Industrial Controls

SIRIUS 3R_1* in sizes S00/S0 to S12

Catalog Add-On IC 10 AO · 2012

SIRIUS

Answers for industry.

SIEMENS

Overview

Features	3RU11	3RB20/3RB21	3RB22/3RB23	Benefits
General data				
Sizes	S00 ...S3	S00 ... S12	S00 ... S12	• Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, etc., ...) • 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 3RB23 evaluation modules sizes S00 to S3 • Simplify configuration
Seamless current range	0,11 ... 100 A	0,1 ... 630 A	0,3 ... 630 A (up to 820 A)[1]	• Allows easy and consistent configuration with one series of overload relays (for small to large loads)
Protection functions				
Tripping due to overload	✓	✓	✓	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload
Tripping due to phase unbalance	✓	✓	✓	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to phase unbalance
Tripping due to phase failure	✓	✓	✓	• Minimizes heating of induction motors during phase failure
Protection of single-phase loads	✓	--	✓	• Enables the protection of single-phase loads
Tripping in the event of overheating by **integrated thermistor motor protection function**	--[2]	--[2]	✓	• Provides optimum temperature-dependent protection of loads against excessive temperature rises e. g. for stator-critical motors or in the event of insufficient coolant flow, contamination of the motor surface or for long starting or braking operations • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs
Tripping in the event of a ground fault by **internal ground-fault detection (activatable)**	--	✓ (only 3RB21)	✓	• Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc. • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs
Features				
RESET function	✓	✓	✓	• Allows manual or automatic resetting of the device
Remote RESET function	✓ (by means of separate module)	✓ (only with 3RB21 and external auxiliary voltage 24 V DC)	✓ (electrically via external button)	• Allows the remote resetting of the device
TEST function for auxiliary contacts	✓	✓	✓	• Allows easy checking of the function and wiring
TEST function for electronics	--	✓	✓	• Allows checking of the electronics
Status display	✓	✓	✓	• Displays the current operating state
Large current adjustment button	✓	✓	✓	• Makes it easier to set the relay exactly to the correct current value
Integrated auxiliary contacts (1 NO + 1 NC)	✓	✓	✓ (2 ×)	• Allows the load to be switched off if necessary • Can be used to output signals

✓ Available

-- Not available

[1] Motor currents up to 820 A can be recorded and evaluated by a current measuring module, e. g. 3RB29 06-2BG1 (0.3 to 3 A) , in combination with a 3UF18 68-3GA00 (820 A/1 A) series transformer. For 3UF18 transformers see Catalog IC 10 · 2012, Chapter 10, "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices".

[2] The SIRIUS 3RN thermistor motor protection devices can be used to provide additional temperature-dependent protection.

General data

Features	3RU11	3RB20/3RB21	3RB22/3RB23	Benefits
Design of load feeders				
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	✓	✓	• Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT contactors	✓	✓	✓[1]	• Simplifies configuration • Reduces wiring outlay and costs • Enables stand-alone installation as well as space-saving direct mounting
Straight-through transformers for main circuit[2] (in this case the cables are routed through the feed-through openings of the overload relay and connected directly to the box terminals of the contactor)	--	✓ (S2 ... S6)	✓ (S00 ... S6)	• Reduces the contact resistance (only one point of contact) • Saves wiring costs (easy, no need for tools, and fast) • Saves material costs • Reduces installation costs
Spring-type connection for auxiliary circuits[2]	✓	✓	✓	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Other features				
Temperature compensation	✓	✓	✓	• Allows the use of the relays at high temperatures without derating • Prevents premature tripping • Allows compact installation of the control cabinet without distance between the devices/load feeders • Simplifies configuration • Enables space to be saved in the control cabinet
Very high long-term stability	✓	✓	✓	• Provides safe protection for the loads even after years of use in severe operating conditions
Wide setting ranges	--	✓ (1:4)	✓ (1:10)	• Minimize the configuration outlay and costs • Minimize storage overheads, storage costs, tied-up capital
Fixed trip class	CLASS 10	CLASS 10 or CLASS 20 (only 3RB20)	--	• Optimum motor protection for standard starts
Trip classes adjustable on the device, CLASS 5, 10, 20, 30	--	✓ (only 3RB21)	✓	• Enables solutions for very fast starting motors requiring special protection (e. g. Ex motors) • Enables heavy starting solutions • Reduces the number of variants • Minimizes the configuring outlay and costs • Minimizes storage overhead, storage costs, and tied-up capital
Low power loss	--	✓	✓	• Reduces power consumption and energy costs (up 98 % less power is used than for thermal overload relays). • Minimizes temperature rises of the contactor and control cabinet – in some cases this may eliminate the need for controlgear cabinet cooling. • Direct mounting to contactor saves space, even for high motor currents (i. e. no heat decoupling is required).

✓ Available
-- Not available

[1] Exception: up to size S3, only stand-alone installation is possible.
[2] Alternatively available for screw terminals.

Features	3RU11	3RB20/3RB21	3RB22/3RB23	Benefits
Further characteristics (continued)				
Internal power supply	--[1]	✓	--	• Eliminates the need for configuration and connecting an additional control circuit
Variable adjustment of the trip classes (The required trip class can be adjusted by means of a rotary switch depending on the current start-up condition.)	--	✓ (only 3RB21)	✓	• Reduces the number of variants • Minimizes the configuring outlay and costs • Minimizes storage overhead, storage costs, and tied-up capital
Overload warning	--	--	✓	• Indicates imminent tripping of the relay directly on the device due to overload, phase unbalance or phase failure through flickering of the LEDs • Allows the imminent tripping of the relay to be signaled • 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 • Eliminates the need for an additional device • Saves space in the control cabinet • Reduces wiring outlay and costs
Analog output	--	--	✓	• Allows the output of an analog output signal for actuating moving-coil instruments, feeding programmable logic controllers or transfer to bus systems • Eliminates the need for an additional measuring transducer and signal converter • Saves space in the control cabinet • Reduces wiring outlay and costs

✓ Available

-- Not available

[1] The SIRIUS 3RU11 thermal overload relays use a bimetal contactor and therefore do not require a control supply voltage.

