/cable lug

Number	Unit(s)	11			2	
Dimensions						
• W	mm	20	25	35	40	50
• D	mm	5	8	10	5	
• H	mm	7.5	9.5	11	12	
• Lock hasp diameter	mm	6.5	8.5	10.5	7	

#### Front-extended terminals

##### Busbars

Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• D	mm	4	10	7	5	5
• Lock hasp diameter	mm	8.5	10	11		14

##### Cable lug

Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• Lock hasp diameter	mm	8.5	10	11		14

#### Front-extended cable terminals for copper cable

##### Busbars, flexible

Number	Unit(s)	1			--	
Dimensions W x D x N						
• W	mm	13	15.5	24	--	
• D	mm	0.5	0.8	1	--	
• N (= number of laminations)	mm	10			--	

##### Cable lug, flexible

Number	Unit(s)	1 or 2			--	
Dimensions						
• For 1 unit	mm <sup>2</sup>	1 ... 70	2.5 ... 120	16 ... 240	--	
• For 2 units	mm <sup>2</sup>	1 ... 50	2.5 ... 95	16 ... 150	--	

##### Cable lug, rigid

Number	Unit(s)	1		1 or 2	--	
Dimensions						
• For 1 unit	mm <sup>2</sup>	1 ... 95	2.5 ... 185	16 ... 300	--	
• For 2 units (for outside mounting)	mm <sup>2</sup>	--		120 ... 240	--	

#### Rear terminals

##### Busbars

Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• D	mm	4	10	7	5	
• Lock hasp diameter	mm	8.5		11	14	

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

### General data

#### Auxiliary switches

**Type** 3RV1991-1.A0

#### Rated operational current $I_e$

• At 250 V AC/DC			
- At AC-14 (utilization category according to IEC 60947-5-1)			
Control supply voltage 125 V	A	6	
Control supply voltage 250 V	A	5	
- At DC-13 (utilization category according to IEC 60947-5-1)			
Control supply voltage 125 V	A	0.3	
Control supply voltage 250 V	A	0.15	
• At 24 V DC			
- Control supply voltage 24 V	mA	≥ 0.75	
- Control supply voltage 5 V	mA	≥ 1	

#### Auxiliary releases

Molded case motor starter protectors	Power consumption during pick-up			
	3RV1353		3RV1.6., 3RV1.7., 3RV1.83	
Version	AC	DC	AC	DC
<b>Undervoltage releases</b>	<b>3RV1952-1A.0</b>		<b>3RV1982-1A.0</b>	
• 24 ... 30 V AC/DC	1.5 VA	1.5 W	6 VA	150 W
• 110 ... 127 V AC/110 ... 125 V DC	2 VA	2 W	6 VA	150 W
• 220 ... 240 V AC/220 ... 250 V DC	2.5 VA	2.5 W	6 VA	150 W
Opening times	ms	15	≤ 25	≤ 15
<b>Shunt releases</b>	<b>3RV1952-1E.0</b>		<b>3RV1982-1E.0</b>	
• 24 ... 30 V AC/DC	50 VA	50 W	150 VA	150 W
• 110 ... 127 V AC/110 ... 125 V DC	50 VA	50 W	150 VA	150 W
• 220 ... 240 V AC/220 ... 250 V DC	50 VA	50 W	150 VA	150 W
Opening times	ms	15	15	15

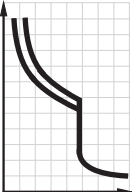

# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

For motor protection

### Selection and ordering data

#### CLASS 10A, 10, 20, 30; without auxiliary switch

	Rated current	Current setting of the inverse-time delayed overload releases "L"	Operating current of the instantaneous short-circuit releases "I"	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
	$I_n$	$I_R$	$I_i$	$I_{cu}$					
A	A	A	A	kA		Article No.	Price per PU		

#### With electronic releases



3RV10.3-7.L10

TU= trip unit (release)

Further accessories can be ordered separately (see "Accessories" on page 7/80 onwards).

#### Standard switching capacity, adjustable short-circuit and overload release, TU 4

100	40 ... 100	600 ... 1 300	120	D	<b>3RV1063-7AL10</b>	1	1 unit	41E
160	64 ... 160	960 ... 2 080	120	D	<b>3RV1063-7CL10</b>	1	1 unit	41E
200	80 ... 200	1 200 ... 2 600	120	D	<b>3RV1063-7DL10</b>	1	1 unit	41E
400	160 ... 400	2 400 ... 5 200	120	D	<b>3RV1073-7GL10</b>	1	1 unit	41E
630	252 ... 630	3 780 ... 8 190	100	D	<b>3RV1083-7JL10</b>	1	1 unit	41E

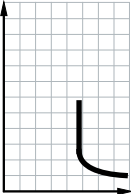



# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

For starter combinations

### Selection and ordering data

#### Without auxiliary switches

	Rated current	Inverse-time delayed overload release "L" $I_R$	Operating current of the instantaneous short-circuit releases "I" $I_i$	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
	$I_n$			$I_{cu}$		Article No.	Price per PU		
	A	A	A	kA					

#### With magnetic releases



3RV1353-6.P10

##### Standard switching capacity, non-adjustable short-circuit release, TU 1

1	Without	13	85	D	<b>3RV1353-6AP10</b>	1	1 unit	41E
1.6	Without	21	85	D	<b>3RV1353-6BP10</b>	1	1 unit	41E
2	Without	26	85	D	<b>3RV1353-6CP10</b>	1	1 unit	41E
3.2	Without	42	85	D	<b>3RV1353-6DP10</b>	1	1 unit	41E
4	Without	52	85	D	<b>3RV1353-6EP10</b>	1	1 unit	41E
5	Without	65	85	D	<b>3RV1353-6FP10</b>	1	1 unit	41E
6.5	Without	85	85	D	<b>3RV1353-6GP10</b>	1	1 unit	41E
8.5	Without	111	85	D	<b>3RV1353-6HP10</b>	1	1 unit	41E
12.5	Without	163	85	D	<b>3RV1353-6JP10</b>	1	1 unit	41E

##### Standard switching capacity, adjustable short-circuit release, TU 2

20	Without	120 ... 240	85	D	<b>3RV1353-6LM10</b>	1	1 unit	41E
32	Without	192 ... 384	85	D	<b>3RV1353-6MM10</b>	1	1 unit	41E

#### With electronic releases



3RV13...-7.N10

##### Standard switching capacity, adjustable short-circuit release, TU 3

100	Without	100 ... 1 000	120	D	<b>3RV1363-7AN10</b>	1	1 unit	41E
160	Without	160 ... 1 600	120	D	<b>3RV1363-7CN10</b>	1	1 unit	41E
250	Without	250 ... 2 500	120	D	<b>3RV1363-7EN10</b>	1	1 unit	41E
400	Without	400 ... 4 000	120	D	<b>3RV1373-7GN10</b>	1	1 unit	41E
630	Without	630 ... 6 300	120	D	<b>3RV1373-7JN10</b>	1	1 unit	41E
630	Without	630 ... 6 300	100	D	<b>3RV1383-7JN10</b>	1	1 unit	41E
800	Without	800 ... 8 000	100	D	<b>3RV1383-7KN10</b>	1	1 unit	41E

##### Increased switching capacity, adjustable short-circuit release, TU 3

100	Without	100 ... 1 000	200	D	<b>3RV1364-7AN10</b>	1	1 unit	41E
160	Without	160 ... 1 600	200	D	<b>3RV1364-7CN10</b>	1	1 unit	41E
250	Without	250 ... 2 500	200	D	<b>3RV1364-7EN10</b>	1	1 unit	41E
400	Without	400 ... 4 000	200	D	<b>3RV1374-7GN10</b>	1	1 unit	41E

TU= trip unit (release)

Further accessories can be ordered separately (see "Accessories" on page 7/80 onwards).

### More information

#### Configuration manual "Configuring SIRIUS"

For more information see "Configuration Manual "Configuring SIRIUS – Selection Data for Fuseless Load Feeders", <http://support.automation.siemens.com/WWW/view/en/68108592>.


# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

### Accessories

#### Mountable accessories

#### Selection and ordering data


Type	Version	For molded case motor starter protectors	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
				Article No.	Price per PU		

#### Auxiliary switches



3RV1991-1AA0

<b>Auxiliary switches</b> for front mounting	1 signaling switch Off-On + 1 tripped signal (250 V AC/DC)	3RV1353, 3RV1.6, ...	D	<b>3RV1991-1AA0</b>	1	1 unit	41E
	3 signaling switches Off-On + 1 tripped signal (250 V AC/DC)	3RV1.83	D	<b>3RV1991-1BA0</b>	1	1 unit	41E
	3 signaling switches Off-On + 1 tripped signal (24 V DC)		D	<b>3RV1991-1CA0</b>	1	1 unit	41E
	<b>Connection cables for auxiliary switches</b>	Length 2 m, 6-pole	3RV1353, 3RV1.6, ... 3RV1.83	D	<b>3RV1991-1FA0</b>	1	1 unit

Type	Rated control supply voltage $U_s$		For molded case motor starter protectors	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
		AC	DC					
		50/60 Hz						
		V	V					
				Article No.	Price per PU			

#### Auxiliary releases



3RV1952-1AA0

<b>Undervoltage releases</b> for front mounting	24 ... 30	24 ... 30	3RV1353	D	<b>3RV1952-1AA0</b>	1	1 unit	41E
	110 ... 127	110 ... 125		D	<b>3RV1952-1AD0</b>	1	1 unit	41E
	220 ... 240	220 ... 250		D	<b>3RV1952-1AE0</b>	1	1 unit	41E
	24 ... 30	24 ... 30	3RV1.6	D	<b>3RV1982-1AA0</b>	1	1 unit	41E
	110 ... 127	110 ... 125	...	D	<b>3RV1982-1AD0</b>	1	1 unit	41E
	220 ... 240	220 ... 250	3RV1.83	D	<b>3RV1982-1AF0</b>	1	1 unit	41E



3RV1952-1EA0

<b>Shunt releases</b> for front mounting	24 ... 30	24 ... 30	3RV1353	D	<b>3RV1952-1EA0</b>	1	1 unit	41E
	110 ... 127	110 ... 125		D	<b>3RV1952-1ED0</b>	1	1 unit	41E
	220 ... 240	220 ... 250		D	<b>3RV1952-1EF0</b>	1	1 unit	41E
	24 ... 30	24 ... 30	3RV1.6	D	<b>3RV1982-1EA0</b>	1	1 unit	41E
	110 ... 127	110 ... 125	...	D	<b>3RV1982-1ED0</b>	1	1 unit	41E
	220 ... 240	220 ... 250	3RV1.83	D	<b>3RV1982-1EF0</b>	1	1 unit	41E

<b>Connection cables for undervoltage and shunt releases</b>	Length 2 m, 6-pole	3RV1353, 3RV1.6, ... 3RV1.83	D	<b>3RV1992-1FA0</b>	1	1 unit	41E
--	--------------------	------------------------------	---	---------------------	---	--------	-----


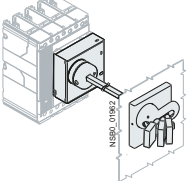
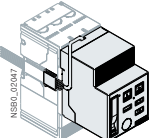





# Motor Starter Protectors/Circuit Breakers

## SIRIUS 3RV1 Molded Case Motor Starter Protectors up to 800 A

Accessories: Rotary operating mechanisms, mounting accessories

### Selection and ordering data

Version	For molded case motor starter protectors	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG		
			Article No.	Price per PU				
<b>Rotary operating mechanisms</b>								
	<b>Lever-type rotary operating mechanisms</b>	With adjustable distance, with lock/door interlocking (padlocks are not included in scope of supply)	3RV1353	D	<b>3RV1956-0BA0</b>	1	1 unit	41E
			3RV1.6., 3RV1.7.	D	<b>3RV1976-0BA0</b>	1	1 unit	41E
			3RV1.83	D	<b>3RV1986-0BA0</b>	1	1 unit	41E
3RV19.6-0BA0								
	<b>Motorized operating mechanisms</b>	With stored energy mechanism, 220 ... 250 V AC/DC	3RV1.6., 3RV1.7.	D	<b>3RV1976-3AP3</b>	1	1 unit	41E
			3RV1.83	D	<b>3RV1986-3AP3</b>	1	1 unit	41E
3RV19.6-3AP3								
<b>Connections</b>								
	<b>Connections</b>	Front-extended (1 set = 6 units)	3RV1353	D	<b>3RV1955-1AA0</b>	1	1 unit	41E
			3RV1.6.	D	<b>3RV1965-1BA0</b>	1	1 unit	41E
			3RV1.7.	D	<b>3RV1975-1CA0</b>	1	1 unit	41E
			3RV1.83-7J.10	D	<b>3RV1985-1DA0</b>	1	1 unit	41E
			3RV1.83-7KN10	D	<b>3RV1985-1EA0</b>	1	1 unit	41E
3RV1975-1CA0								
		Rear (1 set = 3 units)	3RV1353	D	<b>3RV1955-3AA0</b>	1	1 unit	41E
			3RV1.6.	D	<b>3RV1965-3AA0</b>	1	1 unit	41E
			3RV1.7.	D	<b>3RV1975-3AA0</b>	1	1 unit	41E
			3RV1.83	D	<b>3RV1985-3AA0</b>	1	1 unit	41E
3RV1955-3AA0								
	<b>Cable terminals</b>	Front-extended (1 set = 6 units)	3RV1353	D	<b>3RV1955-2AA0</b>	1	1 unit	41E
			3RV1.6.	D	<b>3RV1965-2BA0</b>	1	1 unit	41E
			3RV1.7.-7G.10	D	<b>3RV1975-2CA0</b>	1	1 unit	41E
			3RV1.73-7JN10	D	<b>3RV1975-2DA0</b>	1	1 unit	41E
3RV1975-2AA0								

# Overload Relays

## General data

### Overview



Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
<b>General data</b>							
<b>Sizes</b>	S00, S0	S2, S3	S00, S0	S2 ... S12	S00 ... S12	S00 ... S12	<ul style="list-style-type: none"> <li>Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, etc., ...)</li> <li>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</li> <li>Simplify configuration</li> </ul>
<b>Seamless current range</b>	0.11 ... 40 A	5.5 ... 100 A	0.1 ... 40 A	6 ... 630 A	0.3 ... 630 A (up to 820 A) <sup>1)</sup>	0.3 ... 630 A (up to 820 A) <sup>1)</sup>	<ul style="list-style-type: none"> <li>Allows easy and consistent configuration with one series of overload relays (for small to large loads)</li> </ul>
<b>Protection functions</b>							
<b>Tripping due to overload</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload</li> </ul>
<b>Tripping due to phase unbalance</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to phase unbalance</li> </ul>
<b>Tripping due to phase failure</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Minimizes heating of three-phase motors during phase failure</li> </ul>
<b>Protection of single-phase loads</b>	✓	✓	--	--	✓	✓	<ul style="list-style-type: none"> <li>Enables the protection of single-phase loads</li> </ul>
<b>Tripping in the event of overheating</b>	-- <sup>2)</sup>	-- <sup>2)</sup>	-- <sup>2)</sup>	-- <sup>2)</sup>	✓	✓	<ul style="list-style-type: none"> <li>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</li> <li>Eliminates the need for additional special equipment</li> <li>Saves space in the control cabinet</li> <li>Reduces wiring outlay and costs</li> </ul>
by <b>integrated thermistor motor protection function</b>							
<b>Tripping in the event of a ground fault</b>	--	--	✓ (only 3RB31)	✓ (only 3RB21)	✓	✓	<ul style="list-style-type: none"> <li>Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc.</li> <li>Eliminates the need for additional special equipment</li> <li>Saves space in the control cabinet</li> <li>Reduces wiring outlay and costs</li> </ul>
by <b>internal ground-fault detection (activatable)</b>							

✓ Available  
-- Not available

<sup>1)</sup> Motor currents up to 820 A can be recorded and evaluated by a current measuring module, e.g. 3RB2906-2BG1 (0.3 to 3 A), in combination with a 3UF1868-3GA00 (820 A/1 A) series transformer.  
3UF18 transformers see Chapter 10, "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices".

<sup>2)</sup> The SIRIUS 3RN thermistor motor protection devices can be used to provide additional temperature-dependent protection.



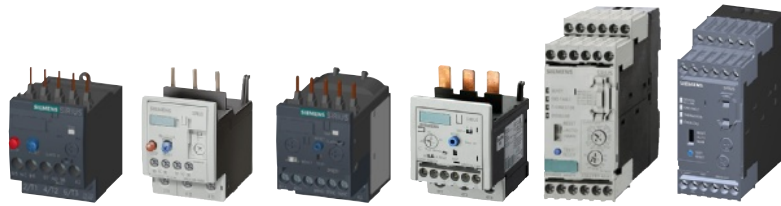
Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
<b>Features</b>							
<b>RESET function</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Allows manual or automatic resetting of the device</li> </ul>
<b>Remote RESET function</b>	✓ (by means of separate module)	✓ (by means 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)	<ul style="list-style-type: none"> <li>Allows the remote resetting of the device</li> </ul>
<b>TEST function for auxiliary contacts</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Allows easy checking of the function and wiring</li> </ul>
<b>TEST function for electronics</b>	--	--	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Allows checking of the electronics</li> </ul>
<b>Status display</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Displays the current operating state</li> </ul>
<b>Large current adjustment button</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Makes it easier to set the relay exactly to the correct current value</li> </ul>
<b>Integrated auxiliary contacts (1 NO + 1 NC)</b>	✓	✓	✓	✓	✓ (2 ×)	--	<ul style="list-style-type: none"> <li>Allows the load to be switched off if necessary</li> <li>Can be used to output signals</li> </ul>
<b>Integrated auxiliary contacts (1 CO and 1 NO in series)</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables the controlling of contactors directly from the higher-level control system through IO-Link</li> </ul>
<b>IO-Link connection</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Reduction of wiring in the control cabinet</li> <li>Enables communication</li> </ul>
<b>Connection of optional hand-held device</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables local operation</li> </ul>
<b>Communication capability through IO-Link</b>							
<b>Full starter functionality through IO-Link</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)</li> </ul>
<b>Reading out of diagnostics functions</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables the reading out of diagnostics information such as overload, open circuit, ground fault, etc.</li> </ul>
<b>Reading out of current values</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables the reading out of current values and their direct processing in the higher-level control system</li> </ul>
<b>Reading out all set parameters</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables the reading out of all set parameters, e.g. for plant documentation</li> </ul>

✓ Available

-- Not available

# Overload Relays

## General data



Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
<b>Design of load feeders</b>							
<b>Short-circuit strength up to 100 kA at 690 V</b> (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations</li> </ul>
<b>Electrical and mechanical matching to 3RT contactors</b>	✓	✓	✓	✓	✓ <sup>1)</sup>	✓ <sup>1)</sup>	<ul style="list-style-type: none"> <li>Simplifies configuration</li> <li>Reduces wiring outlay and costs</li> <li>Enables stand-alone installation as well as space-saving direct mounting</li> </ul>
<b>Straight-through transformers for main circuit<sup>2)</sup></b> (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 ... S6)	✓ (S00 ... S6)	✓ (S00 ... S6)	<ul style="list-style-type: none"> <li>Reduces the contact resistance (only one point of contact)</li> <li>Saves wiring costs (easy, no need for tools, and fast)</li> <li>Saves material costs</li> <li>Reduces installation costs</li> </ul>
<b>Spring-type connection system for main circuit<sup>2)</sup></b>	✓	--	✓	--	--	--	<ul style="list-style-type: none"> <li>Enables fast connections</li> <li>Permits vibration-resistant connections</li> <li>Enables maintenance-free connections</li> </ul>
<b>Spring-type connection system for auxiliary circuits<sup>2)</sup></b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Enables fast connections</li> <li>Permits vibration-resistant connections</li> <li>Enables maintenance-free connections</li> </ul>
<b>Ring terminal lug connection method for main and auxiliary circuits<sup>2)</sup></b>	✓	--	--	--	--	--	<ul style="list-style-type: none"> <li>Enables fast connections</li> <li>Permits vibration-resistant connections</li> <li>Enables maintenance-free connections</li> </ul>
<b>Full starter functionality through IO-Link</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)</li> </ul>
<b>Starter function</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Integration of feeders via IO-Link in the control system up to 630 A or 820 A</li> </ul>

✓ Available

-- Not available

<sup>1)</sup> Exception: up to size S3, only stand-alone installation is possible.<sup>2)</sup> Alternatively available for screw terminals.



Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
<b>Other features</b>							
<b>Temperature compensation</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Allows the use of the relays at high temperatures without derating</li> <li>Prevents premature tripping</li> <li>Allows compact installation of the control cabinet without distance between the devices/load feeders</li> <li>Simplifies configuration</li> <li>Enables space to be saved in the control cabinet</li> </ul>
<b>Very high long-term stability</b>	✓	✓	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Provides safe protection for the loads even after years of use in severe operating conditions</li> </ul>
<b>Wide setting ranges</b>	--	--	✓ (1:4)	✓ (1:4)	✓ (1:10)	✓ (1:10)	<ul style="list-style-type: none"> <li>Minimize the configuration outlay and costs</li> <li>Minimize storage overheads, storage costs, tied-up capital</li> </ul>
<b>Fixed trip class</b>	CLASS 10	CLASS 10	3RB30: CLASS 10 or CLASS 20	3RB20: CLASS 10 or CLASS 20	--	--	<ul style="list-style-type: none"> <li>Optimum motor protection for standard starts</li> </ul>
<b>Trip classes adjustable on the device CLASS 5, 10, 20, 30</b>	--	--	3RB31: ✓	3RB21: ✓	✓	✓	<ul style="list-style-type: none"> <li>Enables solutions for very fast starting motors requiring special protection (e.g. Ex motors)</li> <li>Enables heavy starting solutions</li> <li>Reduces the number of variants</li> <li>Minimizes the configuring outlay and costs</li> <li>Minimizes storage overhead, storage costs, and tied-up capital</li> </ul>
<b>Low power loss</b>	--	--	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Reduces energy consumption and energy costs (up 98 % less energy is used than for thermal overload relays).</li> <li>Minimizes temperature rises of the contactor and control cabinet – in some cases this may eliminate the need for controlgear cabinet cooling.</li> <li>Direct mounting to contactor saves space, even for high motor currents (i.e. no heat decoupling is required).</li> </ul>
<b>Internal power supply</b>	-- <sup>1)</sup>	-- <sup>1)</sup>	✓	✓	--	--	<ul style="list-style-type: none"> <li>Eliminates the need for configuration and connecting an additional control circuit</li> </ul>
<b>Supplied from an external voltage through IO-Link</b>	--	--	--	--	--	✓	<ul style="list-style-type: none"> <li>Eliminates the need for configuration and connecting an additional control circuit</li> </ul>

✓ Available  
-- Not available

<sup>1)</sup> SIRIUS 3RU11 and 3RU21 thermal overload relays use a bimetal contactor and therefore do not require a control supply voltage.

