

power contactor, AC-3 95 A, 45 kW / 400 V 2 NO + 2 NC, 220 V AC, 50/60 Hz 3-pole, 3 NO, Size S3 screw terminal



product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2

General technical data

Size of contactor	S3
<ul style="list-style-type: none"> • Product extension function module for communication 	No
<ul style="list-style-type: none"> • product extension auxiliary switch 	Yes
<ul style="list-style-type: none"> • power loss [W] for rated value of the current at AC in hot operating state 	19.8 W
<ul style="list-style-type: none"> • power loss [W] for rated value of the current at AC in hot operating state per pole 	6.6 W
power loss [W] for rated value of the current without load current share typical	25 W
Surge voltage resistance	
<ul style="list-style-type: none"> • of main circuit rated value 	8 kV
<ul style="list-style-type: none"> • of auxiliary circuit rated value 	6 kV
maximum permissible voltage for safe isolation	

<ul style="list-style-type: none"> • between coil and main contacts acc. to EN 60947-1 	690 V
protection class IP	
<ul style="list-style-type: none"> • on the front 	IP20
<ul style="list-style-type: none"> • of the terminal 	IP00
Shock resistance at rectangular impulse	
<ul style="list-style-type: none"> • at AC 	6.7 g / 5 ms, 4.0 g / 10 ms
Shock resistance with sine pulse	
<ul style="list-style-type: none"> • at AC 	10.6 g / 5 ms, 6.3 g / 10 ms
Mechanical service life (switching cycles)	
<ul style="list-style-type: none"> • of contactor typical 	10 000 000
<ul style="list-style-type: none"> • of the contactor with added electronics-compatible auxiliary switch block typical 	5 000 000
<ul style="list-style-type: none"> • of the contactor with added auxiliary switch block typical 	10 000 000
reference code acc. to DIN EN 81346-2	Q

Ambient conditions	
<ul style="list-style-type: none"> • installation altitude at height above sea level maximum 	2 000 m
<ul style="list-style-type: none"> • ambient temperature during operation 	-25 ... +60 °C
<ul style="list-style-type: none"> • ambient temperature during storage 	-55 ... +80 °C

Main circuit	
number of poles for main current circuit	3
Number of NO contacts for main contacts	3
<ul style="list-style-type: none"> • operating voltage at AC-3 rated value maximum 	1 000 V
<ul style="list-style-type: none"> • Operating current at AC-1 at 400 V <ul style="list-style-type: none"> — at ambient temperature 40 °C rated value 	130 A
<ul style="list-style-type: none"> • Operating current at AC-1 <ul style="list-style-type: none"> — up to 690 V at ambient temperature 40 °C rated value — up to 690 V at ambient temperature 60 °C rated value — up to 1000 V at ambient temperature 40 °C rated value — up to 1000 V at ambient temperature 60 °C rated value 	130 A 110 A 70 A 60 A
<ul style="list-style-type: none"> • Operating current at AC-2 at 400 V rated value 	95 A
<ul style="list-style-type: none"> • <ul style="list-style-type: none"> — operating current at AC-3 at 400 V rated value — Operating current at AC-3 at 500 V rated value 	95 A 95 A

— Operating current at AC-3 at 690 V rated value	78 A
• Operating current at AC-4 at 400 V rated value	80 A
• Operating current at AC-5a up to 690 V rated value	114 A
• Operating current at AC-5b up to 400 V rated value	95 A
• Operating current 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
• Operating current 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
Operating current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	42 A
• at 690 V rated value	30 A
Operating 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
Operating 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	45 kW
•	
— operating power at AC-3 at 230 V rated value	22 kW
— operating power at AC-3 at 400 V rated value	45 kW
— operating power at AC-3 at 500 V rated value	55 kW
— operating power at AC-3 at 690 V rated value	75 kW
Operating power for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	22 kW
• at 690 V rated value	27.4 kW
Operating apparent output at AC-6a	