General data

Overload relays overview – matching contactors

	Overload relays	Current measure-ment	Current range	**Contactors** (type, size, rating in kW)							
				3RT10 1.	**3RT10 2.**	**3RT10 3.**	**3RT10 4.**	**3RT10 5.**	**3RT10 6.**	**3RT10 7**	**3TF68/3TF69**
				S00	S0	S2	S3	S6	S10	S12	Size 14
	Type	Type	A	3/4/5,5	5,5/7,5/11	15/18,5/22	30/37/45	55/75/90	110/132/160	200/250	375/450
SIRIUS 3RU11 thermal overload relays											
 3RU11	3RU11 1	Integrated	0,11 … 12	✓	--	--	--	--	--	--	--
	3RU11 2	Integrated	1,8 … 25	--	✓	--	--	--	--	--	--
	3RU11 3	Integrated	5,5 … 50	--	--	✓	--	--	--	--	--
	3RU11 4	Integrated	18 … 100	--	--	--	✓	--	--	--	--
SIRIUS 3RB20 solid-state overload relays[1]											
 3RB20	3RB20 1	Integrated	0,1 … 12	✓	--	--	--	--	--	--	--
	3RB20 2	Integrated	0,1 … 25	--	✓	--	--	--	--	--	--
	3RB20 3	Integrated	6 … 50	--	--	✓	--	--	--	--	--
	3RB20 4	Integrated	12,5 … 100	--	--	--	✓	--	--	--	--
	3RB20 5	Integrated	50 … 200	--	--	--	--	✓	--	--	--
	3RB20 6	Integrated	55 … 630	--	--	--	--	--	✓	✓	✓
	3RB20 1 + 3UF18	Integrated	630 … 820	--	--	--	--	--	--	--	✓
SIRIUS 3RB21 solid-state overload relays[1]											
 3RB21	3RB21 1	Integrated	0,1 … 12	✓	--	--	--	--	--	--	--
	3RB21 2	Integrated	0,1 … 25	--	✓	--	--	--	--	--	--
	3RB21 3	Integrated	6 … 50	--	--	✓	--	--	--	--	--
	3RB21 4	Integrated	12,5 … 100	--	--	--	✓	--	--	--	--
	3RB21 5	Integrated	50 … 200	--	--	--	--	✓	--	--	--
	3RB21 6	Integrated	55 … 630	--	--	--	--	--	✓	✓	✓
	3RB21 1 + 3UF18	Integrated	630 … 820	--	--	--	--	--	--	--	✓
SIRIUS 3RB22/3RB23 solid-state overload relays[1]											
 3RB22, 3RB23	3RB22 83/ 3RB23 83	3RB29 0	0,3 … 25	✓	✓	--	--	--	--	--	--
		3RB29 0	10 … 100	✓	✓	✓	✓	--	--	--	--
		3RB29 5	20 … 200	--	--	--	--	✓	--	--	--
		3RB29 6	63 … 630	--	--	--	--	--	✓	✓	✓
		3RB29 0 + 3UF18	630 … 820	--	--	--	--	--	--	--	✓

✓ Can be used

-- Cannot be used

[1] "Technical Specifications" for use of the overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders", see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays" and in the Configuration Manual "SIRIUS Configuration – Selection Data for Fuseless Load Feeders", Order No. 3ZX1012-0RA21-0AC0.

Connection methods

The 3RU11 thermal overload relays come with screw terminals.

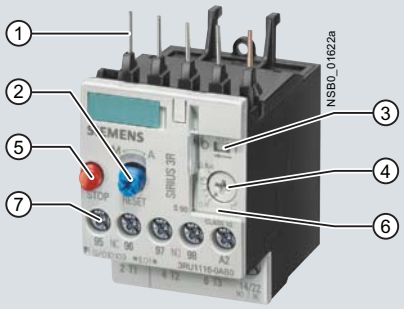
The 3RB20 and 3RB21 solid-state overload relays are available with screw terminals (box terminals) or spring-type terminals on the auxiliary current side; the same applies for the evaluation modules of the 3RB22 to 3RB23 solid-state overload relays for High-Feature application.

Screw terminals

Spring-type terminals

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

Overview



(1) Connection for mounting onto contactors:
Optimally adapted in electrical, mechanical and design terms to the contactors. Connecting pins can be used for direct mounting of the overload relays. Stand-alone installation is possible as an alternative (in some cases in conjunction with a stand-alone installation module).

(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) Transparent, sealable cover:
Secures the motor current setting and the TEST function against adjustment.

(7) Supply terminals:
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.

SIRIUS 3RU11 16-0AB0 thermal overload relay

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 for Protection Equipment – 3RU1, 3RB2 Overload Relays) 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 www.siemens.com/sirius/support → "Characteristic Curves").

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 for Protection Equipment – 3RU1, 3RB2 Overload Relays").

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.

"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 EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e"); see www.siemens.com/sirius/atex .

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

Order No. scheme

Digit of the Order 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 Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

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 7/37 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 +80 °C the upper set value of the setting range must be reduced by the factor listed in the table below.

Ambient temperature in °C	Derating factor for the upper set value
+60	1,0
+65	0,94
+70	0,87
+75	0,81
+80	0,73

Selection and ordering data

3RU11 thermal overload relays with screw terminals on the auxiliary current side for mounting onto contactor[1], 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 of contactor[2]	Rating for induction motor P[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[4]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	A						
Size S00									
 3RU11 16-..B0									
S00	0,04	0,11 ... 0,16	0,5	▶	**3RU11 16-0AB0**		1	1 unit	41F
	0,06	0,14 ... 0,2	1	▶	**3RU11 16-0BB0**		1	1 unit	41F
	0,06	0,18 ... 0,25	1	▶	**3RU11 16-0CB0**		1	1 unit	41F
	0,09	0,22 ... 0,32	1,6	▶	**3RU11 16-0DB0**		1	1 unit	41F
	0,09	0,28 ... 0,4	2	▶	**3RU11 16-0EB0**		1	1 unit	41F
	0,12	0,35 ... 0,5	2	▶	**3RU11 16-0FB0**		1	1 unit	41F
	0,18	0,45 ... 0,63	2	▶	**3RU11 16-0GB0**		1	1 unit	41F
	0,18	0,55 ... 0,8	4	▶	**3RU11 16-0HB0**		1	1 unit	41F
	0,25	0,7 ... 1	4	▶	**3RU11 16-0JB0**		1	1 unit	41F
	0,37	0,9 ... 1,25	4	▶	**3RU11 16-0KB0**		1	1 unit	41F
	0,55	1,1 ... 1,6	6	▶	**3RU11 16-1AB0**		1	1 unit	41F
	0,75	1,4 ... 2	6	▶	**3RU11 16-1BB0**		1	1 unit	41F
	0,75	1,8 ... 2,5	10	▶	**3RU11 16-1CB0**		1	1 unit	41F
	1,1	2,2 ... 3,2	10	▶	**3RU11 16-1DB0**		1	1 unit	41F
	1,5	2,8 ... 4	16	▶	**3RU11 16-1EB0**		1	1 unit	41F
	1,5	3,5 ... 5	20	▶	**3RU11 16-1FB0**		1	1 unit	41F
	2,2	4,5 ... 6,3	20	▶	**3RU11 16-1GB0**		1	1 unit	41F
	3	5,5 ... 8	25	▶	**3RU11 16-1HB0**		1	1 unit	41F
	4	7 ... 10	35	▶	**3RU11 16-1JB0**		1	1 unit	41F
	5,5	9 ... 12	35	▶	**3RU11 16-1KB0**		1	1 unit	41F
Size S0									
 3RU11 26-..B0									
S0	0,75	1,8 ... 2,5	10	▶	**3RU11 26-1CB0**		1	1 unit	41F
	1,1	2,2 ... 3,2	10	▶	**3RU11 26-1DB0**		1	1 unit	41F
	1,5	2,8 ... 4	16	▶	**3RU11 26-1EB0**		1	1 unit	41F
	1,5	3,5 ... 5	20	▶	**3RU11 26-1FB0**		1	1 unit	41F
	2,2	4,5 ... 6,3	20	▶	**3RU11 26-1GB0**		1	1 unit	41F
	3	5,5 ... 8	25	▶	**3RU11 26-1HB0**		1	1 unit	41F
	4	7 ... 10	35	▶	**3RU11 26-1JB0**		1	1 unit	41F
	5,5	9 ... 12,5	35	▶	**3RU11 26-1KB0**		1	1 unit	41F
	7,5	11 ... 16	40	▶	**3RU11 26-4AB0**		1	1 unit	41F
	7,5	14 ... 20	50	▶	**3RU11 26-4BB0**		1	1 unit	41F
	11	17 ... 22	63	▶	**3RU11 26-4CB0**		1	1 unit	41F
	11	20 ... 25	63	▶	**3RU11 26-4DB0**		1	1 unit	41F
Size S2									
 3RU11 36-..B0									
S2	3	5,5 ... 8	25	▶	**3RU11 36-1HB0**		1	1 unit	41F
	4	7 ... 10	35	▶	**3RU11 36-1JB0**		1	1 unit	41F
	5,5	9 ... 12,5	35	▶	**3RU11 36-1KB0**		1	1 unit	41F
	7,5	11 ... 16	40	▶	**3RU11 36-4AB0**		1	1 unit	41F
	7,5	14 ... 20	50	▶	**3RU11 36-4BB0**		1	1 unit	41F
	11	18 ... 25	63	▶	**3RU11 36-4DB0**		1	1 unit	41F
	15	22 ... 32	80	▶	**3RU11 36-4EB0**		1	1 unit	41F
	18,5	28 ... 40	80	▶	**3RU11 36-4FB0**		1	1 unit	41F
	22	36 ... 45	100	▶	**3RU11 36-4GB0**		1	1 unit	41F
	22	40 ... 50	100	▶	**3RU11 36-4HB0**		1	1 unit	41F
Size S3									
 3RU11 46-..B0									
S3	11	18 ... 25	63	▶	**3RU11 46-4DB0**		1	1 unit	41F
	15	22 ... 32	80	▶	**3RU11 46-4EB0**		1	1 unit	41F
	18,5	28 ... 40	80	▶	**3RU11 46-4FB0**		1	1 unit	41F
	22	36 ... 50	125	▶	**3RU11 46-4HB0**		1	1 unit	41F
	30	45 ... 63	125	▶	**3RU11 46-4JB0**		1	1 unit	41F
	37	57 ... 75	160	▶	**3RU11 46-4KB0**		1	1 unit	41F
	45	70 ... 90	160	▶	**3RU11 46-4LB0**		1	1 unit	41F
	45	80 ... 100[5]	200	▶	**3RU11 46-4MB0**		1	1 unit	41F