# Overload Relays

## General data



Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
<b>Further characteristics (continued)</b>							
<b>Overload warning</b>	--	--	--	--	✓	✓	<ul style="list-style-type: none"> <li>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</li> <li>Allows the imminent tripping of the relay to be signaled</li> <li>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</li> <li>Eliminates the need for an additional device</li> <li>Saves space in the control cabinet</li> <li>Reduces wiring outlay and costs</li> </ul>
<b>Analog output</b>	--	--	--	--	✓	✓	<ul style="list-style-type: none"> <li>Allows the output of an analog output signal for actuating moving-coil instruments, feeding programmable logic controllers or transfer to bus systems</li> <li>Eliminates the need for an additional measuring transducer and signal converter</li> <li>Saves space in the control cabinet</li> <li>Reduces wiring outlay and costs</li> </ul>

✓ Available  
 -- Not available

7

## Overview of overload relays – matching contactors

Overload relays	Current measurement	Current range	Contactors (type, size, rating in kW)							
			3RT201.	3RT202.	3RT103.	3RT104.	3RT105.	3RT106.	3RT107.	3TF68/3TF69
Type	A		S00	S0	S2	S3	S6	S10	S12	Size 14
			3/4/5.5/7.5	5.5/7.5/11/15/18.5	15/18.5/22	30/37/45	55/75/90	110/132/160	200/250	375/450

## SIRIUS 3RU21 thermal overload relays



3RU21

3RU211	Integrated	0.11 ... 16	✓	--	--	--	--	--	--	--
3RU212	Integrated	1.8 ... 40	--	✓	--	--	--	--	--	--

## SIRIUS 3RU11 thermal overload relays



3RU11

3RU113	Integrated	5.5 ... 50	--	--	✓	--	--	--	--	--
3RU114	Integrated	18 ... 100	--	--	--	✓	--	--	--	--

SIRIUS 3RB30 solid-state overload relays<sup>1)</sup>

3RB30

3RB301	Integrated	0.1 ... 16	✓	--	--	--	--	--	--	--
3RB302	Integrated	0.1 ... 40	--	✓	--	--	--	--	--	--

SIRIUS 3RB31 solid-state overload relays<sup>1)</sup>

3RB31

3RB311	Integrated	0.1 ... 16	✓	--	--	--	--	--	--	--
3RB312	Integrated	0.1 ... 40	--	✓	--	--	--	--	--	--

SIRIUS 3RB20 solid-state overload relays<sup>1)</sup>

3RB20

3RB203	Integrated	6 ... 50	--	--	✓	--	--	--	--	--
3RB204	Integrated	12.5 ... 100	--	--	--	✓	--	--	--	--
3RB205	Integrated	50 ... 200	--	--	--	--	✓	--	--	--
3RB206	Integrated	55 ... 630	--	--	--	--	--	✓	✓	✓
3RB201 + 3UF18	Integrated	630 ... 820	--	--	--	--	--	--	--	✓

SIRIUS 3RB21 solid-state overload relays<sup>1)</sup>

3RB21

3RB213	Integrated	6 ... 50	--	--	✓	--	--	--	--	--
3RB214	Integrated	12.5 ... 100	--	--	--	✓	--	--	--	--
3RB215	Integrated	50 ... 200	--	--	--	--	✓	--	--	--
3RB216	Integrated	55 ... 630	--	--	--	--	--	✓	✓	✓
3RB211 + 3UF18	Integrated	630 ... 820	--	--	--	--	--	--	--	✓


✓ Can be used  
-- Cannot be used

<sup>1)</sup> "Technical specifications" for the use of overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders", see Configuration Manuals  
- "SIRIUS Configuration – Selection data for Fuseless Load Feeders", <http://support.automation.siemens.com/WW/view/en/68115040>  
- "Configuring SIRIUS Innovations – Selection data for Fuseless and Fused Load Feeders", <http://support.automation.siemens.com/WW/view/en/50250599>.

# Overload Relays

## General data

### Overview of overload relays – matching contactors (continued)

Overload relays	Current measurement	Current range	Contactors (type, size, rating in kW)								
			3RT201.	3RT202.	3RT103.	3RT104.	3RT105.	3RT106.	3RT107.	3TF68/3TF69	
Type	Type	A	S00	S0	S2	S3	S6	S10	S12	Size 14	
			3/4/5/7.5	5.5/7.5/11	15/18.5/22	30/37/45	55/75/90	110/132/160	200/250	375/450	
<b>SIRIUS 3RB22 to 3RB24 solid-state overload relays<sup>1)</sup></b>											
 3RB22, 3RB23	3RB290	0.3 ... 25	✓	✓	--	--	--	--	--	--	
	3RB2283/ 3RB2383/ 3RB2483+	3RB290	10 ... 100	✓	✓	✓	✓	--	--	--	
		3RB295	20 ... 200	--	✓	✓	✓	✓	--	--	
		3RB296	63 ... 630	--	--	--	--	--	✓	✓	
		3RB290 + 3UF18	630 ... 820	--	--	--	--	--	--	✓	

✓ Can be used  
-- Cannot be used

<sup>1)</sup> "Technical Specifications" for the use of overload relays with trip class  $\geq$  CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders", see Configuration Manuals  
 - "SIRIUS Configuration – Selection data for Fuseless Load Feeders", <http://support.automation.siemens.com/WW/view/en/68115040>  
 - "Configuring SIRIUS Innovations – Selection data for Fuseless and Fused Load Feeders", <http://support.automation.siemens.com/WW/view/en/50250599>.






### 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.

The 3RU11 thermal overload relays come with screw terminals.

The solid-state 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 solid-state overload relays for High-Feature applications.

The 3RB29 current measuring modules are designed as straight-through modules. From size S6 upwards they are also available with an optional busbar connection.

-  Screw terminals
-  Spring-type terminals
-  Ring terminal lug connections
-  Busbar connections
-  Straight-through transformers

The various terminals and straight-through transformers are indicated in the corresponding tables by the symbols shown on orange backgrounds.

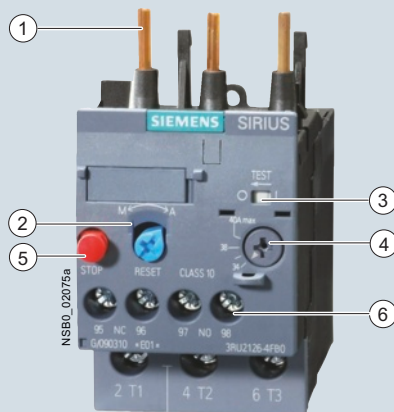


# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

3RU2 up to 40 A  
for standard applications

### 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 the 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 Connecting terminals:  
Depending on the device version, the connecting terminals for screw, spring-type or ring terminal lug 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.

SIRIUS 3RU2126-4FB0 thermal overload relay

### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th			
Thermal overload relays	3	R	U									
SIRIUS 2nd generation			2									
Device series				□								
Size, rated operational current and power					□	□						
Setting range of the overload release							□	□				
Connection methods									□			
Installation type									□			
Example	3	R	U	2	1	1	6	-	0	A	B	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.

The 3RU21 thermal overload relays up to 40 A have been designed for inverse-time delayed protection of loads with normal starting (for "Function" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <http://support.automation.siemens.com/WW/view/en/60298164>) against excessive temperature rises due to overload or phase failure.

An overload or phase failure results in an increase of the motor current beyond the set rated motor current. Via heating elements, this current rise heats up the bimetal strips inside the device which then bend and as a result trigger the auxiliary contacts by means of a tripping mechanism. 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 "Characteristic Curves" <http://support.automation.siemens.com/WW/view/en/34291410/134300>).

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after a recovery time has elapsed (for "Function" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <http://support.automation.siemens.com/WW/view/en/60298164>).

The 3RU2 thermal overload relays are suitable for operation with frequency converters. Please follow the instructions in the manual "SIRIUS Innovations – 3RU2/3RB3 Overload Relays", see <http://support.automation.siemens.com/WW/view/en/60298164>.

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.

3RU11 overload relays in sizes S2 and S3 see page 7/105 onwards.

### "Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RU21 thermal 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 IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Category (2) G/D exists. It has the number DMT 98 ATEX G001.

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

**3RU2 up to 40 A**  
for standard applications

### Benefits

The most important features and benefits of the 3RU21 thermal overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

### Application

#### Industries

The 3RU21 thermal overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal starting conditions (CLASS 10).

#### Application

The 3RU21 thermal overload relays have been designed for the protection of three-phase and single-phase AC and DC motors.

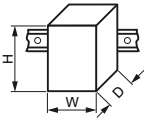

If single-phase AC or DC loads are to be protected by the 3RU21 thermal overload relays, all three bimetal strips must be heated. For this purpose, all main current paths of the relay must be connected in series.

#### Ambient conditions

The 3RU21 thermal overload relays have temperature compensation according to IEC 60947-4-1 for the temperature range of -40 to +60 °C. For temperatures from +60 to +70 °C, the upper set value of the setting range must be reduced by the factor listed in the table below.

Ambient temperature °C	Derating factor for the upper set value Current ranges	
	0.11 ... 20 A	17 ... 40 A
+60	1.0	1.0
+65	0.94	0.97
+70	0.87	0.94

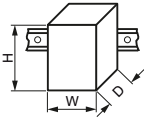
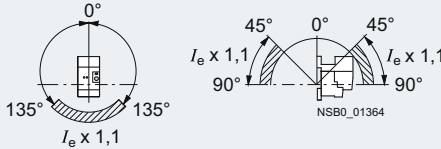
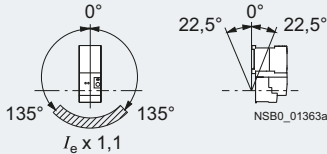
### Technical specifications

Type		3RU2116	3RU2126
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 80	45 x 97 x 95
• Spring-type terminals	mm	45 x 102 x 79	45 x 114 x 95
<b>General data</b>			
<b>Trips in the event of</b>		Overload and phase failure	
<b>Trip class</b> acc. to IEC 60947-4-1	CLASS	10	
<b>Phase failure sensitivity</b>		Yes	
<b>Overload warning</b>		No	
<b>Reset and recovery</b>		Manual, Automatic and Remote RESET (Remote RESET in combination with the corresponding accessories)	
• Reset options after tripping			
• Recovery time			
- For automatic RESET	min	Depends on the strength of the tripping current and characteristic	
- For manual RESET	min	Depends on the strength of the tripping current and characteristic	
- For remote RESET	min	Depends on the strength of the tripping current and characteristic	
<b>Features</b>			
• Display of operating state on device		Yes, by means of TEST function/switch position indicator slide	
• TEST function		Yes	
• RESET button		Yes	
• STOP button		Yes	
<b>Safe operation of motors with "increased safety"</b>			
<b>type of protection</b>			
EC type test certificate number according to directive 94/9/EC (ATEX)		DMT 98 ATEX G 001  II (2) GD, DMT 98 ATEX G 001 N1	
<b>Ambient temperature</b>			
• Storage/transport	°C	-55 ... +80	
• Operation	°C	-40 ... +70	
• Temperature compensation	°C	Up to 60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100 (over +60 °C current reduction is not required)	
- Temperature inside control cabinet 70 °C	%	87	
<b>Repeat terminals</b>			
• Coil repeat terminals		Yes	Not required
• Auxiliary contact repeat terminal		Yes	Not required
<b>Degree of protection</b> acc. to IEC 61140		IP20	
<b>Touch protection</b> acc. to IEC 61140		Screw terminals and spring-type terminals: Finger-safe for vertical contact from the front; ring terminal lug connection: Finger-safe only with optional terminal covers	
<b>Shock resistance with sine</b> acc. to IEC 60068-2-27	g/ms	15/11 (auxiliary contacts 95/96 and 97/98: 8 g/11 ms)	

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

3RU2 up to 40 A  
for standard applications

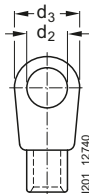
Type		3RU2116	3RU2126
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 80	45 x 97 x 95
• Spring-type terminals	mm	45 x 102 x 79	45 x 114 x 95
<b>General data (continued)</b>			
<b>Electromagnetic compatibility (EMC) – Interference immunity</b>			
• Conductor-related interference			
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.	
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.	
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.	
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	EMC interference immunity is not relevant for thermal overload relays.	
<b>Electromagnetic compatibility (EMC) – emitted interference</b>		EMC interference immunity is not relevant for thermal overload relays.	
<b>Resistance to extreme climates – air humidity</b>	%	90	
<b>Dimensions</b>		"Dimensional drawings" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/60298164">http://support.automation.siemens.com/WW/view/en/60298164</a> .	
<b>Installation altitude above sea level</b>	m	Up to 2 000; above this on request	
<b>Mounting position</b>		<p>The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For mounting position in the hatched area, a setting correction of 10 % must be implemented.</p> <p>Stand-alone installation:</p> 	
		<p>Contactor + overload relay:</p> 	
<b>Type of mounting</b>		Mounting onto contactor/stand-alone installation with terminal support (For screw and snap-on mounting onto TH 35 standard mounting rail. Technical specifications of the terminal supports see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/60298164">http://support.automation.siemens.com/WW/view/en/60298164</a> .)	

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

**3RU2 up to 40 A**  
for standard applications

Type		3RU2116	3RU2126
Size		S00	S0
<b>Main circuit</b>			
Rated insulation voltage $U_i$ (pollution degree 3)	V	690	
Rated impulse withstand voltage $U_{imp}$	kV	6	
Rated operational voltage $U_e$	V	690	
Type of current		Yes	
• Direct current		Yes	
• Alternating current		Yes, frequency range up to 400 Hz	
Current setting	A	0.11 ... 0.16 up to 11 ... 16	1.8 ... 2.5 up to 34 ... 40
Power loss per unit (max.)	W	4.1 ... 6.3	6.2 ... 7.5
Short-circuit protection		See "Selection and Ordering Data" on pages 7/95 and 7/96 "Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders" see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" <a href="http://support.automation.siemens.com/WW/view/en/50250599">http://support.automation.siemens.com/WW/view/en/50250599</a> .	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1			
• Screw terminals or ring terminal lug connections	V	440	690: Setting ranges ≤ 25 A
• Spring-type terminals	V	440	440: Setting ranges > 25 A
<b>Conductor cross-sections of main circuit</b>			
<b>Connection type</b>		⊕ <b>Screw terminals</b>	
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
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup> , max. 2 x 4	2 x (1 ... 2.5) <sup>1)</sup> 2 x (2.5 ... 10) <sup>1)</sup>
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> 2 x (0.75 ... 2.5) <sup>1)</sup>	2 x (1 ... 2.5) <sup>1)</sup> 2 x (2.5 ... 6) <sup>1)</sup> max. 1 x 10
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>1)</sup> 2 x (18 ... 14) <sup>1)</sup> 2 x 12	2 x (16 ... 12) <sup>1)</sup> 2 x (14 ... 8) <sup>1)</sup>
<b>Connection type</b>		⊕ <b>Spring-type terminals</b>	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4)	1 x (1 ... 10)
• Finely stranded without end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)	1 x (18 ... 8)
<b>Connection type</b>		⊕ <b>Ring terminal lug connections</b>	
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	mm	$d_2 = \text{min. } 3.2,$ $d_3 = \text{max. } 7.5$	$d_2 = \text{min. } 4.3,$ $d_3 = \text{max. } 12.2$
• 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			



<sup>1)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

3RU2 up to 40 A  
for standard applications




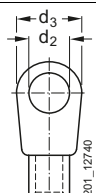
Type		3RU2116	3RU2126
Size		S00	S0
<b>Auxiliary circuit</b>			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage $U_i$ (pollution degree 3)	V	690	
Rated impulse withstand voltage $U_{imp}$	kV	6	
<b>Contact rating of the auxiliary contacts</b>			
• NC contact with alternating current 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	
• NO contact with alternating current AC-14/AC-15, rated operational current $I_e$ at $U_e$ :			
- 24 V	A	3	
- 120 V	A	3	
- 125 V	A	3	
- 230 V	A	2	
- 400 V	A	1	
- 600 V	A	0.75	
- 690 V	A	0.75	
• NC contact, NO contact with direct current DC-13, rated operational current $I_e$ at $U_e$ :			
- 24 V	A	1	
- 60 V	A	On request	
- 110 V	A	0.22	
- 125 V	A	0.22	
- 220 V	A	0.11	
• Conventional thermal current $I_{th}$	A	6	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
<b>Short-circuit protection</b>			
• With fuse			
- Operational class gG	A	6	
- Quick	A	10	
• With miniature circuit breaker (C characteristic)	A	6 <sup>1)</sup>	
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	440	
<b>CSA, UL, UR rated data</b>			
Auxiliary circuit – switching capacity		B600, R300	

<sup>1)</sup> Up to  $I_k \leq 0.5$  kA;  $U \leq 260$  V.

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

**3RU2 up to 40 A**  
for standard applications

Type		3RU2116	3RU2126
Size		S00	S0
<b>Conductor cross-sections for auxiliary circuit</b>			
<b>Connection type</b>		 <b>Screw terminals</b>	
<b>Terminal screw</b>		M3, Pozidriv size 2	
<b>Operating devices</b>	mm	∅ 5 ... 6	
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2	
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>1)</sup> , 2 x (18 ... 14) <sup>1)</sup>	
<b>Connection type</b>		 <b>Spring-type terminals</b>	
<b>Operating devices</b>	mm	3.0 x 0.5 and 3.5 x 0.5	
<b>Conductor cross-sections (min./max.)</b>			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)	
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve (DIN 46228-1)	mm <sup>2</sup>	2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)	
<b>Connection type</b>		 <b>Ring terminal lug connections</b>	
<b>Terminal screw</b>		M3, Pozidriv size 2	
<b>Operating devices</b>	mm	∅ 5 ... 6	
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2	
<b>Usable ring terminal lugs</b>	mm	d <sub>2</sub> = min. 3.2, d <sub>3</sub> = max. 7.5	
<ul style="list-style-type: none"> <li>• DIN 46234 without insulation sleeve</li> <li>• DIN 46225 without insulation sleeve</li> <li>• DIN 46237 with insulation sleeve</li> <li>• JIS C2805 Type R without insulation sleeve</li> <li>• JIS C2805 Type RAV with insulation sleeve</li> <li>• JIS C2805 Type RAP with insulation sleeve</li> </ul>			

<sup>1)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

3RU2 up to 40 A  
for standard applications

### Selection and ordering data

#### 3RU21 thermal overload relays for mounting onto contactor<sup>1)</sup>, CLASS 10

Features and technical specifications:

- Screw terminals, spring-type terminals or ring terminal lug connections<sup>2)</sup>
- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator

- TEST function
- STOP button
- Sealable covers (optional accessory)
- Terminal covers for devices with ring terminal lug connection (optional accessory)

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



3RU2116-4AB0



3RU2116-4ACO



3RU2126-4FBO



3RU2126-4ACO

Size contactor <sup>3)</sup>	Rating for three-phase motor, rated value <sup>4)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>5)</sup>	DT	Screw terminals		DT	Spring-type terminals	
					Article No.	Price per PU		Article No.	Price per PU
<b>Size S00</b>									
S00	0.04	0.11 ... 0.16	0.5	▶	3RU2116-0AB0	B	3RU2116-0AC0		
	0.06	0.14 ... 0.2	1	▶	3RU2116-0BB0	B	3RU2116-0BC0		
	0.06	0.18 ... 0.25	1	▶	3RU2116-0CB0	B	3RU2116-0CC0		
	0.09	0.22 ... 0.32	1.6	▶	3RU2116-0DB0	B	3RU2116-0DC0		
	0.09	0.28 ... 0.4	2	▶	3RU2116-0EB0	B	3RU2116-0EC0		
	0.12	0.35 ... 0.5	2	▶	3RU2116-0FB0	B	3RU2116-0FC0		
	0.18	0.45 ... 0.63	2	▶	3RU2116-0GB0	B	3RU2116-0GC0		
	0.18	0.55 ... 0.8	4	▶	3RU2116-0HB0	B	3RU2116-0HC0		
	0.25	0.7 ... 1	4	▶	3RU2116-0JB0	B	3RU2116-0JC0		
	0.37	0.9 ... 1.25	4	▶	3RU2116-0KB0	B	3RU2116-0KC0		
	0.55	1.1 ... 1.6	6	▶	3RU2116-1AB0	B	3RU2116-1AC0		
	0.75	1.4 ... 2	6	▶	3RU2116-1BB0	B	3RU2116-1BC0		
	0.75	1.8 ... 2.5	10	▶	3RU2116-1CB0	B	3RU2116-1CC0		
	1.1	2.2 ... 3.2	10	▶	3RU2116-1DB0	B	3RU2116-1DC0		
	1.5	2.8 ... 4	16	▶	3RU2116-1EB0	B	3RU2116-1EC0		
	1.5	3.5 ... 5	20	▶	3RU2116-1FB0	B	3RU2116-1FC0		
	2.2	4.5 ... 6.3	20	▶	3RU2116-1GB0	B	3RU2116-1GC0		
	3	5.5 ... 8	25	▶	3RU2116-1HB0	B	3RU2116-1HC0		
	4	7 ... 10	35	▶	3RU2116-1JB0	B	3RU2116-1JC0		
	5.5	9 ... 12.5	35	▶	3RU2116-1KB0	B	3RU2116-1KC0		
7.5	11 ... 16	40	▶	3RU2116-4AB0	B	3RU2116-4AC0			
<b>Size S0</b>									
S0	0.75	1.8 ... 2.5	10	▶	3RU2126-1CB0	B	3RU2126-1CC0		
	1.1	2.2 ... 3.2	10	▶	3RU2126-1DB0	B	3RU2126-1DC0		
	1.5	2.8 ... 4	16	▶	3RU2126-1EB0	B	3RU2126-1EC0		
	1.5	3.5 ... 5	20	▶	3RU2126-1FB0	B	3RU2126-1FC0		
	2.2	4.5 ... 6.3	20	▶	3RU2126-1GB0	B	3RU2126-1GC0		
	3	5.5 ... 8	25	▶	3RU2126-1HB0	B	3RU2126-1HC0		
	4	7 ... 10	35	▶	3RU2126-1JB0	B	3RU2126-1JC0		
	5.5	9 ... 12.5	35	▶	3RU2126-1KB0	B	3RU2126-1KC0		
	7.5	11 ... 16	40	▶	3RU2126-4AB0	▶	3RU2126-4AC0		
	7.5	14 ... 20	50	▶	3RU2126-4BB0	▶	3RU2126-4BC0		
	11	17 ... 22	63	▶	3RU2126-4CB0	▶	3RU2126-4CC0		
	11	20 ... 25	63	▶	3RU2126-4DB0	▶	3RU2126-4DC0		
	15	23 ... 28	63	▶	3RU2126-4NB0	▶	3RU2126-4NC0		
	15	27 ... 32	80	▶	3RU2126-4EB0	▶	3RU2126-4EC0		
	18.5	30 ... 36	80	▶	3RU2126-4PB0	▶	3RU2126-4PC0		
	18.5	34 ... 40	80	▶	3RU2126-4FB0	▶	3RU2126-4FC0		

<sup>1)</sup> With the suitable terminal supports (see "Accessories", page 7/97), the 3RU2 overload relays for mounting on contactors can also be installed as stand-alone units.

