SIEMENS

Data sheet 3RT2028-1AP04



Power contactor, AC-3 38 A, 18.5 kW / 400 V 2 NO + 2 NC, 230 V AC 50 Hz, 3-pole, size S0 screw terminals Removable auxiliary switch

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S0
product extension	
 function module for communication 	No
auxiliary switch	No
power loss [W] for rated value of the current	
 at AC in hot operating state 	9.6 W
 at AC in hot operating state per pole 	3.2 W
 without load current share typical 	9.8 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 according to EN 60947-1	400 V
shock resistance at rectangular impulse	
• at AC	8,3g / 5 ms, 5,3g / 10 ms
shock resistance with sine pulse	
• at AC	13,5g / 5 ms, 8,3g / 10 ms
mechanical service life (switching cycles)	
 of contactor typical 	10 000 000
 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
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 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	50 A	
• at AC-1		
 up to 690 V at ambient temperature 40 °C rated value 	50 A	
— up to 690 V at ambient temperature 60 °C rated value	42 A	
• at AC-3		
— at 400 V rated value	38 A	
— at 500 V rated value	32 A	
— at 690 V rated value	21 A	
• at AC-3e		
— at 400 V rated value	38 A	
— at 500 V rated value	32 A	
— at 690 V rated value	21 A	
• at AC-4 at 400 V rated value	22 A	
• at AC-5a up to 690 V rated value	44 A	
at AC-5b up to 400 V rated value	31.5 A	
• at AC-6a		
up to 230 V for current peak value n=20 rated value	30.8 A	
 up to 400 V for current peak value n=20 rated value 	30.8 A	
 up to 500 V for current peak value n=20 rated value 	30.8 A	
— up to 690 V for current peak value n=20 rated value value	21 A	
 at AC-6a up to 230 V for current peak value n=30 rated value 	20.5 A	
— up to 400 V for current peak value n=30 rated value	20.5 A	
 up to 500 V for current peak value n=30 rated value 	21.4 A	
— up to 690 V for current peak value n=30 rated value	21 A	
minimum cross-section in main circuit at maximum AC-1 rated value operational current for approx. 200000 operating	10 mm ²	
cycles at AC-4		
at 400 V rated value	12 A	
• at 690 V rated value	12 A	
operational current		
• at 1 current path at DC-1		
— at 24 V rated value	35 A	
— at 110 V rated value	4.5 A	
— at 220 V rated value	1 A	
— at 440 V rated value	0.4 A	
— at 600 V rated value	0.25 A	
with 2 current paths in series at DC-1	0.207	
— at 24 V rated value	35 A	
	35 A	
— at 110 V rated value		
— at 220 V rated value	5 A	
— at 440 V rated value	1 A	
— at 600 V rated value	0.8 A	
 with 3 current paths in series at DC-1 		

— at 24 V rated value	35 A		
— at 110 V rated value	35 A		
— at 220 V rated value	35 A		
— at 440 V rated value	2.9 A		
— at 600 V rated value	1.4 A		
 at 1 current path at DC-3 at DC-5 			
— at 24 V rated value	20 A		
— at 110 V rated value	2.5 A		
— at 220 V rated value	1 A		
— at 440 V rated value	0.09 A		
— at 600 V rated value	0.06 A		
 with 2 current paths in series at DC-3 at DC-5 			
— at 24 V rated value	35 A		
— at 110 V rated value	15 A		
— at 220 V rated value	3 A		
— at 440 V rated value	0.27 A		
— at 600 V rated value	0.16 A		
 with 3 current paths in series at DC-3 at DC-5 			
— at 24 V rated value	35 A		
— at 110 V rated value	35 A		
— at 220 V rated value	10 A		
— at 440 V rated value	0.6 A		
— at 600 V rated value	0.6 A		
operating power			
• at AC-3			
— at 230 V rated value	11 kW		
— at 400 V rated value	18.5 kW		
— at 500 V rated value	18.5 kW		
— at 690 V rated value	18.5 kW		
• at AC-3e			
— at 230 V rated value	11 kW		
— at 400 V rated value	18.5 kW		
— at 500 V rated value	18.5 kW		
— at 690 V rated value	18.5 kW		
operating power for approx. 200000 operating cycles			
at AC-4			
 at 400 V rated value 	6 kW		
at 690 V rated value	10.3 kW		
operating apparent power at AC-6a			
 up to 230 V for current peak value n=20 rated value 	12.2 kVA		
 up to 400 V for current peak value n=20 rated value 	21.3 kVA		
 up to 500 V for current peak value n=20 rated value 	26.6 kVA		
up to 690 V for current peak value n=20 rated value	25 kVA		
operating apparent power at AC-6a			
 up to 230 V for current peak value n=30 rated value 	8.1 kVA		
 up to 400 V for current peak value n=30 rated value 	14.2 kVA		
 up to 500 V for current peak value n=30 rated value 	18.5 kVA		
• up to 690 V for current peak value n=30 rated value	25 kVA		
short-time withstand current in cold operating state up to 40 °C			
 limited to 1 s switching at zero current maximum 	593 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 5 s switching at zero current maximum 	395 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 10 s switching at zero current maximum 	260 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 30 s switching at zero current maximum 	186 A; Use minimum cross-section acc. to AC-1 rated value		
limited to 60 s switching at zero current maximum	152 A; Use minimum cross-section acc. to AC-1 rated value		
no-load switching frequency			
• at AC	5 000 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		