1) With the suitable terminal brackets (see "Accessories" on page 7/46), the 3RU11 overload relays for mounting onto contactor can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) 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.

4) Maximum protection by fuse only for overload relays, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

5) For overload relays > 100 A see 3RB2 solid-state overload relays on page 7/50 onwards.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

3RU11 up to 100 A for standard applications

3RU11 thermal overload relays with screw terminals on the auxiliary current side for stand-alone installation[1], 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 of contactor[2]	Rating for induction motor P[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[4]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	A						
Size S00									
 3RU11 16-0AB1									
S00	0,04	0,11 ... 0,16	0,5	►	**3RU11 16-0AB1**		1	1 unit	41F
	0,06	0,14 ... 0,2	1	►	**3RU11 16-0BB1**		1	1 unit	41F
	0,06	0,18 ... 0,25	1	►	**3RU11 16-0CB1**		1	1 unit	41F
	0,09	0,22 ... 0,32	1,6	►	**3RU11 16-0DB1**		1	1 unit	41F
	0,09	0,28 ... 0,4	2	►	**3RU11 16-0EB1**		1	1 unit	41F
	0,12	0,35 ... 0,5	2	►	**3RU11 16-0FB1**		1	1 unit	41F
	0,18	0,45 ... 0,63	2	►	**3RU11 16-0GB1**		1	1 unit	41F
	0,18	0,55 ... 0,8	4	►	**3RU11 16-0HB1**		1	1 unit	41F
	0,25	0,7 ... 1	4	►	**3RU11 16-0JB1**		1	1 unit	41F
	0,37	0,9 ... 1,25	4	►	**3RU11 16-0KB1**		1	1 unit	41F
	0,55	1,1 ... 1,6	6	►	**3RU11 16-1AB1**		1	1 unit	41F
	0,75	1,4 ... 2	6	►	**3RU11 16-1BB1**		1	1 unit	41F
	0,75	1,8 ... 2,5	10	►	**3RU11 16-1CB1**		1	1 unit	41F
	1,1	2,2 ... 3,2	10	►	**3RU11 16-1DB1**		1	1 unit	41F
	1,5	2,8 ... 4	16	►	**3RU11 16-1EB1**		1	1 unit	41F
	1,5	3,5 ... 5	20	►	**3RU11 16-1FB1**		1	1 unit	41F
	2,2	4,5 ... 6,3	20	►	**3RU11 16-1GB1**		1	1 unit	41F
	3	5,5 ... 8	25	►	**3RU11 16-1HB1**		1	1 unit	41F
	4	7 ... 10	35	►	**3RU11 16-1JB1**		1	1 unit	41F
	5,5	9 ... 12	35	►	**3RU11 16-1KB1**		1	1 unit	41F
Size S0									
 3RU11 16-4AB1									
S0	7,5	11 ... 16	40	►	**3RU11 26-4AB1**		1	1 unit	41F
	7,5	14 ... 20	50	►	**3RU11 26-4BB1**		1	1 unit	41F
	11	17 ... 22	63	►	**3RU11 26-4CB1**		1	1 unit	41F
	11	20 ... 25	63	►	**3RU11 26-4DB1**		1	1 unit	41F
Size S2									
 3RU11 36-4EB1									
S2	15	22 ... 32	80	►	**3RU11 36-4EB1**		1	1 unit	41F
	18,5	28 ... 40	80	►	**3RU11 36-4FB1**		1	1 unit	41F
	22	36 ... 45	100	►	**3RU11 36-4GB1**		1	1 unit	41F
	22	40 ... 50	100	►	**3RU11 36-4HB1**		1	1 unit	41F
Size S3									
 3RU11 46-4JB1									
S3	30	45 ... 63	125	►	**3RU11 46-4JB1**		1	1 unit	41F
	37	57 ... 75	160	►	**3RU11 46-4KB1**		1	1 unit	41F
	45	70 ... 90	160	►	**3RU11 46-4LB1**		1	1 unit	41F
	45	80 ... 100[5]	200	►	**3RU11 46-4MB1**		1	1 unit	41F

1) Sizes S00 to S3 for screw and snap-on mounting onto TH 35 standard mounting rails, size S3 also for TH 75 standard mounting rails.

2) Observe maximum rated operational current of the devices.

3) 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.

