SIEMENS

Data sheet 3RT2024-1AP00

power contactor, AC-3 12 A, $5.5~\mathrm{kW}$ / 400 V 1 NO + 1 NC, 230 V AC, 50 Hz 3-pole, Size S0 screw terminal



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	Yes
Power loss [W] for rated value of the current	
 at AC in hot operating state 	1.5 W
 at AC in hot operating state per pole 	0.5 W
Power loss [W] for rated value of the current without	7.6 W
load current share typical	
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 	400 V
60947-1	

• on the front • of the terminal Shock resistance at rectangular impulse • at AC Shock resistance with sine pulse • at AC 11,8g / 5 ms, 7,4g / 10 ms Mechanical service life (switching cycles) • of contactor typical • of the contactor with added electronics- compatible auxiliary switch block typical • of the contactor with added auxiliary switch block typical • of the contactor with added auxiliary switch block typical • of the contactor with added auxiliary switch block typical Reference code acc. to DIN EN 81346-2 Q Ambient conditions Installation altitude at height above sea level • maximum 2 000 m Ambient temperature • during operation • during storage • 25 +60 °C • 25 +80 °C Main circuit Number of poles for main current circuit 3 Number of NO contacts for main current circuit • at AC-1 at 400 V — at ambient temperature 40 °C rated value • at AC-1 — up to 690 ∨ at ambient temperature 40 °C rated value • at AC-2 — at endo Su at ambient temperature 60 °C rated value • at AC-3 — at 400 V rated value • at AC-3 — at 400 V rated value • at AC-3 — at 400 V rated value • at AC-4 at 400 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 au pto 690 V rated value • at AC-5 up to 690 V rated value • at AC-5 bu pto 690 V rated value • at AC-5 bu pto 690 V rated value • at AC-5 bu pto 690 V rated value • at AC-5 bu pto 400 V rated value • at AC-5 bu pto 400 V rated value • at AC-5 bu pto 400 V rated value • at AC-5 bu pto 400 V rated value • at AC-5 bu pto 400 V rated value	Protection class IP	
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• at AC-5b up to 400 V rated value 9.9 A	● at AC-5a up to 690 V rated value	35.2 A
	·	9.9 A
	• at AC-6a	

 up to 230 V for current peak value n=20 rated value 	11.4 A
 up to 400 V for current peak value n=20 rated value 	11.4 A
— up to 500 V for current peak value n=20 rated value	11.3 A
— up to 690 V for current peak value n=20 rated value	9 A
● at AC-6a	
— up to 230 V for current peak value n=30 rated value	7.6 A
 up to 400 V for current peak value n=30 rated value 	7.6 A
— up to 500 V for current peak value n=30 rated value	7.6 A
— up to 690 V for current peak value n=30 rated value	7.6 A
Minimum cross-section in main circuit	
• at maximum AC-1 rated value	10 mm²
Operating current for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	5.5 A
● at 690 V rated value	5.5 A
Operating 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 	
— at 24 V rated value	35 A
— at 110 V rated value	35 A
— 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
Operating current	

 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-2 at 400 V rated value	5.5 kW
• at AC-3	
— at 230 V rated value	3 kW
— at 400 V rated value	5.5 kW
— at 500 V rated value	5.5 kW
— at 690 V rated value	7.5 kW
Operating power for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	2.6 kW
• at 690 V rated value	4.6 kW
Operating apparent output at AC-6a	
 up to 230 V for current peak value n=20 rated value 	4 500 V·A
 up to 400 V for current peak value n=20 rated value 	7 800 V·A
 up to 500 V for current peak value n=20 rated value 	9 800 V·A
 up to 690 V for current peak value n=20 rated value 	10 700 V·A
Operating apparent output at AC-6a	
 up to 230 V for current peak value n=30 rated value 	3 000 V·A
• up to 400 V for current peak value n=30 rated	5 200 V·A

 up to 500 V for current peak value n=30 rated value 	6 500 V·A
 up to 690 V for current peak value n=30 rated value 	9 000 V·A
Short-time withstand current in cold operating state up to 40 °C	
 limited to 1 s switching at zero current maximum 	210 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 5 s switching at zero current maximum 	210 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 10 s switching at zero current maximum 	162 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 30 s switching at zero current maximum 	103 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 60 s switching at zero current maximum 	88 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	1 000 1/h
• at AC-3 maximum	1 000 1/h
• at AC-4 maximum	300 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
Annarent nick-up nower of magnet coil at AC	

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	65 V·A
Inductive power factor with closing power of the coil	
● at 50 Hz	0.82
Apparent holding power of magnet coil at AC	
● at 50 Hz	7.6 V·A
Inductive power factor with the holding power of the	
coil	
● at 50 Hz	0.25
Closing delay	
● at AC	9 38 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	
Number of NC contacts for auxiliary contacts	
instantaneous contact	1
Number of NO contacts for auxiliary contacts	
• instantaneous contact	1
Operating current at AC-12 maximum	10 A
Operating 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
Operating 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
Operating 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 three-phase AC motor	
• at 480 V rated value	11 A
• at 600 V rated value	11 A
Yielded mechanical performance [hp]	
• for single-phase AC motor	
— at 110/120 V rated value	1 hp
— at 230 V rated value	2 hp
• for three-phase AC motor	
— at 200/208 V rated value	3 hp
— at 220/230 V rated value	3 hp

— at 460/480 V rated value	7.5 hp
— at 575/600 V rated value	10 hp
Contact rating of auxiliary contacts according to UL	A600 / P600