<sup>2)</sup> The 3RU21 overload relays are also available with ring terminal lug connection. The Article No. must be changed in the 10th digit to "J": e.g. 3RU2116-0AJ0.

<sup>3)</sup> Observe maximum rated operational current of the devices.

<sup>4)</sup> 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.

<sup>5)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", <http://support.automation.siemens.com/WW/view/en/50250599>.

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

**3RU2 up to 40 A**  
for standard applications

### 3RU21 thermal overload relays for stand-alone installation<sup>1)</sup>, CLASS 10

Features and technical specifications:

- Screw or spring-type terminals
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Sealable covers (optional accessory)

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



3RU2116-4AB1



3RU2116-4AC1



3RU2126-4FB1



3RU2126-4FC1

Size contactor <sup>2)</sup>	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Screw terminals		Spring-type terminals	
					Article No.	Price per PU	Article No.	Price per PU
<b>Size S00</b>								
S00	0.04	0.11 ... 0.16	0.5	B	<b>3RU2116-0AB1</b>	B	<b>3RU2116-0AC1</b>	
	0.06	0.14 ... 0.2	1	B	<b>3RU2116-0BB1</b>	B	<b>3RU2116-0BC1</b>	
	0.06	0.18 ... 0.25	1	B	<b>3RU2116-0CB1</b>	B	<b>3RU2116-0CC1</b>	
	0.09	0.22 ... 0.32	1.6	B	<b>3RU2116-0DB1</b>	B	<b>3RU2116-0DC1</b>	
	0.09	0.28 ... 0.4	2	B	<b>3RU2116-0EB1</b>	B	<b>3RU2116-0EC1</b>	
	0.12	0.35 ... 0.5	2	B	<b>3RU2116-0FB1</b>	B	<b>3RU2116-0FC1</b>	
	0.18	0.45 ... 0.63	2	B	<b>3RU2116-0GB1</b>	B	<b>3RU2116-0GC1</b>	
	0.18	0.55 ... 0.8	4	B	<b>3RU2116-0HB1</b>	B	<b>3RU2116-0HC1</b>	
	0.25	0.7 ... 1	4	B	<b>3RU2116-0JB1</b>	B	<b>3RU2116-0JC1</b>	
	0.37	0.9 ... 1.25	4	B	<b>3RU2116-0KB1</b>	B	<b>3RU2116-0KC1</b>	
	0.55	1.1 ... 1.6	6	B	<b>3RU2116-1AB1</b>	B	<b>3RU2116-1AC1</b>	
	0.75	1.4 ... 2	6	B	<b>3RU2116-1BB1</b>	B	<b>3RU2116-1BC1</b>	
	0.75	1.8 ... 2.5	10	B	<b>3RU2116-1CB1</b>	B	<b>3RU2116-1CC1</b>	
	1.1	2.2 ... 3.2	10	B	<b>3RU2116-1DB1</b>	B	<b>3RU2116-1DC1</b>	
	1.5	2.8 ... 4	16	B	<b>3RU2116-1EB1</b>	B	<b>3RU2116-1EC1</b>	
	1.5	3.5 ... 5	20	B	<b>3RU2116-1FB1</b>	B	<b>3RU2116-1FC1</b>	
	2.2	4.5 ... 6.3	20	B	<b>3RU2116-1GB1</b>	B	<b>3RU2116-1GC1</b>	
	3	5.5 ... 8	25	B	<b>3RU2116-1HB1</b>	B	<b>3RU2116-1HC1</b>	
	4	7 ... 10	35	B	<b>3RU2116-1JB1</b>	B	<b>3RU2116-1JC1</b>	
5.5	9 ... 12.5	35	B	<b>3RU2116-1KB1</b>	B	<b>3RU2116-1KC1</b>		
7.5	11 ... 16	40	B	<b>3RU2116-4AB1</b>	B	<b>3RU2116-4AC1</b>		
<b>Size S0</b>								
S0	7.5	14 ... 20	50	B	<b>3RU2126-4BB1</b>	B	<b>3RU2126-4BC1</b>	
	11	17 ... 22	63	B	<b>3RU2126-4CB1</b>	B	<b>3RU2126-4CC1</b>	
	11	20 ... 25	63	B	<b>3RU2126-4DB1</b>	B	<b>3RU2126-4DC1</b>	
	15	23 ... 28	63	B	<b>3RU2126-4NB1</b>	B	<b>3RU2126-4NC1</b>	
	15	27 ... 32	80	B	<b>3RU2126-4EB1</b>	B	<b>3RU2126-4EC1</b>	
	18.5	30 ... 36	80	B	<b>3RU2126-4PB1</b>	B	<b>3RU2126-4PC1</b>	
	18.5	34 ... 40	80	B	<b>3RU2126-4FB1</b>	B	<b>3RU2126-4FC1</b>	

<sup>1)</sup> Screw and snap-on mounting onto TH 35 standard mounting rail.

<sup>2)</sup> Observe maximum rated operational current of the devices.

<sup>3)</sup> 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.

<sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", <http://support.automation.siemens.com/WWW/view/en/50250599>.



# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

Accessories





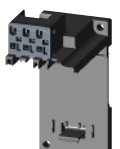


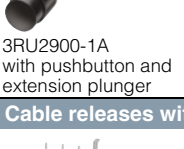
### Overview

#### Overload relays for standard applications

The following optional accessories are available for the 3RU21 thermal overload relays:

- Terminal support for stand-alone installation with screw or spring-type terminals for every size
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Electrical remote RESET module in three voltage variants (for all sizes)
- Sealable cover (for all sizes)
- Terminal covers for devices with ring terminal lug connection









### Selection and ordering data

Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Terminal supports for stand-alone installation</b>							
 3RU2916-3AA01	<b>Terminal supports for overload relays with screw terminals</b>		<b>Screw terminals</b> 		1	1 unit	41F
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00 S0	▶	<b>3RU2916-3AA01</b> <b>3RU2926-3AA01</b>			
 3RU2926-3AA01	<b>Terminal supports for overload relays with spring-type terminal</b>		<b>Spring-type terminals</b> 		1	1 unit	41F
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00 S0	B B	<b>3RU2916-3AC01</b> <b>3RU2926-3AC01</b>			
 3RU2916-3AC01	<b>Resetting plungers, holders and formers</b>		<b>3RU2900-1A</b>		1	1 unit	41F
		S00, S0	▶				
 3RU2926-3AC01	<b>Pushbuttons with extended stroke (12 mm), IP65, ø 22 mm</b>		<b>3SB3000-0EA11</b>		1	1 unit	41J
		S00, S0	B				
 3RU2900-1A with pushbutton and extension plunger	<b>Extension plungers</b>		<b>3SX1335</b>		1	1 unit	41J
	For compensation of the distance between the pushbutton and the unlatching button of the relay	S00, S0	A				
<b>Cable releases with holder for RESET</b>							
 3RU2900-1.	For ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm				1	1 unit	41F
	• Length 400 mm	S00, S0	▶	<b>3RU2900-1B</b>			
	• Length 600 mm	S00, S0	▶	<b>3RU2900-1C</b>	1	1 unit	41F

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

### Accessories



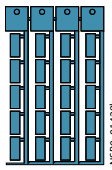
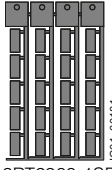
Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Modules for remote RESET, electrical</b>								
 <p>3RU1900-2A.71</p>	Operating range $0.85 \dots 1.1 \times U_N$ , power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h							
	• 24 ... 30 V AC/DC	S00, S0	A	<b>3RU1900-2AB71</b>	1	1 unit	41F	
	• 110 ... 127 V AC/DC	S00, S0	A	<b>3RU1900-2AF71</b>	1	1 unit	41F	
	• 220 ... 250 V AC/DC	S00, S0	A	<b>3RU1900-2AM71</b>	1	1 unit	41F	
<b>Sealable covers</b>								
 <p>3RV2908-0P</p>	For covering the setting knobs		S00, S0	▶	<b>3RV2908-0P</b>	100	10 units	41E
<b>Terminal covers</b>								
 <p>3RU2916-3BJ21</p>			<b>Covers for devices with ring terminal lug connection</b> (ensure finger-safety)		<b>Ring terminal lug connection</b> 			
 <p>3RU2926-3BJ21</p>			<ul style="list-style-type: none"> <li>• Main current level</li> </ul>					
 <p>3RU2916-3BJ20</p>			<ul style="list-style-type: none"> <li>- Cover between contactor and overload relay for direct mounting of the overload relay</li> <li>- Cover for overload relay on load side</li> </ul>					
 <p>3RV2928-4AA00</p>			<ul style="list-style-type: none"> <li>• Auxiliary current level</li> </ul>					
 <p>3RT2916-4EA13</p>								
					<b>3RU2916-3BJ21</b> 1 10 units 41F <b>3RU2926-3BJ21</b> 1 10 units 41F <b>3RU2916-3BJ20</b> 1 10 units 41F <b>3RV2928-4AA00</b> 1 1 unit 41E <b>3RT2916-4EA13</b> 1 10 units 41B			

# Overload Relays

## SIRIUS 3RU2 Thermal Overload Relays

### Accessories

#### General accessories

Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Tools for opening spring-type terminals</b>									
 3RA2908-1A	<b>Screwdrivers</b> 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: 3RU2	A	<b>Spring-type terminals</b> 			
						<b>3RA2908-1A</b>	1	1 unit	41B
<b>Blank labels</b>									
 3RT1900-1SB20	<b>Unit labeling plates<sup>1)</sup></b> for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RU2	D	<b>3RT1900-1SB20</b>			
		100	340 units	41B					
 3RT2900-1SB20		20 mm x 7 mm	Titanium gray	3RU2	D	<b>3RT2900-1SB20</b>			
		100	340 units	41B					

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

# Overload Relays

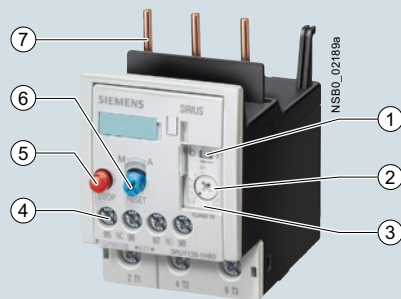
## SIRIUS 3RU1 Thermal Overload Relays

3RU11 up to 100 A  
for standard applications

### Overview

#### Note:

- The 3RU11 devices (sizes S00/S0 to S3) can be found
- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
  - in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
  - in the interactive catalog CA 01
  - in the Industry Mall



- ① Switch position indicator and TEST function of the wiring:  
Indicates a trip and enables the wiring test.
- ② Motor current setting:  
Setting the device to the rated motor current is easy with the large rotary knob.
- ③ Transparent, sealable cover:  
Secures the motor current setting and the TEST function against adjustment.
- ④ Connecting terminals:  
The generously sized terminals permit connection of two conductors with different cross-sections for main and auxiliary circuits. The auxiliary circuit can be connected with screw terminals and alternatively with spring-type terminals.
- 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 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.
- ⑦ Connection for mounting onto contactors:  
Optimally adapted in electrical, mechanical and design terms to the contactors. These connecting pins can be used for direct mounting of the overload relay to the contactor. Stand-alone installation is possible as an alternative (partly in conjunction with a terminal support for stand-alone installation).

SIRIUS 3RU1136-1HB0 thermal overload relay

### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th			
Thermal overload relays	3	R	U									
SIRIUS 1st generation			1									
Device series				□								
Size, rated operational current and power					□	□						
Setting range of the overload release							□	□				
Connection methods									□			
Installation type									□			
Example	3	R	U	1	1	3	6	-	1	H	B	0

#### Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

The 3RU11 thermal overload relays up to 100 A have been designed for inverse-time delayed protection of loads with normal starting ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681830>) against excessive temperature rises due to overload or phase failure.

An overload or phase failure results in an increase of the motor current beyond the set rated motor current. Via heating elements, this current rise heats up the bimetal strips inside the device which then bend and as a result trigger the auxiliary contacts by means of a tripping mechanism. 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 "Characteristic Curves" <http://support.automation.siemens.com/WW/view/en/20356133/134300>).

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after a recovery time has elapsed ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681830>).

The 3RU11 thermal overload relays are suitable for operation with frequency converters. Please follow the instructions in the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", see <http://support.automation.siemens.com/WW/view/en/35681830>.

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.

3RU21 overload relays in sizes S00 and S0 see page 7/95 onwards.

### "Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RU11 thermal 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 IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Category (2) G/D exists. It has the number DMT 98 ATEX G 001.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

# Overload Relays

## SIRIUS 3RU1 Thermal Overload Relays

3RU11 up to 100 A  
for standard applications

### Benefits

The most important features and benefits of the 3RU11 thermal overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

### Application

#### Industries

The 3RU11 thermal overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal starting conditions (CLASS 10).

#### Application

The 3RU11 thermal overload relays have been designed for the protection of three-phase and single-phase AC and DC motors.

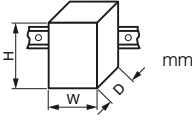

If single-phase AC or DC loads are to be protected by the 3RU11 thermal overload relays, all three bimetal strips must be heated. For this purpose, all main current paths of the relay must be connected in series.

#### Ambient conditions

The 3RU11 thermal overload relays have temperature compensation in accordance with IEC 60947-4-1 for the temperature range of -20 to +60 °C. For temperatures from +60 to +70 °C, the upper set value of the setting range must be reduced by the factor listed in the table below.

Ambient temperature °C	Derating factor for the upper set value
+60	1.0
+65	0.94
+70	0.87

### Technical specifications

Type		3RU1136	3RU1146
Size Dimensions (W x H x D) (overload relay with stand-alone installation support)	 mm	S2 55 x 105 x 118	S3 70 x 120 x 140
<b>General data</b>			
<b>Trips in the event of</b>		Overload and phase failure	
<b>Trip class</b> acc. to IEC 60947-4-1	CLASS	10	
<b>Phase failure sensitivity</b>		Yes	
<b>Overload warning</b>		No	
<b>Reset and recovery</b>		Manual, Automatic and Remote RESET (Remote RESET in combination with the corresponding accessories)	
• Reset options after tripping			
• Recovery time		Depends on the strength of the tripping current and characteristic	
- For automatic RESET	min	Depends on the strength of the tripping current and characteristic	
- For manual RESET	min	Depends on the strength of the tripping current and characteristic	
- For remote RESET	min	Depends on the strength of the tripping current and characteristic	
<b>Features</b>			
• Display of operating state on device		Yes, by means of TEST function/switch position indicator slide	
• TEST function		Yes	
• RESET button		Yes	
• STOP button		Yes	
<b>Safe operation of motors with "increased safety" type of protection</b>			
EC type test certificate number according to directive 94/9/EC (ATEX)		DMT 98 ATEX G 001  II (2) GD, DMT 98 ATEX G 001 N1	
<b>Ambient temperature</b>			
• Storage/transport	°C	-55 ... +80	
• Operation	°C	-20 ... +70	
• Temperature compensation	°C	up to 60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100 (over +60 °C current reduction is not required)	
- Temperature inside control cabinet 70 °C	%	87	
<b>Repeat terminals</b>			
• Coil repeat terminals		Not required	
• Auxiliary contact repeat terminal		Not required	
<b>Degree of protection</b> acc. to IEC 60529		IP20 (terminal compartment: IP00 degree of protection)	
<b>Touch protection</b> acc. to IEC 61140		Finger-safe for vertical contact from the front	
<b>Shock resistance with sine</b> acc. to IEC 60068-2-27	g/ms	8/10	

# Overload Relays

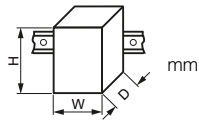
## SIRIUS 3RU1 Thermal Overload Relays

**3RU11 up to 100 A**  
for standard applications

### Type

Size

Dimensions (W x H x D)  
(overload relay with stand-alone installation support)



### 3RU1136

S2

55 x 105 x 118

### 3RU1146

S3

70 x 120 x 140

### General data (continued)

#### Electromagnetic compatibility (EMC) – Interference immunity

• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	EMC interference immunity is not relevant for thermal overload relays.

#### Electromagnetic compatibility (EMC) – emitted interference

EMC interference immunity is not relevant for thermal overload relays.

#### Resistance to extreme climates – air humidity

%

100

#### Dimensions

"Dimensional drawings" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays"  
<http://support.automation.siemens.com/WW/view/en/35681830>.

#### Installation altitude above sea level

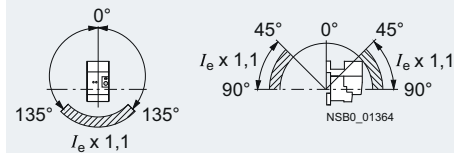
m

Up to 2 000; above this on request

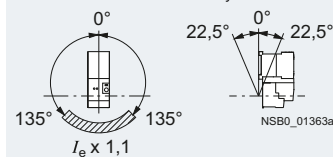
#### Mounting position

The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For mounting position in the hatched area, a setting correction of 10 % must be implemented.

Stand-alone installation:



Contactor + overload relay:





#### Type of mounting

Direct mounting/stand-alone installation with terminal support  
(For screw and snap-on mounting onto TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail. For technical specifications of the terminal supports see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays",  
<http://support.automation.siemens.com/WW/view/en/35681830>.)

# Overload Relays

## SIRIUS 3RU1 Thermal Overload Relays

3RU11 up to 100 A  
for standard applications


Type		3RU1136	3RU1146
Size		S2	S3
<b>Main circuit</b>			
Rated insulation voltage $U_i$ (pollution degree 3)	V	690	1 000
Rated impulse withstand voltage $U_{imp}$	kV	6	8
Rated operational voltage $U_e$	V	690	1 000
Type of current		Yes	
• Direct current		Yes, frequency range up to 400 Hz	
• Alternating current			
Current setting	A	5.5 ... 8 up to 40 ... 50	18 ... 25 up to 80 ... 100
Power loss per unit (max.)	W	6 ... 9	10 ... 16.5
Short-circuit protection		See "Selection and ordering data" on pages 7/105 to 7/107 See Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/35681830">http://support.automation.siemens.com/WW/view/en/35681830</a> → "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders".	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1	V	500	690
<b>Conductor cross-section of the main circuit</b>			
Connection type		 Screw terminals with box terminal	
Terminal screw		M6, Pozidriv size 2	M8, 4 mm Allen screw
Operating devices	mm	∅ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm <sup>2</sup>	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm <sup>2</sup>	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 3), 1 x (18 ... 1)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
Connection type		 Busbar connection <sup>1)</sup>	
Terminal screw		--	M6 x 20
Prescribed tightening torque	Nm	--	4 ... 6
Conductor cross-sections (min./max.)			
• Finely stranded with cable lug	mm <sup>2</sup>	--	2 x 70
• Stranded with cable lug	mm <sup>2</sup>	--	3 x 70
• AWG cables, solid or stranded, with cable lug	AWG	--	2/0
• With connecting bars (max. width)	mm	--	12

<sup>1)</sup> The box terminal is removable. Rail and cable lug connections are possible if the box terminal is removed.

# Overload Relays

## SIRIUS 3RU1 Thermal Overload Relays

**3RU11 up to 100 A**  
for standard applications

Type		3RU1136	3RU1146
Size		S2	S3
<b>Auxiliary circuit</b>			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		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	
<b>Contact rating of the auxiliary contacts</b>			
• NC contact with alternating current 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	0.6	
- 690 V	A	0.5	
• NO contact with alternating current AC-14/AC-15, rated operational current $I_e$ at $U_e$ :			
- 24 V	A	3	
- 120 V	A	3	
- 125 V	A	3	
- 230 V	A	2	
- 400 V	A	1	
- 600 V	A	0.6	
- 690 V	A	0.5	
• NC contact, NO contact with direct current DC-13, rated operational current $I_e$ at $U_e$ :			
- 24 V	A	1	
- 60 V	A	On request	
- 110 V	A	0.22	
- 125 V	A	0.22	
- 220 V	A	0.11	
• Conventional thermal current $I_{th}$	A	6	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
<b>Short-circuit protection</b>			
• With fuse			
- Operational class gG	A	6	
- Quick	A	10	
• With miniature circuit breaker (C characteristic)	A	6 <sup>1)</sup>	
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	440	
<b>CSA, UL, UR rated data</b>			
Auxiliary circuit – switching capacity		B600, R300	
<b>Conductor cross-sections of the auxiliary circuit</b>			
Connection type		 Screw terminals	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	∅ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> , 2 x (0.75 ... 2.5) <sup>2)</sup>	
• Finely stranded without end sleeve	mm <sup>2</sup>	--	
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> , 2 x (0.75 ... 2.5) <sup>2)</sup>	
• Stranded	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> , 2 x (0.75 ... 2.5) <sup>2)</sup>	
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	

<sup>1)</sup> Up to  $I_k \leq 0.5$  kA;  $\leq 260$  V.

