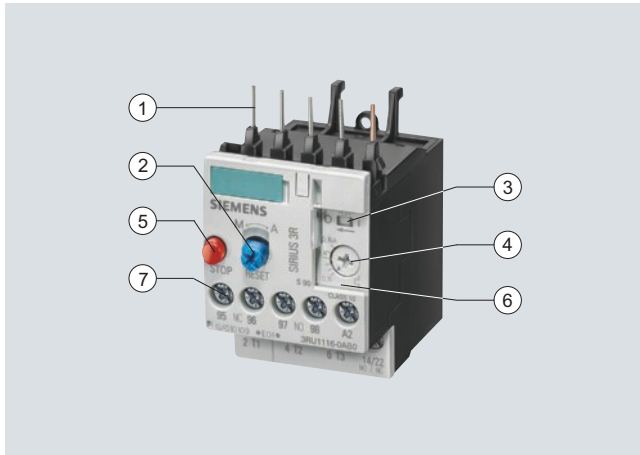


Overload Relays

SIRIUS 3RU1 Thermal Overload Relays

3RU11 for standard applications

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.

The 3RU11 thermal overload relays up to 100 A have been designed for inverse-time delayed protection of loads with normal starting (for "Function" see note on [Technical Information on page 5/1](#)) 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 set current I_{tr} and is stored in the form of a long-term stable tripping characteristic (for "Characteristic Curves" see the note on [Technical Information on page 5/1](#)).

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 note on [Technical Information on page 5/1](#)).

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 [Chapter 20 "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for explosion-protected areas \(ATEX Explosion Protection\)"](#).

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

Benefits

The most important features and benefits of the 3RU11 thermal overload relays are listed in the overview table (see ["General Data" on page 5/42](#)).

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 °C to $+60\text{ °C}$. For temperatures from $+60\text{ °C}$ to $+80\text{ °C}$ 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

Accessories

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

- For the four overload relay sizes S00 to S3 one terminal bracket each for stand-alone installation
- One mechanical RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One electrical remote RESET module in three voltage variants for all sizes
- Terminal covers