<ul style="list-style-type: none"> • 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 	<p>33 kV·A</p> <p>58 kV·A</p> <p>73 kV·A</p> <p>69 kV·A</p>
<p>Operating apparent output at AC-6a</p> <ul style="list-style-type: none"> • 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 	<p>22.4 kV·A</p> <p>39 kV·A</p> <p>48.7 kV·A</p> <p>67.3 kV·A</p>
<p>Short-time withstand current in cold operating state up to 40 °C</p> <ul style="list-style-type: none"> • 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 	<p>1 725 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>1 297 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>946 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>610 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>486 A; Use minimum cross-section acc. to AC-1 rated value</p>
<p>No-load switching frequency</p> <ul style="list-style-type: none"> • at AC • Operating frequency at AC-1 maximum • Operating frequency at AC-2 maximum • operating frequency at AC-3 maximum • Operating frequency at AC-4 maximum 	<p>5 000 1/h</p> <p>900 1/h</p> <p>350 1/h</p> <p>850 1/h</p> <p>250 1/h</p>
Control circuit/ Control	
<p>Type of voltage of the control supply voltage</p> <ul style="list-style-type: none"> • Control supply voltage at AC at 50 Hz rated value • Control supply voltage at AC at 60 Hz rated value 	<p>AC</p> <p>220 V</p> <p>220 V</p>
<p>Operating range factor control supply voltage rated value of magnet coil at AC</p> <ul style="list-style-type: none"> • at 50 Hz 	<p>0.8 ... 1.1</p>

<ul style="list-style-type: none"> • at 60 Hz 	0.85 ... 1.1
Apparent pick-up power of magnet coil at AC	
<ul style="list-style-type: none"> • at 50 Hz 	348 V·A
<ul style="list-style-type: none"> • at 60 Hz 	296 V·A
Inductive power factor with closing power of the coil	
<ul style="list-style-type: none"> • at 50 Hz 	0.62
<ul style="list-style-type: none"> • at 60 Hz 	0.55
Apparent holding power of magnet coil at AC	
<ul style="list-style-type: none"> • at 50 Hz 	25 V·A
<ul style="list-style-type: none"> • at 60 Hz 	18 V·A
Inductive power factor with the holding power of the coil	
<ul style="list-style-type: none"> • at 50 Hz 	0.35
<ul style="list-style-type: none"> • at 60 Hz 	0.41
Closing delay	
<ul style="list-style-type: none"> • at AC 	13 ... 50 ms
Opening delay	
<ul style="list-style-type: none"> • at AC 	10 ... 21 ms
Arcing time	10 ... 20 ms
Control version of the switch operating mechanism	Standard A1 - A2

Auxiliary circuit	
<ul style="list-style-type: none"> • Number of NC contacts for auxiliary contacts instantaneous contact 	2
<ul style="list-style-type: none"> • Number of NO contacts for auxiliary contacts instantaneous contact 	2
Operating current at AC-12 maximum	10 A
Operating current at AC-15	
<ul style="list-style-type: none"> • at 230 V rated value 	6 A
<ul style="list-style-type: none"> • at 400 V rated value 	3 A
<ul style="list-style-type: none"> • at 500 V rated value 	2 A
<ul style="list-style-type: none"> • at 690 V rated value 	1 A
<ul style="list-style-type: none"> • Operating current at DC-12 at 24 V rated value 	10 A
<ul style="list-style-type: none"> • operating current at DC-12 at 48 V rated value 	6 A
<ul style="list-style-type: none"> • Operating current at DC-12 at 60 V rated value 	6 A
<ul style="list-style-type: none"> • operating current at DC-12 at 110 V rated value 	3 A
<ul style="list-style-type: none"> • Operating current at DC-12 at 125 V rated value 	2 A
<ul style="list-style-type: none"> • Operating current at DC-12 at 220 V rated value 	1 A
<ul style="list-style-type: none"> • Operating current at DC-12 at 600 V rated value 	0.15 A
<ul style="list-style-type: none"> • Operating current at DC-13 at 24 V rated value 	6 A

• operating current at DC-13 at 48 V rated value	2 A
• Operating current at DC-13 at 60 V rated value	2 A
• operating current at DC-13 at 110 V rated value	1 A
• Operating current at DC-13 at 125 V rated value	0.9 A
• Operating current at DC-13 at 220 V rated value	0.3 A
• Operating current at DC-13 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	96 A
• at 600 V rated value	77 A
yielded mechanical performance [hp]	
• for single-phase AC motor	
— at 110/120 V rated value	10 hp
— at 230 V rated value	20 hp
• for three-phase AC motor	
— at 200/208 V rated value	30 hp
— at 220/230 V rated value	30 hp
— at 460/480 V rated value	75 hp
— at 575/600 V rated value	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	gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA)
• Design of the fuse link for short-circuit protection of the main circuit with type of assignment 2 required	gG: 160 A (690 V, 100 kA), aM: 100 A (690 V, 100 kA), BS88: 125 A (415 V, 80 kA)
• design of the fuse link 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
• mounting type	screw and snap-on mounting onto 35 mm standard mounting rail according to DIN EN 60715
• mounting type side-by-side mounting	Yes
height	140 mm
width	70 mm
depth	195 mm

required spacing	
<ul style="list-style-type: none"> • with side-by-side mounting <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side • for grounded parts <ul style="list-style-type: none"> — forwards — upwards — at the side — downwards • for live parts <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side 	<p>20 mm</p> <p>10 mm</p> <p>10 mm</p> <p>0 mm</p> <p>20 mm</p> <p>10 mm</p> <p>10 mm</p> <p>10 mm</p> <p>20 mm</p> <p>10 mm</p> <p>10 mm</p> <p>10 mm</p>

