



power contactor, AC-3 95 A, 45 kW / 400 V 1 NO + 1 NC, 230 V AC, 50/60 Hz 3-pole, 3 NO, Size S3 Spring-type terminal

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	19.8 W
• per pole	6.6 W
power loss [W] for rated value of the current without load current share typical	25 W
insulation voltage	
• of main circuit with degree of pollution 3 rated value	1 000 V
• of auxiliary circuit with degree of pollution 3 rated value	690 V
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
shock resistance with sine pulse	
• at AC	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
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	95 %

maximum	
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
• at AC-3e rated value maximum	1 000 V
operational current	
• at AC-1 at 400 V at ambient temperature 40 °C rated value	130 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	130 A
— up to 690 V at ambient temperature 60 °C rated value	110 A
• at AC-3	
— at 400 V rated value	95 A
— at 500 V rated value	95 A
— at 690 V rated value	78 A
— at 1000 V rated value	30 A
• at AC-3e	
— at 400 V rated value	95 A
— at 500 V rated value	95 A
— at 690 V rated value	78 A
— at 1000 V rated value	30 A
• at AC-4 at 400 V rated value	80 A
• at AC-5a up to 690 V rated value	114 A
• at AC-5b up to 400 V rated value	95 A
• at AC-6a	
— up to 230 V for current peak value n=20 rated value	84.4 A
— up to 400 V for current peak value n=20 rated value	84.4 A
— up to 500 V for current peak value n=20 rated value	84.4 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	56.3 A
— up to 400 V for current peak value n=30 rated value	56.3 A
— up to 500 V for current peak value n=30 rated value	56.3 A
— up to 690 V for current peak value n=30 rated value	56.3 A
minimum cross-section in main circuit at maximum AC-1 rated value	50 mm ²
operational current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	42 A
• at 690 V rated value	30 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 — at 600 V rated value	1.8 A 1 A
● with 3 current paths in series at DC-1 — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value	100 A 100 A 80 A 4.5 A 2.6 A
● at 1 current path at DC-3 at DC-5 — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value	40 A 2.5 A 1 A 0.15 A 0.06 A
● with 2 current paths in series at DC-3 at DC-5 — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value	100 A 100 A 7 A 0.42 A 0.16 A
● with 3 current paths in series at DC-3 at DC-5 — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value	100 A 100 A 35 A 0.8 A 0.35 A
operating power ● at AC-2 at 400 V rated value ● at AC-3 — at 230 V rated value — at 400 V rated value — at 500 V rated value — at 690 V rated value — at 1000 V rated value ● at AC-3e — at 1000 V rated value — at 230 V rated value — at 400 V rated value — at 500 V rated value — at 690 V rated value	45 kW 22 kW 45 kW 55 kW 75 kW 37 kW 37 kW 22 kW 45 kW 55 kW 75 kW
operating power for approx. 200000 operating cycles at AC-4 ● at 400 V rated value ● at 690 V rated value	22 kW 27.4 kW
operating apparent power at AC-6a ● up to 230 V for current peak value n=20 rated value ● up to 400 V for current peak value n=20 rated value ● up to 500 V for current peak value n=20 rated value ● up to 690 V for current peak value n=20 rated value	33 kV·A 58 kV·A 73 kV·A 69 kV·A
operating apparent power at AC-6a ● up to 230 V for current peak value n=30 rated value ● up to 400 V for current peak value n=30 rated value ● up to 500 V for current peak value n=30 rated value ● up to 690 V for current peak value n=30 rated value	22.4 kV·A 39 kV·A 48.7 kV·A 67.3 kV·A
short-time withstand current in cold operating state up to 40 °C ● limited to 1 s switching at zero current maximum ● limited to 5 s switching at zero current maximum ● limited to 10 s switching at zero current maximum ● limited to 30 s switching at zero current maximum ● limited to 60 s switching at zero current maximum	1 725 A; Use minimum cross-section acc. to AC-1 rated value 1 297 A; Use minimum cross-section acc. to AC-1 rated value 946 A; Use minimum cross-section acc. to AC-1 rated value 610 A; Use minimum cross-section acc. to AC-1 rated value 486 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 • at AC-2 maximum • at AC-3 maximum • at AC-3e maximum • at AC-4 maximum	900 1/h 350 1/h 850 1/h 850 1/h 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 • at 60 Hz rated value	230 V 230 V
operating range factor control supply voltage rated value of magnet coil at AC • at 50 Hz • at 60 Hz	0.8 ... 1.1 0.85 ... 1.1
apparent pick-up power of magnet coil at AC • at 50 Hz • at 60 Hz	348 V·A 296 V·A
inductive power factor with closing power of the coil • at 50 Hz • at 60 Hz	0.62 0.55
apparent holding power of magnet coil at AC • at 50 Hz • at 60 Hz	25 V·A 18 V·A
inductive power factor with the holding power of the coil • at 50 Hz • at 60 Hz	0.35 0.41
closing delay • at AC	13 ... 50 ms
opening delay • at AC	10 ... 21 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 • at 400 V rated value • at 500 V rated value • at 690 V rated value	6 A 3 A 2 A 1 A
operational current at DC-12 • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 600 V rated value	10 A 6 A 6 A 3 A 2 A 1 A 0.15 A
operational current at DC-13 • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value	10 A 2 A 2 A 1 A 0.9 A