Overload Relays

SIRIUS 3RU1 Thermal Overload Relays

3RU11 for standard applications





Selection and ordering data

3RU11 thermal overload relays with screw terminals on the auxiliary current side for direct mounting¹⁾, 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 con- tactor ²⁾	Rating for induction motor rated value ³⁾	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coord- ination 2, gL/gG opera- tional class ⁴⁾	DT	Screw terminals (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
										Order No.
Size S00										
 3RU11 16-.B0	S00	0.04	0.11 ... 0.16	0.5	▶	3RU11 16-0AB0	1	1 unit	101	0.150
		0.06	0.14 ... 0.2	1	▶	3RU11 16-0BB0	1	1 unit	101	0.150
		0.06	0.18 ... 0.25	1	▶	3RU11 16-0CB0	1	1 unit	101	0.150
		0.09	0.22 ... 0.32	1.6	▶	3RU11 16-0DB0	1	1 unit	101	0.150
		0.09	0.28 ... 0.4	2	▶	3RU11 16-0EB0	1	1 unit	101	0.150
		0.12	0.35 ... 0.5	2	▶	3RU11 16-0FB0	1	1 unit	101	0.150
		0.18	0.45 ... 0.63	2	▶	3RU11 16-0GB0	1	1 unit	101	0.150
		0.18	0.55 ... 0.8	4	▶	3RU11 16-0HB0	1	1 unit	101	0.150
		0.25	0.7 ... 1	4	▶	3RU11 16-0JB0	1	1 unit	101	0.150
		0.37	0.9 ... 1.25	4	▶	3RU11 16-0KB0	1	1 unit	101	0.150
		0.55	1.1 ... 1.6	6	▶	3RU11 16-1AB0	1	1 unit	101	0.150
		0.75	1.4 ... 2	6	▶	3RU11 16-1BB0	1	1 unit	101	0.150
		0.75	1.8 ... 2.5	10	▶	3RU11 16-1CB0	1	1 unit	101	0.150
		1.1	2.2 ... 3.2	10	▶	3RU11 16-1DB0	1	1 unit	101	0.150
		1.5	2.8 ... 4	16	▶	3RU11 16-1EB0	1	1 unit	101	0.150
		1.5	3.5 ... 5	20	▶	3RU11 16-1FB0	1	1 unit	101	0.150
		2.2	4.5 ... 6.3	20	▶	3RU11 16-1GB0	1	1 unit	101	0.150
		3	5.5 ... 8	25	▶	3RU11 16-1HB0	1	1 unit	101	0.150
		4	7 ... 10	35	▶	3RU11 16-1JB0	1	1 unit	101	0.150
	5.5	9 ... 12	35	▶	3RU11 16-1KB0	1	1 unit	101	0.150	
Size S0										
 3RU11 26-.B0	S0	0.75	1.8 ... 2.5	10	▶	3RU11 26-1CB0	1	1 unit	101	0.190
		1.1	2.2 ... 3.2	10	▶	3RU11 26-1DB0	1	1 unit	101	0.190
		1.5	2.8 ... 4	16	▶	3RU11 26-1EB0	1	1 unit	101	0.190
		1.5	3.5 ... 5	20	▶	3RU11 26-1FB0	1	1 unit	101	0.190
		2.2	4.5 ... 6.3	20	▶	3RU11 26-1GB0	1	1 unit	101	0.190
		3	5.5 ... 8	25	▶	3RU11 26-1HB0	1	1 unit	101	0.190
		4	7 ... 10	35	▶	3RU11 26-1JB0	1	1 unit	101	0.190
		5.5	9 ... 12.5	35	▶	3RU11 26-1KB0	1	1 unit	101	0.190
		7.5	11 ... 16	40	▶	3RU11 26-4AB0	1	1 unit	101	0.190
		7.5	14 ... 20	50	▶	3RU11 26-4BB0	1	1 unit	101	0.190
		11	17 ... 22	63	▶	3RU11 26-4CB0	1	1 unit	101	0.190
		11	20 ... 25	63	▶	3RU11 26-4DB0	1	1 unit	101	0.190
	Size S2									
 3RU11 36-.B0	S2	3	5.5 ... 8	25	▶	3RU11 36-1HB0	1	1 unit	101	0.320
		4	7 ... 10	35	▶	3RU11 36-1JB0	1	1 unit	101	0.320
		5.5	9 ... 12.5	35	▶	3RU11 36-1KB0	1	1 unit	101	0.320
		7.5	11 ... 16	40	▶	3RU11 36-4AB0	1	1 unit	101	0.320
		7.5	14 ... 20	50	▶	3RU11 36-4BB0	1	1 unit	101	0.320
		11	18 ... 25	63	▶	3RU11 36-4DB0	1	1 unit	101	0.320
		15	22 ... 32	80	▶	3RU11 36-4EB0	1	1 unit	101	0.320
		18.5	28 ... 40	80	▶	3RU11 36-4FB0	1	1 unit	101	0.320
		22	36 ... 45	100	▶	3RU11 36-4GB0	1	1 unit	101	0.320
		22	40 ... 50	100	▶	3RU11 36-4HB0	1	1 unit	101	0.320
	Size S3									
 3RU11 46-.B0	S3	11	18 ... 25	63	▶	3RU11 46-4DB0	1	1 unit	101	0.550
		15	22 ... 32	80	▶	3RU11 46-4EB0	1	1 unit	101	0.550
		18.5	28 ... 40	80	▶	3RU11 46-4FB0	1	1 unit	101	0.550
		22	36 ... 50	125	▶	3RU11 46-4HB0	1	1 unit	101	0.550
		30	45 ... 63	125	▶	3RU11 46-4JB0	1	1 unit	101	0.550
		37	57 ... 75	160	▶	3RU11 46-4KB0	1	1 unit	101	0.550
		45	70 ... 90	160	▶	3RU11 46-4LB0	1	1 unit	101	0.550
		45	80 ... 100 ⁵⁾	200	▶	3RU11 46-4MB0	1	1 unit	101	0.550

1) With the suitable terminal brackets (see "Accessories", page 5/50), the 3RU11 overload relays for direct mounting 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 AC 50 Hz 400 V. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination 2.

For fuse values in conjunction with contactors, see "Technical specifications" -> "Short-circuit protection with fuses/motor starter protectors for motor feeders", see note on Technical Information on page 5/1.

5) For overload relays > 100 A, see 3RB2.

* You can order this quantity or a multiple thereof.