Connections/ Terminals

<ul style="list-style-type: none"> • type of electrical connection for main current circuit • type of electrical connection for auxiliary and control current circuit • Type of electrical connection at contactor for auxiliary contacts • Type of electrical connection of magnet coil 	<p>screw-type terminals</p> <p>screw-type terminals</p> <p>Screw-type terminals</p> <p>Screw-type terminals</p>
<ul style="list-style-type: none"> • type of connectable conductor cross-sections for main contacts finely stranded with core end processing • type of connectable conductor cross-sections at AWG conductors for main contacts 	<p>2x (2.5 ... 35 mm²), 1x (2.5 ... 50 mm²)</p> <p>2x (10 ... 1/0), 1x (10 ... 2)</p>
<p>connectable conductor cross-section for main contacts</p> <ul style="list-style-type: none"> • solid • stranded • finely stranded with core end processing 	<p>2.5 ... 16 mm²</p> <p>6 ... 70 mm²</p> <p>2.5 ... 50 mm²</p>
<p>connectable conductor cross-section for auxiliary contacts</p> <ul style="list-style-type: none"> • single or multi-stranded • finely stranded with core end processing • type of connectable conductor cross-sections for auxiliary contacts single or multi-stranded • type of connectable conductor cross-sections for auxiliary contacts finely stranded with core end processing 	<p>0.5 ... 2.5 mm²</p> <p>0.5 ... 2.5 mm²</p> <p>2x (0,5 ... 1,5 mm²), 2x (0,75 ... 2,5 mm²)</p> <p>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)</p>

<ul style="list-style-type: none"> • type of connectable conductor cross-sections at AWG conductors for auxiliary contacts 	2x (20 ... 16), 2x (18 ... 14)
AWG number as coded connectable conductor cross section <ul style="list-style-type: none"> • for main contacts • for auxiliary contacts 	10 ... 2 20 ... 14

Safety related data

B10 value <ul style="list-style-type: none"> • with high demand rate acc. to SN 31920 	1 000 000
proportion of dangerous failures <ul style="list-style-type: none"> • with low demand rate acc. to SN 31920 • with high demand rate acc. to SN 31920 	40 % 73 %
failure rate [FIT] <ul style="list-style-type: none"> • with low demand rate acc. to SN 31920 	100 FIT
Product function <ul style="list-style-type: none"> • Mirror contact acc. to IEC 60947-4-1 • positively driven operation acc. to IEC 60947-5-1 	Yes No
T1 value for proof test interval or service life acc. to IEC 61508	20 y
protection against electrical shock	finger-safe when touched vertically from front acc. to IEC 60529
Suitability for use safety-related switching OFF	Yes

Certificates/ approvals

General Product Approval	EMC
---------------------------------	------------



[KC](#)



Declaration of Conformity	Test Certificates	Marine / Shipping
----------------------------------	--------------------------	--------------------------



[Miscellaneous](#)

[Special Test Certificate](#)



Marine / Shipping	other
--------------------------	--------------



[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=3RT2046-1AN24>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2046-1AN24>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AN24>

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

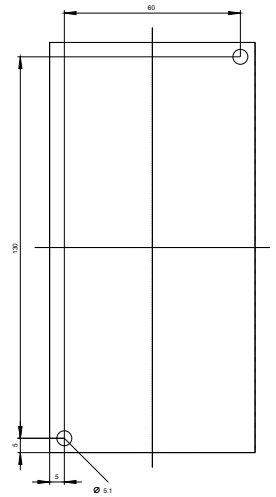
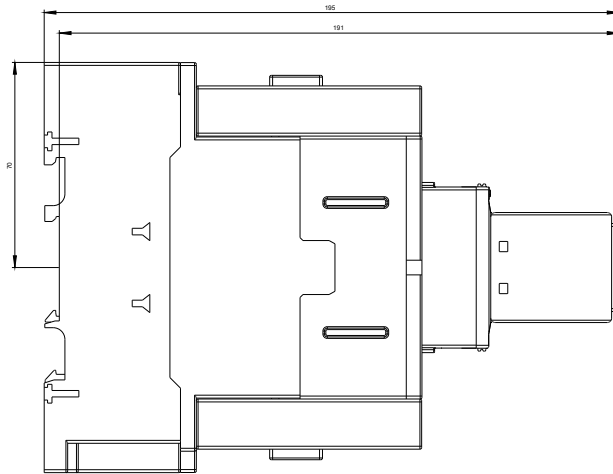
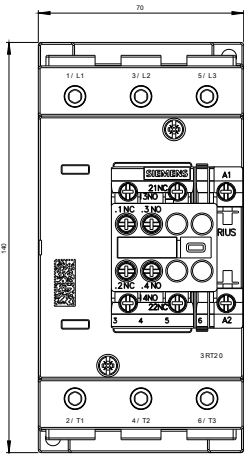
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-1AN24&lang=en

