SIEMENS

Data sheet 3RT2045-1NF30

power contactor, AC-3 80 A, 37 kW / 400 V 1 NO + 1 NC, 84-155 V AC/DC
3-pole, 3 NO, Size S3 screw terminal integrated varistor

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S3
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	15.9 W
● per pole	5.3 W
power loss [W] for rated value of the current without load current share typical	3.5 W
surge voltage resistance	
● of main circuit rated value	8 kV
● of auxiliary circuit rated value	6 kV
maximum permissible voltage for safe isolation between coil and main contacts acc. to EN 60947-1	690 V
shock resistance at rectangular impulse	
● at AC	6.7 g / 5 ms, 4.0 g / 10 ms
● at DC	6.7 g / 5 ms, 4.0 g / 10 ms
shock resistance with sine pulse	
● at AC	10.6 g / 5 ms, 6.3 g / 10 ms
● at DC	10.6 g / 5 ms, 6.3 g / 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 acc. to IEC 81346-2	Q
Substance Prohibitance (Date)	01.03.2017 00:00:00
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
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	1 000 V
operational current	
● at AC-1 at 400 V at ambient temperature 40 °C rated value	125 A
● at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	125 A
— up to 690 V at ambient temperature 60 °C rated value	105 A
— up to 1000 V at ambient temperature 40 °C rated value	60 A
— up to 1000 V at ambient temperature 60 °C rated value	50 A
● at AC-3	
— at 400 V rated value	80 A
— at 500 V rated value	80 A
— at 690 V rated value	58 A
— at 1000 V rated value	30 A
● at AC-4 at 400 V rated value	66 A
● at AC-5a up to 690 V rated value	110 A
● at AC-5b up to 400 V rated value	80 A
● at AC-6a	
— up to 230 V for current peak value n=20 rated value	80 A
— up to 400 V for current peak value n=20 rated value	80 A
— up to 500 V for current peak value n=20 rated value	80 A
— up to 690 V for current peak value n=20 rated value	58 A
● at AC-6a	
— up to 230 V for current peak value n=30 rated value	54 A
— up to 400 V for current peak value n=30 rated value	54 A
— up to 500 V for current peak value n=30 rated value	54 A
— up to 690 V for current peak value n=30 rated value	54 A
minimum cross-section in main circuit at maximum AC-1 rated value	50 mm²
operational current for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	34 A
● at 690 V rated value	24 A
operational current	
● at 1 current path at DC-1	
— at 24 V rated value	100 A
— at 110 V rated value	9 A
— at 220 V rated value	2 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.4 A
● with 2 current paths in series at DC-1	
— at 24 V rated value	100 A
— at 110 V rated value	100 A
— at 220 V rated value	10 A
— at 440 V rated value	1.8 A
— at 600 V rated value	1 A
● with 3 current paths in series at DC-1	
— at 24 V rated value	100 A
— at 110 V rated value	100 A