Overload Relays

SIRIUS 3RU1 Thermal Overload Relays





3RU11 for standard applications

3RU11 thermal overload relays with screw terminals on the auxiliary current side for stand-alone installation¹⁾, 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 con- tactor ²⁾	Rating for induction motor rated value ³⁾	Current setting of the inverse- time delayed overload release	Short-circuit protection with fuse, type of coord- ination 2, gL/gG opera- tional class ⁴⁾	DT	Screw terminals (on auxiliary current side)		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
					Order No.	Price per PU					
Size S00											
 3RU11 16-0AB1	S00	0.04	0.11 ... 0.16	0.5	B	3RU11 16-0AB1		1	1 unit	101	0.180
		0.06	0.14 ... 0.2	1	B	3RU11 16-0BB1		1	1 unit	101	0.180
		0.06	0.18 ... 0.25	1	B	3RU11 16-0CB1		1	1 unit	101	0.180
		0.09	0.22 ... 0.32	1.6	B	3RU11 16-0DB1		1	1 unit	101	0.180
	0.09	0.28 ... 0.4	2	▶	3RU11 16-0EB1		1	1 unit	101	0.180	
	0.12	0.35 ... 0.5	2	▶	3RU11 16-0FB1		1	1 unit	101	0.180	
	0.18	0.45 ... 0.63	2	▶	3RU11 16-0GB1		1	1 unit	101	0.180	
	0.18	0.55 ... 0.8	4	▶	3RU11 16-0HB1		1	1 unit	101	0.180	
	0.25	0.7 ... 1	4	▶	3RU11 16-0JB1		1	1 unit	101	0.180	
	0.37	0.9 ... 1.25	4	▶	3RU11 16-0KB1		1	1 unit	101	0.180	
	0.55	1.1 ... 1.6	6	▶	3RU11 16-1AB1		1	1 unit	101	0.180	
	0.75	1.4 ... 2	6	▶	3RU11 16-1BB1		1	1 unit	101	0.180	
	0.75	1.8 ... 2.5	10	▶	3RU11 16-1CB1		1	1 unit	101	0.180	
	1.1	2.2 ... 3.2	10	▶	3RU11 16-1DB1		1	1 unit	101	0.180	
	1.5	2.8 ... 4	16	▶	3RU11 16-1EB1		1	1 unit	101	0.180	
	1.5	3.5 ... 5	20	▶	3RU11 16-1FB1		1	1 unit	101	0.180	
2.2	4.5 ... 6.3	20	▶	3RU11 16-1GB1		1	1 unit	101	0.180		
3	5.5 ... 8	25	▶	3RU11 16-1HB1		1	1 unit	101	0.180		
4	7 ... 10	35	▶	3RU11 16-1JB1		1	1 unit	101	0.180		
5.5	9 ... 12	35	▶	3RU11 16-1KB1		1	1 unit	101	0.180		
Size S0											
 3RU11 16-4AB1	S0	7.5	11 ... 16	40	▶	3RU11 26-4AB1		1	1 unit	101	0.240
		7.5	14 ... 20	50	▶	3RU11 26-4BB1		1	1 unit	101	0.240
		11	17 ... 22	63	▶	3RU11 26-4CB1		1	1 unit	101	0.240
		11	20 ... 25	63	▶	3RU11 26-4DB1		1	1 unit	101	0.240
Size S2											
 3RU11 16-4EB1	S2	15	22 ... 32	80	▶	3RU11 36-4EB1		1	1 unit	101	0.480
		18.5	28 ... 40	80	▶	3RU11 36-4FB1		1	1 unit	101	0.480
		22	36 ... 45	100	▶	3RU11 36-4GB1		1	1 unit	101	0.480
		22	40 ... 50	100	▶	3RU11 36-4HB1		1	1 unit	101	0.480
Size S3											
 3RU11 16-4JB1	S3	30	45 ... 63	125	▶	3RU11 46-4JB1		1	1 unit	101	0.810
		37	57 ... 75	160	▶	3RU11 46-4KB1		1	1 unit	101	0.810
		45	70 ... 90	160	▶	3RU11 46-4LB1		1	1 unit	101	0.810
		45	80 ... 100 ⁵⁾	200	▶	3RU11 46-4MB1		1	1 unit	101	0.810

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 AC 50 Hz 400 V. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

⁴⁾ Maximum protection by fuse for overload relay, type of coordination 2. For fuse values in conjunction with contactors, see "Technical specifications" --> "Short-circuit protection with fuses/motor starter protectors for motor feeders", see note on Technical Information on page 5/1.

⁵⁾ For overload relays > 100 A, see 3RB2.

