SIEMENS

Data sheet 3RT2016-1AF02



Power contactor, AC-3 9 A, 4 kW / 400 V 1 NC, 110 V AC, 50 / 60 Hz 3-pole, Size S00 screw terminal

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 	No	
auxiliary switch	Yes	
power loss [W] for rated value of the current		
 at AC in hot operating state 	2.1 W	
 at AC in hot operating state per pole 	0.7 W	
without load current share typical	4.2 W	
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 safe isolation between coil and main contacts acc. to EN 60947-1	400 V	
shock resistance at rectangular impulse		
• at AC	6,7g / 5 ms, 4,2g / 10 ms	
shock resistance with sine pulse		
• at AC	10,5g / 5 ms, 6,6g / 10 ms	
mechanical service life (switching 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 acc. to IEC 81346-2	Q	
Substance Prohibitance (Date)	01.10.2009	
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 acc. to IEC 60068-2-30 maximum	95 %	

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 $^{\circ}\text{C}$ rated value	22 A	
— up to 690 V at ambient temperature 60 $^{\circ}\text{C}$ rated value	20 A	
• at AC-3		
— 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-3e		
— 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 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 operational current for approx. 200000 operating	4 mm ²	
cycles at AC-4		
at 400 V rated value	4.1 A	
at 690 V rated value	3.3 A	
operational current		
at 1 current path at DC-1		
— at 24 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	
	0.0 A	
with 2 current paths in series at DC-1 at 24 V rated value.	20. A	
— at 24 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		

-t 04 \ /tdb	00.4	
— at 24 V rated value	20 A	
— at 110 V rated value	20 A	
— at 220 V rated value	20 A	
— at 440 V rated value	1.3 A	
— at 600 V rated value	1 A	
 at 1 current path at DC-3 at DC-5 		
— at 24 V rated value	20 A	
— at 110 V rated value	0.1 A	
 with 2 current paths in series at DC-3 at DC-5 		
— at 24 V rated value	20 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 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	5 kW	
operating power for approx. 200000 operating cycles		
at AC-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	
 limited to 30 s switching at zero current maximum 	66 A; Use minimum cross-section acc. to AC-1 rated value	
limited to 60 s switching at zero current maximum	55 A; Use minimum cross-section acc. to AC-1 rated value	
no-load switching frequency		
• at AC	10 000 1/h	
operating frequency		
at AC-1 maximum	1 000 1/h	
• at AC-2 maximum	750 1/h	
at AC-3 maximum	750 1/h	
• 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	AC	
control supply voltage at AC		

 at 50 Hz rated value 	110 V		
at 60 Hz rated value	110 V		
operating range factor control supply voltage rated			
value of magnet coil at AC			
● at 50 Hz	0.8 1.1		
• at 60 Hz	0.85 1.1		
apparent pick-up power of magnet coil at AC			
● at 50 Hz	27 VA		
● at 60 Hz	24.3 VA		
inductive power factor with closing power of the coil			
● at 50 Hz	0.8		
● at 60 Hz	0.75		
apparent holding power of magnet coil at AC			
● at 50 Hz	4.2 VA		
● at 60 Hz	3.3 VA		
inductive power factor with the holding power of the			
coil	0.05		
• at 50 Hz	0.25		
• at 60 Hz	0.25		
closing delay	0.05		
• at AC	9 35 ms		
opening delay	- 40		
• at AC	7 13 ms		
arcing time	10 15 ms		
control version of the switch operating mechanism	Standard A1 - A2		
Auxiliary circuit			
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		
• at 125 V rated value	2 A		
• at 220 V rated value	1 A		
• at 600 V rated value	0.15 A		
operational current at DC-13			
at 24 V rated value	10 A		
at 48 V rated value	2 A		
at 60 V rated value	2 A		
at 110 V rated value	1 A		
at 125 V rated value	0.9 A		
at 220 V rated value	0.3 A		
at 600 V rated value	0.1 A		
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 violated machanical performance [hp]	9 A		
yielded mechanical performance [hp]			
• for single-phase AC motor	0.00 hp		
— at 110/120 V rated value	0.33 hp		
— at 230 V rated value	1 hp		
— at 230 V rated value● 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		
	1/400° retation receible on vertical requiring ourfocal can be tilted	
mounting position	+/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface	
fastening method	screw and snap-on mounting onto 35 mm standard mounting rail	
nactorning mounds	according to DIN EN 60715	
• side-by-side mounting	Yes	
height	58 mm	
width	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	
— upwards	10 mm	
— at the side	6 mm	
— downwards	10 mm	
for live parts		
— forwards	10 mm	
— upwards	10 mm	
— downwards	10 mm	
— at the side	6 mm	
Connections/ Terminals	•	
type of electrical connection		
for main current circuit	scrow type terminals	
for auxiliary and control circuit	screw-type terminals screw-type terminals	
at contactor for auxiliary contacts	Screw-type terminals Screw-type terminals	
-		
of magnet coil type of connectable conductor cross-sections	Screw-type terminals	
for main contacts		
— solid	2v (0.5	
solid solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²), 2x 4 mm² 2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²), 2x 4 mm²	
	2x (0,5 1,5 mm²), 2x (0,75 2,5 mm²), 2x 4 mm² 2x (0,5 1,5 mm²), 2x (0,75 2,5 mm²)	
 finely stranded with core end processing at AWG cables for main contacts 	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)	
	2x (20 16), 2x (18 14), 2x 12	
connectable conductor cross-section for main contacts		
• solid	0.5 4 mm²	
stranded	0.5 4 mm²	
finely stranded with core end processing	0.5 2.5 mm ²	
connectable conductor cross-section for auxiliary	- 10 m = 10 mm	
contacts		
solid or stranded	0.5 4 mm²	
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 mm²), 2x (0.75 2.5 mm²), 2x 4 mm²	
	, , , , , , , , , , , , , , , , , , , ,	