4) Maximum protection by fuse only for overload relays, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

5) For overload relays > 100 A see 3RB2 solid-state overload relays on page 7/50 onwards.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

3RU11 thermal overload relays with spring-type terminals for mounting onto contactor[1], 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 of contactor[2]	Rating for induction motor P[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[4]	DT	Spring-type terminals (on auxiliary current side) Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
		kW	A	A						
Size S00 for stand-alone installation[5][6]										
 3RU11 16-..C1	S00	0,04	0,11 ... 0,16	0,5	B	**3RU11 16-0AC1**		1	1 unit	41F
		0,06	0,14 ... 0,2	1	B	**3RU11 16-0BC1**		1	1 unit	41F
		0,06	0,18 ... 0,25	1	B	**3RU11 16-0CC1**		1	1 unit	41F
		0,09	0,22 ... 0,32	1,6	B	**3RU11 16-0DC1**		1	1 unit	41F
		0,09	0,28 ... 0,4	2	B	**3RU11 16-0EC1**		1	1 unit	41F
		0,12	0,35 ... 0,5	2	B	**3RU11 16-0FC1**		1	1 unit	41F
		0,18	0,45 ... 0,63	2	▶	**3RU11 16-0GC1**		1	1 unit	41F
		0,18	0,55 ... 0,8	4	▶	**3RU11 16-0HC1**		1	1 unit	41F
		0,25	0,7 ... 1	4	▶	**3RU11 16-0JC1**		1	1 unit	41F
		0,37	0,9 ... 1,25	4	▶	**3RU11 16-0KC1**		1	1 unit	41F
		0,55	1,1 ... 1,6	6	▶	**3RU11 16-1AC1**		1	1 unit	41F
		0,75	1,4 ... 2	6	▶	**3RU11 16-1BC1**		1	1 unit	41F
		0,75	1,8 ... 2,5	10	B	**3RU11 16-1CC1**		1	1 unit	41F
		1,1	2,2 ... 3,2	10	▶	**3RU11 16-1DC1**		1	1 unit	41F
		1,5	2,8 ... 4	16	B	**3RU11 16-1EC1**		1	1 unit	41F
		1,5	3,5 ... 5	20	▶	**3RU11 16-1FC1**		1	1 unit	41F
		2,2	4,5 ... 6,3	20	▶	**3RU11 16-1GC1**		1	1 unit	41F
		3	5,5 ... 8	25	▶	**3RU11 16-1HC1**		1	1 unit	41F
		4	7 ... 10	35	▶	**3RU11 16-1JC1**		1	1 unit	41F
		5,5	9 ... 12	35	▶	**3RU11 16-1KC1**		1	1 unit	41F
Size S0[1][7]										
 3RU11 16-..D0	S0	0,75	1,8 ... 2,5	10	B	**3RU11 26-1CD0**		1	1 unit	41F
		1,1	2,2 ... 3,2	10	B	**3RU11 26-1DD0**		1	1 unit	41F
		1,5	2,8 ... 4	16	B	**3RU11 26-1ED0**		1	1 unit	41F
		1,5	3,5 ... 5	20	B	**3RU11 26-1FD0**		1	1 unit	41F
		2,2	4,5 ... 6,3	20	B	**3RU11 26-1GD0**		1	1 unit	41F
		3	5,5 ... 8	25	B	**3RU11 26-1HD0**		1	1 unit	41F
		4	7 ... 10	35	B	**3RU11 26-1JD0**		1	1 unit	41F
		5,5	9 ... 12,5	35	B	**3RU11 26-1KD0**		1	1 unit	41F
		7,5	11 ... 16	40	▶	**3RU11 26-4AD0**		1	1 unit	41F
		7,5	14 ... 20	50	▶	**3RU11 26-4BD0**		1	1 unit	41F
		11	17 ... 22	63	▶	**3RU11 26-4CD0**		1	1 unit	41F
		11	20 ... 25	63	▶	**3RU11 26-4DD0**		1	1 unit	41F
Size S2[1][7]										
 3RU11 36-..D0	S2	3	5,5 ... 8	25	B	**3RU11 36-1HD0**		1	1 unit	41F
		4	7 ... 10	35	B	**3RU11 36-1JD0**		1	1 unit	41F
		5,5	9 ... 12,5	35	B	**3RU11 36-1KD0**		1	1 unit	41F
		7,5	11 ... 16	40	B	**3RU11 36-4AD0**		1	1 unit	41F
		7,5	14 ... 20	50	B	**3RU11 36-4BD0**		1	1 unit	41F
		11	18 ... 25	63	B	**3RU11 36-4DD0**		1	1 unit	41F
		15	22 ... 32	80	▶	**3RU11 36-4ED0**		1	1 unit	41F
		18,5	28 ... 40	80	▶	**3RU11 36-4FD0**		1	1 unit	41F
		22	36 ... 45	100	▶	**3RU11 36-4GD0**		1	1 unit	41F
		22	40 ... 50	100	▶	**3RU11 36-4HD0**		1	1 unit	41F
Size S3[1][7]										
 3RU11 46-..D0	S3	11	18 ... 25	63	B	**3RU11 46-4DD0**		1	1 unit	41F
		15	22 ... 32	80	B	**3RU11 46-4ED0**		1	1 unit	41F
		18,5	28 ... 40	80	B	**3RU11 46-4FD0**		1	1 unit	41F
		22	36 ... 50	125	B	**3RU11 46-4HD0**		1	1 unit	41F
		30	45 ... 63	125	▶	**3RU11 46-4JD0**		1	1 unit	41F
		37	57 ... 75	160	▶	**3RU11 46-4KD0**		1	1 unit	41F
		45	70 ... 90	160	▶	**3RU11 46-4LD0**		1	1 unit	41F
		45	80 ... 100	200	▶	**3RU11 46-4MD0**		1	1 unit	41F

1) With the suitable terminal brackets (see "Accessories" on page 7/46), the 3RU11 overload relays for mounting onto contactor can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) 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.

4) Maximum protection by fuse only for overload relays, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

5) Size S00 for screw and snap-on mounting onto TH 35 standard mounting rail.

6) Auxiliary and main conductor connections with spring-type terminals.

7) Auxiliary conductor connections with spring-type terminals and main conductor connections with screw terminals.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Accessories

Overview

Overload relays for standard applications

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

- Terminal bracket for stand-alone installation of overload relay sizes S00 to 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

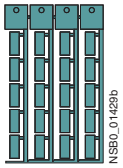
Selection and ordering data

	Version	Size	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Terminal brackets for stand-alone installation								
 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	S00	►	**3RU19 16-3AA01**		1	1 unit	41F
		S0	►	**3RU19 26-3AA01**		1	1 unit	41F
		S2	►	**3RU19 36-3AA01**		1	1 unit	41F
		S3	►	**3RU19 46-3AA01**		1	1 unit	41F
Mechanical RESET								
 3RU19 00-1A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S00 ...S3	►	**3RU19 00-1A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S00 ...S3	B	**3SB30 00-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between the pushbutton and the unlatching button of the relay	S00 ...S3	A	**3SX1 335**		1	1 unit	41J
Cable releases with holder for RESET								
 3RU19 00-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm							
	• Length 400 mm	S00 ...S3	►	**3RU19 00-1B**		1	1 unit	41F
	• Length 600 mm	S00 ...S3	►	**3RU19 00-1C**		1	1 unit	41F
Modules for remote RESET, electrical								
 3RU19 00-2A.71	Operating range 0.85 ... 1.1 × U_s, power consumption 80 VA AC, 70 W DC, ON period 0.2 ... 4 s, switching frequency 60/h							
	• 24 ... 30 V AC/DC	S00 ...S3	►	**3RU19 00-2AB71**		1	1 unit	41F
	• 110 ... 127 V AC/DC	S00 ...S3	►	**3RU19 00-2AF71**		1	1 unit	41F
	• 220 ... 250 V AC/DC	S00 ...S3	►	**3RU19 00-2AM71**		1	1 unit	41F
Terminal covers								
	Covers for cable lugs and busbar connections							
	• Length 55 mm	S3	►	**3RT19 46-4EA1**		1	1 unit	41B
	Covers for box terminals							
	• Length 20.6 mm	S2	►	**3RT19 36-4EA2**		1	1 unit	41B
	• Length 20.8 mm	S3	►	**3RT19 46-4EA2**		1	1 unit	41B