Overload Relays

SIRIUS 3RU1 Thermal Overload Relays





3RU11 for standard applications

3RU11 thermal overload relays with Cage Clamp terminals for direct mounting¹⁾ and stand-alone installation²⁾, 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 con- tactor ³⁾	Rating for induction motor rated value ⁴⁾	Current setting of the inverse- time delayed overload release	Short-circuit protection with fuse, type of coordi- nation 2, g/L/gG opera- tional class ⁵⁾	DT	Cage Clamp terminals (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
	kW	A	A		Order No.	Price per PU			kg	
Size S00 for stand-alone installation⁶⁾										
 3RU11 16-..C1	S00	0.04	0.11 ... 0.16	0.5	B	3RU11 16-0AC1	1	1 unit	101	0.190
		0.06	0.14 ... 0.2	1	B	3RU11 16-0BC1	1	1 unit	101	0.190
		0.06	0.18 ... 0.25	1	B	3RU11 16-0CC1	1	1 unit	101	0.190
		0.09	0.22 ... 0.32	1.6	B	3RU11 16-0DC1	1	1 unit	101	0.190
		0.09	0.28 ... 0.4	2	B	3RU11 16-0EC1	1	1 unit	101	0.190
		0.12	0.35 ... 0.5	2	B	3RU11 16-0FC1	1	1 unit	101	0.190
		0.18	0.45 ... 0.63	2	▶	3RU11 16-0GC1	1	1 unit	101	0.190
		0.18	0.55 ... 0.8	4	▶	3RU11 16-0HC1	1	1 unit	101	0.190
		0.25	0.7 ... 1	4	▶	3RU11 16-0JC1	1	1 unit	101	0.190
		0.37	0.9 ... 1.25	4	▶	3RU11 16-0KC1	1	1 unit	101	0.190
		0.55	1.1 ... 1.6	6	▶	3RU11 16-1AC1	1	1 unit	101	0.190
		0.75	1.4 ... 2	6	▶	3RU11 16-1BC1	1	1 unit	101	0.190
		0.75	1.8 ... 2.5	10	C	3RU11 16-1CC1	1	1 unit	101	0.190
		1.1	2.2 ... 3.2	10	▶	3RU11 16-1DC1	1	1 unit	101	0.190
		1.5	2.8 ... 4	16	B	3RU11 16-1EC1	1	1 unit	101	0.190
		1.5	3.5 ... 5	20	▶	3RU11 16-1FC1	1	1 unit	101	0.190
		2.2	4.5 ... 6.3	20	▶	3RU11 16-1GC1	1	1 unit	101	0.190
	3	5.5 ... 8	25	▶	3RU11 16-1HC1	1	1 unit	101	0.190	
	4	7 ... 10	35	▶	3RU11 16-1JC1	1	1 unit	101	0.190	
	5.5	9 ... 12	35	▶	3RU11 16-1KC1	1	1 unit	101	0.190	
Size S0 for direct mounting¹⁾⁷⁾										
 3RU11 16-..D0	S0	0.75	1.8 ... 2.5	10	B	3RU11 26-1CD0	1	1 unit	101	0.190
		1.1	2.2 ... 3.2	10	B	3RU11 26-1DD0	1	1 unit	101	0.190
		1.5	2.8 ... 4	16	B	3RU11 26-1ED0	1	1 unit	101	0.190
		1.5	3.5 ... 5	20	B	3RU11 26-1FD0	1	1 unit	101	0.190
		2.2	4.5 ... 6.3	20	B	3RU11 26-1GD0	1	1 unit	101	0.190
		3	5.5 ... 8	25	B	3RU11 26-1HD0	1	1 unit	101	0.190
		4	7 ... 10	35	B	3RU11 26-1JD0	1	1 unit	101	0.190
		5.5	9 ... 12.5	35	B	3RU11 26-1KD0	1	1 unit	101	0.190
		7.5	11 ... 16	40	▶	3RU11 26-4AD0	1	1 unit	101	0.190
		7.5	14 ... 20	50	▶	3RU11 26-4BD0	1	1 unit	101	0.190
		11	17 ... 22	63	▶	3RU11 26-4CD0	1	1 unit	101	0.190
		11	20 ... 25	63	▶	3RU11 26-4DD0	1	1 unit	101	0.190
Size S2 for direct mounting¹⁾⁷⁾										
 3RU11 36-..D0	S2	3	5.5 ... 8	25	B	3RU11 36-1HD0	1	1 unit	101	0.320
		4	7 ... 10	35	B	3RU11 36-1JD0	1	1 unit	101	0.320
		5.5	9 ... 12.5	35	B	3RU11 36-1KD0	1	1 unit	101	0.320
		7.5	11 ... 16	40	B	3RU11 36-4AD0	1	1 unit	101	0.320
		7.5	14 ... 20	50	B	3RU11 36-4BD0	1	1 unit	101	0.320
		11	18 ... 25	63	B	3RU11 36-4DD0	1	1 unit	101	0.320
		15	22 ... 32	80	▶	3RU11 36-4ED0	1	1 unit	101	0.320
		18.5	28 ... 40	80	▶	3RU11 36-4FD0	1	1 unit	101	0.320
		22	36 ... 45	100	▶	3RU11 36-4GD0	1	1 unit	101	0.320
		22	40 ... 50	100	▶	3RU11 36-4HD0	1	1 unit	101	0.320
Size S3 for direct mounting¹⁾⁷⁾										
 3RU11 46-..D0	S3	11	18 ... 25	63	B	3RU11 46-4DD0	1	1 unit	101	0.550
		15	22 ... 32	80	B	3RU11 46-4ED0	1	1 unit	101	0.550
		18.5	28 ... 40	80	B	3RU11 46-4FD0	1	1 unit	101	0.550
		22	36 ... 50	125	B	3RU11 46-4HD0	1	1 unit	101	0.550
		30	45 ... 63	125	▶	3RU11 46-4JD0	1	1 unit	101	0.550
		37	57 ... 75	160	▶	3RU11 46-4KD0	1	1 unit	101	0.550
		45	70 ... 90	160	▶	3RU11 46-4LD0	1	1 unit	101	0.550
		45	80 ... 100	200	▶	3RU11 46-4MD0	1	1 unit	101	0.550

