



Technical data

General technical data

Type		3RV1.1	3RV1.2	3RV1.3	3RV1.4	
Specifications					Does not include 3RV17	
• IEC 60 947-1, EN 60 947-1 (VDE 0660 Part 100)		yes				
• IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101)		yes				
• IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102)		yes				
Size		S00	S0	S2	S3	
Number of poles		3				
Max. rated current I_{nmax} (=max. rated operational current I_e)	A	12	25	50	100	
Permissible ambient temperature						
Storage/transport	°C	-50 ... +80				
Operation	°C	-20 ... +70 ¹⁾				
Permissible rated current at temperature inside enclosure of:						
• +60 °C	%	100				
• +70 °C	%	87				
MSP inside enclosure						
Permissible rated current at temperature inside enclosure of:						
• +35 °C	%	100				
• +60 °C	%	87				
Rated operational voltage U_e	V	690 ²⁾				
Rated frequency	Hz	50/60				
Rated insulation voltage U_i	V	690				
Rated impulse withstand voltage U_{imp}	kV	6				
Utilization category						
• IEC 60 947-2 (circuit-breaker)		A				
• IEC 60 947-4-1 (motor starter)		AC-3				
Class	acc. to IEC 60 947-4-1	10		10/20		
DC short-circuit breaking capacity (time constant $\tau = 5$ ms)						
• 1 conducting path DC 150 V	kA	10				
• 2 conducting paths in series DC 300 V	kA	10				
• 3 conducting paths in series DC 450 V	kA	10				
Power loss P_v per circuit-breaker	I_n -> up to 1.25 A	W	5	-	-	-
dependent on rated current I_n	I_n -> 1.6 ... 6.3 A	W	6	-	-	-
(upper setting range)	I_n -> 8 ... 12 A	W	7	-	-	-
	I_n -> up to 0.63 A	W	-	5	-	-
	I_n -> 0.8 ... 6.3 A	W	-	6	-	-
	I_n -> 8 ... 16 A	W	-	7	-	-
	I_n -> 20 ... 25 A	W	-	8	-	-
$R_{per\ conducting\ path} = P/I^2 \times 3$	I_n -> up to 25 A	W	-	-	12	-
	I_n -> 32 A	W	-	-	15	-
	I_n -> 40 ... 50 A	W	-	-	20	-
	I_n -> up to 63 A	W	-	-	-	20
	I_n -> 75 and 90 A	W	-	-	-	30
	I_n -> up to 100 A	W	-	-	-	38
Shock resistance	acc. to IEC 68 Part 2-27	g/ms	25/11 (square and sinusoidal pulse)			
incl. accessory: plug-in socket		g/ms	15/11 (square and sinusoidal pulse)			
Degree of protection	acc. to IEC 60 529		IP 20		IP 20 ³⁾	
Touch guard	acc. to DIN VDE 0106 Part 100		safe against finger touch			
Temperature compensation	acc. to IEC 60 947-4-1	°C	-20 ... +60			
Phase failure sensitivity	acc. to IEC 60 947-4-1		yes			
Explosion protection	to DIN VDE 0165 and EN 50 019		yes for 3RV10 (KEMA Testing License No. Ex-97.4.32 36) ⁴⁾			
Isolating function	acc. to IEC 60 947-2		yes			
Main and EMERGENCY-OFF switch characteristics⁵⁾	to IEC 60 204-1 (VDE 0113)		yes			
Safe isolation between power and auxiliary circuits, required for PELV applications	acc. to DIN VDE 0106 Part 101					
• up to 400 V + 10 %			yes			
• up to 415 V + 5 % (higher voltages on request)			yes			
Mechanical endurance			100 000		50 000	
Electrical endurance		Operat. cycles	100 000		25 000	
Max. operating frequency per hour (motor starts)		1/h	15			

For rated short-circuit breaking capacity I_{cn} see the table on Page 1/22.

1) Over +60 °C current reduction.

2) 500 V with moulded-plastic enclosure.

3) Terminal compartment IP 00.

4) ATEX license to EC Guideline 94/9/EG is in preparation

5) With appropriate accessories.

