SIEMENS

Data sheet

3RT2016-1BB42-0CC0



power contactor, AC-3e/AC-3, 9 A, 4 kW / 400 V, 3-pole, 24 V DC, auxiliary contacts: 1 NC, screw terminal, size: S00, communication-capable

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S00
product extension	
 function module for communication 	Yes
 auxiliary switch 	Yes
power loss [W] for rated value of the current	
 at AC in hot operating state 	0.9 W
 at AC in hot operating state per pole 	0.3 W
 without load current share typical 	4 W
type of calculation of power loss depending on pole	quadratic
insulation voltage	
 of main circuit with degree of pollution 3 rated value 	690 V
 of auxiliary circuit with degree of pollution 3 rated value 	690 V
surge voltage resistance	
 of main circuit rated value 	6 kV
 of auxiliary circuit rated value 	6 kV
maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1	400 V
shock resistance at rectangular impulse	
• at DC	6,7g / 5 ms, 4,2g / 10 ms
shock resistance with sine pulse	
• at DC	10,5g / 5 ms, 6,6g / 10 ms
mechanical service life (operating cycles)	
 of contactor typical 	30 000 000
 of the contactor with added electronically optimized auxiliary switch block typical 	5 000 000
 of the contactor with added auxiliary switch block typical 	10 000 000
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	10/01/2009
SVHC substance name	Lead - 7439-92-1
Weight	0.29 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	
during operation	-25 +60 °C
during storage	-55 +80 °C
relative humidity minimum	10 %
relative humidity at 55 °C according to IEC 60068-2-30	95 %

maximum	
Environmental footprint	
Environmental Product Declaration(EPD)	Yes
global warming potential [CO2 eq] total	153 kg
global warming potential [CO2 eq] during manufacturing	1.42 kg
global warming potential [CO2 eq] during operation	152 kg
global warming potential [CO2 eq] after end of life	-0.305 kg
Main circuit	
number of poles for main current circuit	3
number of NO contacts for main contacts	3
operating voltage	
 at AC-3 rated value maximum 	690 V
 at AC-3e rated value maximum 	690 V
operational current	
 at AC-1 at 400 V at ambient temperature 40 °C rated value 	22 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	22 A
— up to 690 V at ambient temperature 60 °C rated value	20 A
• at AC-3	
- at 400 V rated value	9 A 7 7 A
— at 500 V rated value	7.7 A 6.7 A
 — at 690 V rated value • at AC-3e 	0.1 A
• at AC-se — at 400 V rated value	9 A
— at 500 V rated value	7.7 A
— at 690 V rated value	6.7 A
at AC-4 at 400 V rated value	8.5 A
 at AC-5a up to 690 V rated value 	19.4 A
● at AC-5b up to 400 V rated value	7.4 A
● at AC-6a	
 — up to 230 V for current peak value n=20 rated value 	5.3 A
— up to 400 V for current peak value n=20 rated value	5.3 A
 — up to 500 V for current peak value n=20 rated value 	5.3 A
 — up to 690 V for current peak value n=20 rated value 	5 A
● at AC-6a	
 — up to 230 V for current peak value n=30 rated value 	3.5 A
 — up to 400 V for current peak value n=30 rated value 	3.5 A
— up to 500 V for current peak value n=30 rated value	3.6 A
— up to 690 V for current peak value n=30 rated value	3.3 A
minimum cross-section in main circuit at maximum AC-1 rated value	4 mm ²
operational current for approx. 200000 operating cycles at AC-4	
 at 400 V rated value at 690 V rated value 	4.1 A 3.3 A
• at 690 v rated value operational current	0.0 A
• at 1 current path at DC-1	
- at 24 V rated value	20 A
— at 60 V rated value	20 A
— at 110 V rated value	2.1 A
— at 220 V rated value	0.8 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.6 A
 with 2 current paths in series at DC-1 	
— at 24 V rated value	20 A
— at 60 V rated value	20 A
— at 110 V rated value	12 A
— at 220 V rated value	1.6 A
— at 440 V rated value	0.8 A