<sup>2)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.



# Overload Relays

## SIRIUS 3RU1 Thermal Overload Relays



3RU11 up to 100 A  
for standard applications

### Selection and ordering data

**3RU11 thermal overload relays with screw terminals on the auxiliary current side for mounting onto contactor<sup>1)</sup>, CLASS 10**

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated sealable cover

Size contactor <sup>2)</sup>	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Screw terminals (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG		
									Article No.	Price per PU
<b>Size S2</b>										
 3RU1136-.B0	S2	3	5.5 ... 8	25	▶	3RU1136-1HB0	1	1 unit	41F	
		4	7 ... 10	35	▶	3RU1136-1JB0	1	1 unit	41F	
		5.5	9 ... 12.5	35	▶	3RU1136-1KB0	1	1 unit	41F	
	3RU1136-.B0	S2	7.5	11 ... 16	40	▶	3RU1136-4AB0	1	1 unit	41F
			7.5	14 ... 20	50	▶	3RU1136-4BB0	1	1 unit	41F
			11	18 ... 25	63	▶	3RU1136-4DB0	1	1 unit	41F
			15	22 ... 32	80	▶	3RU1136-4EB0	1	1 unit	41F
			18.5	28 ... 40	80	▶	3RU1136-4FB0	1	1 unit	41F
			22	36 ... 45	100	▶	3RU1136-4GB0	1	1 unit	41F
			22	40 ... 50	100	▶	3RU1136-4HB0	1	1 unit	41F
<b>Size S3</b>										
 3RU1146-.B0	S3	11	18 ... 25	63	▶	3RU1146-4DB0	1	1 unit	41F	
		15	22 ... 32	80	▶	3RU1146-4EB0	1	1 unit	41F	
	3RU1146-.B0	S3	18.5	28 ... 40	80	▶	3RU1146-4FB0	1	1 unit	41F
			22	36 ... 50	125	▶	3RU1146-4HB0	1	1 unit	41F
			30	45 ... 63	125	▶	3RU1146-4JB0	1	1 unit	41F
			37	57 ... 75	160	▶	3RU1146-4KB0	1	1 unit	41F
			45	70 ... 90	160	▶	3RU1146-4LB0	1	1 unit	41F
			45	80 ... 100 <sup>5)</sup>	200	▶	3RU1146-4MB0	1	1 unit	41F

<sup>1)</sup> With the appropriate terminal supports (see "Accessories", page 7/108), the 3RU11 overload relays for mounting onto contactors can also be installed as stand-alone units.

<sup>2)</sup> Observe maximum rated operational current of the devices.

<sup>3)</sup> 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.

<sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors, see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WWW/view/en/35681830> → "Technical Specifications" → "Short-Circuit Protection with Fuses/ Motor Starter Protectors for Motor Feeders".

<sup>5)</sup> For overload relays > 100 A, see 3RB2 solid-state overload relays on page 7/126 onwards.

# Overload Relays



## SIRIUS 3RU1 Thermal Overload Relays

**3RU11 up to 100 A  
for standard applications**

**3RU11 thermal overload relays with screw terminals on the auxiliary current side for stand-alone installation<sup>1)</sup>, CLASS 10**

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated sealable cover

Size contactor <sup>2)</sup>	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Screw terminals (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG	
kW		A	A		Article No.	Price per PU			
<b>Size S2</b>									
 3RU1136-4EB1	S2	15	22 ... 32	80	▶	<b>3RU1136-4EB1</b>	1	1 unit	41F
		18.5	28 ... 40	80	▶	<b>3RU1136-4FB1</b>	1	1 unit	41F
		22	36 ... 45	100	▶	<b>3RU1136-4GB1</b>	1	1 unit	41F
		22	40 ... 50	100	▶	<b>3RU1136-4HB1</b>	1	1 unit	41F
<b>Size S3</b>									
 3RU1146-4JB1	S3	30	45 ... 63	125	▶	<b>3RU1146-4JB1</b>	1	1 unit	41F
		37	57 ... 75	160	▶	<b>3RU1146-4KB1</b>	1	1 unit	41F
		45	70 ... 90	160	▶	<b>3RU1146-4LB1</b>	1	1 unit	41F
		45	80 ... 100 <sup>5)</sup>	200	▶	<b>3RU1146-4MB1</b>	1	1 unit	41F

- <sup>1)</sup> Sizes S2 and S3 for screw and snap-on mounting onto TH 35 standard mounting rails, size S3 also for TH 75 standard mounting rails.
- <sup>2)</sup> Observe maximum rated operational current of the devices.
- <sup>3)</sup> 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.

- <sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors, see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681830> → "Technical Specifications" → "Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders".
- <sup>5)</sup> For overload relays > 100 A, see 3RB2 solid-state overload relays on page 7/126 onwards.

# Overload Relays



## SIRIUS 3RU1 Thermal Overload Relays

3RU11 up to 100 A  
for standard applications

### 3RU11 thermal overload relays with spring-type terminals for mounting onto contactor<sup>1)</sup>, CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated sealable cover

Size contactor 2)	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Spring-type terminals (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG	Article No.	Price per PU
									kW	A
<b>Size S2<sup>1)5)</sup></b>										
 3RU1136-...D0	S2	3	5.5 ... 8	25	B	<b>3RU1136-1HD0</b>	1	1 unit	41F	
		4	7 ... 10	35	B	<b>3RU1136-1JD0</b>	1	1 unit	41F	
		5.5	9 ... 12.5	35	B	<b>3RU1136-1KD0</b>	1	1 unit	41F	
		7.5	11 ... 16	40	B	<b>3RU1136-4AD0</b>	1	1 unit	41F	
	▶	7.5	14 ... 20	50	B	<b>3RU1136-4BD0</b>	1	1 unit	41F	
		11	18 ... 25	63	B	<b>3RU1136-4DD0</b>	1	1 unit	41F	
		15	22 ... 32	80	▶	<b>3RU1136-4ED0</b>	1	1 unit	41F	
		18.5	28 ... 40	80	▶	<b>3RU1136-4FD0</b>	1	1 unit	41F	
		22	36 ... 45	100	▶	<b>3RU1136-4GD0</b>	1	1 unit	41F	
		22	40 ... 50	100	▶	<b>3RU1136-4HD0</b>	1	1 unit	41F	
<b>Size S3<sup>1)5)</sup></b>										
 3RU1146-...D0	S3	11	18 ... 25	63	B	<b>3RU1146-4DD0</b>	1	1 unit	41F	
		15	22 ... 32	80	B	<b>3RU1146-4ED0</b>	1	1 unit	41F	
		18.5	28 ... 40	80	B	<b>3RU1146-4FD0</b>	1	1 unit	41F	
		22	36 ... 50	125	B	<b>3RU1146-4HD0</b>	1	1 unit	41F	
	▶	30	45 ... 63	125	▶	<b>3RU1146-4JD0</b>	1	1 unit	41F	
		37	57 ... 75	160	▶	<b>3RU1146-4KD0</b>	1	1 unit	41F	
		45	70 ... 90	160	▶	<b>3RU1146-4LD0</b>	1	1 unit	41F	
		45	80 ... 100	200	▶	<b>3RU1146-4MD0</b>	1	1 unit	41F	

<sup>1)</sup> With the appropriate terminal supports (see "Accessories", page 7/108), the 3RU11 overload relays for mounting onto contactors can also be installed as stand-alone units.

<sup>2)</sup> Observe maximum rated operational current of the devices.

<sup>3)</sup> 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.

<sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors, see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681830> → "Technical Specifications" → "Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders".

<sup>5)</sup> Auxiliary conductor connections with spring-type terminals and main conductor connections with screw terminals.

# Overload Relays

## SIRIUS 3RU1 Thermal Overload Relays

### Accessories

#### Overview

##### Overload relays for standard applications

The following optional accessories are available for the 3RU11 thermal overload relays:

- Terminal support for stand-alone installation of overload relays sizes S2 and S3
- Mechanical RESET (for all sizes)



- Cable release for resetting devices which are difficult to access (for all sizes)
- Electrical remote RESET module in three voltage variants (for all sizes)
- Terminal covers

#### Technical specifications

##### Terminal supports for stand-alone installation

Type	3RU1936-3AA01	3RU1946-3AA01
For overload relays	3RU1136	3RU1146
Mounting type	For screw and snap-on mounting onto TH 35 standard mounting rails, size S2 also for TH 75 standard mounting rails	
<b>Connection for main circuit</b>		
Connection type	Screw terminals with box terminal	
Terminal screw	M6, Pozidriv size 2	4 mm Allen screw
Operating devices	mm ∅ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm 3 ... 4.5	4 ... 6
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>		
• Solid	mm <sup>2</sup> 2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded without end sleeve	mm <sup>2</sup> --	--
• Finely stranded with end sleeve	mm <sup>2</sup> 2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm <sup>2</sup> 2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG 2 x (18 ... 3), 1 x (18 ... 1)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm 2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)

#### Selection and ordering data

Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Terminal supports for stand-alone installation</b>							
 3RU19.6-3AA01	For separate mounting of overload relays; screw and snap-on mounting onto TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail	S2	▶	3RU1936-3AA01	1	1 unit	41F
		S3	▶	3RU1946-3AA01	1	1 unit	41F
<b>Mechanical RESET</b>							
 3RU1900-1A with pushbutton and extension plunger	<b>Resetting plungers, holders and formers</b>	S2, S3	▶	3RU1900-1A	1	1 unit	41F
	<b>Pushbuttons with extended stroke</b> (12 mm), IP65, ∅ 22 mm	S2, S3	B	3SB3000-0EA11	1	1 unit	41J
	<b>Extension plungers</b> For compensation of the distance between the pushbutton and the unlatching button of the relay	S2, S3	A	3SX1335	1	1 unit	41J

# Overload Relays

## SIRIUS 3RU1 Thermal Overload Relays

### Accessories

Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	------	----	-------------	--------------	-------------------	-----	----

#### Cable releases with holder for RESET



For  $\varnothing$  6.5 mm holes in the control panel;  
max. control panel thickness 8 mm

- Length 400 mm
- Length 600 mm

S2, S3	▶	<b>3RU1900-1B</b>	1	1 unit	41F
S2, S3	▶	<b>3RU1900-1C</b>	1	1 unit	41F

3RU1900-1.

#### Modules for remote RESET, electrical



Operating range  $0.85 \dots 1.1 \times U_N$ ,  
power consumption AC 80 VA, DC 70 W,  
ON period 0.2 ... 4 s,  
switching frequency 60/h

- 24 ... 30 V AC/DC
- 110 ... 127 V AC/DC
- 220 ... 250 V AC/DC

S2, S3	A	<b>3RU1900-2AB71</b>	1	1 unit	41F
S2, S3	A	<b>3RU1900-2AF71</b>	1	1 unit	41F
S2, S3	A	<b>3RU1900-2AM71</b>	1	1 unit	41F

3RU1900-2A.71

#### Terminal covers

##### Covers for cable lugs and busbar connections

• Length 55 mm	S3	B	<b>3RT1946-4EA1</b>	1	1 unit	41B
----------------	----	---	---------------------	---	--------	-----

##### Covers for box terminals

• Length 20.6 mm	S2	B	<b>3RT1936-4EA2</b>	1	1 unit	41B
• Length 20.8 mm	S3	▶	<b>3RT1946-4EA2</b>	1	1 unit	41B

#### General accessories

Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	------	-------	---------------------	----	-------------	--------------	-------------------	-----	----

#### Tools for opening spring-type terminals



3RA2908-1A

**Screwdrivers**  
For all SIRIUS devices  
with spring-type  
terminals

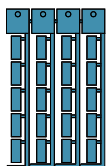
Length approx.  
200 mm,  
3.0 mm x 0.5 mm

Titanium  
gray/  
black,  
partially  
insulated

Main and  
auxiliary  
circuit  
connection:  
3RU1

<b>Spring-type terminals</b>		1	1 unit	41B
<b>3RA2908-1A</b>				

#### Blank labels



3RT1900-1SB20

**Unit labeling plates<sup>1)</sup>**  
for SIRIUS devices

20 mm x 7 mm

Pastel  
turquoise

3RU1

D

**3RT1900-1SB20**

100

340 units

41B

20 mm x 7 mm

Titanium  
gray

3RU1

D

**3RT2900-1SB20**

100

340 units

41B

**Adhesive inscription labels<sup>1)</sup>**  
for SIRIUS devices

19 mm x 6 mm

Pastel  
turquoise

3RU1

C

**3RT1900-1SB60**

100

3 060 units

41B

19 mm x 6 mm

Zinc  
yellow

3RU1

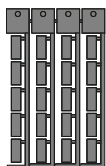
C

**3RT1900-1SD60**

100

3 060 units

41B



3RT2900-1SB20

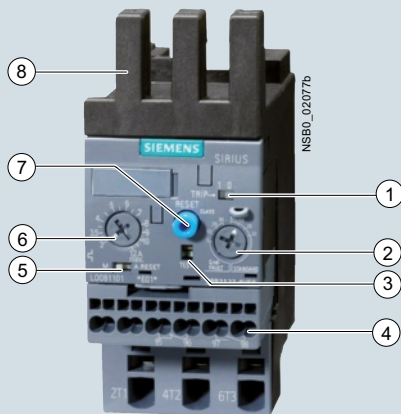
<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

3RB30, 3RB31 up to 40 A  
for standard applications

### Overview



- ① Switch position indicator and TEST function of the wiring:  
Indicates a trip and enables the wiring test.
- ② Trip class setting/internal ground-fault detection (only 3RB31):  
Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the start-up conditions.
- ③ Solid-state test (device test):  
Enables a test of all important device components and functions.
- ④ Connecting terminals (removable joint block for auxiliary circuits):  
Depending on the device version, the terminals for screw and spring-type connection are configured for the main and auxiliary circuit.
- ⑤ Selector switch for manual/automatic RESET:  
With the slide switch you can choose between manual and automatic RESET.
- ⑥ Motor current setting:  
Setting the device to the rated motor current is easy with the large rotary knob.
- ⑦ A device set to manual RESET can be reset locally by pressing the RESET button. On 3RB31 overload relays an electrical remote RESET is integrated.
- ⑧ Connection for mounting onto contactors:  
Optimally adapted in electrical, mechanical and design terms to the contactors 3RT2. The overload relay can be connected directly using these connection pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal support for stand-alone installation).

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

SIRIUS 3RB3123-4VE00 solid-state overload relays

The 3RB30/3RB31 solid-state overload relays up to 40 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting (for "Function" see the manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <http://support.automation.siemens.com/WW/view/en/60314990>) 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 rated motor 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 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 "Characteristic Curves" <http://support.automation.siemens.com/WW/view/en/34290881/134300>).

In addition to inverse-time delayed protection of loads against excessive temperature rises due to overload, phase unbalance and phase failure, the 3RB31 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with contactor assemblies for wye-delta starting). 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. Resetting takes place either manually or automatically after the recovery time has elapsed ("Function" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <http://support.automation.siemens.com/WW/view/en/60314990>).

The 3RB3 solid-state overload relays are suitable for operation with frequency converters. Please follow the instructions in the manual "SIRIUS Innovations – 3RU2/3RB3 Overload Relays", see <http://support.automation.siemens.com/WW/view/en/60314990>.

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.

3RB20 and 3RB21 overload relays in sizes S2 to S10/S12 see [page 7/126 onwards](#).

**"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC**

The 3RB30/3RB31 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 IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 09 ATEX 3001.

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

3RB30, 3RB31 up to 40 A  
for standard applications

### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	
	□□□	□	□	□	□	-	□	□	□	
<b>Solid-state overload relays</b>	<b>3 R B</b>									
<b>SIRIUS 3rd generation</b>	<b>3</b>									
<b>Device series</b>	□									
<b>Size, rated operational current and power</b>	□									
<b>Version of the automatic RESET, electrical remote RESET</b>	□									
<b>Trip class (CLASS)</b>	□									
<b>Setting range of the overload release</b>	□									
<b>Connection methods</b>	□									
<b>Installation type</b>	□									
<b>Example</b>	<b>3 R B</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>-</b>	<b>1</b>	<b>R</b>	<b>B</b>	<b>0</b>

### Note:

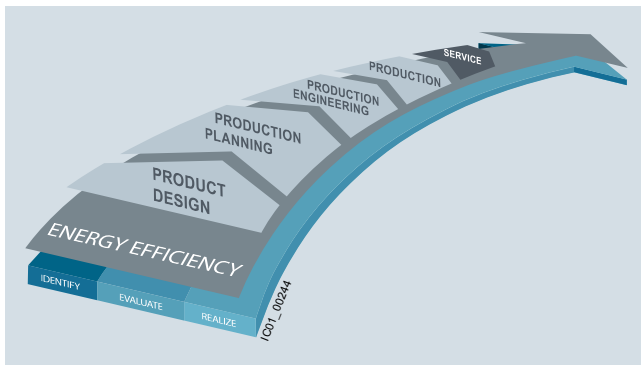
The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

### Benefits

The most important features and benefits of the 3RB30/3RB31 solid-state overload relays are listed in the overview table (see "General Data" on page 7/82).

### 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 – identify, evaluate, and realize – 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](http://www.siemens.com/sirius/energysaving)).

3RB30/3RB31 solid-state overload relays contribute to energy efficiency throughout the plant as follows:

- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

### Application

#### Industries

The 3RB30/3RB31 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed 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 3RB30/3RB31 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 3RU21 thermal overload relay or the 3RB22/3RB23 solid-state overload relay can be used for single-phase AC loads. For DC loads we recommend the 3RU21 thermal overload relay.

#### Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

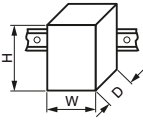

For the temperature range from -25 °C to +60 °C, the 3RB30/3RB31 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

**3RB30, 3RB31 up to 40 A  
for standard applications**

### Technical specifications

Type		3RB301., 3RB311.	3RB302., 3RB312.
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals		45 x 89 x 80	45 x 97 x 94
• Spring-type terminals		45 x 102 x 80	45 x 116 x 95
<b>General data</b>			
<b>Trips in the event of</b>		Overload, phase failure, and phase unbalance + ground fault (for 3RB31 only)	
<b>Trip class</b> acc. to IEC 60947-4-1		CLASS 3RB30: 10, 20; 3RB31: 5, 10, 20 and 30 adjustable	
<b>Phase failure sensitivity</b>		Yes	
<b>Overload warning</b>		No	
<b>Reset and recovery</b>		Manual, automatic and remote RESET (depending on the version)	
• Reset options after tripping		Manual, automatic and remote RESET (depending on the version)	
• Recovery time		Approx. 3 min	
- For automatic RESET		Immediately	
- For manual RESET		Immediately	
- For remote RESET		Immediately	
<b>Features</b>		Yes, by means of switch position indicator slide	
• Display of operating state on device		Yes, test of electronics by pressing the TEST button / test of auxiliary contacts and wiring of control circuit by actuating the switch position indicator slide/ self-monitoring	
• TEST function		Yes	
• RESET button		Yes	
• STOP button		No	
<b>Explosion protection – Safe operation of motors with "increased safety" type of protection</b>			
EC type test certificate number according to directive 94/9/EC (ATEX)		PTB 09 ATEX 3001  II (2) GD	
<b>Ambient temperatures</b>			
• Storage/transport	°C	-40 ... +80	
• Operation	°C	-25 ... +60	
• Temperature compensation	°C	+60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100	100 <sup>1)</sup>
- Temperature inside control cabinet 70 °C	%	On request	
<b>Repeat terminals</b>			
• Coil repeat terminals		Yes	Not required
• Auxiliary contact repeat terminal		Yes	Not required
<b>Degree of protection</b> acc. to IEC 60529		IP20	
<b>Touch protection</b> acc. to IEC 61140		Finger-safe for vertical contact from the front	
<b>Shock resistance with sine</b> acc. to IEC 60068-2-27	g/ms	15/12 (signaling contact 97/98 in position "tripped": 4/11g/ms)	
<b>Electromagnetic compatibility (EMC) – Interference immunity</b>			
• 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 acc. to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10	
<b>Electromagnetic compatibility (EMC) – emitted interference</b>		Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)	
<b>Resistance to extreme climates – air humidity</b>	%	95	
<b>Dimensions</b>		"Dimensional drawings" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/60314990">http://support.automation.siemens.com/WW/view/en/60314990</a> .	
<b>Installation altitude above sea level</b>	m	Up to 2 000	
<b>Mounting position</b>		Any	
<b>Type of mounting</b>		Direct mounting/stand-alone installation with terminal support	



<sup>1)</sup> Permissible rated current in case of heavy starting  
Size S0 at 10 A up to 40 A:  
- CLASS 20,  $I_{e \max} = 32$  A,  
- CLASS 30,  $I_{e \max} = 25$  A.



# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

**3RB30, 3RB31 up to 40 A  
for standard applications**



Type		3RB301., 3RB311.	3RB302., 3RB312.
Size		S00	S0
<b>Main circuit</b>			
Rated insulation voltage $U_i$ (pollution degree 3)	V	690	
Rated impulse withstand voltage $U_{imp}$	kV	6	
Rated operational voltage $U_e$	V	690	
Type of current		No	
• Direct current		Yes, 50/60 Hz $\pm 5\%$	
• Alternating current			
Current setting	A	0.1 ... 0.4 up to 4 ... 16	0.1 ... 0.4 up to 10 ... 40
Power loss per unit (max.)	W	0.05 ... 0.2	
Short-circuit protection		See "Selection and Ordering Data" on pages 7/115 to 7/117 "Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders" see Configuration Manual for "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", <a href="http://support.automation.siemens.com/WW/view/en/50250600">http://support.automation.siemens.com/WW/view/en/50250600</a> .	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1 (pollution degree 2)			
• For systems with grounded neutral point	V	690	
• For systems with ungrounded neutral point	V	600	
<b>Conductor cross-sections of main circuit</b>			
Connection type		 <b>Screw terminals</b>	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	$\varnothing 5 \dots 6$	$\varnothing 5 \dots 6$
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup> , 2 x (0.5 ... 4) <sup>1)</sup>	2 x (1 ... 2.5) <sup>1)</sup> , 2 x (2.5 ... 10) <sup>1)</sup>
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> , 2 x (0.75 ... 2.5) <sup>1)</sup>	2 x (1 ... 2.5) <sup>1)</sup> , 2 x (2.5 ... 6) <sup>1)</sup> , max. 1 x 10
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>1)</sup> , 2 x (18 ... 14) <sup>1)</sup> , 2 x 12	2 x (16 ... 12) <sup>1)</sup> , 2 x (14 ... 8) <sup>1)</sup>
Connection type		 <b>Spring-type terminals</b>	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4)	1 x (1 ... 10)
• Finely stranded without end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• Finely stranded with end sleeves (DIN 46228-1)	mm <sup>2</sup>	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)	1 x (18 ... 8)

<sup>1)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

**3RB30, 3RB31 up to 40 A  
for standard applications**

Type		3RB301., 3RB311.	3RB302., 3RB312.
Size		S00	S0
<b>Auxiliary circuit</b>			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage $U_i$ (pollution degree 3)	V	300	
Rated impulse withstand voltage $U_{imp}$	kV	4	
<b>Auxiliary contacts – contact rating</b>			
<ul style="list-style-type: none"> <li>NC contact with alternating current AC-14/AC-15, rated operational current <math>I_e</math> at <math>U_e</math>:           <ul style="list-style-type: none"> <li>- 24 V A 4</li> <li>- 120 V A 4</li> <li>- 125 V A 4</li> <li>- 250 V A 3</li> </ul> </li> <li>NO contact with alternating current AC-14/AC-15, rated operational current <math>I_e</math> at <math>U_e</math>:           <ul style="list-style-type: none"> <li>- 24 V A 4</li> <li>- 120 V A 4</li> <li>- 125 V A 4</li> <li>- 250 V A 3</li> </ul> </li> <li>NC contact, NO contact with direct current DC-13, rated operational current <math>I_e</math> at <math>U_e</math>:           <ul style="list-style-type: none"> <li>- 24 V A 2</li> <li>- 60 V A 0.55</li> <li>- 110 V A 0.3</li> <li>- 125 V A 0.3</li> <li>- 250 V A 0.11</li> </ul> </li> <li>Conventional thermal current <math>I_{th}</math> A 5</li> <li>Contact reliability (suitability for PLC control; 17 V, 5 mA) Yes</li> </ul>			
<b>Short-circuit protection</b>			
<ul style="list-style-type: none"> <li>With fuse, operational class gG A 6</li> </ul>			
<b>Ground-fault protection (only 3RB31)</b>			
<ul style="list-style-type: none"> <li>Tripping value <math>I_{\Delta}</math></li> <li>Operating range <math>I</math></li> <li>Response time <math>t_{trip}</math> (in steady-state condition) s</li> </ul>		The information refers to sinusoidal residual currents at 50/60 Hz. > $0.75 \times I_{motor}$ Lower current setting value < $I_{motor}$ < $3.5 \times$ upper current setting value < 1	
<b>Integrated electrical remote RESET (only 3RB31)</b>			
Connecting terminals A3, A4		24 V DC, max. 200 mA for approx. 20 ms, then < 10 mA	
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	300	
<b>CSA, UL, UR rated data</b>			
Auxiliary circuit – switching capacity		3RB30: B600, R300; 3RB31: B300, R300	
<b>Conductor cross-sections for auxiliary circuit</b>			
<b>Connection type</b>		 <b>Screw terminals</b>	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	Ø 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>			
<ul style="list-style-type: none"> <li>Solid mm<sup>2</sup> 1 × (0.5 ... 4), 2 × (0.5 ... 2.5)</li> <li>Finely stranded with end sleeve mm<sup>2</sup> 1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)</li> <li>AWG cables, solid or stranded AWG 2 × (20 ... 14)</li> </ul>			
<b>Connection type</b>		 <b>Spring-type terminals</b>	
Operating devices	mm	3.0 x 0.5	
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>			
<ul style="list-style-type: none"> <li>Solid mm<sup>2</sup> 2 × (0.25 ... 1.5)</li> <li>Finely stranded without end sleeve mm<sup>2</sup> 2 × (0.25 ... 1.5)</li> <li>Finely stranded with end sleeve mm<sup>2</sup> 2 × (0.25 ... 1.5)</li> <li>AWG cables, solid or stranded AWG 2 × (24 ... 16)</li> </ul>			

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

**3RB30, 3RB31 up to 40 A  
for standard applications**

### Selection and ordering data

#### 3RB30 solid-state overload relays for mounting onto contactors<sup>1)</sup>, CLASS 10

Features and technical specifications:

- Screw terminals and spring-type terminals
- 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
- Sealable covers (optional accessory)

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


3RB3016-1TB0



3RB3016-1TE0



3RB3026-1VB0



3RB3026-1VE0

Size contactor <sup>2)</sup>	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Screw terminals		Spring-type terminals	
					Article No.	Price per PU	Article No.	Price per PU
<b>Size S00<sup>1)</sup></b>								
S00	0.04 ... 0.09	0.1 ... 0.4	4	▶	<b>3RB3016-1RB0</b>	A	<b>3RB3016-1RE0</b>	
	0.12 ... 0.37	0.32 ... 1.25	6	▶	<b>3RB3016-1NB0</b>	A	<b>3RB3016-1NE0</b>	
	0.55 ... 1.5	1 ... 4	20	▶	<b>3RB3016-1PB0</b>	A	<b>3RB3016-1PE0</b>	
	1.1 ... 5.5	3 ... 12	25	▶	<b>3RB3016-1SB0</b>	A	<b>3RB3016-1SE0</b>	
	2.2 ... 7.5	4 ... 16	25	▶	<b>3RB3016-1TB0</b>	A	<b>3RB3016-1TE0</b>	
<b>Size S0<sup>1)</sup></b>								
S0	0.04 ... 0.09	0.1 ... 0.4	4	▶	<b>3RB3026-1RB0</b>	A	<b>3RB3026-1RE0</b>	
	0.12 ... 0.37	0.32 ... 1.25	6	▶	<b>3RB3026-1NB0</b>	A	<b>3RB3026-1NE0</b>	
	0.55 ... 1.5	1 ... 4	20	▶	<b>3RB3026-1PB0</b>	A	<b>3RB3026-1PE0</b>	
	1.1 ... 5.5	3 ... 12	25	▶	<b>3RB3026-1SB0</b>	A	<b>3RB3026-1SE0</b>	
	3 ... 11	6 ... 25	50	▶	<b>3RB3026-1QB0</b>	A	<b>3RB3026-1QE0</b>	
	5.5 ... 18.5	10 ... 40	50	▶	<b>3RB3026-1VB0</b>	A	<b>3RB3026-1VE0</b>	

<sup>1)</sup> With the appropriate terminal supports (see "Accessories", page 7/118), these overload relays can also be installed as stand-alone units.

<sup>2)</sup> Observe maximum rated operational current of the devices.

<sup>3)</sup> 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.

<sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders"  
<http://support.automation.siemens.com/WWW/view/en/50250600>.

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

**3RB30, 3RB31 up to 40 A  
for standard applications**

### 3RB30 solid-state overload relays for mounting onto contactors<sup>1)</sup>, CLASS 20

Features and technical specifications:

- Screw terminals and spring-type terminals
- 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
- Sealable covers (optional accessory)

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



3RB3016-2TB0



3RB3016-2TE0



3RB3026-2VB0



3RB3026-2VE0

Size contactor <sup>2)</sup>	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Screw terminals	DT	Spring-type terminals	
	kW	A	A		Article No.	Price per PU	Article No.	Price per PU
<b>Size S00<sup>1)</sup></b>								
S00	0.04 ... 0.09	0.1 ... 0.4	4	▶	<b>3RB3016-2RB0</b>	A	<b>3RB3016-2RE0</b>	
	0.12 ... 0.37	0.32 ... 1.25	6	▶	<b>3RB3016-2NB0</b>	A	<b>3RB3016-2NE0</b>	
	0.55 ... 1.5	1 ... 4	20	▶	<b>3RB3016-2PB0</b>	A	<b>3RB3016-2PE0</b>	
	1.1 ... 5.5	3 ... 12	25	▶	<b>3RB3016-2SB0</b>	A	<b>3RB3016-2SE0</b>	
	2.2 ... 7.5	4 ... 16	25	▶	<b>3RB3016-2TB0</b>	A	<b>3RB3016-2TE0</b>	
<b>Size S0<sup>1)</sup></b>								
S0	0.04 ... 0.09	0.1 ... 0.4	4	▶	<b>3RB3026-2RB0</b>	A	<b>3RB3026-2RE0</b>	
	0.12 ... 0.37	0.32 ... 1.25	6	▶	<b>3RB3026-2NB0</b>	A	<b>3RB3026-2NE0</b>	
	0.55 ... 1.5	1 ... 4	20	▶	<b>3RB3026-2PB0</b>	A	<b>3RB3026-2PE0</b>	
	1.1 ... 5.5	3 ... 12	25	▶	<b>3RB3026-2SB0</b>	A	<b>3RB3026-2SE0</b>	
	3 ... 11	6 ... 25	50	▶	<b>3RB3026-2QB0</b>	A	<b>3RB3026-2QE0</b>	
	5.5 ... 18.5	10 ... 40	50	▶	<b>3RB3026-2VB0</b>	A	<b>3RB3026-2VE0</b>	

<sup>1)</sup> With the appropriate terminal supports (see "Accessories", page 7/118), these overload relays can also be installed as stand-alone units.

<sup>2)</sup> Observe maximum rated operational current of the devices.

<sup>3)</sup> 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.

<sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders"  
<http://support.automation.siemens.com/WW/view/en/50250600>.

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

**3RB30, 3RB31 up to 40 A  
for standard applications**
**3RB31 solid-state overload relays for mounting onto contactors<sup>1)</sup>, CLASS 5, 10, 20 and 30 adjustable**

Features and technical specifications:

- Screw terminals and spring-type terminals
- 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
- Sealable covers (optional accessory)

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


3RB3113-4TB0





3RB3113-4TE0



3RB3123-4VB0



3RB3123-4VE0

Size contactor <sup>2)</sup>	Rating for three-phase motor, rated value <sup>3)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>4)</sup>	DT	Screw terminals 	DT	Spring-type terminals 	
kW	A	A			Article No.	Price per PU	Article No.	Price per PU
<b>Size S00<sup>1)</sup></b>								
S00	0.04 ... 0.09	0.1 ... 0.4	4	▶	<b>3RB3113-4RB0</b>	A	<b>3RB3113-4RE0</b>	
	0.12 ... 0.37	0.32 ... 1.25	6	▶	<b>3RB3113-4NB0</b>	A	<b>3RB3113-4NE0</b>	
	0.55 ... 1.5	1 ... 4	20	▶	<b>3RB3113-4PB0</b>	A	<b>3RB3113-4PE0</b>	
	1.1 ... 5.5	3 ... 12	25	▶	<b>3RB3113-4SB0</b>	A	<b>3RB3113-4SE0</b>	
	2.2 ... 7.5	4 ... 16	25	▶	<b>3RB3113-4TB0</b>	A	<b>3RB3113-4TE0</b>	
<b>Size S0<sup>1)</sup></b>								
S0	0.04 ... 0.09	0.1 ... 0.4	4	▶	<b>3RB3123-4RB0</b>	A	<b>3RB3123-4RE0</b>	
	0.12 ... 0.37	0.32 ... 1.25	6	▶	<b>3RB3123-4NB0</b>	A	<b>3RB3123-4NE0</b>	
	0.55 ... 1.5	1 ... 4	20	▶	<b>3RB3123-4PB0</b>	A	<b>3RB3123-4PE0</b>	
	1.1 ... 5.5	3 ... 12	25	▶	<b>3RB3123-4SB0</b>	A	<b>3RB3123-4SE0</b>	
	3 ... 11	6 ... 25	50	▶	<b>3RB3123-4QB0</b>	A	<b>3RB3123-4QE0</b>	
5.5 ... 18.5	10 ... 40	50	▶	<b>3RB3123-4VB0</b>	A	<b>3RB3123-4VE0</b>		

<sup>1)</sup> With the appropriate terminal supports (see "Accessories", page 7/118), these overload relays can also be installed as stand-alone units.

<sup>2)</sup> Observe maximum rated operational current of the devices.

<sup>3)</sup> 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.

<sup>4)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders"  
<http://support.automation.siemens.com/WW/view/en/50250600>.

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

### Accessories

#### Overview




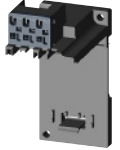
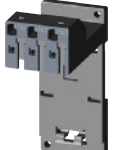



##### Overload relays for standard applications

The following optional accessories are available for the 3RB30/3RB31 solid-state overload relays:

- Terminal supports for stand-alone installation with screw or spring-type terminals for every size

- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Sealable cover (for all sizes)

#### Selection and ordering data



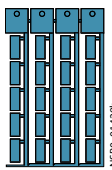
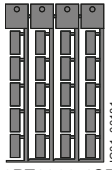
Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Terminal supports for stand-alone installation</b>							
 3RU2916-3AA01	<b>Terminal supports for overload relays with screw terminals</b> For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail		S00 ▶ S0 ▶	<b>Screw terminals</b>  <b>3RU2916-3AA01</b> <b>3RU2926-3AA01</b>	1 1	1 unit 1 unit	41F 41F
	 3RU2926-3AA01	<b>Terminal supports for overload relays with spring-type terminal</b> For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail					
 3RU2916-3AC01		<b>Resetting plungers, holders and formers</b>		S00, S0 ▶ S00, S0 B	<b>3RB3980-0A</b> <b>3SB3000-0EA11</b>	1 1	1 unit 1 unit
	 3RU2926-3AC01	<b>Pushbuttons with extended stroke</b> (12 mm), IP65, ø 22 mm					
<b>Extension plungers</b> For compensation of the distance between a pushbutton and the unlatching button of the relay		S00, S0 ▶ S00, S0 ▶	<b>3RB3980-0B</b> <b>3RB3980-0C</b>	1 1	1 unit 1 unit	41F 41F	
<b>Mechanical RESET</b>							
 3RB3980-0 with pushbutton and extension plunger	<b>Resetting plungers, holders and formers</b>		S00, S0 ▶ S00, S0 ▶	<b>3RB3980-0B</b> <b>3RB3980-0C</b>	1 1	1 unit 1 unit	41F 41F
	<b>Pushbuttons with extended stroke</b> (12 mm), IP65, ø 22 mm						
<b>Cable releases with holder for RESET</b>							
 3RB3980-0	For ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm		S00, S0 ▶ S00, S0 ▶	<b>3RB3980-0B</b> <b>3RB3980-0C</b>	1 1	1 unit 1 unit	41F 41F
	<ul style="list-style-type: none"> <li>• Length 400 mm</li> <li>• Length 600 mm</li> </ul>						
<b>Sealable covers</b>							
 3RB3984-0	For covering the setting knobs		S00, S0 ▶	<b>3RB3984-0</b>	1	1 unit	41F

# Overload Relays

## SIRIUS 3RB3 Solid-State Overload Relays

### Accessories

#### General accessories

Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Tools for opening spring-type terminals</b>									
 3RA2908-1A	<b>Screwdrivers</b> 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: 3RB3	A	<b>Spring-type terminals</b> 			
						<b>3RA2908-1A</b>	1	1 unit	41B
<b>Blank labels</b>									
 3RT1900-1SB20	<b>Unit labeling plates</b> <sup>1)</sup> for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB3	D	<b>3RT1900-1SB20</b>	100	340 units	41B
		 3RT2900-1SB20	20 mm x 7 mm	Titanium gray	3RB3		D	<b>3RT2900-1SB20</b>	100

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

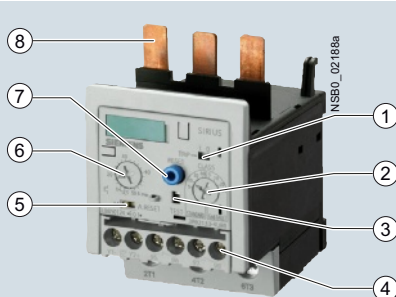
**3RB20, 3RB21 up to 630 A  
for standard applications**

### Overview

#### Note:

The 3RB20 and 3RB21 devices (sizes S00/S0 to S12) can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



- ① Switch position indicator and TEST function of the wiring:  
Indicates a trip and enables the wiring test.
- ② Trip class setting/internal ground-fault detection (only 3RB21):  
Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the start-up conditions.
- ③ Solid-state test (device test):  
Enables a test of all important device components and functions.
- ④ Connecting terminals (removable terminal block for auxiliary circuits):  
The generously sized terminals permit connection of two conductors with different cross-sections for the main and auxiliary circuits. The auxiliary circuit can be connected with screw terminals and alternatively with spring-type terminals.
- ⑤ Selector switch for manual/automatic RESET:  
With the slide switch you can choose between manual and automatic RESET.
- ⑥ Motor current setting:  
Setting the device to the rated motor current is easy with the large rotary knob.
- ⑦ A device set to manual RESET can be reset locally by pressing the RESET button. On the 3RB21 overload relay a solid-state remote RESET is integrated.
- ⑧ Connection for mounting onto contactors:  
Optimally adapted in electrical, mechanical and design terms to the contactors 3RT1. These connecting pins can be used for direct mounting of the overload relay to the contactor. Stand-alone installation is possible as an alternative (partly in conjunction with a terminal bracket for stand-alone installation).

SIRIUS 3RB2133-4UB0 solid-state overload relay

The 3RB20 and 3RB21 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 ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" <http://support.automation.siemens.com/WW/view/en/35681297>) 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 rated motor 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 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 "Characteristic Curves" <http://support.automation.siemens.com/WW/view/en/20357046/134300>).

In addition to inverse-time delayed protection of loads against excessive temperature rises due to overload, phase unbalance and phase failure, the 3RB21 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with contactor assemblies for wye-delta starting). 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. Resetting takes place either manually or automatically after the recovery time has elapsed ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681297>).

The 3RB2 solid-state overload relays are suitable for operation with frequency converters. Please follow the instructions in the Reference Manual "Protection Equipment – 3RU1 and 3RB2 Overload Relays", see <http://support.automation.siemens.com/WW/view/en/35681297>.

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.

For 3RB30 and 3RB31 overload relay sizes S00 and S0 see page 7/115 onwards.

#### **"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC**

The 3RB20/3RB21 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EExe.

The relays meet the requirements of IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 06 ATEX 3001.



# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 up to 630 A  
for standard applications

### Article No. scheme

Digit of the Article 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	0	3	6	-	1	Q	B	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

The most important features and benefits of the 3RB20/3RB21 solid-state overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

### Application

#### Industries

The 3RB20 and 3RB21 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed 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 3RB20 and 3RB21 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 3RU11 thermal overload relays or the 3RB22 to 3RB24 solid-state overload relays can be used for single-phase AC loads. For DC loads we recommend the 3RU11 thermal overload relay.

#### 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 3RB20 and 3RB21 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

For the 3RB20 and 3RB21 solid-state overload relays with the sizes S6, S10 and S12, the upper set value of the setting range must be reduced for ambient temperatures > 50 °C by a certain factor.