— at 220 V rated value	80 A
— at 440 V rated value	4.5 A
— at 600 V rated value	2.6 A
operational current	
● at 1 current path at DC-3 at DC-5	
— at 24 V rated value	40 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.15 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	100 A
— at 110 V rated value	100 A
— at 220 V rated value	7 A
— at 440 V rated value	0.42 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	100 A
— at 110 V rated value	100 A
— at 220 V rated value	35 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.35 A
operating power	
● at AC-2 at 400 V rated value	37 kW
● at AC-3	
— at 230 V rated value	22 kW
— at 400 V rated value	37 kW
— at 500 V rated value	45 kW
— at 690 V rated value	55 kW
— at 1000 V rated value	37 kW
operating power for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	17.9 kW
● at 690 V rated value	21.8 kW
operating apparent power at AC-6a	
● up to 230 V for current peak value n=20 rated value	31 kV·A
● up to 400 V for current peak value n=20 rated value	55 kV·A
● up to 500 V for current peak value n=20 rated value	69 kV·A
● up to 690 V for current peak value n=20 rated value	69 kV·A
operating apparent power at AC-6a	
● up to 230 V for current peak value n=30 rated value	21.5 kV·A
● up to 400 V for current peak value n=30 rated value	37.4 kV·A
● up to 500 V for current peak value n=30 rated value	46.7 kV·A
● up to 690 V for current peak value n=30 rated value	64.5 kV·A
short-time withstand current in cold operating state up to 40 °C	
● limited to 1 s switching at zero current maximum	1 500 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 5 s switching at zero current maximum	1 186 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 10 s switching at zero current maximum	851 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 30 s switching at zero current maximum	538 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 60 s switching at zero current maximum	423 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
● at AC	1 000 1/h
● at DC	1 000 1/h
operating frequency	
● at AC-1 maximum	900 1/h
● at AC-2 maximum	400 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/DC
control supply voltage at AC	
● at 50 Hz rated value	83 ... 155 V
● at 60 Hz rated value	83 ... 155 V
control supply voltage at DC	
● rated value	83 ... 155 V
operating range factor control supply voltage rated value of magnet coil at DC	
● initial value	0.8
● full-scale value	1.1
operating range factor control supply voltage rated value of magnet coil at AC	
● at 50 Hz	0.8 ... 1.1
● at 60 Hz	0.8 ... 1.1
design of the surge suppressor	with varistor
inrush current peak	1.5 A
duration of inrush current peak	50 µs
locked-rotor current mean value	1.1 A
locked-rotor current peak	2.7 A
duration of locked-rotor current	150 ms
holding current mean value	15 mA
apparent pick-up power of magnet coil at AC	
● at 50 Hz	151 V·A
● at 60 Hz	151 V·A
apparent holding power of magnet coil at AC	
● at 50 Hz	3.5 V·A
● at 60 Hz	3.5 V·A
closing power of magnet coil at DC	76 W
holding power of magnet coil at DC	2.7 W
closing delay	
● at AC	50 ... 70 ms
● at DC	50 ... 70 ms
opening delay	
● at AC	38 ... 57 ms
● at DC	38 ... 57 ms
arcing time	10 ... 20 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
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	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	77 A
● at 600 V rated value	62 A
yielded mechanical performance [hp]	
● for single-phase AC motor	
— at 110/120 V rated value	7.5 hp
— at 230 V rated value	15 hp
● for 3-phase AC motor	
— at 200/208 V rated value	25 hp
— at 220/230 V rated value	30 hp
— at 460/480 V rated value	60 hp
— at 575/600 V rated value	60 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: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA)
— with type of assignment 2 required	gG: 160A (690V,100kA), aM: 80A (690V,100kA), BS88: 125A (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 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	140 mm
width	70 mm
depth	152 mm
required spacing	
● with side-by-side mounting	
— forwards	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
● for grounded parts	
— forwards	20 mm
— upwards	10 mm
— at the side	10 mm
— downwards	10 mm
● for live parts	
— forwards	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	10 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	
— finely stranded with core end processing	2x (2.5 ... 35 mm²), 1x (2.5 ... 50 mm²)
● at AWG cables for main contacts	2x (10 ... 1/0), 1x (10 ... 2)
connectable conductor cross-section for main contacts	
● solid	2.5 ... 16 mm²
● stranded	6 ... 70 mm²
● finely stranded with core end processing	2.5 ... 50 mm²
connectable conductor cross-section for auxiliary contacts	
● solid or 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	
— solid or 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 cables for auxiliary contacts	2x (20 ... 16), 2x (18 ... 14)
AWG number as coded connectable conductor cross section	
● for main contacts	10 ... 2
● for auxiliary contacts	20 ... 14
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
product function positively driven operation acc. to IEC 60947-5-1	No
T1 value for proof test interval or service life acc. to IEC 61508	20 y
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 on	No
● safety-related switching OFF	Yes

Certificates/ approvals

General Product Approval					EMC
CSA	CCC	UL	KC	EAC	RCM

Functional Safety/Safety of Machinery	Declaration of Conformity		Test Certificates		Marine / Shipping
Type Examination Certificate	UK Declaration of Conformity	EG-Konf.	Special Test Certific-ate	Type Test Certific-ates/Test Report	ABS