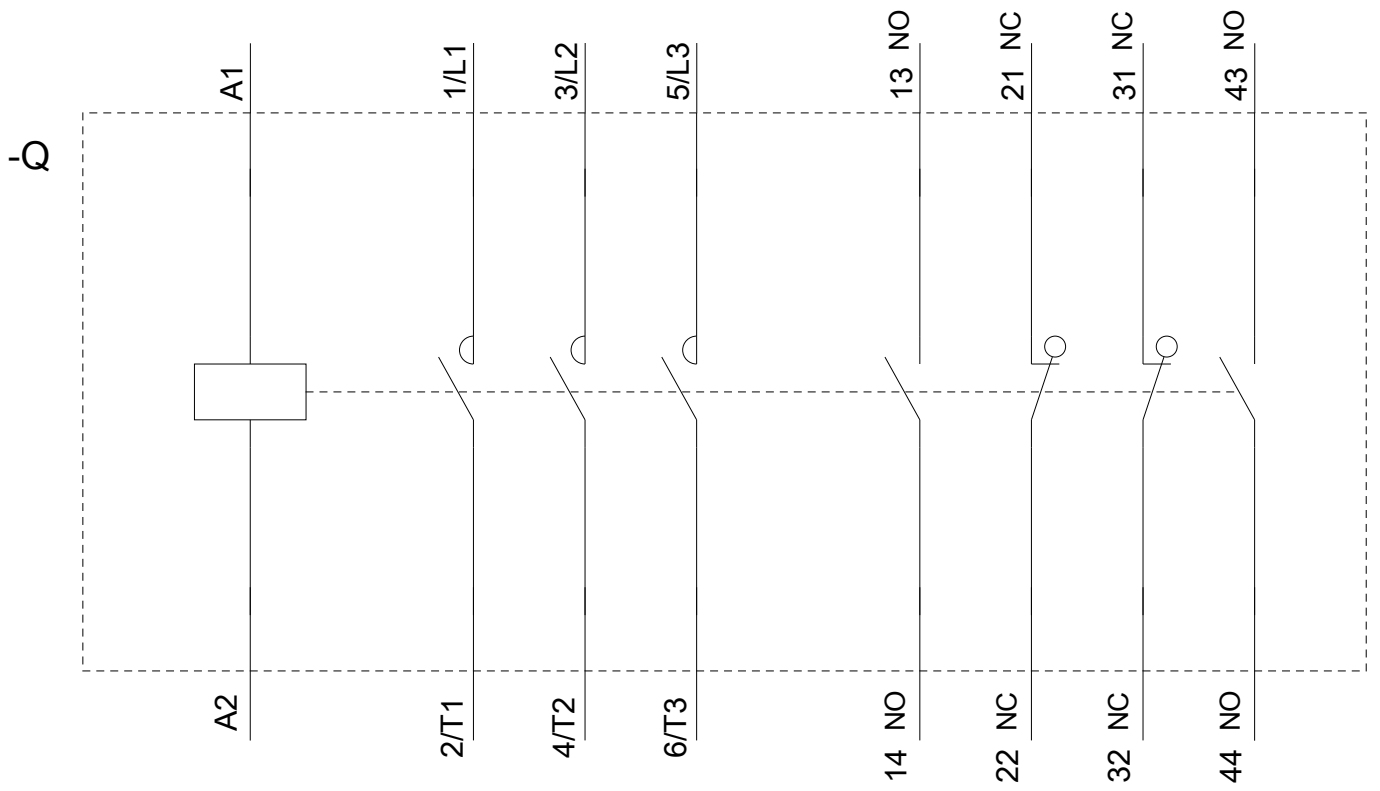
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AN24/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-1AN24&objecttype=14&gridview=view1>





last modified:

08/25/2020