• at 220 V rated value • at 600 V rated value	0.3 A 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 • at 600 V rated value	96 A 77 A
yielded mechanical performance [hp]	
• for single-phase AC motor — at 110/120 V rated value — at 230 V rated value • for 3-phase AC motor — at 200/208 V rated value — at 220/230 V rated value — at 460/480 V rated value — at 575/600 V rated value	10 hp 20 hp 30 hp 30 hp 75 hp 75 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 — with type of assignment 2 required • for short-circuit protection of the auxiliary switch required	gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA) gG: 160 A (690 V, 100 kA), aM: 100 A (690 V, 100 kA), BS88: 125 A (415 V, 80 kA) 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 — upwards — downwards — at the side • for grounded parts — forwards — upwards — at the side — downwards • for live parts — forwards — upwards — downwards — at the side	20 mm 10 mm 10 mm 0 mm 20 mm 10 mm 10 mm 10 mm 20 mm 10 mm 10 mm 10 mm
Connections/ Terminals	
type of electrical connection	
• for main current circuit • for auxiliary and control circuit • at contactor for auxiliary contacts • of magnet coil	screw-type terminals spring-loaded terminals Spring-type terminals Spring-type terminals
type of connectable conductor cross-sections	
• for main contacts — finely stranded with core end processing • at AWG cables for main contacts	2x (2.5 ... 35 mm²), 1x (2.5 ... 50 mm²) 2x (10 ... 1/0), 1x (10 ... 2)

connectable conductor cross-section for main contacts • solid • stranded • finely stranded with core end processing	2.5 ... 16 mm ² 6 ... 70 mm ² 2.5 ... 50 mm ²
connectable conductor cross-section for auxiliary contacts • solid or stranded • finely stranded with core end processing • finely stranded without core end processing	0.5 ... 2.5 mm ² 0.5 ... 2.5 mm ² 0.5 ... 2.5 mm ²
type of connectable conductor cross-sections • for auxiliary contacts — solid or stranded — finely stranded with core end processing — finely stranded without core end processing • at AWG cables for auxiliary contacts	2x (0.5 ... 2.5 mm ²) 2x (0.5 ... 1.5 mm ²) 2x (0.5 ... 2.5 mm ²) 2x (20 ... 16)
AWG number as coded connectable conductor cross section • for main contacts • for auxiliary contacts	10 ... 2 20 ... 14
Safety related data	
product function • mirror contact acc. to IEC 60947-4-1 • positively driven operation acc. to IEC 60947-5-1	Yes No
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 • with high demand rate acc. to SN 31920	40 % 73 %
failure rate [FIT] with low demand rate acc. to SN 31920	100 FIT
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 OFF	Yes
Certificates/ approvals	
General Product Approval	



[Confirmation](#)



[KC](#)



EMC	Functional Safety/Safety of Machinery	Declaration of Conformity	Test Certificates
-----	---------------------------------------	---------------------------	-------------------



[Type Examination Certificate](#)



EG-Konf.

[UK Declaration of Conformity](#)

[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)

Marine / Shipping



other	Railway	Dangerous Good
-------	---------	----------------

[Confirmation](#)

[Vibration and Shock](#)

[Transport Information](#)

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=3RT2046-3AL20>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2046-3AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-3AL20>

