
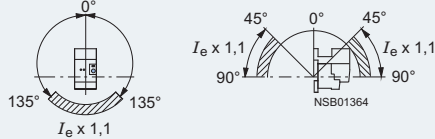
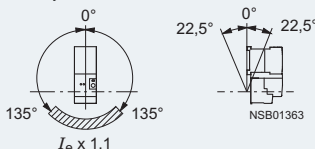


Overload Relays

3RU1 Thermal Overload Relays

3RU11 for standard applications



Technical specifications

Type	3RU11 16		3RU11 26	3RU11 36	3RU11 46
Size	S00		S0	S2	S3
Width	45 mm		45 mm	55 mm	70 mm
General data					
Trips in the event of			Overload and phase failure		
Trip class acc. to IEC 60947-4-1		CLASS	10		
Phase failure sensitivity			Yes		
Overload warning			No		
Reset and recovery			Manual, automatic and remote RESET ¹⁾		
• Reset options after tripping					
• Recovery time					
- For automatic RESET		min	Depends on the strength of the tripping current and characteristic		
- For manual RESET		min	Depends on the strength of the tripping current and characteristic		
- For remote RESET		min	Depends on the strength of the tripping current and characteristic		
Features			Yes, by means of TEST function/switch position indicator slide		
• Display of operating state on device			Yes		
• TEST function			Yes		
• RESET button			Yes		
• STOP button			Yes		
Safe operation of motors with "increased safety" type of protection			DMT 98 ATEX G 001  II (2) GD, DMT 98 ATEX G 001 N1		
EC type test certificate number acc. to directive 94/9/EC					
Ambient temperature					
• Storage/transport		°C	-55 ... +80		
• Operation		°C	-20 ... +70		
• Temperature compensation		°C	Up to 60		
• Permissible rated current at					
- Temperature inside control cabinet 60 °C		%	100 (over +60 °C current reduction is not required)		
- Temperature inside control cabinet 70 °C		%	87		
Repeat terminals			Yes Not required		
• Coil repeat terminal			Yes		
• Auxiliary contact repeat terminal			Yes		
Degree of protection acc. to IEC 60529			IP20		IP20 ²⁾
Touch protection acc. to IEC 61140			Finger-safe		
Shock resistance with sine acc. to IEC 60068-2-27			g/ms	8/10	
Electromagnetic compatibility (EMC) – Interference immunity					
• Conductor-related interference					
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)		kV	EMC interference immunity is not relevant for thermal overload relays		
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)		kV	EMC interference immunity is not relevant for thermal overload relays		
• Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	EMC interference immunity is not relevant for thermal overload relays		
• Field-related interference acc. to IEC 61000-4-3 (corresponds to degree of severity 3)		V/m	EMC interference immunity is not relevant for thermal overload relays		
Electromagnetic compatibility (EMC) – Emitted interference			EMC interference immunity is not relevant for thermal overload relays		
Resistance to extreme climates – Air humidity			%	100	
Dimensions			See dimensional drawings		
Installation altitude above sea level			m	Up to 2000; above this, please enquire	
Mounting position			The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For installation in the hatched area, a setting correction of 10 % must be implemented. Stand-alone installation:  Contactor + overload relay: 		
Type of mounting			Direct mounting ^{3)/} stand-alone installation with terminal bracket ⁴⁾ Direct mounting/stand-alone installation with terminal bracket ⁴⁾		