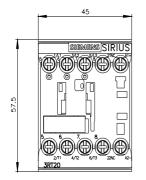
— at 600 V rated value	0.7 A			
with 3 current paths in series at DC-1 at 24 // rated value	20.4			
— at 24 V rated value — at 60 V rated value	20 A 20 A			
— at 100 V rated value	20 A			
— at 220 V rated value				
— at 440 V rated value	20 A 1.3 A			
— at 600 V rated value	1.3.7			
• at 1 current path at DC-3 at DC-5				
— at 24 V rated value	20 A			
— at 60 V rated value	0.5 A			
— at 110 V rated value	0.15 A			
• with 2 current paths in series at DC-3 at DC-5				
— at 24 V rated value	20 A			
— at 60 V rated value	5 A			
— at 110 V rated value	0.35 A			
 with 3 current paths in series at DC-3 at DC-5 				
— at 24 V rated value	20 A			
— at 60 V rated value	20 A			
— at 110 V rated value	20 A			
— at 220 V rated value	1.5 A			
— at 440 V rated value	0.2 A			
— at 600 V rated value	0.2 A			
operating power				
• at AC-3				
— at 230 V rated value	2.2 kW			
— at 400 V rated value	4 kW			
— at 500 V rated value	4 kW			
— at 690 V rated value	5.5 kW			
• at AC-3e				
— at 230 V rated value	2.2 kW			
— at 400 V rated value	4 kW			
— at 500 V rated value	4 kW			
at 690 V rated value operating power for approx. 200000 operating cycles at AC-	5.5 kW			
4				
• at 400 V rated value	2 kW			
• at 690 V rated value	2.5 kW			
operating apparent power at AC-6a				
 up to 230 V for current peak value n=20 rated value 	2 kVA			
 up to 400 V for current peak value n=20 rated value 	3.6 kVA			
 up to 500 V for current peak value n=20 rated value 	4.6 kVA			
• up to 690 V for current peak value n=20 rated value	5.9 kVA			
operating apparent power at AC-6a				
• up to 230 V for current peak value n=30 rated value	1.3 kVA			
• up to 400 V for current peak value n=30 rated value	2.4 kVA			
• up to 500 V for current peak value n=30 rated value	3.1 kVA			
up to 690 V for current peak value n=30 rated value	4 kVA			
short-time withstand current in cold operating state up to 40 °C				
 limited to 1 s switching at zero current maximum 	155 A; Use minimum cross-section acc. to AC-1 rated value			
 limited to 5 s switching at zero current maximum 	111 A; Use minimum cross-section acc. to AC-1 rated value			
 limited to 10 s switching at zero current maximum 	86 A; Use minimum cross-section acc. to AC-1 rated value			
Imited to 30 s switching at zero current maximum	66 A; Use minimum cross-section acc. to AC-1 rated value			
Imited to 60 s switching at zero current maximum	55 A; Use minimum cross-section acc. to AC-1 rated value			
no-load switching frequency	10.000 1/b			
• at DC operating frequency	10 000 1/h			
• at AC-1 maximum	1 000 1/h			
• at AC-2 maximum	750 1/h			
• at AC-3 maximum	750 1/h			

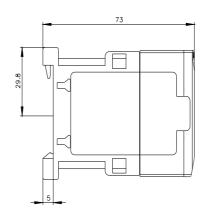
a at AC 20 maximum	750.1/b
at AC-3e maximum	750 1/h
at AC-4 maximum	250 1/h
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage at DC rated value	24 V
operating range factor control supply voltage rated value of magnet coil at DC	
initial value	0.8
full-scale value	1.1
closing power of magnet coil at DC	4 W
holding power of magnet coil at DC	4 W
closing delay	
• at DC	30 100 ms
opening delay	
• at DC	7 13 ms
arcing time	10 15 ms
control version of the switch operating mechanism	Standard A1 - A2, optionally via function module
Auxiliary circuit	1
number of NC contacts for auxiliary contacts instantaneous contact	1
operational current at AC-12 maximum	10 A
operational current at AC-15	
• at 230 V rated value	10 A
• at 400 V rated value	3 A
• at 500 V rated value	2 A
at 690 V rated value	1 A
operational current at DC-12	
at 24 V rated value	10 A
at 48 V rated value	6 A
at 60 V rated value	6 A
at 110 V rated value	3 A 2 A
at 125 V rated value	2 A
at 220 V rated value	1 A 0.15 A
at 600 V rated value	0.15 A
operational current at DC-13 • at 24 V rated value	10 A
at 24 V rated value at 48 V rated value	2 A
at 60 V rated value	2 A
at 10 V rated value	1A
at 125 V rated value	0.9 A
at 220 V rated value	0.3 A
at 600 V rated value	0.1 A
design of the miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V	C characteristic: 10 A; 0.4 kA
contact reliability of auxiliary contacts	1 faulty switching per 100 million (17 V, 1 mA)
UL/CSA ratings	
full-load current (FLA) for 3-phase AC motor	
• at 480 V rated value	7.6 A
• at 600 V rated value	9 A
yielded mechanical performance [hp]	
 for single-phase AC motor 	
— at 110/120 V rated value	0.33 hp
— at 230 V rated value	1 hp
• for 3-phase AC motor	
— at 200/208 V rated value	2 hp
— at 220/230 V rated value	3 hp
— at 460/480 V rated value	5 hp
— at 575/600 V rated value	7.5 hp
contact rating of auxiliary contacts according to UL	A600 / Q600
Short-circuit protection	
design of the fuse link	