7

* You can order this quantity or a multiple thereof.
Illustrations are approximate

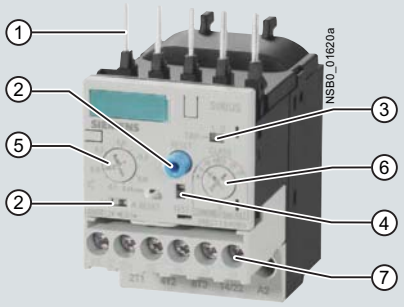
General accessories

	Version	Size	Color	For overload relays	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
 8WA2 803	**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	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RU1	D	**3RT19 00-1SB20**		100	340 units	41B
	Inscription labels for sticking[1] for SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RU1	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm	Zinc yellow		C	**3RT19 00-1SD60**		100	3 060 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Catalog IC 10 · 2012, Chapter 16, "Appendix" → "External Partners").

3RB20, 3RB21 up to 630 A for standard applications

Overview



1. Connection for mounting onto contactors:
   Optimally adapted in electrical, mechanical and design terms to the contactors and soft starters. Connecting pins can be used for direct mounting of the overload relays. Stand-alone installation is possible as an alternative (in some cases in conjunction with a stand-alone installation module).
2. Selector switch for manual/automatic RESET and RESET button:
   With the slide switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. On the 3RB21 a solid-state remote RESET is integrated.
3. Switch position indicator and TEST function of the wiring:
   Indicates a trip and enables the wiring test.
4. Solid-state test (device test):
   Enables a test of all important device components and functions.
5. Motor current setting:
   Setting the device to the rated motor current is easy with the large rotary knob.
6. Trip class setting/internal ground-fault detection (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.
7. Connecting terminals (removable joint 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.

SIRIUS 3RB21 13-4RB0 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 for Protection Equipment – 3RU1, 3RB2 Overload Relays") 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 rise in current 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 www.siemens.com/sirius/support → "Characteristic Curves").

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 for Protection Equipment – 3RU1, 3RB2 Overload Relays").

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.

"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 EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e"); see www.siemens.com/sirius/atex .

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 06 ATEX 3001.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□ □ □	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**0**	**3**	**6**	**–**	**1**	**Q**	**B**	**0**

Note:

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

For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

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 7/37 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 power consumption, and optimize plant availability and maintenance management.

Application

The 3RB20 and 3RB21 solid-state overload relays have been designed for the protection of induction 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	Derating factor for the upper set value for **stand-alone installation** at ambient temperature	
		+50 °C	+60 °C
3RB20 56, 3RB21 56	50 ... 200 A	100 %	100 %
3RB20 66, 3RB21 66	55 ... 250 A	100 %	100 %
3RB20 66, 3RB21 66	160 ... 630 A	100 %	90 %

Type	Setting range	Derating factor for the upper set value for **mounting onto contactor** at ambient temperature	
		+50 °C	+60 °C
3RB20 56, 3RB21 56	50 ... 200 A	100 %	70 %
3RB20 66, 3RB21 66	55 ... 250 A	100 %	70 %
3RB20 66, 3RB21 66	160 ... 630 A	100 %	70 %

3RB20, 3RB21 up to 630 A for standard applications

Selection and ordering data

3RB20 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], 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


3RB20 16-1RB0


3RB20 26-1QD0


3RB20 36-1UB0


3RB20 46-1ED0


3RB20 56-1FW2


3RB20 66-1MF2

Size of contactor[4)]	Rating for induction motor P[5)]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[6)]	DT	**Screw terminals** (on auxiliary current side)	DT	**Spring-type terminals** (on auxiliary current side)
					Order No. / Price € per PU		Order No. / Price € per PU
	kW	A	A				
Size S00[1)]							
S00	0,04 … 0,09	0,1 … 0,4	1	►	**3RB20 16-1RB0**	►	**3RB20 16-1RD0**
	0,12 … 0,37	0,32 … 1,25	2	►	**3RB20 16-1NB0**	A	**3RB20 16-1ND0**
	0,55 … 1,5	1 … 4	10	►	**3RB20 16-1PB0**	A	**3RB20 16-1PD0**
	1,1 … 5,5	3 … 12	20	►	**3RB20 16-1SB0**	A	**3RB20 16-1SD0**
Size S0[1)]							
S0	0,04 … 0,09	0,1 … 0,4	1	►	**3RB20 26-1RB0**	►	**3RB20 26-1RD0**
	0,12 … 0,37	0,32 … 1,25	2	►	**3RB20 26-1NB0**	►	**3RB20 26-1ND0**
	0,55 … 1,5	1 … 4	10	►	**3RB20 26-1PB0**	►	**3RB20 26-1PD0**
	1,1 … 5,5	3 … 12	20	►	**3RB20 26-1SB0**	A	**3RB20 26-1SD0**
	3 … 11	6 … 25	35	►	**3RB20 26-1QB0**	A	**3RB20 26-1QD0**
Size S2[1)3)7)]							
S2	3 … 11	6 … 25	63	►	**3RB20 36-1QB0**	►	**3RB20 36-1QD0**
				►	**3RB20 36-1QW1**	►	**3RB20 36-1QX1**
	7,5 … 22	12,5 … 50	80	►	**3RB20 36-1UB0**	A	**3RB20 36-1UD0**
				►	**3RB20 36-1UW1**	►	**3RB20 36-1UX1**
Size S3[1)3)7)]							
S3	7,5 … 22	12,5 … 50	160	►	**3RB20 46-1UB0**	A	**3RB20 46-1UD0**
	11 … 45	25 … 100	315	►	**3RB20 46-1EB0**	A	**3RB20 46-1ED0**
				►	**3RB20 46-1EW1**	►	**3RB20 46-1EX1**
Size S6[2)7)]							
S6 with busbar connection	22 … 90	50 … 200	315	►	**3RB20 56-1FC2**	A	**3RB20 56-1FF2**
For mounting to S6 contactors with box terminals				►	**3RB20 56-1FW2**	►	**3RB20 56-1FX2**
Size S10/S12[2)]							
S10/S12 and size 14 (3TF68/3TF69)	22 … 110	55 … 250	400	►	**3RB20 66-1GC2**	►	**3RB20 66-1GF2**
	90 … 450	160 … 630	800	►	**3RB20 66-1MC2**	►	**3RB20 66-1MF2**

1) The relays with an Order No. ending with **"0"** are designed for mounting onto contactor. With the matching terminal brackets (see "Accessories", page 7/53) the sizes S00 and S0 can also be installed as stand-alone units.