¹⁾ With the suitable terminal brackets (see "Accessories", page 5/50), the 3RU11 overload relays for direct mounting can also be installed as stand-alone units.

²⁾ Size S00 for screw and snap-on mounting onto TH 35 standard mounting rail.

³⁾ Observe maximum rated operational current of the devices.

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

⁵⁾ Maximum protection by fuse for overload relay, type of coordination 2.

For fuse values in conjunction with contactors, see "Technical specifications" -> "Short-circuit protection with fuses/motor starter protectors for motor feeders", see note on Technical Information on page 5/1.

⁶⁾ Auxiliary and main conductor connections with Cage Clamp terminal.

⁷⁾ Auxiliary conductor connections with Cage Clamp terminals and main conductor connections with screw terminals.

* You can order this quantity or a multiple thereof.

Overload Relays

SIRIUS 3RU1 Thermal Overload Relays





Accessories

Overview

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

- For the four overload relay sizes S00 to S3 one terminal bracket each for stand-alone installation
- One mechanical RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One 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	Weight per PU approx. kg
Terminal brackets for stand-alone installation								
	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	101	0.060
		S0	▶ 3RU19 26-3AA01		1	1 unit	101	0.080
		S2	▶ 3RU19 36-3AA01		1	1 unit	101	0.180
		S3	▶ 3RU19 46-3AA01		1	1 unit	101	0.280
Mechanical RESET¹⁾								
	Resetting plungers, holders and formers	S00 ... S3	▶ 3RU19 00-1A		1	1 unit	101	0.038
	Pushbuttons with extended stroke (12 mm), IP65, Ø 22 mm		B 3SB30 00-0EA11		1	1 unit	102	0.020
	Extension plungers For compensation of the distance between the pushbutton and the unlatching button of the relay		A 3SX1 335		1	1 unit	102	0.004
Cable releases with holder for RESET¹⁾								
	For Ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm	S00 ... S3						
	<ul style="list-style-type: none"> • Length 400 mm • Length 600 mm 		▶ 3RU19 00-1B		1	1 unit	101	0.063
			▶ 3RU19 00-1C		1	1 unit	101	0.073
Modules for remote RESET, electrical								
	Operating range	24 ... 30 V	S00 ... S3	▶ 3RU19 00-2AB71	1	1 unit	101	0.066
	0.85 ... 1.1 x U _S , power consumption	110 ... 127 V		▶ 3RU19 00-2AF71	1	1 unit	101	0.067
	AC 80 VA, DC 70 W, ON period	220 ... 250 V		▶ 3RU19 00-2AM71	1	1 unit	101	0.066
	0.2 ... 4 s, switching frequency	60/h						
Terminal covers¹⁾								
Covers for cable lugs and busbar connections								
	• Length 55 mm	S3	▶ 3RT19 46-4EA1		1	1 unit	101	0.040
Covers for box terminals								
	• Length 20.6 mm	S2	▶ 3RT19 36-4EA2		1	1 unit	101	0.020
	• Length 20.8 mm	S3	▶ 3RT19 46-4EA2		1	1 unit	101	0.025

For more accessories (screwdrivers and labeling plates), see page 5/62.

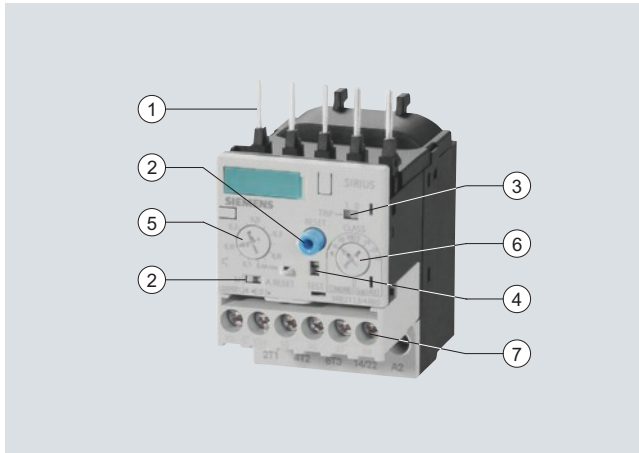
¹⁾ The accessories are identical to those of the 3RB2 solid-state overload relays.