-t AO 2i	750.4%	
• 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	230 V	
operating range factor control supply voltage rated		
value of magnet coil at AC		
• at 50 Hz	0.8 1.1	
apparent pick-up power of magnet coil at AC		
• at 50 Hz	77 VA	
inductive power factor with closing power of the coil		
• at 50 Hz	0.82	
apparent holding power of magnet coil at AC	0.01/4	
• at 50 Hz	9.8 VA	
inductive power factor with the holding power of the coil		
• at 50 Hz	0.25	
closing delay	V.=V	
• at AC	8 40 ms	
opening delay	· · · · · · · · · · · · · · · · · · ·	
• at AC	4 16 ms	
arcing time	10 10 ms	
control version of the switch operating mechanism	Standard A1 - A2	
Auxiliary circuit	otanida (1717)	
number of NC contacts for auxiliary contacts	2	
instantaneous contact	2	
number of NO contacts for auxiliary contacts	2	
instantaneous contact		
operational current at AC-12 maximum	10 A	
operational current at AC-15		
 at 230 V rated value 	6 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	6 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	34 A	
• at 600 V rated value	27 A	
yielded mechanical performance [hp]		
• for single-phase AC motor		
— at 110/120 V rated value	3 hp	
— at 230 V rated value	5 hp	
• for 3-phase AC motor		

— at 200/208 V rated value	10 hp	
 at 220/230 V rated value 	10 hp	
 — at 460/480 V rated value 	25 hp	
— at 575/600 V rated value	25 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: 125A (690V,100kA), aM: 50A (690V,100kA), BS88: 125A	
— with type of assignment 2 required	(415V,80kA) gG: 50A (690V,100kA), aM: 25A (690V, 100kA), BS88: 50A (415V,	
for short-circuit protection of the auxiliary switch	80kA) gG: 10 A (500 V, 1 kA)	
required		
Installation/ mounting/ dimensions	±/ 100° rotation possible on vertical mounting surfaces can be titled	
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 according to DIN EN 60715	
side-by-side mounting	Yes	
height	85 mm	
width	45 mm	
depth	141 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	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 (1 2.5 mm²), 2x (2.5 10 mm²)	
— solid or stranded	2x (1 2.5 mm²), 2x (2.5 10 mm²)	
finely stranded with core end processing	2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm²	
at AWG cables for main contacts	2x (16 12), 2x (14 8)	
connectable conductor cross-section for main		
contacts		
• solid	1 10 mm²	
• stranded	1 10 mm²	
finely stranded with core end processing	1 10 mm²	
connectable conductor cross-section for auxiliary contacts		
 solid or stranded 	0.5 2.5 mm²	
• finally atranded with core and processing		
finely stranded with core end processing	0.5 2.5 mm ²	

for auxiliary contacts

 solid or stranded
 finely stranded with core end processing
 at AWG cables for auxiliary contacts

 AWG number as coded connectable conductor cross section

 for main contacts
 for auxiliary contacts

 16 ... 8
 for auxiliary contacts
 22 (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)
 2x (20 ... 16), 2x (18 ... 14)

 AWG number as coded connectable conductor cross section
 for main contacts
 for auxiliary contacts
 20 ... 14

Safety related data		
product function		
 mirror contact according to IEC 60947-4-1 	Yes	
 positively driven operation according to IEC 60947- 5-1 	No	
B10 value with high demand rate according to SN 31920	450 000	
proportion of dangerous failures		
 with low demand rate according to SN 31920 	40 %	
 with high demand rate according to SN 31920 	73 %	
failure rate [FIT] with low demand rate according to SN 31920	100 FIT	
T1 value for proof test interval or service life according to IEC 61508	20 y	
protection class IP on the front according to IEC 60529	IP20	
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front	
suitability for use		
 safety-related switching OFF 	Yes	
0-4:5:-4/		

Certificates/ approvals

General Product Approval



Confirmation





<u>KC</u>



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



Type Test Certificates/Test Report

Special Test Certificate

Marine / Shipping













other

Confirmation



Confirmation

Further informatior

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=3RT2028-1AP04

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2028-1AP04

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AP04

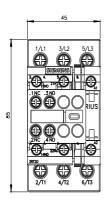
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/cax de.aspx?mlfb=3RT2028-1AP04&lang=en

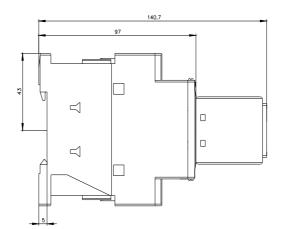
Characteristic: Tripping characteristics, I2t, Let-through current

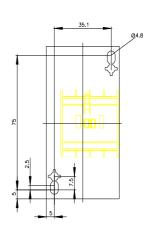
https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AP04/char

Further characteristics (e.g. electrical endurance, switching frequency)

http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-1AP04&objecttype=14&gridview=view1







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