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

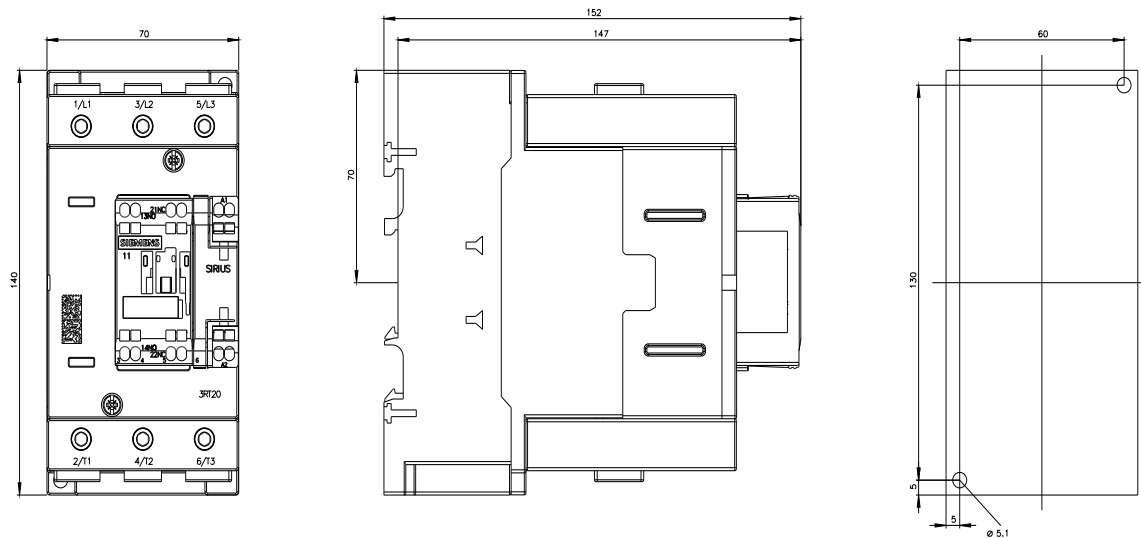
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-3AL20&lang=en

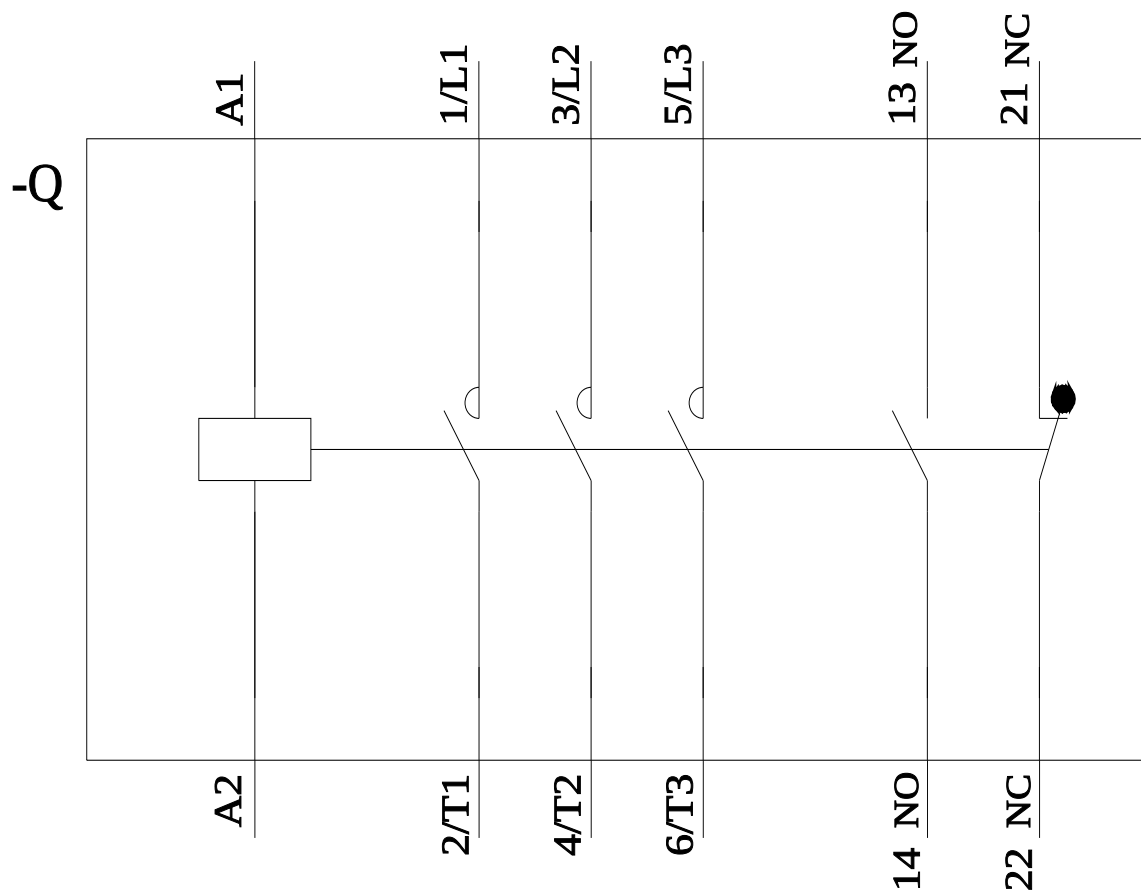
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-3AL20/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-3AL20&objecttype=14&gridview=view1>





last modified:

2/15/2022 [🔗](#)