Overload Relays

SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 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.
- ④ 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.

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 (for "Function" see note on Technical Information on page 5/1) 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 set current I_e and is stored in the form of a long-term stable tripping characteristic (for "Characteristic Curves" see the note on Technical Information on page 5/1).

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 a recovery time has elapsed (for "Function" see note on Technical Information on page 5/1).

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 EEx e. The relays meet the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e"); see Chapter 20 "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for explosion-protected areas (ATEX Explosion Protection)".

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

Benefits

The most important features and benefits of the 3RB20/3RB21 solid-state overload relays are listed in the overview table (see "General Data" on page 5/42).

Overload Relays

SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 for standard applications

Application

Industries

The 3RB20/3RB21 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 CLASS 30), minimize project completion times, inventories and power consumption, and optimize plant availability and maintenance management.

Application

The 3RB20/3RB21 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 relay or the 3RB22/3RB23 solid-state overload relay 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 environments, ageing and temperature fluctuation.

For the temperature range from -25 °C to $+60\text{ °C}$, the 3RB20/3RB21 solid-state overload relays compensate the temperature according to IEC 60947-4-1.

For the 3RB20/3RB21 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 $> 50\text{ °C}$ by a certain factor (see tables below).

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 %

Accessories

The following optional accessories are available for the 3RB20/3RB21 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as stand-alone installation without a terminal bracket)
- One mechanical remote RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Terminal covers for sizes S2 to S10/S12
- Box terminal blocks for sizes S6 and S10/S12

Overload Relays

SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 for standard applications
Selection and ordering data
3RB20 solid-state overload relays for direct mounting¹⁾²⁾ and stand-alone installation²⁾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 = 101


Size of contactor ⁴⁾	Rating for induction motor Rated value ⁵⁾	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination 2, gL/gG operational class ⁶⁾	DT	Screw terminals (on auxiliary current side)		Weight per PU approx.	DT	Spring-type terminals (on auxiliary current side)		Weight per PU approx.
	kW	A	A		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Size S00¹⁾											
S00	0.04 ... 0.09	0.1 ... 0.4	1	▶	3RB20 16-1RB0		0.200	A	3RB20 16-1RD0		0.200
	0.12 ... 0.37	0.32 ... 1.25	2	▶	3RB20 16-1NB0		0.200	A	3RB20 16-1ND0		0.200
	0.55 ... 1.5	1 ... 4	10	▶	3RB20 16-1PB0		0.200	A	3RB20 16-1PD0		0.200
	1.1 ... 5.5	3 ... 12	20	▶	3RB20 16-1SB0		0.200	A	3RB20 16-1SD0		0.200
Size S0¹⁾											
S0	0.04 ... 0.09	0.1 ... 0.4	1	▶	3RB20 26-1RB0		0.220	A	3RB20 26-1RD0		0.220
	0.12 ... 0.37	0.32 ... 1.25	2	▶	3RB20 26-1NB0		0.220	A	3RB20 26-1ND0		0.220
	0.55 ... 1.5	1 ... 4	10	▶	3RB20 26-1PB0		0.220	A	3RB20 26-1PD0		0.220
	1.1 ... 5.5	3 ... 12	20	▶	3RB20 26-1SB0		0.220	A	3RB20 26-1SD0		0.220
	3 ... 11	6 ... 25	35	▶	3RB20 26-1QB0		0.220	A	3RB20 26-1QD0		0.220
Size S2¹⁾³⁾⁷⁾											
S2	3 ... 11	6 ... 25	63	▶	3RB20 36-1QB0		0.360	A	3RB20 36-1QD0		0.360
				▶	3RB20 36-1QW1		0.230	A	3RB20 36-1QX1		0.230
	7.5 ... 22	12.5 ... 50	80	▶	3RB20 36-1UB0		0.360	A	3RB20 36-1UD0		0.360
				▶	3RB20 36-1UW1		0.230	A	3RB20 36-1UX1		0.230
Size S3¹⁾³⁾⁷⁾											
S3	7.5 ... 22	12.5 ... 50	160	▶	3RB20 46-1UB0		0.560	A	3RB20 46-1UD0		0.560
	11 ... 45	25 ... 100	315	▶	3RB20 46-1EB0		0.560	A	3RB20 46-1ED0		0.560
				▶	3RB20 46-1EW1		0.450	A	3RB20 46-1EX1		0.450
Size S6²⁾⁷⁾											
S6 with busbar connections	22 ... 90	50 ... 200	315	▶	3RB20 56-1FC2		1.030	A	3RB20 56-1FF2		1.030
S6 with box terminals				▶	3RB20 56-1FW2		0.690	A	3RB20 56-1FX2		0.690
Size S10/S12²⁾											
S10/S12	22 ... 110	55 ... 250	400	▶	3RB20 66-1GC2		1.820	A	3RB20 66-1GF2		1.820
and size 14 (3TF68/ 3TF69)	90 ... 450	160 ... 630	800	▶	3RB20 66-1MC2		1.820	A	3RB20 66-1MF2		1.820