Short-circuit protection	
Design of the fuse link	
 for short-circuit protection of the main circuit 	
— with type of coordination 1 required	gG: 63A (690V,100kA), aM: 32A (690V,100kA), BS88: 63A (415V,80kA)
— with type of assignment 2 required	gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A (415V,80kA)
• for short-circuit protection of the auxiliary switch	gG: 10 A (500 V, 1 kA)

nstallation/ mounting/ dimensions Mounting position	+/-180° rotation possible on vertical mounting surface; can be
Mounting position	•
	tilted forward and backward by +/- 22.5° on vertical mounting surface
NA	
Mounting type	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	97 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
at the side	•

Connections/ Terminals	
Type of electrical connection	
 for main current circuit 	screw-type terminals
 for auxiliary and control current circuit 	screw-type terminals

required

• at contactor for auxiliary contacts	Screw-type terminals
at contactor for auxiliary contacts	Screw-type terminals Screw-type terminals
of magnet coil Time of compostable conductor cross sections	Screw-type terminals
Type of connectable conductor cross-sections	
• for main contacts	20. (4 2.5
— solid	2x (1 2.5 mm²), 2x (2.5 10 mm²)
— single or multi-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 conductors for main contacts	2x (16 12), 2x (14 8)
Connectable conductor cross-section for main	
contacts	4 40 mm²
• solid	1 10 mm²
• stranded	1 10 mm²
finely stranded with core end processing	1 10 mm²
Connectable conductor cross-section for auxiliary contacts	
 single or multi-stranded 	0.5 2.5 mm²
 finely stranded with core end processing 	0.5 2.5 mm²
Type of connectable conductor cross-sections	
 for auxiliary contacts 	
 single or multi-stranded 	2x (0,5 1,5 mm²), 2x (0,75 2,5 mm²)
 finely stranded with core end processing 	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
 at AWG conductors for auxiliary contacts 	2x (20 16), 2x (18 14)
AWG number as coded connectable conductor cross section	
• for main contacts	16 8
• for auxiliary contacts	20 14
Safety related data	
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
Product function	
 Mirror contact acc. to IEC 60947-4-1 	Yes
T1 value for proof test interval or service life acc. to IEC 61508	20 y
Protection against electrical shock	finger-safe

Suitability for use safety-related switching OFF

Yes

General Product Approval







KC





EMC

Functional Safety/Safety of Machinery	Declaration of Conformity	Test Certificates	Marine / Ship- ping
Type Examination Certificate	Miscellaneous EG-Konf.	Type Test Certificates/Test Report Special Test Certificates Special Test Certificates	ABS

Marine / Shipping













other

Confirmation

other



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=3RT2024-1AP00

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2024-1AP00

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1AP00

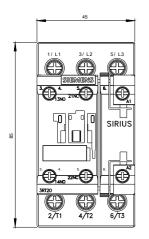
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2024-1AP00&lang=en

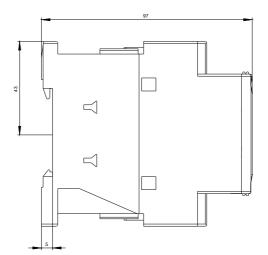
Characteristic: Tripping characteristics, I2t, Let-through current

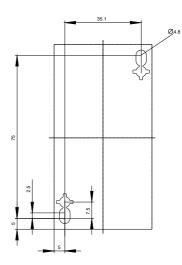
https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1AP00/char

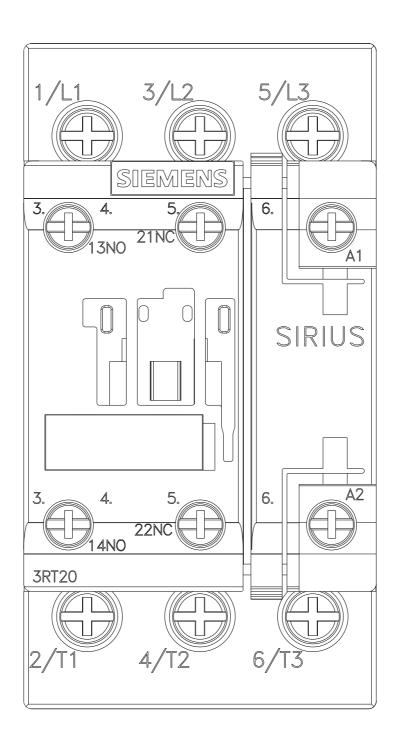
Further characteristics (e.g. electrical endurance, switching frequency)

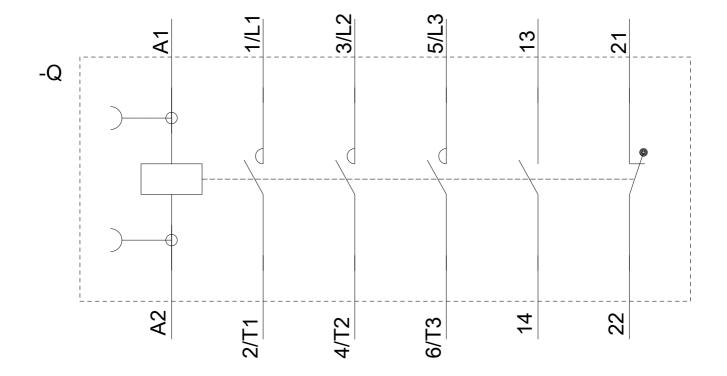
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2024-1AP00&objecttype=14&gridview=view1











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