2) The relays with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) 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 relays, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

7) The relays with an Order No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

3RB20 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], 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


3RB20 16-2RB0


3RB20 26-2QD0


3RB20 36-2UB0


3RB20 46-2ED0


3RB20 56-2FW2


3RB20 66-2MF2

Size of contactor[4)]	Rating for induction motor P[5)]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[6)]	DT	**Screw terminals** (on auxiliary current side)		DT	**Spring-type terminals** (on auxiliary current side)	
					Order No.	Price € per PU		Order No.	Price € per PU
	kW	A	A						
Size S00[1)]									
S00	0,04 … 0,09	0,1 … 0,4	1	►	**3RB20 16-2RB0**		►	**3RB20 16-2RD0**	
	0,12 … 0,37	0,32 … 1,25	2	►	**3RB20 16-2NB0**		►	**3RB20 16-2ND0**	
	0,55 … 1,5	1 … 4	10	►	**3RB20 16-2PB0**		►	**3RB20 16-2PD0**	
	1,1 … 5,5	3 … 12	20	►	**3RB20 16-2SB0**		►	**3RB20 16-2SD0**	
Size S0[1)]									
S0	0,04 … 0,09	0,1 … 0,4	1	►	**3RB20 26-2RB0**		►	**3RB20 26-2RD0**	
	0,12 … 0,37	0,32 … 1,25	2	►	**3RB20 26-2NB0**		►	**3RB20 26-2ND0**	
	0,55 … 1,5	1 … 4	10	►	**3RB20 26-2PB0**		►	**3RB20 26-2PD0**	
	1,1 … 5,5	3 … 12	20	►	**3RB20 26-2SB0**		A	**3RB20 26-2SD0**	
	3 … 11	6 … 25	35		**3RB20 26-2QB0**		A	**3RB20 26-2QD0**	
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	►	**3RB20 36-2QB0**		►	**3RB20 36-2QD0**	
				►	**3RB20 36-2QW1**		►	**3RB20 36-2QX1**	
	7,5 … 22	12,5 … 50	80	►	**3RB20 36-2UB0**		A	**3RB20 36-2UD0**	
				►	**3RB20 36-2UW1**		►	**3RB20 36-2UX1**	
Size S3[1)3)7)]									
S3	7,5 … 22	12,5 … 50	160	►	**3RB20 46-2UB0**		A	**3RB20 46-2UD0**	
	11 … 45	25 … 100	315	►	**3RB20 46-2EB0**		A	**3RB20 46-2ED0**	
				►	**3RB20 46-2EW1**		►	**3RB20 46-2EX1**	
Size S6[2)7)]									
S6 with busbar connections	22 … 90	50 … 200	315	►	**3RB20 56-2FC2**		A	**3RB20 56-2FF2**	
For mounting to S6 contactors with box terminals				►	**3RB20 56-2FW2**		►	**3RB20 56-2FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/3TF69)	22 … 110	55 … 250	400	►	**3RB20 66-2GC2**		►	**3RB20 66-2GF2**	
	90 … 450	160 … 630	800	►	**3RB20 66-2MC2**		►	**3RB20 66-2MF2**	

1) The relays with an Order No. ending with **"0"** are designed for mounting onto contactor. With the matching terminal brackets (see "Accessories", page 7/53) the sizes S00 and S0 can also be installed as stand-alone units.

2) The relays with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) 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 relays, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

7) The relays with an Order No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

3RB20, 3RB21 up to 630 A for standard applications

3RB21 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 5, 10, 20 and 30 adjustable

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal ground-fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring

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


3RB21 13-4RB0


3RB21 23-4QD0


3RB21 33-4UB0


3RB21 43-4ED0


3RB21 53-4FX2


3RB21 63-4MC2

Size of contactor[4)]	Rating for induction motor P[5)]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[6)]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price € per PU	DT	**Spring-type terminals** (on auxiliary current side) Order No.	Price € per PU
	kW	A	A						
Size S00[1)]									
S00	0,04 … 0,09	0,1 … 0,4	1	►	**3RB21 13-4RB0**		►	**3RB21 13-4RD0**	
	0,12 … 0,37	0,32 … 1,25	2	►	**3RB21 13-4NB0**		►	**3RB21 13-4ND0**	
	0,55 … 1,5	1 … 4	10	►	**3RB21 13-4PB0**		►	**3RB21 13-4PD0**	
	1,1 … 5,5	3 … 12	20	►	**3RB21 13-4SB0**		►	**3RB21 13-4SD0**	
Size S0[1)]									
S0	0,04 … 0,09	0,1 … 0,4	1	►	**3RB21 23-4RB0**		►	**3RB21 23-4RD0**	
	0,12 … 0,37	0,32 … 1,25	2	►	**3RB21 23-4NB0**		►	**3RB21 23-4ND0**	
	0,55 … 1,5	1 … 4	10	►	**3RB21 23-4PB0**		►	**3RB21 23-4PD0**	
	1,1 … 5,5	3 … 12	20	►	**3RB21 23-4SB0**		A	**3RB21 23-4SD0**	
	3 … 11	6 … 25	35	►	**3RB21 23-4QB0**		A	**3RB21 23-4QD0**	
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	►	**3RB21 33-4QB0**		►	**3RB21 33-4QD0**	
				►	**3RB21 33-4QW1**		►	**3RB21 33-4QX1**	
	7,5 … 22	12,5 … 50	80	►	**3RB21 33-4UB0**		►	**3RB21 33-4UD0**	
				►	**3RB21 33-4UW1**		►	**3RB21 33-4UX1**	
Size S3[1)3)7)]									
S3	7,5 … 22	12,5 … 50	160	►	**3RB21 43-4UB0**		►	**3RB21 43-4UD0**	
	11 … 45	25 … 100	315	►	**3RB21 43-4EB0**		►	**3RB21 43-4ED0**	
				►	**3RB21 43-4EW1**		►	**3RB21 43-4EX1**	
Size S6[2)7)]									
S6 with busbar connections	22 … 90	50 … 200	315	►	**3RB21 53-4FC2**		►	**3RB21 53-4FF2**	
For mounting to S6 contactors with box terminals				►	**3RB21 53-4FW2**		►	**3RB21 53-4FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/3TF69)	22 … 110	55 … 250	400	►	**3RB21 63-4GC2**		►	**3RB21 63-4GF2**	
	90 … 450	160 … 630	800	►	**3RB21 63-4MC2**		►	**3RB21 63-4MF2**	

1) The relays with an Order No. ending with **"0"** are designed for mounting onto contactor. With the matching terminal brackets (see "Accessories", page 7/53) the sizes S00 and S0 can also be installed as stand-alone units.