Type	Setting range	Stand-alone installation	
		Derating factor for the upper set value at ambient temperature	
		+50 °C	+60 °C
3RB2056, 3RB2156	50 ... 200 A	100 %	100 %
3RB2066, 3RB2166	55 ... 250 A	100 %	100 %
3RB2066, 3RB2166	160 ... 630 A	100 %	90 %

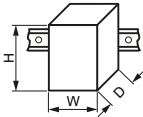
Type	Setting range	Mounting onto contactor	
		Derating factor for the upper set value at ambient temperature	
		+50 °C	+60 °C
3RB2056, 3RB2156	50 ... 200 A	100 %	70 %
3RB2066, 3RB2166	55 ... 250 A	100 %	70 %
3RB2066, 3RB2166	160 ... 630 A	100 %	70 %

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB20, 3RB21 up to 630 A  
for standard applications**

### Technical specifications




Type		3RB2036, 3RB2133	3RB2046, 3RB2143	3RB2056, 3RB2153	3RB2066, 3RB2163	
Size						
Dimensions (W x H x D) (overload relay with stand-alone installation support)		mm	55 x 74 x 109	70 x 86 x 124	120 x 119 x 155	145 x 147 x 156
<b>General data</b>						
<b>Trips in the event of</b>		Overload, phase failure, and phase unbalance + ground fault (for 3RB21 only)				
<b>Trip class</b> acc. to IEC 60947-4-1	CLASS	3RB20: 10 or 20; 3RB21: 5, 10, 20 and 30 adjustable				
<b>Phase failure sensitivity</b>		Yes				
<b>Overload warning</b>		No				
<b>Reset and recovery</b>		3RB20: Manual and automatic RESET; 3RB21: Manual, automatic and remote RESET				
• Reset options after tripping						
• Recovery time		Approx. 3 min				
- For automatic RESET		Immediately				
- For manual RESET		Immediately				
- For remote RESET		Immediately				
<b>Features</b>		Yes, by means of switch position indicator slide				
• Display of operating state on device		Yes, test of electronics by pressing the TEST button / test of auxiliary contacts and wiring of control circuit by actuating the switch position indicator slide/self-monitoring				
• TEST function		Yes				
• RESET button		No				
• STOP button		No				
<b>Explosion protection – Safe operation of motors with "increased safety" type of protection</b>		PTB 06 ATEX 3001 ⚠ II (2) GD				
EC type test certificate number according to directive 94/9/EC (ATEX)						
<b>Ambient temperatures</b>						
• 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	100 or 90 <sup>1)</sup>	
- Temperature inside control cabinet 60 °C, mounted on contactor	%	100	100	70	70	
- Temperature inside control cabinet 70 °C	%	On request				
<b>Repeat terminals</b>						
• Coil repeat terminals		Yes	Not required			
• Auxiliary contact repeat terminal		Yes	Not required			
<b>Degree of protection</b> acc. to IEC 60529		IP20		IP20 (terminal compartment: IP00 degree of protection)		
<b>Touch protection</b> acc. to IEC 61140		Finger-safe for vertical contact from the front		Finger-safe; for busbar connection with cover	Finger-safe with cover	
<b>Shock resistance with sine</b> acc. to IEC 60068-2-27	g/ms	15/11 (signaling contact 97/98 in position "tripped": 4/11g/ms)				
<b>Electromagnetic compatibility (EMC) – Interference immunity</b>						
• 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 acc. to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10				
<b>Electromagnetic compatibility (EMC) – emitted interference</b>		Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)				
<b>Resistance to extreme climates – air humidity</b>	%	100				
<b>Dimensions</b>		For "Dimensional drawings" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/35681297">http://support.automation.siemens.com/WW/view/en/35681297</a> .				
<b>Installation altitude above sea level</b>	m	Up to 2 000				
<b>Mounting position</b>		Any				
<b>Type of mounting</b>		Direct mounting/stand-alone installation with terminal support		Direct mounting/stand-alone installation		

<sup>1)</sup> 90 % for relay with current setting range 160 A to 630 A.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 up to 630 A  
for standard applications

Type		3RB2036, 3RB2133	3RB2046, 3RB2143
Size		S2	S3
<b>Main circuit</b>			
Rated insulation voltage $U_i$ (pollution degree 3)	V	690/1 000 <sup>1)</sup>	1 000
Rated impulse withstand voltage $U_{imp}$	kV	6/8 <sup>2)</sup>	8
Rated operational voltage $U_e$	V	690/1 000 <sup>1)</sup>	1 000
Type of current		No	
• Direct current		No	
• Alternating current		Yes, 50/60 Hz $\pm 5\%$	
Current setting	A	6 ... 25, 12.5 ... 50	12.5 ... 50, 25 ... 100
Power loss per unit (max.)	W	0.05	
Short-circuit protection			
• With fuse without contactor			See "Selection and Ordering Data" on pages 7/126 to 7/128
• With fuse and contactor			See Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays". <a href="http://support.automation.siemens.com/WW/view/en/35681297">http://support.automation.siemens.com/WW/view/en/35681297</a> → "Technical Specifications" → "Short-circuit protection with Fuses for Motor Feeders"
<b>Protective separation between main and auxiliary current paths</b> acc. to IEC 60947-1 (pollution degree 2)			
• For systems with grounded neutral point	V	690	
• For systems with ungrounded neutral point	V	600	
<b>Conductor cross-sections of the main circuit</b>			
Connection type		 Screw terminals with box terminal	
Terminal screw		M6, Pozidriv size 2	M8, 4 mm Allen screw
Operating devices	mm	∅ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>			
• Solid	mm <sup>2</sup>	2 × (1 ... 16)	2 × (2.5 ... 16)
• Finely stranded without end sleeve	mm <sup>2</sup>	--	--
• Finely stranded with end sleeve	mm <sup>2</sup>	2 × (1 ... 16), 1 × (1 ... 25)	2 × (2.5 ... 35), 1 × (2.5 ... 50)
• Stranded	mm <sup>2</sup>	2 × (max. 25), 1 × (1 ... 35)	2 × (10 ... 50), 1 × (10 ... 70)
• AWG cables, solid or stranded	AWG	2 × (max. 4), 1 × (18 ... 2)	2 × (10 ... 1/0), 1 × (10 ... 2/0)
• Ribbon cables (Number x Width x Thickness)	mm	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)
Connection type		 Busbar connections	
Terminal screw		--	M6 × 20
Prescribed tightening torque	Nm	--	4 ... 6
<b>Conductor cross-sections (min./max.)</b>			
• Finely stranded with cable lug	mm <sup>2</sup>	--	2 × 70
• Stranded with cable lug	mm <sup>2</sup>	--	3 × 70
• AWG cables, solid or stranded, with cable lug	AWG	--	2/0
• With connecting bars (max. width)	mm	--	12
Connection type		 Straight-through transformers	
Diameter of opening	mm	15	18




<sup>1)</sup> For version with straight-through transformer up to 1 000 V AC.

<sup>2)</sup> For version with straight-through transformer up to 8 kV.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB20, 3RB21 up to 630 A**  
for standard applications

Type		3RB2056, 3RB2153	3RB2066, 3RB2163
Size		S6	S10/S12
<b>Main circuit</b>			
Rated insulation voltage $U_i$ (pollution degree 3)	V	1 000	
Rated impulse withstand voltage $U_{imp}$	kV	8	
Rated operational voltage $U_e$	V	1 000	
Type of current		No Yes, 50/60 Hz $\pm 5\%$	
• Direct current			
• Alternating current			
Current setting	A	50 ... 200	55 ... 250, 160 ... 630
Power loss per unit (max.)	W	0.05	
Short-circuit protection		See "Selection and Ordering Data" on pages 7/126 to 7/128 See Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/35681297">http://support.automation.siemens.com/WW/view/en/35681297</a> → "Technical Specifications" → "Short-circuit protection with Fuses for Motor Feeders"	
• With fuse without contactor			
• With fuse and contactor			
<b>Protective separation between main and auxiliary current paths</b> acc. to IEC 60947-1 (pollution degree 2)			
• For systems with grounded neutral point	V	690	
• For systems with ungrounded neutral point	V	600	
<b>Conductor cross-sections of the main circuit</b>			
Connection type		 <b>Screw terminals with box terminal</b>	
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	1 ... 12	20 ... 22
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>			
• Solid	mm <sup>2</sup>	--	--
• Finely stranded without end sleeve	mm <sup>2</sup>	With 3RT1955-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70); With 3RT1956-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240); rear clamping point only: 1 × (120 ... 185)
• Finely stranded with end sleeve	mm <sup>2</sup>	With 3RT1955-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70); With 3RT1956-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	2 × (50 ... 185), Rear clamping point only: 1 × (70 ... 240); rear clamping point only: 1 × (120 ... 185)
• Stranded	mm <sup>2</sup>	With 3RT1955-4G box terminal: 2 × (max. 70), 1 × (16 ... 70); With 3RT1956-4G box terminal: 2 × (max. 120), 1 × (16 ... 120)	2 × (70 ... 240), Rear clamping point only: 1 × (95 ... 300); rear clamping point only: 1 × (120 ... 240)
• AWG cables, solid or stranded	AWG	With 3RT1955-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0); With 3RT1956-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil)	2 × (2/0 ... 500 kcmil), rear clamping point only: 1 × (3/0 ... 600 kcmil); rear clamping point only: 1 × (250 kcmil ... 500 kcmil)
• Ribbon cables (Number x Width x Thickness)	mm	With 3RT1955-4G box terminal: 2 × (6 × 15,5 × 0,8), 1 × (3 × 9 × 0,8 ... 6 × 15,5 × 0,8); With 3RT1956-4G 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)
<b>Connection type</b>			
		 <b>Busbar connections</b>	
Terminal screw		M8 × 25	M10 × 30
Prescribed tightening torque	Nm	10 ... 14	14 ... 24
<b>Conductor cross-section (min./max.)</b>			
• Finely stranded with cable lug	mm <sup>2</sup>	16 ... 95 <sup>1)</sup>	50 ... 240 <sup>2)</sup>
• Stranded with cable lug	mm <sup>2</sup>	25 ... 120 <sup>1)</sup>	70 ... 240 <sup>2)</sup>
• AWG cables, solid or stranded, with cable lug	AWG	4 ... 250 kcmil	2/0 ... 500 kcmil
• With connecting bars (max. width)	mm	15	25
<b>Connection type</b>			
		 <b>Straight-through transformers</b>	
Diameter of opening	mm	24.5	--



<sup>1)</sup> When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm<sup>2</sup> and more, the 3RT1956-4EA1 terminal cover must be used to ensure phase clearance.

<sup>2)</sup> When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm<sup>2</sup> and more, as well as to DIN 46235 with conductor cross-sections of 185 mm<sup>2</sup> and more, the 3RT1956-4EA1 terminal cover must be used to ensure the phase clearance.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 up to 630 A  
for standard applications

Type	3RB2036, 3RB2133	3RB2046, 3RB2143	3RB2056, 3RB2153	3RB2066, 3RB2163
Size	S2	S3	S6	S10/S12
<b>Auxiliary circuit</b>				
Number of NO contacts	1			
Number of NC contacts	1			
Auxiliary contacts – assignment	1 NO for the signal "tripped"; 1 NC for disconnecting the contactor			
Rated insulation voltage $U_i$ (pollution degree 3)	V	300		
Rated impulse withstand voltage $U_{imp}$	kV	4		
<b>Auxiliary contacts – contact rating</b>				
• NC contact with alternating current AC-14/AC-15, 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, 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 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	0.11		
• Conventional thermal current $I_{th}$	A	5		
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes		
<b>Short-circuit protection</b>				
• With fuse, operational class gG	A	6		
<b>Ground-fault protection (only 3RB21)</b>				
• Tripping value $I_{\Delta}$		The information refers to sinusoidal residual currents at 50/60 Hz. > $0.75 \times I_{motor}$		
• Operating range $I$		Lower current setting value < $I_{motor}$ < $3.5 \times$ upper current setting value		
• Response time $t_{trip}$ (in steady-state condition)	s	< 1		
<b>Integrated electrical remote RESET (only 3RB21)</b>				
Connecting terminals A3, A4		24 V DC, 100 mA, 2.4 W short-term		
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	300		
<b>CSA, UL, UR rated data</b>				
Auxiliary circuit – switching capacity		B300, R300		
<b>Conductor cross-sections of the auxiliary circuit</b>				
<b>Connection type</b>				
 <b>Screw terminals</b>				
Terminal screw		M3, Pozidriv size 2		
Operating devices	mm	ø 5 ... 6		
Prescribed tightening torque	Nm	0.8 ... 1.2		
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>				
• Solid	mm <sup>2</sup>	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)		
• Finely stranded without end sleeve	mm <sup>2</sup>	--		
• Finely stranded with end sleeve	mm <sup>2</sup>	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)		
• Stranded	mm <sup>2</sup>	--		
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)		
<b>Connection type</b>				
 <b>Spring-type terminals</b>				
Operating devices	mm	3.0 × 0.5		
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>				
• Solid	mm <sup>2</sup>	2 × (0.25 ... 1.5)		
• Finely stranded without end sleeve	mm <sup>2</sup>	--		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 × (0.25 ... 1.5)		
• Stranded	mm <sup>2</sup>	2 × (0.25 ... 1.5)		
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)		

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB20, 3RB21 up to 630 A  
for standard applications**

### Selection and ordering data

**3RB20 solid-state overload relays for mounting onto contactor<sup>1)2)</sup> and stand-alone installation<sup>2)3)</sup>, CLASS 10**

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

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



3RB2036-1UB0



3RB2046-1ED0



3RB2056-1FW2



3RB2066-1MF2

Size contactor <sup>4)</sup>	Rating for three-phase motor, rated value <sup>5)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>6)</sup>	DT	Screw terminals (on auxiliary current side)		Spring-type terminals (on auxiliary current side)	
					Article No.	Price per PU	Article No.	Price per PU
	kW	A	A					
<b>Size S2<sup>1)3)7)</sup></b>								
S2	3 ... 11	6 ... 25	63	▶	<b>3RB2036-1QB0</b>		▶	<b>3RB2036-1QD0</b>
				▶	<b>3RB2036-1QW1</b>		▶	<b>3RB2036-1QX1</b>
	7.5 ... 22	12.5 ... 50	80	▶	<b>3RB2036-1UB0</b>	A	▶	<b>3RB2036-1UD0</b>
				▶	<b>3RB2036-1UW1</b>		▶	<b>3RB2036-1UX1</b>
<b>Size S3<sup>1)3)7)</sup></b>								
S3	7.5 ... 22	12.5 ... 50	160	▶	<b>3RB2046-1UB0</b>	A	▶	<b>3RB2046-1UD0</b>
	11 ... 45	25 ... 100	315	▶	<b>3RB2046-1EB0</b>	A	▶	<b>3RB2046-1ED0</b>
				▶	<b>3RB2046-1EW1</b>		▶	<b>3RB2046-1EX1</b>
<b>Size S6<sup>2)7)</sup></b>								
S6 with busbar connection	22 ... 90	50 ... 200	315	▶	<b>3RB2056-1FC2</b>	A	▶	<b>3RB2056-1FF2</b>
For mounting onto S6 contactors with box terminals				▶	<b>3RB2056-1FW2</b>		▶	<b>3RB2056-1FX2</b>
<b>Size S10/S12<sup>2)</sup></b>								
S10/S12	22 ... 110	55 ... 250	400	▶	<b>3RB2066-1GC2</b>		▶	<b>3RB2066-1GF2</b>
and size 14 (3TF68/3TF69)	90 ... 450	160 ... 630	800	▶	<b>3RB2066-1MC2</b>		▶	<b>3RB2066-1MF2</b>

1) The relays with an Article No. ending with "0" are designed for mounting onto contactor.

2) The relays with an Article No. ending with "2" are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Article No. ending with "1" are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) 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.

6) Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors, see the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681297> → "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders".

7) The relays with an Article No. with "W" or "X" in penultimate position are equipped with a straight-through transformer.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB20, 3RB21 up to 630 A  
for standard applications**

### 3RB20 solid-state overload relays for mounting onto contactor<sup>1)2)</sup> and stand-alone installation<sup>2)3)</sup>, CLASS 20

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

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



3RB2036-2UB0



3RB2046-2ED0



3RB2056-2FW2



3RB2066-2MF2

Size contactor <sup>4)</sup>	Rating for three-phase motor, rated value <sup>5)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>6)</sup>	DT	Screw terminals (on auxiliary current side)	DT	Spring-type terminals (on auxiliary current side)	
	kW	A	A		Article No.	Price per PU	Article No.	Price per PU
<b>Size S2<sup>1)3)7)</sup></b>								
S2	3 ... 11	6 ... 25	63	▶	<b>3RB2036-2QB0</b>	▶	<b>3RB2036-2QD0</b>	
				▶	<b>3RB2036-2QW1</b>	▶	<b>3RB2036-2QX1</b>	
	7.5 ... 22	12.5 ... 50	80	▶	<b>3RB2036-2UB0</b>	A	<b>3RB2036-2UD0</b>	
				▶	<b>3RB2036-2UW1</b>	▶	<b>3RB2036-2UX1</b>	
<b>Size S3<sup>1)3)7)</sup></b>								
S3	7.5 ... 22	12.5 ... 50	160	▶	<b>3RB2046-2UB0</b>	A	<b>3RB2046-2UD0</b>	
	11 ... 45	25 ... 100	315	▶	<b>3RB2046-2EB0</b>	A	<b>3RB2046-2ED0</b>	
				▶	<b>3RB2046-2EW1</b>	▶	<b>3RB2046-2EX1</b>	
<b>Size S6<sup>2)7)</sup></b>								
S6 with busbar connections	22 ... 90	50 ... 200	315	▶	<b>3RB2056-2FC2</b>	A	<b>3RB2056-2FF2</b>	
For mounting onto S6 contactors with box terminals				▶	<b>3RB2056-2FW2</b>	▶	<b>3RB2056-2FX2</b>	
<b>Size S10/S12<sup>2)</sup></b>								
S10/S12	22 ... 110	55 ... 250	400	▶	<b>3RB2066-2GC2</b>	▶	<b>3RB2066-2GF2</b>	
and size 14 (3TF68/ 3TF69)	90 ... 450	160 ... 630	800	▶	<b>3RB2066-2MC2</b>	▶	<b>3RB2066-2MF2</b>	

<sup>1)</sup> The relays with an Article No. ending with "0" are designed for mounting onto contactor.

<sup>2)</sup> The relays with an Article No. ending with "2" are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

<sup>3)</sup> The relays with an Article No. ending with "1" are designed for stand-alone installation.

<sup>4)</sup> Observe maximum rated operational current of the devices.

<sup>5)</sup> 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.

<sup>6)</sup> Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors, see the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681297> → "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders".

<sup>7)</sup> The relays with an Article No. with "W" or "X" in penultimate position are equipped with a straight-through transformer.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB20, 3RB21 up to 630 A  
for standard applications**

**3RB21 solid-state overload relays for mounting onto contactor<sup>1)2)</sup> and stand-alone installation<sup>2)3)</sup>, 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

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



3RB2133-4UB0



3RB2143-4ED0



3RB2153-4FX2



3RB2163-4MC2

Size contactor <sup>4)</sup>	Rating for three-phase motor, rated value <sup>5)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>6)</sup>	DT	Screw terminals (on auxiliary current side)		Spring-type terminals (on auxiliary current side)	
					Article No.	Price per PU	Article No.	Price per PU
	kW	A	A					
<b>Size S2<sup>1)3)7)</sup></b>								
S2	3 ... 11	6 ... 25	63	▶	<b>3RB2133-4QB0</b>	▶	<b>3RB2133-4QD0</b>	
					<b>3RB2133-4QW1</b>	▶	<b>3RB2133-4QX1</b>	
	7.5 ... 22	12.5 ... 50	80	▶	<b>3RB2133-4UB0</b>	▶	<b>3RB2133-4UD0</b>	
				▶	<b>3RB2133-4UW1</b>	▶	<b>3RB2133-4UX1</b>	
<b>Size S3<sup>1)3)7)</sup></b>								
S3	7.5 ... 22	12.5 ... 50	160	▶	<b>3RB2143-4UB0</b>	▶	<b>3RB2143-4UD0</b>	
	11 ... 45	25 ... 100	315	▶	<b>3RB2143-4EB0</b>	▶	<b>3RB2143-4ED0</b>	
				▶	<b>3RB2143-4EW1</b>	▶	<b>3RB2143-4EX1</b>	
<b>Size S6<sup>2)7)</sup></b>								
S6 with busbar connection	22 ... 90	50 ... 200	315	▶	<b>3RB2153-4FC2</b>	▶	<b>3RB2153-4FF2</b>	
For mounting onto S6 contactors with box terminals				▶	<b>3RB2153-4FW2</b>	▶	<b>3RB2153-4FX2</b>	
<b>Size S10/S12<sup>2)</sup></b>								
S10/S12 and size 14 (3TF68/3TF69)	22 ... 110 90 ... 450	55 ... 250 160 ... 630	400 800	▶	<b>3RB2163-4GC2</b>	▶	<b>3RB2163-4GF2</b>	
				▶	<b>3RB2163-4MC2</b>	▶	<b>3RB2163-4MF2</b>	

- The relays with an Article No. ending with "0" are designed for mounting onto contactor.
- The relays with an Article No. ending with "2" are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.
- The relays with an Article No. ending with "1" are designed for stand-alone installation.
- Observe maximum rated operational current of the devices.

- 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.
- Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors, see the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681297> → "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders".
- The relays with an Article No. with "W" or "X" in penultimate position are equipped with a straight-through transformer.



# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

### Accessories for 3RB20, 3RB21




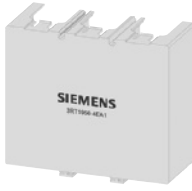


#### Overview

##### Overload relays for standard applications

The following optional accessories are available for the 3RB20 and 3RB21 solid-state overload relays:

- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Sealable cover (for all sizes)
- Terminal covers for sizes S2 to S10/S12
- Box terminal blocks for sizes S6 and S10/S12

#### Selection and ordering data

Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Mechanical RESET</b>								
 <p>3RU1900-1A with pushbutton and extension plunger</p>	<b>Resetting plungers, holders and formers</b>		S2 ... S10/S12 ▶	<b>3RU1900-1A</b>	1	1 unit	41F	
	<b>Pushbuttons with extended stroke</b> (12 mm), IP65, ø 22 mm		S2 ... S10/S12	<b>3SB3000-0EA11</b>	1	1 unit	41J	
	<b>Extension plungers</b> For compensation of the distance between a pushbutton and the unlatching button of the relay		S2 ... S10/S12	<b>3SX1335</b>	1	1 unit	41J	
<b>Cable releases with holder for RESET</b>								
 <p>3RU1900-1.</p>	For ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm		S2 ... S10/S12	▶				
	• Length 400 mm							<b>3RU1900-1B</b>
• Length 600 mm				<b>3RU1900-1C</b>	1	1 unit	41F	
<b>Sealable covers</b>								
 <p>3RB2984-0</p>	For covering the setting knobs		S2 ... S10/S12 ▶	<b>3RB2984-0</b>	1	10 units	41F	
<b>Terminal covers</b>								
 <p>3RT1946-4EA1</p>	<b>Covers for cable lugs and busbar connections</b>		S3	B	<b>3RT1946-4EA1</b>	1	1 unit	41B
	• Length 55 mm		S6	▶	<b>3RT1956-4EA1</b>	1	1 unit	41B
	• Length 100 mm		S10/S12	▶	<b>3RT1966-4EA1</b>	1	1 unit	41B
• Length 120 mm								
 <p>3RT1936-4EA2</p>	<b>Covers for box terminals</b>		S2	B	<b>3RT1936-4EA2</b>	1	1 unit	41B
	• Length 20.6 mm		S3	▶	<b>3RT1946-4EA2</b>	1	1 unit	41B
	• Length 20.8 mm		S6	▶	<b>3RT1956-4EA2</b>	1	1 unit	41B
	• Length 25 mm		S10/S12	▶	<b>3RT1966-4EA2</b>	1	1 unit	41B
• Length 30 mm								
<b>Covers for screw terminals</b> between contactor and overload relay, without box terminals (1 unit required per combination)		S6	▶	<b>3RT1956-4EA3</b>	1	1 unit	41B	
		S10/S12	▶	<b>3RT1966-4EA3</b>	1	1 unit	41B	
<b>Box terminal blocks</b>								
 <p>3RT195-4G</p>	For round and ribbon cables		S6 <sup>1)</sup>	▶	<b>3RT1955-4G</b>	1	1 unit	41B
	• Up to 70 mm <sup>2</sup>		S6	▶	<b>3RT1956-4G</b>	1	1 unit	41B
	• Up to 120 mm <sup>2</sup>		S10/S12	▶	<b>3RT1966-4G</b>	1	1 unit	41B
• Up to 240 mm <sup>2</sup>								
For technical specifications for conductor cross-sections see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/35681297">http://support.automation.siemens.com/WW/view/en/35681297</a> .								