Marine / Shipping	other

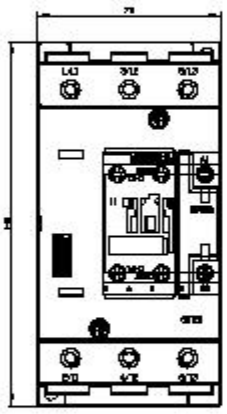
Confirmation

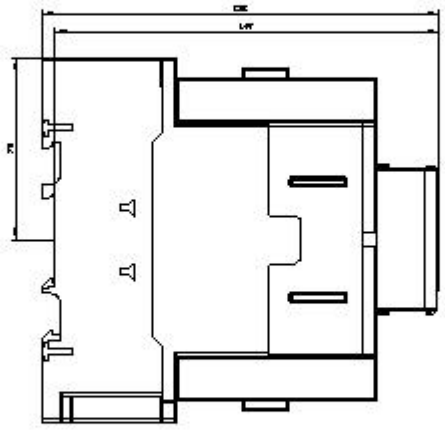
Railway

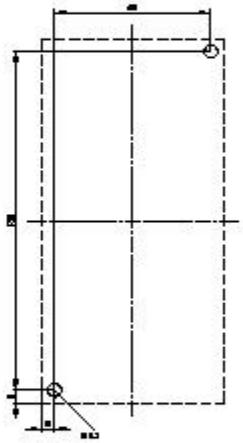
Vibration and Shock

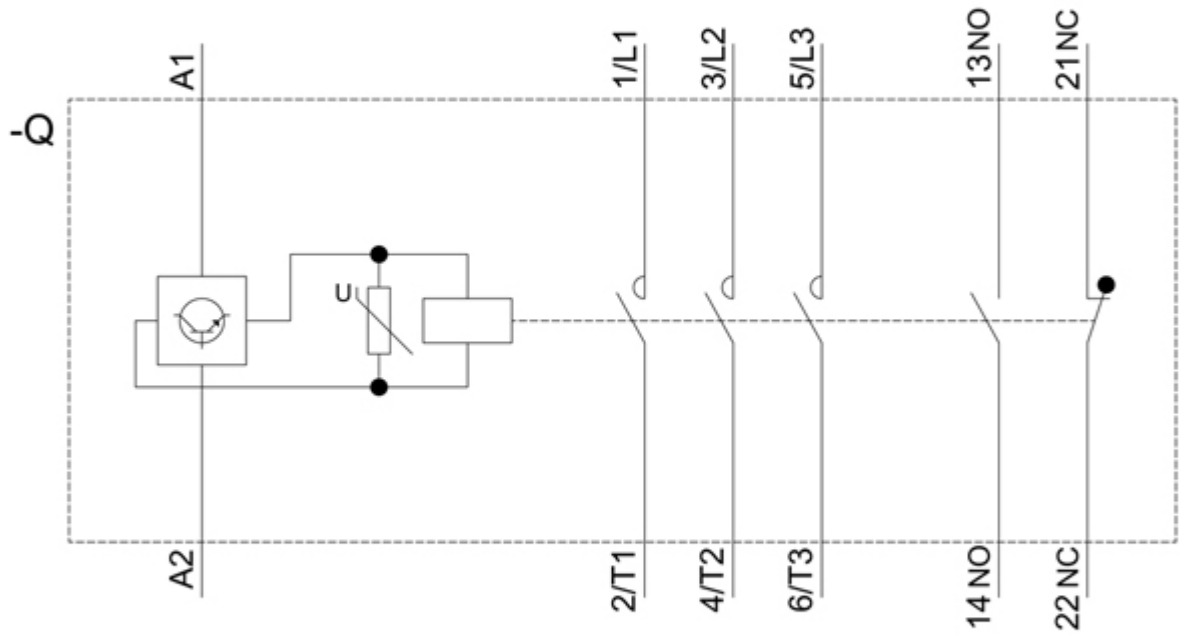
Further information

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=3RT2045-1NF30
Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2045-1NF30
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RT2045-1NF30
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2045-1NF30&lang=en
Characteristic: Tripping characteristics, I²t, Let-through current
https://support.industry.siemens.com/cs/ww/en/ps/3RT2045-1NF30/char
Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2045-1NF30&objecttype=14&gridview=view1









last modified: 7/2/2021