2) The relays with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) 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 relays, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

7) The relays with an Order No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Terminal brackets for stand-alone installation								
 3RB29 .3-0AA1	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	►	**3RB29 13-0AA1**		1	1 unit	41F
		S0	►	**3RB29 23-0AA1**		1	1 unit	41F
Mechanical RESET								
 3RU19 00-1A with pushbutton and extension plunger	**Resetting plunger, holders and formers**	S00 ... S10/S12	►	**3RU19 00-1A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S00 ... S10/S12	B	**3SB30 00-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between a pushbutton and the unlatching button of the relay	S00 ... S10/S12	A	**3SX1 335**		1	1 unit	41J
Cable releases with holder for RESET								
 3RU19 00-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm	S00 ... S10/S12						
	• Length 400 mm		►	**3RU19 00-1B**		1	1 unit	41F
	• Length 600 mm		►	**3RU19 00-1C**		1	1 unit	41F

7

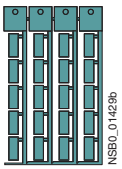
*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Accessories for 3RB20, 3RB21

	Version	Size	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Sealable covers								
 3RB29 84-0	For covering the setting knobs	S00 ... S10/S12	►	**3RB29 84-0**		1	10 units	41F
Terminal covers								
 3RT19 46-4EA1	**Covers for cable lugs and busbar connections**							
	• Length 55 mm	S3	►	**3RT19 46-4EA1**		1	1 unit	41B
	• Length 100 mm	S6	►	**3RT19 56-4EA1**		1	1 unit	41B
	• Length 120 mm	S10/S12	►	**3RT19 66-4EA1**		1	1 unit	41B
 3RT19 36-4EA2	**Covers for box terminals**							
	• Length 20.6 mm	S2	►	**3RT19 36-4EA2**		1	1 unit	41B
	• Length 20.8 mm	S3	►	**3RT19 46-4EA2**		1	1 unit	41B
	• Length 25 mm	S6	►	**3RT19 56-4EA2**		1	1 unit	41B
	• Length 30 mm	S10/S12	►	**3RT19 66-4EA2**		1	1 unit	41B
The figures show mounting on the contactor.	**Covers for screw terminals** between contactor and overload relay, without box terminals (1 unit required per combination)	S6	►	**3RT19 56-4EA3**		1	1 unit	41B
		S10/S12	►	**3RT19 66-4EA3**		1	1 unit	41B
Box terminal blocks								
 3RT19 5.-4G	For round and ribbon cables							
	• Up to 70 mm^2	S6[1]	►	**3RT19 55-4G**		1	1 unit	41B
	• Up to 120 mm^2	S6	►	**3RT19 56-4G**		1	1 unit	41B
	• Up to 240 mm^2	S10/S12	►	**3RT19 66-4G**		1	1 unit	41B
	Technical specifications for conductor cross-sections see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".							

[1] In the scope of supply for 3RT10 54-1 contactors (55 kW).

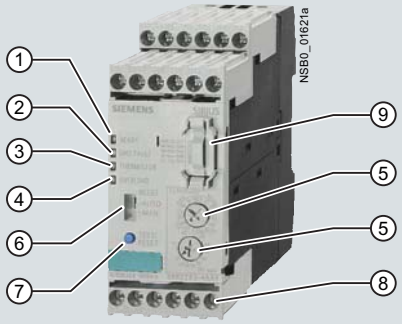
General accessories

	Version	Size	Color	For overload relays	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	**3RT19 00-1SB20**		100	340 units	41B
	Inscription labels for sticking[1] For SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RB2	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm	Zinc yellow		C	**3RT19 00-1SD60**		100	3 060 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Catalog IC 10 · 2012, Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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 3RB29 85 function expansion module:
Enables more functions to be added, e. g. internal ground-fault detection and/or an analog output with corresponding signals.

SIRIUS 3RB22 and 3RB23 evaluation modules

The 3RB22 and 3RB23 solid-state overload relays up to 630 A (up to 820 A possible with a series transformer) have a modular structure and consist of an evaluation unit, a current measuring module and a connecting cable. The overload relays type 3RB22 (with monostable auxiliary contacts) and type 3RB23 (with bistable auxiliary contacts) are supplied from an external power supply.

They have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays") 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 7/60) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support → "Characteristic Curves"). The "tripped" status is signaled by means of a continuous red "OVERLOAD" LED.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the current limit has been exceeded. This alarm is also issued as a signal through auxiliary contacts for the 3RB22 and 3RB23 overload relays.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB22/3RB23 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 overtemperature, 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 also 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 monitoring in conjunction with a function expansion module (for details see "Selection and Ordering Data", not possible in conjunction with contactor assembly for Wye-Delta starting). In the event of a ground fault the 3RB22/3RB23 relays trip instantaneously. The "tripped" status is signaled by means of a 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 for Protection Equipment – 3RU1, 3RB2 Overload Relays"). 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 mA to 20 mA for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

With an additional AS-Interface analog module, the current values can also be transferred over the AS-i bus system.

The devices are manufactured in accordance with environmental guidelines and contain environmentally-friendly and reusable materials.

They comply with all important worldwide standards and approvals.

Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" in accordance with ATEX Directive 94/9/EC

The 3RB22 (monostable) solid-state overload relays protect motors of types of protection EEx e and EEx d in potentially explosive areas quickly and reliably.

They comply with the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d"); see www.siemens.com/sirius/atex .

EC prototype test certificate for Group II, Category (2) G/D exists. It has the number PTB 05 ATEX 3022.

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

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□ □ □	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**2**	**8**	**3**	**–**	**4**	**A**	**A**	**1**

Note:

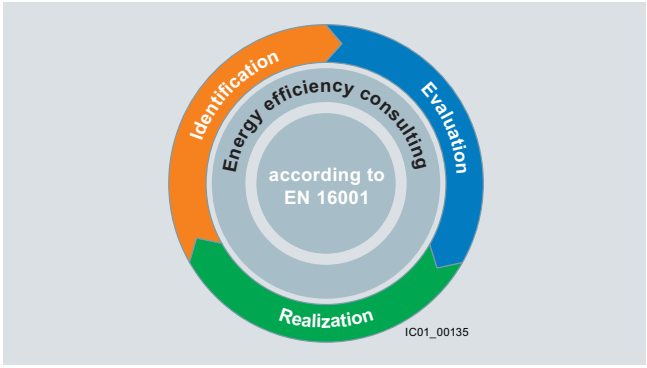
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quote 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 7/37 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for efficient energy management in the industry – a process that is used to optimize the energy requirements. We divide operational energy management into the three phases: identification, evaluation and implementation, and support you with suitable hardware and software solutions in each phase of the process.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.de/sirius/energiesparen).

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 power 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 ("Schematics" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays").

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.

Selection and ordering data

3RB22 and 3RB23 solid-state overload relays (evaluation modules) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable

Type	3RB22 83-4A.1, 3RB23 83-4A.1
Features and technical specifications	
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	✓
4 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

3RB22 83-4AA1,
3RB23 83-4AA1

3RB22 83-4AC1,
3RB23 83-4AC1

Size of contactor	Version	DT	Screw terminals Order No.	Price € per PU	DT	Spring-type terminals Order No.	Price € per PU
Evaluation modules							
S00 ... S12	Monostable	▶	**3RB22 83-4AA1**		▶	**3RB22 83-4AC1**	
	Bistable	▶	**3RB23 83-4AA1**		▶	**3RB23 83-4AC1**	

Note:

Overload relays overview – matching contactors see page 7/40.

Current measuring modules and related connecting cables see page 7/60, general accessories see page 7/61.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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

Functions of the 3RB22 and 3RB23 evaluation modules in combination with the 3RB29 85 function expansion modules.