Overload Relays

3RU1 Thermal Overload Relays

3RU11 for standard applications

Type		3RU11 16	3RU11 26	3RU11 36	3RU11 46
Size		S00	S0	S2	S3
Width		45 mm	45 mm	55 mm	70 mm
Main circuit					
Rated insulation voltage U_i (degree of pollution 3)	V	690			1000
Rated impulse withstand voltage U_{imp}	kV	6			8
Rated operational voltage U_e	V	690			1000
Type of current					
• Direct current		Yes			
• Alternating current		Yes, frequency range up to 400 Hz			
Current setting	A	0.11 ... 0.16 to 9 ... 12	1.8 ... 2.5 to 20 ... 25	5.5 ... 8 to 40 ... 50	18 ... 25 to 80 ... 100
Power loss per unit (max.)	W	3.9 ... 6.6	3.9 ... 6	6 ... 9	10 ... 16.5
Short-circuit protection					
• With fuse without contactor		See "Selection and ordering data" See "Technical specifications" (short-circuit protection with fuses/motor starter protectors for motor feeders)			
• With fuse and contactor					
Protective separation between main and auxiliary conducting path acc. to IEC 60947-1	V	500	690		
Connection for main circuit					
Connection type		 Screw terminals with box terminal			
• Terminal screw		Pozidriv size 2			
• Tightening torque	Nm	0.8 ... 1.2	2 ... 2.5	3 ... 4.5	4 ... 6
• Conductor cross-sections (min./max.), 1 or 2 conductors					
- Solid	mm ²	2 x (0.5 ... 1.5) ²⁾ 2 x (0.75 ... 2.5) ²⁾ Max. 2 x (1 ... 4) ²⁾	2 x (1 ... 2.5) ²⁾ 2 x (2.5 ... 6) ²⁾ Max. 2 x (2.5 ... 10) ²⁾	2 x (0.75 ... 16)	2 x (2.5 ... 16)
- Finely stranded with end sleeve	mm ²	2 x (0.5 ... 1.5) ²⁾ 2 x (0.75 ... 2.5) ²⁾	2 x (1 ... 2.5) ²⁾ 2 x (2.5 ... 6) ²⁾	2 x (0.75 ... 16) 1 x (0.75 ... 25)	2 x (2.5 ... 35) 1 x (2.5 ... 50)
- Stranded	mm ²	2 x (0.5 ... 1.5) ²⁾ 2 x (0.75 ... 2.5) ²⁾ Max. 2 x (1 ... 4) ²⁾	2 x (1 ... 2.5) ²⁾ 2 x (2.5 ... 6) ²⁾ Max. 2 x (2.5 ... 10) ²⁾	2 x (0.75 ... 25) 1 x (0.75 ... 35)	2 x (10 ... 50) 1 x (10 ... 70)
- AWG cables, solid or stranded	AWG	2 x (18 ... 14)	2 x (14 ... 10)	2 x (18 ... 3) 1 x (18 ... 1)	2 x (10 ... 1/0) 1 x (10 ... 2/0)
- Ribbon cable conductors (number x width x thickness)	mm	--		2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
Busbar connections					
• Terminal screw		Busbar connection¹⁾			
• Tightening torque	Nm	--			M6 x 20 4 ... 6
• Conductor cross-sections (min./max.)					
- Finely stranded with cable lug	mm ²	--			2 x 70
- Stranded with cable lug	mm ²	--			3 x 70
- AWG cables, solid or stranded, with cable lug	AWG	--			2/0
- With connecting bar (max. width)	mm	--			12
Connection type		 Cage Clamp terminals			
• Conductor cross-sections (min./max.)					
- Solid	mm ²	2 x (0.25 ... 2.5)	--		
- Finely stranded without end sleeve	mm ²	2 x (0.25 ... 2.5)	--		
- Finely stranded with end sleeve	mm ²	2 x (0.25 ... 1.5)	--		
- Stranded	mm ²	--	--		
- AWG cables, solid or stranded	AWG	2 x (24 ... 14)	--		

Footnotes for previous page:

- 1) Remote RESET in combination with the corresponding accessories.
- 2) Terminal compartment: degree of protection IP00.
- 3) The 3RU11 16 overload relay with Cage Clamp terminals can only be installed as a stand-alone installation.
- 4) For screw and snap-on mounting TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail. [For more detailed information about terminal brackets see "Accessories" --> "Technical specifications"](#).