¹⁾ The relays with an Order No. ending with "0" are designed for direct mounting. With the matching terminal brackets (see "Accessories", page 5/60) 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 direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

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

⁴⁾ Observe maximum rated operational current of the devices.

⁵⁾ Guide value for 4-pole standard motors at AC 50 Hz 400 V. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

⁶⁾ Maximum protection by fuse for overload relay, type of coordination 2. For fuse values in conjunction with contactors, see "Technical specifications" -> "Short-circuit protection with fuses for motor feeders", see note on Technical Information on page 5/1.

Overload Relays

SIRIUS 3RB2 Solid-State Overload Relays

3RB20, 3RB21 for standard applications

3RB20 solid-state overload relays for direct mounting¹⁾²⁾ and stand-alone installation²⁾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 = 101



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 Rated value ⁵⁾	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination 2, gL/gG operational class ⁶⁾	DT	Screw terminals (on auxiliary current side)		Weight per PU approx.	DT	Spring-type terminals (on auxiliary current side)		Weight per PU approx.
					Order No.	Price per PU			Order No.	Price per PU	
	kW	A	A				kg			kg	
Size S00¹⁾											
S00	0.04 ... 0.09	0.1 ... 0.4	1	▶	3RB20 16-2RB0		0.200 A		3RB20 16-2RD0		0.200
	0.12 ... 0.37	0.32 ... 1.25	2	▶	3RB20 16-2NB0		0.200 A		3RB20 16-2ND0		0.200
	0.55 ... 1.5	1 ... 4	10	▶	3RB20 16-2PB0		0.200 A		3RB20 16-2PD0		0.200
	1.1 ... 5.5	3 ... 12	20	▶	3RB20 16-2SB0		0.200 A		3RB20 16-2SD0		0.200
Size S0¹⁾											
S0	0.04 ... 0.09	0.1 ... 0.4	1	▶	3RB20 26-2RB0		0.220 A		3RB20 26-2RD0		0.220
	0.12 ... 0.37	0.32 ... 1.25	2	▶	3RB20 26-2NB0		0.220 A		3RB20 26-2ND0		0.220
	0.55 ... 1.5	1 ... 4	10	▶	3RB20 26-2PB0		0.220 A		3RB20 26-2PD0		0.220
	1.1 ... 5.5	3 ... 12	20	▶	3RB20 26-2SB0		0.220 A		3RB20 26-2SD0		0.220
	3 ... 11	6 ... 25	35	▶	3RB20 26-2QB0		0.220 A		3RB20 26-2QD0		0.220
Size S2¹⁾³⁾⁷⁾											
S2	3 ... 11	6 ... 25	63	▶	3RB20 36-2QB0		0.360 A		3RB20 36-2QD0		0.360
				▶	3RB20 36-2QW1		0.230 A		3RB20 36-2QX1		0.230
	7.5 ... 22	12.5 ... 50	80	▶	3RB20 36-2UB0		0.360 A		3RB20 36-2UD0		0.360
				▶	3RB20 36-2UW1		0.230 A		3RB20 36-2UX1		0.230
Size S3¹⁾³⁾⁷⁾											
S3	7.5 ... 22	12.5 ... 50	160	▶	3RB20 46-2UB0		0.560 A		3RB20 46-2UD0		0.560
	11 ... 45	25 ... 100	315	▶	3RB20 46-2EB0		0.560 A		3RB20 46-2ED0		0.560
				▶	3RB20 46-2EW1		0.450 A		3RB20 46-2EX1		0.450
Size S6²⁾⁷⁾											
S6 with busbar connections	22 ... 90	50 ... 200	315	▶	3RB20 56-2FC2		1.030 A		3RB20 56-2FF2		1.030
S6 with box terminals				▶	3RB20 56-2FW2		0.690 A		3RB20 56-2FX2		0.690
Size S10/S12²⁾											
S10/S12 and size 14 (3TF68/3TF69)	22 ... 110	55 ... 250	400	▶	3RB20 66-2GC2		1.820 A		3RB20 66-2GF2		1.820
	90 ... 450	160 ... 630	800	▶	3RB20 66-2MC2		1.820 A		3RB20 66-2MF2		1.820

1) The relays with an Order No. ending with "0" are designed for direct mounting. With the matching terminal brackets (see "Accessories", page 5/60) 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 direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

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

4) Observe maximum rated operational current of the devices.