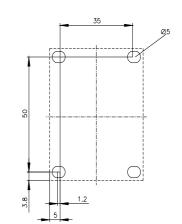
 for short-circuit protection of the main circuit 				
 — with type of coordination 1 required 	gG: 35A (690V,100kA), aM: 20A (690V,100kA), BS88: 35A (415V,80kA)			
— with type of assignment 2 required	gG: 20A (690V,100kA), aM: 16A (690V, 100kA), BS88: 20A (415V, 80kA)			
 for short-circuit protection of the auxiliary switch required 	gG: 10 A (500 V, 1 kA)			
Installation/ mounting/ dimensions				
mounting position	+/-180° rotation possible on vertical mounting surface; can be tilted forward and			
factoring method aids by aids mounting	backward by +/- 22.5° on vertical mounting surface Yes			
fastening method side-by-side mounting				
fastening method	screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715 58 mm			
height	45 mm			
depth	73 mm			
required spacing				
with side-by-side mounting				
— forwards	10 mm			
— upwards	10 mm			
— downwards	10 mm			
— at the side	0 mm			
for grounded parts				
forwards	10 mm			
	10 mm			
— upwards — at the side	6 mm			
— downwards	o mm			
 for live parts forwards 	10 mm			
	10 mm			
— upwards				
— downwards	10 mm			
— at the side	6 mm			
Connections/ Terminals				
type of electrical connection				
• for main current circuit	screw-type terminals			
for auxiliary and control circuit	screw-type terminals			
at contactor for auxiliary contacts	Screw-type terminals			
of magnet coil	Screw-type terminals			
type of connectable conductor cross-sections				
for main contacts				
— solid	2x (0.5 1.5 mm ²), 2x (0.75 2.5 mm ²), 2x 4 mm ²			
— solid or stranded	2x (0,5 1,5 mm ²), 2x (0,75 2,5 mm ²), 2x 4 mm ²			
— finely stranded with core end processing	2x (0.5 1.5 mm ²), 2x (0.75 2.5 mm ²)			
for AWG cables for main contacts	2x (20 16), 2x (18 14), 2x 12			
connectable conductor cross-section for main contacts	0.5 4 mm²			
• solid	0.5 4 mm ²			
• stranded	0.5 4 mm ²			
finely stranded with core end processing	0.5 2.5 mm²			
connectable conductor cross-section for auxiliary contacts	0.5 4 mm²			
solid or stranded	0.5 4 mm ²			
finely stranded with core end processing	0.5 2.5 mm²			
type of connectable conductor cross-sections				
for auxiliary contacts				
— solid or stranded	2x (0.5 1.5 mm ²), 2x (0.75 2.5 mm ²), 2x 4 mm ²			
— finely stranded with core end processing	2x (0.5 1.5 mm ²), 2x (0.75 2.5 mm ²)			
for AWG cables for auxiliary contacts	2x (20 16), 2x (18 14), 2x 12			
AWG number as coded connectable conductor cross section				
for main contacts	20 12			
for auxiliary contacts	20 12			
Safety related data				
product function				
mirror contact according to IEC 60947-4-1	Yes			
 positively driven operation according to IEC 60947-5-1 	No			
suitable for safety function	Yes			
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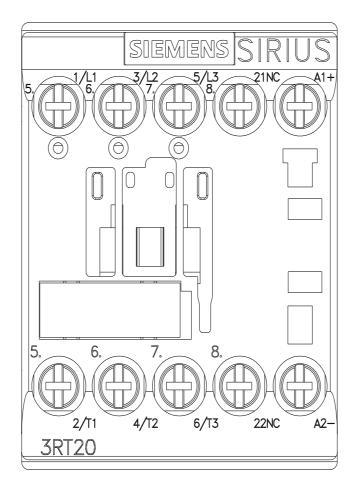
-	y-related switching OFF		'es		
service life maximum	l	2	0 a		
test wear-related serv	vice life necessary	Y	′es		
proportion of danger	ous failures				
 with low demand 	d rate according to SN 3192	20 4	0 %		
 with high deman 	d rate according to SN 319	20 7	3 %		
	lemand rate according to		000 000		
			00 FIT		
failure rate [FIT] with low demand rate according to SN 31920			00111		
ISO 13849					
device type according	g to ISO 13849-1	3			
overdimensioning ac	cording to ISO 13849-2 no	ecessary Y	′es		
IEC 61508	.	,			
	cording to IEC 61508-2	Т	ype A		
Electrical Safety			<i>jp i i i</i>		
	n the front according to I	C 60529	>20		
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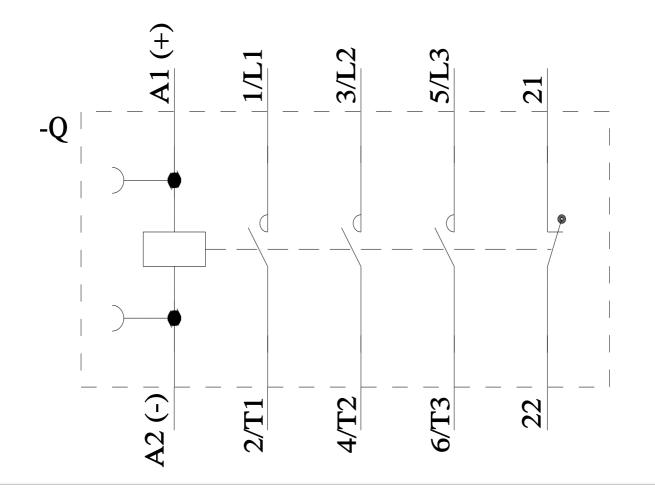








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