3RV1 Motor Starter Protectors

General Data

SIRIUS

3RV1
up to 100 A



Technical data

Conductor cross-sections for main circuit

Type		3RV1.1	3RV1.2	3RV1.3	3RV1.4
Terminal type		Screw connection		Screw terminal with box terminal	
Terminal screw		Pozi driv size 2		Pozi driv size 2	Hexagon socket screw M4
Prescribed tightening torque	N/m	0.8 ... 1.2	2 ... 2.5	3 ... 4.5	4 ... 6
Conductor cross-section, 1 or 2 conductors					
Solid	mm ²	2 × (0.5 ... 1.5)	2 × (1 ... 2.5)	2 × (0.75 ... 16)	2 × (2.5 ... 16)
	mm ²	2 × (0.75 ... 2.5) (max. 4)	2 × (2.5 ... 6)	–	–
Finely stranded with end sleeve	mm ²	2 × (0.5 ... 1.5)	2 × (1 ... 2.5)	2 × (0.75 ... 16)	2 × (2.5 ... 35)
	mm ²	2 × (0.75 ... 2.5)	2 × (2.5 ... 6) (max. 10)	1 × (0.75 ... 25)	1 × (2.5 ... 50)
Stranded	mm ²	2 × (0.5 ... 1.5)	2 × (1 ... 2.5)	2 × (0.75 ... 25)	2 × (10 ... 50)
	mm ²	2 × (0.75 ... 2.5) (max. 4)	2 × (2.5 ... 6) (max. 10)	1 × (0.75 ... 35)	1 × (10 ... 70)
AWG cables, solid and stranded wire	AWG	2 × (18 ... 14)	2 × (14 ... 10)	2 × (18 ... 3)	2 × (10 ... 1/0)
	AWG	–	–	2 × (18 ... 1)	2 × (10 ... 1/0)
Ribbon cable conductors (Number × Width × Thickness)	mm	–	–	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)
Removable box terminal¹⁾					
With copper bars	mm	–	–	–	18 × 10
With cable lug	mm ²	–	–	–	up to 2 × 70
Cage Clamp connections^{2) 3) 4)} (1 or 2 conductors connectable)					
	solid	mm ²	2 × (0.25 ... 2.5)	–	–
	finely stranded with end sleeve	mm ²	2 × (0.25 ... 1.5)	–	–
	finely stranded without wire end sleeve	mm ²	2 × (0.25 ... 2.5)	–	–
	AWG cables, solid and stranded wire	AWG	2 × (24 ... 14)	–	–
Max. outer diameter of the cable insulation: 3.6 mm.					
Permissible mounting position			any acc. to IEC 60 447 start command "I" right-hand side or top		

Auxiliary switches

Front transverse auxiliary switch with 1 changeover contact				Switching capacity for different voltages			
Rated operational voltage U_e	AC	AC V	24	230	400	690	
Rated operational current I_e /AC-15		A	4	3	1.5	0.5	
Rated operational current I_e /AC-12 $\cong I_{th}$		A	10	10	10	10	
Rated operational voltage U_e	DC L/R 200 ms	DC V	24	110	220		
Rated operational current I_e /DC-13		A	1	0.22	0.1		
Front transverse solid-state compatible auxiliary switch with 1 changeover contact							
Rated operational voltage U_e	AC	AC V	3 ... 60				
Rated operational current I_e /AC-14		mA	1 ... 300				
Rated operational voltage U_e	DC L/R 200 ms	DC V	3 ... 60				
Rated operational current I_e /DC-13		mA	1 ... 300				
Front transverse auxiliary switch with 1 NO + 1 NC, 2 NO							
Rated operational voltage U_e	AC	AC V	24	230			
Rated operational current I_e /AC-15		A	2	0.5			
Rated operational current I_e /AC-12 $\cong I_{th}$		A	2.5	2.5			
Rated operational voltage U_e	DC L/R 200 ms	DC V	24	48	60		
Rated operational current I_e /DC-13		A	1	0.3	0.15		
Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC and signaling switch							
Rated operational voltage U_e	AC	AC V	24	230	400	690	
Rated operational current I_e /AC-15		A	6	4	3	1	
Rated operational current I_e /AC-12 $\cong I_{th}$		A	10	10	10	10	
Rated operational voltage U_e	DC L/R 200 ms	DC V	24	110	220	440	
Rated operational current I_e		A	2	0.5	0.25	0.1	

1) Cable lug and bar connection is also possible, after removal of the box terminals.