Footnotes for this page:

- 1) The box terminal is removable. Rail and cable lug connections are possible if the box terminal is removed.
- 2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

Overload Relays

3RU1 Thermal Overload Relays

3RU11 for standard applications

Type		3RU11 16	3RU11 26	3RU11 36	3RU11 46
Size		S00	S0	S2	S3
Width		45 mm	45 mm	55 mm	70 mm
Auxiliary circuit					
Number of NO contacts		1			
Number of NC contacts		1			
Auxiliary contacts – assignment		1 NO for the signal "tripped", 1 NC for disconnecting the contactor			
Rated insulation voltage U_i (degree of pollution 3)	V	690			
Rated impulse withstand voltage U_{imp}	kV	6			
Contact rating of the auxiliary contacts					
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e :					
- 24 V	A	4			
- 120 V	A	4			
- 125 V	A	4			
- 230 V	A	3			
- 400 V	A	2			
- 600 V	A	0.6			
- 690 V	A	0.5			
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e :					
- 24 V	A	3			
- 120 V	A	3			
- 125 V	A	3			
- 230 V	A	2			
- 400 V	A	1			
- 600 V	A	0.6			
- 690 V	A	0.5			
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e :					
- 24 V	A	1			
- 60 V	A	1)			
- 110 V	A	0.22			
- 125 V	A	0.22			
- 220 V	A	0.11			
• Conventional thermal current I_{th}	A	6 ²⁾			
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes			
Short-circuit protection					
• With fuse					
- gL/gG operational class	A	6			
- Quick	A	10			
• With miniature circuit breaker (C characteristic)	A	6			
Protective separation between main and auxiliary conducting path	V	415			
Acc. to IEC 60947-1					
CSA, UL, UR rated data					
Auxiliary circuit – switching capacity		B600, R300			
Connection of the auxiliary circuit					
Connection type		 Screw terminals			
• Terminal screw		Pozidriv size 2			
• Tightening torque	Nm	0.8 ... 1.2			
• Conductor cross-sections (min./max.), 1 or 2 conductors					
- Solid	mm ²	2 x (0.5 ... 1.5) ³⁾ , 2 x (0.75 ... 2.5) ³⁾			
- Finely stranded without end sleeve	mm ²	--			
- Finely stranded with end sleeve	mm ²	2 x (0.5 ... 1.5) ³⁾ , 2 x (0.75 ... 2.5) ³⁾			
- Stranded	mm ²	2 x (0.5 ... 1.5) ³⁾ , 2 x (0.75 ... 2.5) ³⁾			
- AWG cables, solid or stranded	AWG	2 x (18 ... 14)			
Connection type		 Cage Clamp terminals			
• Conductor cross-sections (min./max.)					
- Solid		2 x (0.25 ... 2.5)			
- Finely stranded without end sleeve		2 x (0.25 ... 2.5)			
- Finely stranded with end sleeve		2 x (0.25 ... 1.5)			
- Stranded		--			
- AWG cables, solid or stranded		2 x (24 ... 14)			

¹⁾ On request.²⁾ Up to $I_k \leq 0.5$ kA; ≤ 260 V.³⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

Overload Relays

3RU1 Thermal Overload Relays

3RU11 for standard applications

Short-circuit protection with fuses/motor starter protectors for motor feeders

With short-circuit currents up to 100 kA at rated operational voltages up to AC 50/60 Hz 690 V

Permissible short-circuit protection fuse for motor starters comprising overload relay and contactor, type of coordination 2¹⁾