 finely stranded with core end processing 	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)	
at 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 acc. to IEC 60947-4-1	Yes	
B10 value with high demand rate acc. to SN 31920	1 000 000	
proportion of dangerous failures		
 with low demand rate acc. to SN 31920 	40 %	
with high demand rate acc. to SN 31920	73 %	
failure rate [FIT] with low demand rate acc. to SN 31920	100 FIT	
protection class IP on the front acc. to IEC 60529	IP20	
touch protection on the front acc. to IEC 60529	finger-safe, for vertical contact from the front	
suitability for use		
 safety-related switching OFF 	Yes	
Certificates/ approvals		

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General Product Approval





Confirmation



<u>KC</u>



EMC Functional Safety/Safety of Machinery	Declaration of Conformity	Test Certificates
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Type Examination Certificate



UK Declaration of Conformity Type Test Certificates/Test Report

Special Test Certificate

Marine / Shipping













Marine / Shipping

other



Confirmation



Confirmation

Further information

Information- and Downloadcenter (Catalogs, Brochures,...)

https://www.siemens.com/ic10

Industry Mall (Online ordering system)

https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2016-1AF02

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2016-1AF02

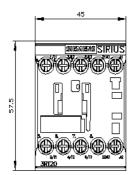
Service&Support (Manuals, Certificates, Characteristics, FAQs,...) https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AF02

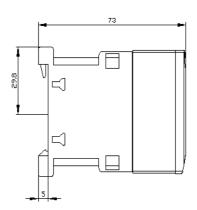
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

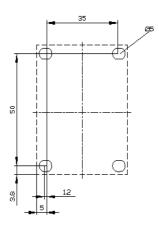
 $\underline{\text{http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2016-1AF02\&lang=en}}$

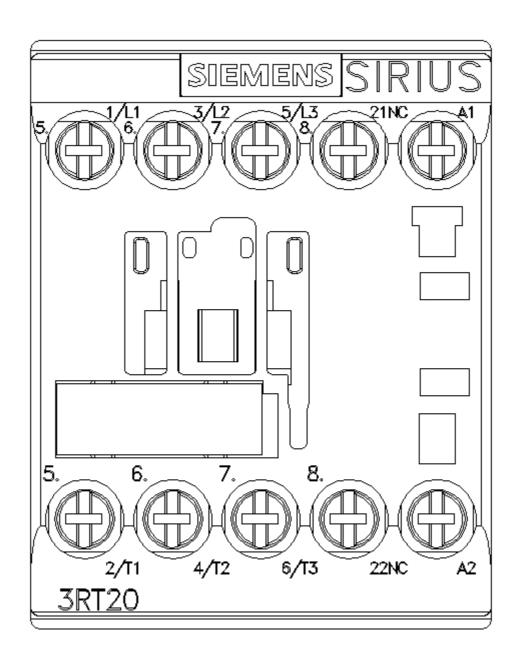
Characteristic: Tripping characteristics, l²t, Let-through current https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AF02/char

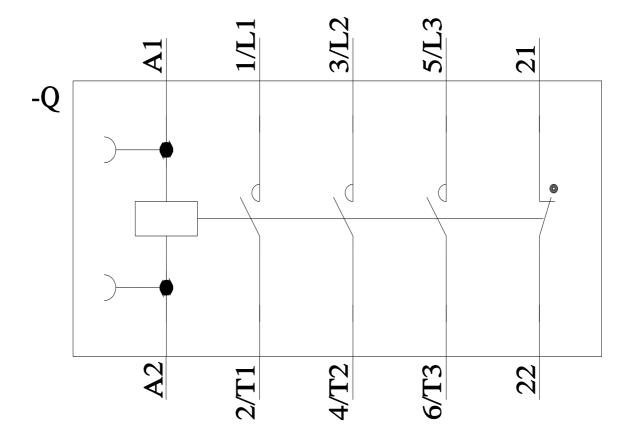
Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2016-1AF02&objecttype=14&gridview=view1











last modified: 2/15/2022 🖸