2) For further information about Cage Clamp connection refer to Section 19.

3) With conductor cross-sections of $\leq 1 \text{ mm}^2$ an "insulation stopper" must be used, refer to accessories for "Contactors and contactor combinations" Section 2.

4) Corresponding opening tool 8WA28 03, see page 1/15.



Technical data

Auxiliary releases

Undervoltage release

Power consumption during pick-up:	AC voltages	VA/W	20.2/13.0
	DC voltages	W	20.0
Power consumption with uninterrupted duty	AC voltages	VA/W	7.2/2.4
	DC voltages	W	2.1
Response voltage	trip	V	0.7 ... 0.35 × U _s
	pick-up	V	0.85 ... 1.1 × U _s
Max. opening time (for rated control supply voltage U _s see selection and ordering data)		ms	20

Shunt release

Power consumption during pick-up:	AC voltages	VA/W	20.2/13
	DC voltages	W	13 ... 80
Response voltage acc. to IEC 60 947-1	trip	V	0.7 ... 1.1 × U _s
Max. opening time (for rated control supply voltage U _s see selection and ordering data)		ms	20

Short-circuit protection for auxiliary and control circuits

Fuses	gL/gG	A	10
5SX / 5SY miniature MSP's	C characteristic	A	6 ¹⁾

Conductor cross-sections for aux. and control circuits

Terminal type	Screw connection
Terminal screw	Pozidriv size 2

Conductor cross-sections, 1 or 2 conductors

solid	mm ²	2 × (0.5 ... 1.5) / 2 × (0.75 ... 2.5)
finely stranded with end sleeve	mm ²	2 × (0.5 ... 1.5) / 2 × (0.75 ... 2.5)
stranded	mm ²	2 × (0.5 ... 1.5) / 2 × (0.75 ... 2.5)
AWG cables, solid and stranded wire	AWG	2 × (18 ... 14)

Cage Clamp terminals²⁾³⁾⁴⁾

(for connecting 1 or 2 conductors)	solid	mm ²	2 × (0.25 ... 2.5)
	finely stranded with end sleeve	mm ²	2 × (0.25 ... 1.5)
	fine-wire w/o wire end sleeve	mm ²	2 × (0.25 ... 2.5)
	AWG cables, solid and stranded wire	AWG	2 × (24 ... 14)

Max. outer diameter of the cable included insulation: 3.6 mm.

Remote-controlled operating mechanisms

Max. power consumption at U _s	DC 24 V	W	48
	AC 230 V	VA	170
Operating range		V	0.85 ... 1.1 × U _s
Min. command duration at U _s		s	0.1
Maximum command duration		s	unlimited (uninterrupted operation)
Maximum make-/break-time	Remote-controlled	s	2
Ready to reclose	after approx.	s	2.5
Operating frequency		h ⁻¹	25
Internal back-up fuse	AC 230 V	A	0.8
	DC 24 V	A	1.6

Terminal type of control leads

Connector with screw connection

Shock resistance acc. to IEC 68, Part 2-27

g/ms 25/11 (square and sinusoidal pulse)

Terminal block type E

Conductor cross sections

3RT19 28-1H

	Front clamping point connected	Rear clamping point connected	Both clamping points connected Front clamping point	Rear clamping point
solid	mm ² 1 ... 10	mm ² 1 ... 10	mm ² 1 ... 10	mm ² 1 ... 10
finely stranded with end sleeve	mm ² 1 ... 16	mm ² 1 ... 16	mm ² 1 ... 10	mm ² 1 ... 10
stranded	mm ² 2.5 ... 25	mm ² 1.5 ... 25	mm ² 2.5 ... 10	mm ² 5 ... 25
AWG cables, solid and stranded wire	AWG 14 ... 3	AWG 16 ... 3	AWG 14 ... 6	AWG 16 ... 3
Terminal screw	M 4	M 4	M 4	

Conductor cross sections

3RT19 46-4GA07

⁵⁾

1) Unlimited short-circuit current < 0.4 kA.

2) With conductor cross-sections of ≤ 1 mm² an "insulation stop" must be used, refer to

accessories for "Contactors and contactor combinations".

3) Notes on Cage Clamp connection in Section 19.

4) Corresponding opening tool 8WA28 03, see page 1/15.

5) See MSP 3RV1.4 on page 1/26.