Overload relay Setting range	3 kW \cong 3RT10 15 $I_{e \max} = 7 \text{ A}$ (at AC 50 Hz 400 V)			4 kW \cong 3RT10 16 $I_{e \max} = 9 \text{ A}$ (at AC 50 Hz 400 V)			5.5 kW \cong 3RT10 17 $I_{e \max} = 12 \text{ A}$ (at AC 50 Hz 400 V)			UL-listed fuses RK5	Motor starter protector for starter combinations at $I_q = 50 \text{ kA/400 V AC}$
A	gL/gG	aM	BS 88	gL/gG	aM	BS 88	gL/gG	aM	BS 88	A	
Size S00											
0.11 ... 0.16	0.5	--	--	0.5	--	--	0.5	--	--	1	--
0.14 ... 0.2	1	--	--	1	--	--	1	--	--	1	3RV13 21-0BC10
0.18 ... 0.25	1	--	--	1	--	--	1	--	--	1	3RV13 21-0CC10
0.22 ... 0.32	1.6	--	2	1.6	--	2	1.6	--	2	1	3RV13 21-0DC10
0.28 ... 0.4	2	--	2	2	--	2	2	--	2	1.6	3RV13 21-0EC10
0.35 ... 0.5	2	--	2	2	--	2	2	--	2	2	3RV13 21-0FC10
0.45 ... 0.63	2	--	4	2	--	4	2	--	4	2.5	3RV13 21-0GC10
0.55 ... 0.8	4	--	4	4	--	4	4	--	4	3	3RV13 21-0HC10
0.7 ... 1	4	--	6	4	--	6	4	--	6	4	3RV13 21-0JC10
0.9 ... 1.25	4	--	6	4	--	6	4	--	6	5	3RV13 21-0KC10
1.1 ... 1.6	6	--	10	6	--	10	6	--	10	6	3RV13 21-1AC10
1.4 ... 2	6	--	10	6	--	10	6	--	10	8	3RV13 21-1BC10
1.8 ... 2.5	10	--	10	10	--	10	10	--	10	10	--
2.2 ... 3.2	10	--	16	10	--	16	10	--	16	12	--
2.8 ... 4	16	--	16	16	--	16	16	--	16	16	--
3.5 ... 5	20	6	20	20	6	20	20	6	20	20	--
4.5 ... 6.3	20	6	20	20	6	20	20	6	20	25	--
5.5 ... 8	20	10	20	20	10	20	20	10	20	30	--
7 ... 10	--	--	--	20	16	20	20	16	20	40	--
9 ... 12	--	--	--	--	--	--	20	16	25	45	--

Overload relay Setting range	5.5 kW \cong 3RT10 24 $I_{e \max} = 12 \text{ A}$ (at AC 50 Hz 400 V)			7.5 kW \cong 3RT10 25 $I_{e \max} = 17 \text{ A}$ (at AC 50 Hz 400 V)			11 kW \cong 3RT10 26 $I_{e \max} = 25 \text{ A}$ (at AC 50 Hz 400 V)			UL-listed fuses RK5	Motor starter protector for starter combinations at $I_q = 50 \text{ kA/400 V AC}$
A	gL/gG	aM	BS 88	gL/gG	aM	BS 88	gL/gG	aM	BS 88	A	
Size S0											
1.8 ... 2.5	10	–	10	10	–	10	10	–	10	10	3RV13 21-1CC10
2.2 ... 3.2	10	–	16	10	–	16	10	–	16	12	3RV13 21-1DC10
2.8 ... 4	16	–	16	16	–	16	16	–	16	16	3RV13 21-1EC10
3.5 ... 5	20	6	20	20	6	20	20	6	20	20	3RV13 21-1FC10
4.5 ... 6.3	20	6	25	20	6	25	20	6	25	25	3RV13 21-1GC10
5.5 ... 8	25	10	25/32 ²⁾	25	10	25/32 ²⁾	25	10	32	30	3RV13 21-1HC10
7 ... 10	25	16	25/32 ²⁾	25	16	25/32 ²⁾	32	16	35	40	3RV13 21-1JC10
9 ... 12.5	25	20	25/32 ²⁾	25	20	25/32 ²⁾	35	20	35	45	3RV13 21-1KC10
11 ... 16	25	20	25/32 ²⁾	25	20	25/32 ²⁾	35	20	35	60	3RV13 21-4AC10
14 ... 20	--	--	--	25	20	25/32 ²⁾	35	20	35	80	3RV13 21-4BC10
17 ... 22	--	--	--	--	--	--	35	20	35	80	3RV13 21-4CC10
20 ... 25	--	--	--	--	--	--	35	20	35	100	--

For type of coordination "1"¹⁾ see short-circuit protection of the contactors without overload relay under "Controls - Contactors and Contactor Assemblies".