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

6) Maximum protection by fuse for overload relay, type of coordination 2. For fuse values in conjunction with contactors, see "Technical specifications" -> "Short-circuit protection with fuses for motor feeders", see note on Technical Information on page 5/1.

7) The relays with an Order 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 for standard applications

3RB21 solid-state overload relays for direct mounting¹⁾²⁾ and stand-alone installation²⁾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 = 101



Size of contactor ⁴⁾	Rating for induction motor Rated value ⁵⁾	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination 2, gL/gG operational class ⁶⁾	DT	Screw terminals (on auxiliary current side)	⊕	Weight per PU approx.	DT	Spring-type terminals (on auxiliary current side)	⊕	Weight per PU approx.
	kW	A	A		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Size S00¹⁾											
S00	0.04 ... 0.09	0.1 ... 0.4	1	▶	3RB21 13-4RB0		0.200	A	3RB21 13-4RD0		0.200
	0.12 ... 0.37	0.32 ... 1.25	2	▶	3RB21 13-4NB0		0.200	A	3RB21 13-4ND0		0.200
	0.55 ... 1.5	1 ... 4	10	▶	3RB21 13-4PB0		0.200	A	3RB21 13-4PD0		0.200
	1.1 ... 5.5	3 ... 12	20	▶	3RB21 13-4SB0		0.200	A	3RB21 13-4SD0		0.200
Size S0¹⁾											
S0	0.04 ... 0.09	0.1 ... 0.4	1	▶	3RB21 23-4RB0		0.220	▶	3RB21 23-4RD0		0.220
	0.12 ... 0.37	0.32 ... 1.25	2	▶	3RB21 23-4NB0		0.220	▶	3RB21 23-4ND0		0.220
	0.55 ... 1.5	1 ... 4	10	▶	3RB21 23-4PB0		0.220	▶	3RB21 23-4PD0		0.220
	1.1 ... 5.5	3 ... 12	20	▶	3RB21 23-4SB0		0.220	A	3RB21 23-4SD0		0.220
	3 ... 11	6 ... 25	35	▶	3RB21 23-4QB0		0.220	A	3RB21 23-4QD0		0.220
Size S2¹⁾³⁾⁷⁾											
S2	3 ... 11	6 ... 25	63	▶	3RB21 33-4QB0		0.360	A	3RB21 33-4QD0		0.360
				▶	3RB21 33-4QW1		0.230	A	3RB21 33-4QX1		0.230
	7.5 ... 22	12.5 ... 50	80	▶	3RB21 33-4UB0		0.360	A	3RB21 33-4UD0		0.360
				▶	3RB21 33-4UW1		0.230	A	3RB21 33-4UX1		0.230
Size S3¹⁾³⁾⁷⁾											
S3	7.5 ... 22	12.5 ... 50	160	▶	3RB21 43-4UB0		0.560	A	3RB21 43-4UD0		0.560
	11 ... 45	25 ... 100	315	▶	3RB21 43-4EB0		0.560	A	3RB21 43-4ED0		0.560
				▶	3RB21 43-4EW1		0.450	A	3RB21 43-4EX1		0.450
Size S6²⁾⁷⁾											
S6 with busbar connections	22 ... 90	50 ... 200	315	▶	3RB21 53-4FC2		1.030	A	3RB21 53-4FF2		1.030
S6 with box terminals				▶	3RB21 53-4FW2		0.690	A	3RB21 53-4FX2		0.690
Size S10/S12²⁾											
S10/S12 and size 14 (3TF68/ 3TF69)	22 ... 110	55 ... 250	400	▶	3RB21 63-4GC2		1.820	A	3RB21 63-4GF2		1.820
	90 ... 450	160 ... 630	800	▶	3RB21 63-4MC2		1.820	A	3RB21 63-4MF2		1.820

1) The relays with an Order No. ending with "0" are designed for direct mounting. With the matching terminal brackets (see "Accessories", page 5/60) 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 direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

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

4) Observe maximum rated operational current of the devices.

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

6) Maximum protection by fuse for overload relay, type of coordination 2. For fuse values in conjunction with contactors, see "Technical specifications" -> "Short-circuit protection with fuses for motor feeders", see note on Technical Information on page 5/1.

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.