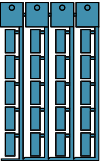
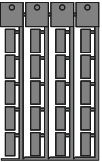
<sup>1)</sup> In the scope of supply for 3RT 1054-1 contactors (55 kW).

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

### Accessories for 3RB20, 3RB21

#### General accessories

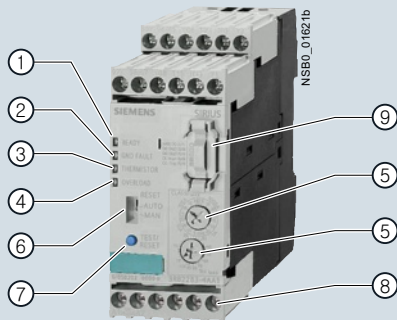
Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Tools for opening spring-type terminals</b>										
	<b>Screwdrivers</b> For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	<b>Spring-type terminals</b> <b>3RA2908-1A</b>		1	1 unit	41B
<b>Blank labels</b>										
	<b>Unit labeling plates</b> <sup>1)</sup> For SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	<b>3RT1900-1SB20</b>	100	340 units	41B	
		20 mm x 7 mm	Titanium gray	3RB2	D	<b>3RT2900-1SB20</b>	100	340 units	41B	
	<b>Adhesive inscription labels</b> <sup>1)</sup> For SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RB2	C	<b>3RT1900-1SB60</b>	100	3 060 units	41B	
		19 mm x 6 mm	Zinc yellow	3RB2	C	<b>3RT1900-1SD60</b>	100	3 060 units	41B	
<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").										

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB22, 3RB23 up to 630 A  
for High-Feature applications

### Overview



- ① Green LED "READY":  
A continuous green light signals that the device is working correctly.
- ② Red LED "GND FAULT":  
A continuous red light signals a ground-fault tripping.
- 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 joint 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 3RB2985 function expansion module:  
Enables more functions to be added, e. g. internal ground-fault detection and/or an analog output with corresponding signals.

#### SIRIUS 3RB22 and 3RB23 evaluation modules

The 3RB22 and 3RB23 solid-state overload relays up to 630 A (up to 820 A possible in combination with a series transformer) are from a modular system and comprise an evaluation unit, a current measuring module and a connecting cable. The 3RB22 overload relays (with monostable auxiliary contacts) and the 3RB23 overload relays (with bistable auxiliary contacts) are supplied from an external voltage.

These units have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <http://support.automation.siemens.com/WW/view/en/35681297>) 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 rated motor current.

This current rise is detected by means of a current measuring module (see page 7/147) 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 "Characteristic Curves" <http://support.automation.siemens.com/WW/view/en/20357046/134300>).

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. In the case of the 3RB22 and 3RB23 overload relays this warning can also be issued through auxiliary contacts.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB22 and 3RB23 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.

To protect the loads against high-resistance short circuits due to damage to the insulation, humidity, condensed water, etc., the 3RB22 and 3RB23 solid-state overload relays offer the possibility of internal ground-fault detection in conjunction with a function expansion module (for details see "Selection and Ordering Data" page 7/137, not possible in conjunction with contactor assemblies for wye-delta starting). In the event of a ground fault the 3RB22 and 3RB23 relays trip instantaneously.

The "tripped" status is signaled by means of a continuous red "Ground Fault" LED. Signaling through auxiliary contacts is also possible.

After tripping due to overload, phase unbalance, phase failure, thermistor or ground-fault tripping, the relay is reset manually or automatically after the recovery time has elapsed ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" <http://support.automation.siemens.com/WW/view/en/35681297>). 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 mA to 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 3RB2 solid-state overload relays are suitable for operation with frequency converters. Please follow the instructions in the Reference Manual "Protection Equipment – 3RU1 and 3RB2 Overload Relays", see <http://support.automation.siemens.com/WW/view/en/35681297>.

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" according to ATEX Directive 94/9/EC**

The 3RB22 solid-state overload relays (monostable) provide quick and reliable protection for motors with types of protection EEx e and EEx d in hazardous areas.

They comply with the requirements of IEC 60079-7 (Electrical devices for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d").

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 05 ATEX 3022.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB22, 3RB23 up to 630 A  
for High-Feature applications**

### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	
	□□□	□	□	□	□	-	□	□	□	
<b>Solid-state overload relays</b>	<b>3 R B</b>									
<b>SIRIUS 2nd generation</b>	<b>2</b>									
<b>Device series</b>	□									
<b>Size, rated operational current and power</b>	□									
<b>Version of the automatic RESET, electrical remote RESET</b>	□									
<b>Trip class (CLASS)</b>	□									
<b>Setting range of the overload release</b>	□									
<b>Connection methods</b>	□									
<b>Installation type</b>	□									
<b>Example</b>	<b>3 R B</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>3</b>	<b>-</b>	<b>4</b>	<b>A</b>	<b>A</b>	<b>1</b>

### Note:

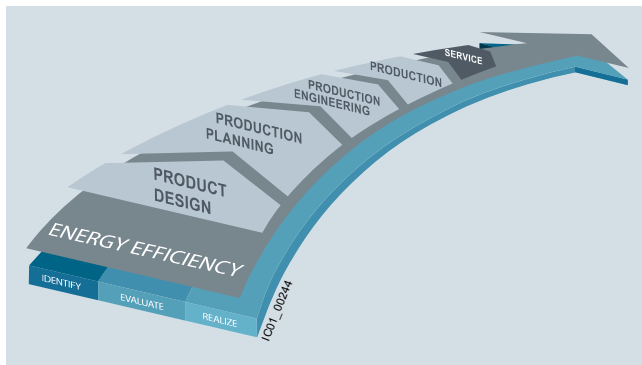
The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

### Benefits

The most important features and benefits of the 3RB22 and 3RB23 solid-state overload relays are listed in the overview table (see "General Data", page 7/82 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 – identify, evaluate, and realize – 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](http://www.siemens.com/sirius/energysaving)).

3RB22 and 3RB23 solid-state overload relays contribute to energy efficiency throughout the plant as follows:

- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

### Application

#### Industries

The 3RB22 and 3RB23 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 3RB22 and 3RB23 devices 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 and 3RB23 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Circuit Diagrams" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" <http://support.automation.siemens.com/WW/view/en/35681297>).

#### 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 3RB22 and 3RB23 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.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB22, 3RB23 up to 630 A  
for High-Feature applications

### Technical specifications

<b>Type – Overload relay: Evaluation modules</b>	<b>3RB2283-4A.1, 3RB2383-4A.1</b>	
<b>Size contactor</b>	S00 ... S10/S12	
<b>General data</b>		
<b>Trips in the event of</b>	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)	
<b>Trip class</b> acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
<b>Phase failure sensitivity</b>	Yes	
<b>Overload warning</b>	Yes, from 1.125 x $I_n$ for symmetrical loads and from 0.85 x $I_n$ for unsymmetrical loads	
<b>Reset and recovery</b>	Manual, automatic and remote RESET	
• Reset options after tripping		
• Recovery time		
- For automatic RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature
- For manual RESET	min	- for tripping due to a ground fault: no automatic RESET - for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature
- For remote RESET	min	- for tripping due to a ground fault: Immediately - for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
<b>Features</b>		
• Display of operating state on device	Yes, with 4 LEDs - Green LED "Ready" - Red LED "Ground Fault" - Red LED "Thermistor" - 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	
<b>Explosion protection – Safe operation of motors with "increased safety" type of protection</b>		
EC type test certificate number according to directive 94/9/EC (ATEX)	3RB22: PTB 05 ATEX 3022 ⚠ II (2) GD 3RB23: --	
<b>Ambient temperatures</b>		
• 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
<b>Repeat terminals</b>		
• Coil repeat terminals	Not required	
• Auxiliary contact repeat terminal	Not required	
<b>Degree of protection</b> acc. to IEC 60529	IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover.	
<b>Touch protection</b> acc. to IEC 61140	Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover.	
<b>Shock resistance with sine</b> acc. to IEC 60068-2-27	g/ms	15/11
<b>Electromagnetic compatibility (EMC) – Interference immunity</b>		
• 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
<b>Electromagnetic compatibility (EMC) – emitted interference</b>	Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)	
<b>Resistance to extreme climates – air humidity</b>	%	100
<b>Dimensions</b>	For "Dimensional drawings" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", <a href="http://support.automation.siemens.com/WWW/view/en/35681297">http://support.automation.siemens.com/WWW/view/en/35681297</a> .	
<b>Installation altitude above sea level</b>	m	Up to 2 000
<b>Mounting position</b>	Any	
<b>Type of mounting</b>		
• Evaluation modules		Stand-alone installation
• Current measuring module	Size	S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

# Overload Relays

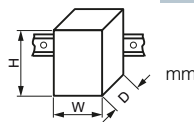
## SIRIUS 3RB2 Solid-State Overload Relays

**3RB22, 3RB23 up to 630 A  
for High-Feature applications**

### Type – Overload relay: Evaluation modules

Size contactor

Dimensions of evaluation modules (W x H x D)



### 3RB2283-4A.1, 3RB2383-4A.1

S00 ... S10/S12

45 x 111 x 95

### Auxiliary circuit

Number of NO contacts

2

Number of NC contacts

2

Number of CO contacts

--

Auxiliary contacts – assignment

- Alternative 1
  - 1 NO for the signal "tripped by overload and/or thermistor"
  - 1 NC for disconnecting the contactor
  - 1 NO for the signal "tripped by ground fault"
  - 1 NC for disconnecting the contactor
- or<sup>1)</sup>
- Alternative 2
  - 1 NO for the signal "tripped by overload and/or thermistor and/or ground fault"
  - 1 NC for disconnecting the contactor
  - 1 NO for overload warning
  - 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

### 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<sup>2</sup> 1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
- Finely stranded without end sleeve mm<sup>2</sup> --
- Finely stranded with end sleeve mm<sup>2</sup> 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
- Stranded mm<sup>2</sup> --
- AWG cables, solid or stranded AWG 2 x (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<sup>2</sup> 2 x (0.25 ... 1.5)
- Finely stranded without end sleeve mm<sup>2</sup> --
- Finely stranded with end sleeve mm<sup>2</sup> 2 x (0.25 ... 1.5)
- Stranded mm<sup>2</sup> 2 x (0.25 ... 1.5)
- AWG cables, solid or stranded AWG 2 x (24 ... 16)

<sup>1)</sup> The assignment of auxiliary contacts may be influenced by function expansion modules.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB22, 3RB23 up to 630 A  
for High-Feature applications

<b>Type – Overload relay: Evaluation modules</b>		<b>3RB2283-4A.1, 3RB2383-4A.1</b>
Size contactor		S00 ... S10/S12
<b>Control and sensor circuit as well as the analog output</b>		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3) <sup>1)</sup>	V	300
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> <sup>1)</sup>	kV	4
<b>Rated control supply voltage <math>U_s</math></b> <sup>1)</sup>	V	24 ... 240
• 50/60 Hz AC	V	24 ... 240
• DC	V	24 ... 240
<b>Operating range</b> <sup>1)</sup>		$0.85 \times U_{s \min} \leq U_s \leq 1.1 \times U_{s \max}$ $0.85 \times U_{s \min} \leq U_s \leq 1.1 \times U_{s \max}$
<b>Rated power</b> <sup>1)</sup>	W	0.5
• 50/60 Hz AC	W	0.5
• DC	W	0.5
<b>Mains buffering time</b> <sup>1)</sup>	ms	200
<b>Thermistor motor protection (PTC thermistor detector)</b> <sup>2)</sup>		
• Summation cold resistance	k $\Omega$	$\leq 1.5$
• Response value	k $\Omega$	3.4 ... 3.8
• Return value	k $\Omega$	1.5 ... 1.65
<b>Ground-fault detection</b>		The information refers to sinusoidal residual currents at 50/60 Hz.
• Tripping value $I_A$ <sup>3)</sup>		$> 0.3 \times I_e$
- For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$		$> 0.15 \times I_{motor}$
- For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$		500 ... 1 000
• Response time $t_{trip}$	ms	
<b>Analog output</b> <sup>3)4)</sup>		
• Output signal	mA	4 ... 20
• Measuring range		0 ... $1.25 \times I_e$
		4 mA corresponds to $0 \times I_e$
		16.8 mA corresponds to $1.0 \times I_e$
		20 mA corresponds to $1.25 \times I_e$
• Load, max.	$\Omega$	100
<b>Conductor cross-sections for the control and sensor circuit as well as the analog output</b>		
<b>Connection type</b>		 <b>Screw terminals</b>
<b>Terminal screw</b>		M3, Pozidriv size 2
<b>Operating devices</b>	mm	3.0 x 0.5
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected		
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded without end sleeve	mm <sup>2</sup>	--
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Stranded	mm <sup>2</sup>	--
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)
<b>Connection type</b>		 <b>Spring-type terminals</b>
<b>Operating devices</b>	mm	3.0 x 0.5
<b>Conductor cross-sections (min./max.),</b> 1 or 2 conductors can be connected		
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve	mm <sup>2</sup>	--
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• Stranded	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)

<sup>1)</sup> Control circuit.

<sup>2)</sup> Sensor circuit.

<sup>3)</sup> For the 3RB22 and 3RB23 overload relays in combination with a corresponding function expansion module.

<sup>4)</sup> 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.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB22, 3RB23 up to 630 A  
for High-Feature applications**

### Selection and ordering data

#### Functions of the 3RB22 and 3RB23 evaluation modules in combination with the 3RB2985 function expansion modules

Evaluation modules	With function expansion module	Basic functions	Inputs		
			A1/A2	T1/T2	Y1/Y2
3RB2283-4AA1 3RB2283-4AC1 3RB2383-4AA1 3RB2383-4AC1	--	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
	3RB2985-2CA1	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
	3RB2985-2CB1	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
	3RB2985-2AA0	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
	3RB2985-2AA1	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
	3RB2985-2AB1	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 modules	With function expansion module	Outputs				
		I (-) / I (+)	95/96 NC	97/98 NO	05/06 NC	07/08 NO
3RB2283-4AA1 3RB2283-4AC1 3RB2383-4AA1 3RB2383-4AC1	--	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2CA1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2CB1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"
	3RB2985-2AA0	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2AA1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2AB1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"



# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB22, 3RB23 up to 630 A  
for High-Feature applications

**3RB22 and 3RB23 solid-state overload relays (evaluation modules) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable**

Type	3RB2283-4A.1, 3RB2383-4A.1
<b>Features and technical specifications</b>	
Overload protection, phase failure protection and unbalance protection	✓
Supplied from an external voltage	✓ 24 ... 240 V AC/DC
Auxiliary contacts	✓ 2 NO + 2 NC
Electrical remote RESET integrated	✓
Four LEDs for operating and status displays	✓
TEST function and self-monitoring	✓
Internal ground-fault detection	✓ (with function expansion module)
Screw or spring-type terminals for auxiliary, control and sensor circuits	✓
Input for PTC sensor circuit	✓
Analog output	✓ (with function expansion module)

✓ Available



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



3RB2283-4AA1,  
3RB2383-4AA1



3RB2283-4AC1,  
3RB2383-4AC1

Size contactor	Version	DT	Screw terminals 		Spring-type terminals 	
			Article No.	Price per PU	Article No.	Price per PU
<b>Evaluation modules</b>						
S00 ... S12	Monostable	▶	<b>3RB2283-4AA1</b>	▶	<b>3RB2283-4AC1</b>	
	Bistable	▶	<b>3RB2383-4AA1</b>	▶	<b>3RB2383-4AC1</b>	

### Note:

Overview of overload relays – matching contactors  
see page 7/88.


Current measuring modules and related connecting cables see  
page 7/148, general accessories see page 7/150 onwards.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB22, 3RB23 up to 630 A  
for High-Feature applications**

### Function expansion modules for 3RB22 and 3RB23 overload relays (evaluation modules)

Size contactor	Version	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Sizes S00 to S12</b>									
 3RB2985-2..1	S00 ... S12	For plugging into evaluation module (1 unit)							
		<b>Analog Basic 1 modules<sup>1)</sup></b> Analog output DC 4 ... 20 mA, with overload warning	3RB22, 3RB23	▶	<b>3RB2985-2AA0</b>		1	1 unit	41F
		<b>Analog Basic 1 GF modules<sup>1)2)</sup></b> Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload warning	3RB22, 3RB23	▶	<b>3RB2985-2AA1</b>		1	1 unit	41F
		<b>Analog Basic 2 GF modules<sup>1)2)</sup></b> Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload ground-fault signaling	3RB22, 3RB23	▶	<b>3RB2985-2AB1</b>		1	1 unit	41F
		<b>Basic 1 GF modules<sup>2)</sup></b> with internal ground-fault detection and overload warning	3RB22, 3RB23	▶	<b>3RB2985-2CA1</b>		1	1 unit	41F
	<b>Basic 2 GF modules<sup>2)</sup></b> with internal ground-fault detection and ground-fault signaling	3RB22, 3RB23	▶	<b>3RB2985-2CB1</b>		1	1 unit	41F	

#### 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.

<sup>1)</sup> The analog signal DC 4 mA up to 20 mA can be used for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

<sup>2)</sup> The following information on ground-fault protection refers to sinusoidal residual currents at 50/60 Hz:

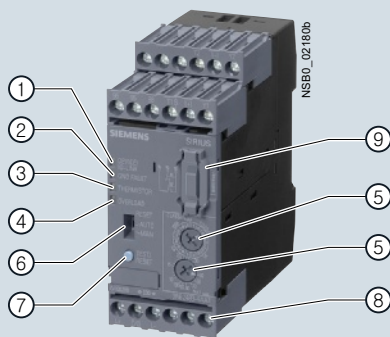
- With a motor current of between 0,3 and 2 times the current setting  $I_e$ , the unit will trip at a ground-fault current equal to 30 % of the current setting.
- With a motor current of between 2 and 8 times the current setting  $I_e$ , the unit will trip at a ground-fault current equal to 15 % of the set current.
- The response delay amounts to between 0,5 s and 1 s.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB24 for IO-Link, up to 630 A  
for High-Feature applications

### 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 3RA6935-0A operator panel.

#### SIRIUS 3RB24 evaluation module

The modular 3RB24 solid-state overload relay, 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 "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", <http://support.automation.siemens.com/WW/view/en/46165627>) 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 engine 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 wye-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 7/147) 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 "Characteristic Curves" <http://support.automation.siemens.com/WW/view/en/20357046/134300>). 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 protect the loads against incomplete ground faults due to damage to the insulation, humidity, condensed water, etc., the 3RB24 solid-state overload relays offer the possibility of internal ground-fault detection (for details, see Manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", <http://support.automation.siemens.com/WW/view/en/46165627>, not possible in conjunction with contactor assemblies 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 monitors (broken wire or short-circuit on the thermistor) can only be reset on-site ("Function" see Manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", <http://support.automation.siemens.com/WW/view/en/46165627>).

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 3RB24 solid-state overload relay for IO-Link is suitable for operation with frequency converters. Please follow the instructions in the manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", see <http://support.automation.siemens.com/WW/view/en/46165627>.

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.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB24 for IO-Link, up to 630 A  
for High-Feature applications**

**Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" according to 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 IEC 60079-7 (Electrical devices for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d").

EC type test certificate for Group II, Category (2) G/D has been submitted. On request.

### Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Solid-state overload relays</b>	<b>3 R B</b>									
<b>SIRIUS 2nd generation</b>	<b>2</b>									
<b>Device series</b>	<input type="checkbox"/>									
<b>Size, rated operational current and power</b>	<input type="checkbox"/>									
<b>Version of the automatic RESET, electrical remote RESET</b>	<input type="checkbox"/>									
<b>Trip class (CLASS)</b>	<input type="checkbox"/>									
<b>Setting range of the overload release</b>	<input type="checkbox"/>									
<b>Connection methods</b>	<input type="checkbox"/>									
<b>Installation type</b>	<input type="checkbox"/>									
<b>Example</b>	<b>3 R B</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>-</b>	<b>4</b>	<b>A</b>	<b>A</b>	<b>1</b>

### Note:

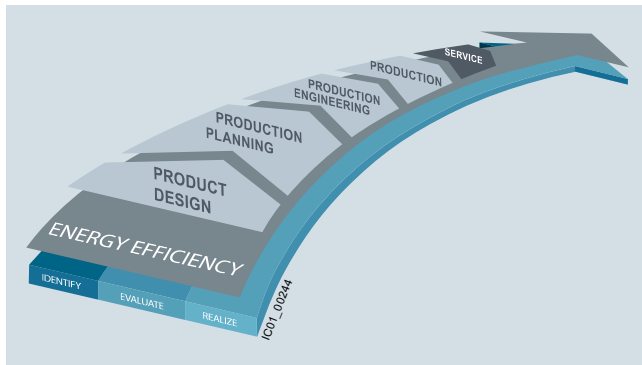
The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

## Benefits

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 7/82 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 – identify, evaluate, and realize – 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](http://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 ("Circuit Diagrams" see Manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", <http://support.automation.siemens.com/WW/view/en/46165627>).

### Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from  $-25\text{ °C}$  to  $+60\text{ °C}$ , the 3RB24 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below  $-25\text{ °C}$  or above  $+60\text{ °C}$  on request.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB24 for IO-Link, up to 630 A  
for High-Feature applications

### Technical specifications

<b>Type – Overload relay: Evaluation modules</b>	<b>3RB2483-4A.1</b>	
<b>Size contactor</b>	S00 ... S10/S12	
<b>General data</b>		
<b>Trips in the event of</b>	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)	
<b>Trip class</b> acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
<b>Phase failure sensitivity</b>	Yes	
<b>Overload warning</b>	Yes, from $1.125 \times I_n$ for symmetrical loads and from $0.85 \times I_n$ for unsymmetrical loads	
<b>Reset and recovery</b>	Manual and automatic RESET, electrical remote RESET or through IO-Link	
<ul style="list-style-type: none"> <li>Reset options after tripping</li> <li>Recovery time <ul style="list-style-type: none"> <li>- For automatic RESET</li> </ul> </li> </ul>	min	<ul style="list-style-type: none"> <li>- for tripping due to overcurrent: 3 (stored permanently),</li> <li>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature</li> <li>- for tripping due to a ground fault: no automatic RESET</li> </ul>
<ul style="list-style-type: none"> <li>- For manual RESET</li> </ul>	min	<ul style="list-style-type: none"> <li>- for tripping due to overcurrent: 3 (stored permanently),</li> <li>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature</li> <li>- for tripping due to a ground fault: Immediately</li> </ul>
<ul style="list-style-type: none"> <li>- For remote RESET</li> </ul>	min	<ul style="list-style-type: none"> <li>- for tripping due to overcurrent: 3 (stored permanently),</li> <li>- for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature</li> <li>- for tripping due to a ground fault: Immediately</li> </ul>
<b>Features</b>		
<ul style="list-style-type: none"> <li>Display of operating state on device</li> </ul>	Yes, with 4 LEDs <ul style="list-style-type: none"> <li>- Green "DEVICE/IO-Link" LED</li> <li>- Red LED "Ground Fault"</li> <li>- Red LED "Thermistor"</li> <li>- Red "Overload" LED</li> </ul>	
<ul style="list-style-type: none"> <li>TEST function</li> </ul>	Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring	
<ul style="list-style-type: none"> <li>RESET button</li> <li>STOP button</li> </ul>	Yes, with the TEST/RESET button No	
<b>Explosion protection – Safe operation of motors with "increased safety EEx e and explosion-proof enclosure EEx d" type of protection</b>		
EC type test certificate number according to directive 94/9/EC (ATEX)	On request	
<b>Ambient temperatures</b>		
<ul style="list-style-type: none"> <li>Storage/transport</li> </ul>	°C	-40 ... +80
<ul style="list-style-type: none"> <li>Operation</li> </ul>	°C	-25 ... +60
<ul style="list-style-type: none"> <li>Temperature compensation</li> </ul>	°C	+60
<ul style="list-style-type: none"> <li>Permissible rated current <ul style="list-style-type: none"> <li>- Temperature inside control cabinet 60 °C</li> <li>- Temperature inside control cabinet 70 °C</li> </ul> </li> </ul>	%	100 On request
<b>Repeat terminals</b>		
<ul style="list-style-type: none"> <li>Coil repeat terminals</li> <li>Auxiliary contact repeat terminal</li> </ul>	Not required Not required	
<b>Degree of protection</b> acc. to IEC 60529	IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover	
<b>Touch protection</b> acc. to IEC 61140	Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover	
<b>Shock resistance with sine</b> acc. to IEC 60068-2-27	g/ms	15/11
<b>Electromagnetic compatibility (EMC) – Interference immunity</b>		
<ul style="list-style-type: none"> <li>Conductor-related interference <ul style="list-style-type: none"> <li>- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)</li> <li>- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)</li> </ul> </li> <li>Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)</li> <li>Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)</li> </ul>	kV	2 (power ports), 1 (signal ports) 2 (line to earth), 1 (line to line) 8 (air discharge), 6 (contact discharge)
	V/m	10
<b>Electromagnetic compatibility (EMC) – emitted interference</b>	Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)	
<b>Resistance to extreme climates – air humidity</b>	%	100
<b>Dimensions</b>	"Dimensional drawings" see manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", <a href="http://support.automation.siemens.com/WW/view/en/46165627">http://support.automation.siemens.com/WW/view/en/46165627</a> .	
<b>Installation altitude above sea level</b>	m	Up to 2 000
<b>Mounting position</b>	Any	
<b>Type of mounting</b>		
<ul style="list-style-type: none"> <li>Evaluation modules</li> <li>Current measuring module</li> </ul>	Size	Stand-alone installation S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

# Overload Relays

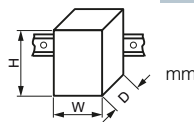
## SIRIUS 3RB2 Solid-State Overload Relays

**3RB24 for IO-Link, up to 630 A  
for High-Feature applications**

### Type – Overload relay: Evaluation modules

Size contactor

Dimensions of evaluation modules (W x H x D)



### 3RB2483-4A.1

S00 ... S10/S12

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
- 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 current 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<sup>2</sup> 1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
- Finely stranded without end sleeve mm<sup>2</sup> –
- Finely stranded with end sleeve mm<sup>2</sup> 1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
- Stranded mm<sup>2</sup> –
- AWG cables, solid or stranded AWG 2 x (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<sup>2</sup> 2 x (0.25 ... 1.5)
- Finely stranded without end sleeve mm<sup>2</sup> –
- Finely stranded with end sleeve mm<sup>2</sup> 2 x (0.25 ... 1.5)
- Stranded mm<sup>2</sup> 2 x (0.25 ... 1.5)
- AWG cables, solid or stranded AWG 2 x (24 ... 16)

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

3RB24 for IO-Link, up to 630 A  
for High-Feature applications

<b>Type – Overload relay: Evaluation modules</b>		<b>3RB2483-4A.1</b>
Size contactor		S00 ... S10/S12
<b>Control and sensor circuit as well as the analog output</b>		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3) <sup>1)</sup>	V	300
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> <sup>1)</sup>	kV	4
<b>Rated control supply voltage <math>U_s</math></b> <sup>1)</sup>		
• DC	V	24 through IO-Link
<b>Operating range</b> <sup>1)</sup>		
• DC		$0.85 \times U_{s \min} \leq U_s \leq 1.1 \times U_{s \max}$
<b>Rated power</b> <sup>1)</sup>		
• DC	W	0.5
<b>Mains buffering time</b> <sup>1)</sup>	ms	200
<b>Thermistor motor protection (PTC thermistor detector)</b> <sup>2)</sup>		
• Summation cold resistance	k $\Omega$	$\leq 1.5$
• Response value	k $\Omega$	3.4 ... 3.8
• Return value	k $\Omega$	1.5 ... 1.65
<b>Ground-fault detection</b>		
• Tripping value $I_{\Delta}$		The information refers to sinusoidal residual currents at 50/60 Hz.
- For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$		$> 0.3 \times I_e$
- For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$		$> 0.15 \times I_{motor}$
• Response time $t_{trip}$	ms	500 ... 1 000
<b>Analog output</b> <sup>3)</sup>		
• Output signal	mA	4 ... 20
• Measuring range		0 ... $1.25 \times I_e$ 4 mA corresponds to $0 \times I_e$ 16.8 mA corresponds to $1.0 \times I_e$ 20 mA corresponds to $1.25 \times I_e$
• Load, max.	$\Omega$	100
<b>Conductor cross-sections for the control and sensor circuit as well as the analog output</b>		
<b>Connection type</b>		 <b>Screw terminals</b>
<b>Terminal screw</b>		M3, Pozidriv size 2
<b>Operating devices</b>	mm	3.0 x 0.5
<b>Prescribed tightening torque</b>	Nm	0.8 ... 1.2
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>		
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded without end sleeve	mm <sup>2</sup>	--
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Stranded	mm <sup>2</sup>	--
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)
<b>Connection type</b>		 <b>Spring-type terminals</b>
<b>Operating devices</b>		mm 3.0 x 0.5
<b>Conductor cross-sections (min./max.), 1 or 2 conductors can be connected</b>		
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve	mm <sup>2</sup>	--
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• Stranded	mm <sup>2</sup>	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)

1) Control circuit.

2) Sensor circuit.

3) 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.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

**3RB24 for IO-Link, up to 630 A  
for High-Feature applications**

### 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	3RB2483-4A.1
<b>Features and technical specifications</b>	
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)
Four 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	✓
<b>IO-Link-specific functions</b>	
• 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



3RB2483-4AA1



3RB2483-4AC1

Size contactor	Version	DT	<b>Screw terminals</b> 	DT	<b>Spring-type terminals</b> 	
			Article No.	Price per PU	Article No.	Price per PU

### Evaluation modules

S00 ... S12	Monostable	▶	<b>3RB2483-4AA1</b>	A	<b>3RB2483-4AC1</b>
-------------	------------	---	---------------------	---	---------------------

### Notes:

- Overview of overload relays – matching contactors [see page 7/88](#).
- 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.

For current measuring modules and related connecting cables [see page 7/147](#), "Accessories" [see page 7/149 onwards](#).



# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

Current measuring modules for  
3RB22, 3RB23, 3RB24

### Overview

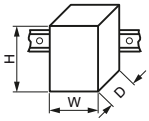


SIRIUS 3RB2906 current measuring module

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-alone units.

### Technical specifications

Type – Overload relays: Current measuring modules		3RB2906		3RB2956	3RB2966
		S00/S0	S2/S3	S6	S10/S12
Size contactor		45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Dimensions of current measuring modules (W x H x D)	mm				
<b>Main circuit</b>					
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		No		Yes, 50/60 Hz 5 %	
• Direct current					
• Alternating current					
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		See "Selection and ordering data" on page 7/147 See configuration manuals			
• With fuse without contactor		<ul style="list-style-type: none"> <li>"Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", <a href="http://support.automation.siemens.com/WW/view/en/50250039">http://support.automation.siemens.com/WW/view/en/50250039</a></li> </ul>			
• With fuse and contactor		<ul style="list-style-type: none"> <li>"SIRIUS Configuration – Selection Data for Fuseless Load Feeders", <a href="http://support.automation.siemens.com/WW/view/en/68115041">http://support.automation.siemens.com/WW/view/en/68115041</a></li> </ul>			
<b>Protective separation between main and auxiliary current paths</b> acc. to IEC 60947-1 (pollution degree 2)					
• For systems with grounded neutral point	V	690			
• For systems with ungrounded neutral point	V	600			

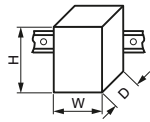
# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

### Current measuring modules for 3RB22, 3RB23, 3RB24

#### Type – Overload relays: Current measuring modules

Size contactor

Dimensions of current measuring modules  
(W x H x D)

		3RB2906		3RB2956	3RB2966
		S00/S0	S2/S3	S6	S10/S12
		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 <sup>2</sup>	--		--	--
• Finely stranded without end sleeve	mm <sup>2</sup>	--		With 3RT1955-4G box terminal: 2 x (1 x max. 50, 1 x max. 70), 1 x (10 ... 70)	2 x (50 ... 185), rear clamping point only: 1 x (70 ... 240)
				With 3RT1956-4G box terminal: 2 x (1 x max. 95, 1 x max. 120), 1 x (10 ... 120)	Rear clamping point only: 1 x (120 ... 185)
• Finely stranded with end sleeve	mm <sup>2</sup>	--		With 3RT1955-4G box terminal: 2 x (1 x max. 50, 1 x max. 70), 1 x (10 ... 70)	2 x (50 ... 185), Rear clamping point only: 1 x (70 ... 240)
				With 3RT1956-4G box terminal: 2 x (1 x max. 95, 1 x max. 120), 1 x (10 ... 120)	Rear clamping point only: 1 x (120 ... 185)
• Stranded	mm <sup>2</sup>	--		With 3RT1955-4G box terminal: 2 x (max. 70), 1 x (16 ... 70)	2 x (70 ... 240), Rear clamping point only: 1 x (95 ... 300)
				With 3RT1956-4G box terminal: 2 x (max. 120), 1 x (16 ... 120)	Rear clamping point only: 1 x (120 ... 240)
• AWG cables, solid or stranded	AWG	--		With 3RT1955-4G box terminal: 2 x (max. 1/0), 1 x (6 ... 2/0)	2 x (2/0 ... 500 kcmil), rear clamping point only: 1 x (3/0 ... 600 kcmil)
				With 3RT1956-4G box terminal: 2 x (max. 3/0), 1 x (6 ... 250 kcmil)	Rear clamping point only: 1 x (250 kcmil ... 500 kcmil)
• Ribbon cables (Number x Width x Thickness)	mm	--		With 3RT1955-4G box terminal: 2 x (6 x 15.5 x 0.8), 1 x (3 x 9 x 0.8 ... 6 x 15.5 x 0.8)	2 x (20 x 24 x 0.5), 1 x (6 x 9 x 0.8 ... 20 x 24 x 0.5)
				With 3RT1956-4G box terminal: 2 x (10 x 15.5 x 0.8), 1 x (3 x 9 x 0.8 ... 10 x 15.5 x 0.8)	
Connection type		⊕ Busbar connections			
Terminal screw		--		M8 x 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 <sup>2</sup>	--		16 ... 95 <sup>1)</sup>	50 ... 240 <sup>2)</sup>
• Stranded with cable lug	mm <sup>2</sup>	--		25 ... 120 <sup>1)</sup>	70 ... 240 <sup>2)</sup>
• AWG cables, solid or stranded, with cable lug	AWG	--		4 ... 250 kcmil	2/0 ... 500 kcmil
• With connecting bars (max. width)	mm	--		17	25
Connection type		⊕ Straight-through transformers			
Diameter of opening	mm	7.5	14	25	--

<sup>1)</sup> When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm<sup>2</sup> and more, the 3RT1956-4EA1 terminal cover must be used to ensure phase clearance.

<sup>2)</sup> When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm<sup>2</sup> and more as well as to DIN 46235 with conductor cross-sections of 185 mm<sup>2</sup> and more, the 3RT1956-4EA1 terminal cover must be used to ensure the phase clearance.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

Current measuring modules for  
3RB22, 3RB23, 3RB24

### Selection and ordering data

Current measuring modules for mounting onto contactor<sup>1)</sup> and stand-alone installation<sup>1)2)</sup> (essential accessories)



3RB2906-2JG1



3RB2906-2JG1



3RB2956-2TG2



3RB2966-2WH2

Size contactor <sup>3)</sup>	Rating for three-phase motor, rated value <sup>4)</sup>	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG <sup>5)</sup>	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	A							
<b>Sizes S00/S0<sup>2)6)</sup></b>										
S00/S0	0.09 ... 1.1	0.3 ... 3	20	3RB22 to 3RB24	▶	<b>3RB2956-2TH2</b>		1	1 unit	41G
	1.1 ... 11	2.4 ... 25	63		▶	<b>3RB2956-2TG2</b>		1	1 unit	41G
<b>Sizes S2/S3<sup>2)6)</sup></b>										
S2/S3	5.5 ... 45	10 ... 100	315	3RB22 to 3RB24	▶	<b>3RB2906-2JG1</b>		1	1 unit	41G
<b>Size S6<sup>1)6)</sup></b>										
S6 with busbar connection	11 ... 90	20 ... 200	315	3RB22 to 3RB24	▶	<b>3RB2956-2TH2</b>		1	1 unit	41G
For mounting onto S6 contactors with box terminals	11 ... 90	20 ... 200	315	3RB22 to 3RB24	▶	<b>3RB2956-2TG2</b>		1	1 unit	41G
<b>Sizes S10/S12<sup>1)</sup></b>										
S10/S12 and size 14 (3TF68/ 3TF69)	37 ... 450	63 ... 630	800	3RB22 to 3RB24	▶	<b>3RB2966-2WH2</b>		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 (see page 7/148).


- The current measuring modules with an Article No. ending with "2" are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.
- The current measuring modules with an Article No. ending with "1" are designed for stand-alone installation.
- Observe maximum rated operational current of the devices.
- 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.
- Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors see Configuration Manuals
  - "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", <http://support.automation.siemens.com/WW/view/en/50250039>
  - "SIRIUS Configuration – Selection Data for Fuseless Load Feeders", <http://support.automation.siemens.com/WW/view/en/68115041>.
- The modules with an Article No. with "G" in penultimate position are equipped with a straight-through transformer.

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

### Current measuring modules for 3RB22, 3RB23, 3RB24

#### Accessories

Size contactor	Version	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Connecting cables (necessary accessories)</b>								
	S00 ... S3	For connection between evaluation module and current measuring module • Length 0.1 m (only for mounting of the evaluation module directly onto the current measuring module)	3RB24, 3RB29	▶ <b>3RB2987-2B</b>		1	1 unit	41F
3RB2987-2.	S00 ... S12	• Length 0.5 m	3RB24, 3RB29	▶ <b>3RB2987-2D</b>		1	1 unit	41F

Additional general accessories [see page 7/150](#).

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

### Accessories for 3RB22, 3RB23, 3RB24

#### 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 for the evaluation modules 3RB24
- Sealable cover for the evaluation modules 3RB22 to 3RB24
- Terminal covers for the 3RB29 current measuring modules size S6 and S10/S12
- Box terminal blocks for the 3RB29 current measuring modules size S6 and S10/S12
- Push-in lugs for screw fixing for 3RB22 to 3RB24 evaluation modules and 3RB2906 current measuring modules

#### Selection and ordering data

##### Accessories for 3RB24 overload relays

Version	For over-load relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Operator panels for evaluation modules</b>							
 3RA6935-0A	<b>Operator panels (set)</b>	3RB24	A	<b>3RA6935-0A</b>	1	1 unit	42F
	One set comprises: • 1 x operator panel • 1 x 3RA6936-0A enabling module • 1 x 3RA6936-0B interface cover • 1 x fixing terminal						
	<u>Note:</u> The connecting cable between the evaluation module and the operator panel is not included in the scope of supply; please order separately.						
	<b>Connecting cable</b> Length 2.5 m (round), for connecting the evaluation module to the operator panel	3RB24	▶	<b>3UF7933-0BA00-0</b>	1	1 unit	42J
	<b>Enabling modules (replacement)</b>	3RB24	A	<b>3RA6936-0A</b>	1	1 unit	42F
	<b>Interface covers</b>	3RB24	A	<b>3RA6936-0B</b>	1	5 units	42F
<b>Manuals</b>							
 Manual "Solid-State Overload Relay for IO-Link"	<b>Manual "Solid-State Overload Relay for IO-Link"</b>	3RB24					
	The manual can be downloaded free of charge, see <a href="http://support.automation.siemens.com/WW/view/en/46165627">http://support.automation.siemens.com/WW/view/en/46165627</a>						







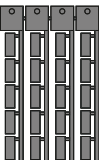
Additional general accessories [see next page](#).

# Overload Relays

## SIRIUS 3RB2 Solid-State Overload Relays

### Accessories for 3RB22, 3RB23, 3RB24

#### General accessories

Version	Size	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Sealable covers for evaluation modules</b>									
	For covering the setting knobs	--	3RB22 to 3RB24	▶	<b>3RB2984-2</b>	1	10 units	41F	
<b>Terminal covers for current measuring modules</b>									
<b>Covers for cable lugs and busbar connections</b>									
	• Length 100 mm	S6	3RB2956	▶	<b>3RT1956-4EA1</b>	1	1 unit	41B	
	• Length 120 mm	S10/S12	3RB2966	▶	<b>3RT1966-4EA1</b>	1	1 unit	41B	
<b>Covers for box terminals</b>									
	• Length 25 mm	S6	3RB2956	▶	<b>3RT1956-4EA2</b>	1	1 unit	41B	
	• Length 30 mm	S10/S12	3RB2966	▶	<b>3RT1966-4EA2</b>	1	1 unit	41B	
<b>Covers for screw terminals</b>									
	between contactor and overload relay, without box terminals	S6	3RB2956	▶	<b>3RT1956-4EA3</b>	1	1 unit	41B	
	(1 unit required per combination)	S10/S12	3RB2966	▶	<b>3RT1966-4EA3</b>	1	1 unit	41B	
<b>Box terminal blocks for current measuring modules</b>									
	For round and ribbon cables								
	• Up to 70 mm <sup>2</sup>	S6 <sup>1)</sup>	3RB2956	▶	<b>3RT1955-4G</b>	1	1 unit	41B	
	• Up to 120 mm <sup>2</sup>	S6	3RB2956	▶	<b>3RT1956-4G</b>	1	1 unit	41B	
	• Up to 240 mm <sup>2</sup>	S10/S12	3RB2966	▶	<b>3RT1966-4G</b>	1	1 unit	41B	
	For technical specifications for conductor cross-sections see Reference Manual "Protection Equipment – 3RU 1, 3RB2 Overload Relays", <a href="http://support.automation.siemens.com/WW/view/en/35681297">http://support.automation.siemens.com/WW/view/en/35681297</a> .								
<b>3RT195..-4G</b>									
<b>Push-in lugs for evaluation modules and current measuring modules</b>									
	For screw fixing the evaluation modules	--	3RB22 to 3RB24	B	<b>3RP1903</b>	1	10 units	41H	
<b>3RP1903</b>									
	For screw fixing the current measuring modules (2 units per module)	S00 ... S3	3RB2906	A	<b>3RB1900-0B</b>	100	10 units	41F	
<b>3RB1900-0B</b>									
<sup>1)</sup> In the scope of supply for 3RT1054-1 contactors (55 kW).									
Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Tools for opening spring-type terminals</b>									
	<b>Screwdrivers</b> 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	A	<b>3RA2908-1A</b>	1	1 unit	41B
<b>3RA2908-1A</b>									
<b>Blank labels</b>									
	<b>Unit labeling plates<sup>1)</sup></b> For SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	<b>3RT1900-1SB20</b>	100	340 units	41B
<b>3RT1900-1SB20</b>									
		20 mm x 7 mm	Titanium gray	3RB2	D	<b>3RT2900-1SB20</b>	100	340 units	41B
<b>3RT2900-1SB20</b>									

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from:

murrplastik Systemtechnik GmbH  
(see Chapter 16, "Appendix" → "External Partners").