¹⁾ Assignment and short-circuit protective devices according to

IEC 60947-4-1:

The contactor or starter must not endanger persons or the installation in the event of a short-circuit.

Type of coordination "1": The contactor or the starter may be non-operational after every short-circuit release.

Type of coordination "2": The contactor or the starter must be operational after a short-circuit release (without replacement of parts). Welding of the contacts is permissible however.

²⁾ At max. 415 V.

Overload Relays

3RU1 Thermal Overload Relays

3RU11 for standard applications

Short-circuit protection with fuses/motor starter protectors for motor feeders

With short-circuit currents up to 100 kA at rated operational voltages up to AC 50/60 Hz 690 V

Permissible short-circuit protection fuse for motor starters comprising overload relay and contactor, type of coordination 2¹⁾

Overload relay Setting range	15 kW \cong 3RT10 34 $I_{e \max} = 32$ A (at AC 50 Hz 400 V)			18.5 kW \cong 3RT10 35 $I_{e \max} = 40$ A (at AC 50 Hz 400 V)			22 kW \cong 3RT10 36 $I_{e \max} = 50$ A (at AC 50 Hz 400 V)			UL-listed fuses RK5	Motor starter protector for starter combinations at $I_q = 50$ kA/400 V AC
A	gL/gG	aM	BS 88	gL/gG	aM	BS 88	gL/gG	aM	BS 88	A	
Size S2											
5.5 ... 8	25	10	25	25	10	25	25	10	25	30	--
7 ... 10	32	16	32	32	16	32	32	16	32	40	--
9 ... 12.5	35	16	35	35	16	35	35	16	35	50	--
11 ... 16	40	20	40	40	20	40	40	20	40	60	--
14 ... 20	50	25	50	50	25	50	50	25	50	80	--
18 ... 25	63	32	63	63	32	63	63	32	63	100	3RV13 31-4DC10
22 ... 32	63	35	63	63	35	63	80	35	80	125	3RV13 31-4EC10
28 ... 40	63	50	63	63	50	63	80	50	80	150	3RV13 31-4FC10
36 ... 45	--	--	--	63	50	80	80	50	80	175	3RV13 31-4GC10
40 ... 50	--	--	--	--	--	--	80	50	80	200	3RV13 31-4HC10

Overload relay Setting range	30 kW \cong 3RT10 44 $I_{e \max} = 65$ A (at AC 50 Hz 400 V)			37 kW \cong 3RT10 45 $I_{e \max} = 80$ A (at AC 50 Hz 400 V)			45 kW \cong 3RT10 46 $I_{e \max} = 95$ A (at AC 50 Hz 400 V)			UL-listed fuses RK5	Motor starter protector for starter combinations at $I_q = 50$ kA/400 V AC
A	gL/gG	aM	BS 88	gL/gG	aM	BS 88	gL/gG	aM	BS 88	A	
Size S3											
18 ... 25	63	32	63	63	32	63	63	32	63	100	--
22 ... 32	80	35	80	80	35	80	80	35	80	125	--
28 ... 40	80	50	80	80	50	80	80	50	80	150	--
36 ... 50	125	50	125	125	50	125	125	50	125	200	--
45 ... 63	125	63	125	160	63	160	160	63	160	250	3RV13 41-4JC10
57 ... 75	--	--	--	160	80	160	160	80	160	300	3RV13 41-4KC10
70 ... 90	--	--	--	--	--	--	160	100	160	350	3RV13 41-4LC10
80 ... 100	--	--	--	--	--	--	160	100	160	350	3RV13 41-4MC10

For type of coordination "1"¹⁾ see short-circuit protection of the contactors without overload relay under "Controls - Contactors and Contactor Assemblies".

¹⁾ Assignment and short-circuit protective devices according to IEC 60947-4-1:

The contactor or starter must not endanger persons or the installation in the event of a short-circuit.

Type of coordination "1": The contactor or the starter may be non-operational after every short-circuit release.

Type of coordination "2": The contactor or the starter must be operational after a short-circuit release (without replacement of parts). Welding of the contacts is permissible however.