Evaluation modules	With function expansion module	Basic functions	Inputs		
			A1/A2	T1/T2	Y1/Y2
3RB22 83-4AA1 3RB22 83-4AC1 3RB23 83-4AA1 3RB23 83-4AC1	--	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
	3RB29 85-2CA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2CB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground-fault signal	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2AA0	Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2AA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2AB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground-fault signal, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET

Evaluation modules	With function expansion module	Outputs				
		I (–) / I (+)	95/96 NC	97/98 NO	05/06 NC	07/08 NO
3RB22 83-4AA1 3RB22 83-4AC1 3RB23 83-4AA1 3RB23 83-4AC1	--	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2CA1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2CB1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"
	3RB29 85-2AA0	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2AA1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2AB1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"

Function expansion modules for 3RB22 and 3RB23 overload relays (evaluation modules)

	Size of contactor	Version	For overload relays	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Sizes S00 to S12									
		For plugging into evaluation module (1 unit)							
 3RB29 85-2..1	S00 ... S12	**Analog Basic 1 modules**[1] Analog output DC 4 ... 20 mA, with overload warning	3RB22, 3RB23	►	**3RB29 85-2AA0**		1	1 unit	41F
		Analog Basic 1 GF modules[1)2)] Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload warning	3RB22, 3RB23	►	**3RB29 85-2AA1**		1	1 unit	41F
		Analog Basic 2 GF modules[1)2)] Analog output DC 4 ... 20 mA, with internal ground-fault detection and ground-fault signal	3RB22, 3RB23	►	**3RB29 85-2AB1**		1	1 unit	41F
		Basic 1 GF modules[2)] with internal ground-fault detection and overload warning	3RB22, 3RB23	►	**3RB29 85-2CA1**		1	1 unit	41F
		Basic 2 GF modules[2)] with internal ground-fault detection and ground-fault signaling	3RB22, 3RB23	►	**3RB29 85-2CB1**		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.

1) 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.

2) The following information on ground-fault protection refers to sinusoidal residual currents at 50/60 Hz:
- with a motor current of between 0.3 and 2 times the set current I_e the unit will trip at a ground-fault current equal to 30 % of the 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 current setting.
- The response delay amounts to between 0.5 s and 1 s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Current measuring modules for 3RB22, 3RB23

Overview

The current measuring modules are designed as system components for connecting to evaluation units 3RB22 and 3RB23. Using these evaluation modules 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 modules. The larger evaluation modules are installed directly on the contactor or as standalond units.

Selection and ordering data

Current measuring modules for mounting onto contactor[1] and stand-alone installation[1)2)] (essential accessories)

3RB29 06-2.G1

3RB29 06-2JG1

3RB29 56-2TG2

3RB29 66-2WH2

Size of contactor[3]	Rating for induction motor P[4]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", gG operational class[5]	For overload relays	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	A							
Sizes S00/S0[2)6)]										
S00/S0	0,09 … 1,1	0,3 … 3	20	3RB22, 3RB23	►	**3RB29 06-2BG1**		1	1 unit	41G
	1,1 … 11	2,4 … 25	63		►	**3RB29 06-2DG1**		1	1 unit	41G
Sizes S2/S3[2)6)]										
S2/S3	5,5 … 45	10 … 100	315	3RB22, 3RB23	►	**3RB29 06-2JG1**		1	1 unit	41G
Size S6[1)6)]										
S6 with busbar connection	11 … 90	20 … 200	315	3RB22, 3RB23	►	**3RB29 56-2TH2**		1	1 unit	41G
For mounting to S6 contactors with box terminals				3RB22, 3RB23	►	**3RB29 56-2TG2**		1	1 unit	41G
Sizes S10/S12[1)]										
S10/S12 and size 14 (3TF68/ 3TF69)	37 … 450	63 … 630	800	3RB22, 3RB23	►	**3RB29 66-2WH2**		1	1 unit	41G

Note:

The connecting cable between the current measuring module and the evaluation module is not included in the scope of supply; please order separately.

1) The current measuring modules with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

2) The current measuring modules with an Order No. ending with **"1"** are designed for stand-alone installation.

3) Observe maximum rated operational current of the devices.

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

5) Maximum protection by fuse only for overload relays, type of coordination "2". "Fuse Values in Connection with Contactors" see Configuration Manual "SIRIUS Configuration – Selection Data for Fuseless Load Feeders".

Accessories

	Size of contactor	Version	For current measuring modules	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Connecting cables (necessary accessories)									
 3RB29 87-2.	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)	3RB29	►	**3RB29 87-2B**		1	1 unit	41F
	S00 ... S12	• Length 0.5 m	3RB29	►	**3RB29 87-2D**		1	1 unit	41F

Additional general accessories see pages 7/61 and 7/62.

Overview

Overload relays for High-Feature applications

The following optional accessories are available for the 3RB22 and 3RB23 solid-state overload relays:

- Sealable covers
- 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, 3RB23 evaluation modules and 3RB29 06 current measuring modules

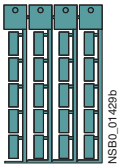
Selection and ordering data

General accessories

	Version	Size	For overload relays	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Sealable covers for evaluation modules									
 3RB29 84-2	For covering the setting knobs	--	3RB22, 3RB23	▶	**3RB29 84-2**		1	10 units	41F
Terminal covers for current measuring modules									
	Covers for cable lugs and busbar connections								
	• Length 100 mm	S6	3RB29 56	▶	**3RT19 56-4EA1**		1	1 unit	41B
	• Length 120 mm	S10/S12	3RB29 66	▶	**3RT19 66-4EA1**		1	1 unit	41B
	Covers for box terminals								
	• Length 25 mm	S6	3RB29 56	▶	**3RT19 56-4EA2**		1	1 unit	41B
	• Length 30 mm	S10/S12	3RB29 66	▶	**3RT19 66-4EA2**		1	1 unit	41B
	Covers for screw terminals between contactor and overload relay, without box terminals (1 unit required per combination)	S6	3RB29 56	▶	**3RT19 56-4EA3**		1	1 unit	41B
		S10/S12	3RB29 66	▶	**3RT19 66-4EA3**		1	1 unit	41B
Box terminal blocks for current measuring modules									
 3RT19 5.-4G	For round and ribbon cables								
	• Up to 70 mm^2	S6[1)]	3RB29 56	▶	**3RT19 55-4G**		1	1 unit	41B
	• Up to 120 mm^2	S6	3RB29 56	▶	**3RT19 56-4G**		1	1 unit	41B
	• Up to 240 mm^2	S10/S12	3RB29 66	▶	**3RT19 66-4G**		1	1 unit	41B
	Technical specifications for conductor cross-sections see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".								
Push-in lugs for evaluation modules and current measuring modules									
 3RP19 03	for screw fixing the evaluation modules	--	3RB22, 3RB23	B	**3RP19 03**		1	10 units	41H
 3RB19 00-0B	for screw fixing the current measuring modules (2 units per module)	S00 ...S3	3RB29 06	A	**3RB19 00-0B**		100	10 units	41F

[1)] In the scope of supply for 3RT10 54-1 contactors (55 kW).

Accessories for 3RB22, 3RB23

	Version	Size	Color	For overload relays	DT	Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	**Spring-type terminals** **3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	**3RT19 00-1SB20**		100	340 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Catalog IC 10 · 2012, Chapter 16, "Appendix" → "External Partners").

7