3RT2046-1AK64-3MA0

Data sheet



power contactor, AC-3 95 A, 45 kW / 400 V 2 NO + 2 NC, 110 V AC, 50 Hz Hz 120 V/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	
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	22 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
operational current	
at AC-1 at 400 V at ambient temperature 40 °C	130 A
rated value	
• 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-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 at AC-6a 	58 A
— 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	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 440 v rateu value	T.U A.

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— at 600 V rated value	2.6 A		
• at 1 current path at DC-3 at DC-5	40.4		
— 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	400.4		
— 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	400.4		
— 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	45 110		
at AC-2 at 400 V rated value	45 kW		
• at AC-3	22 144		
— at 230 V rated value	22 kW		
— at 400 V rated value	45 kW		
— at 500 V rated value	55 kW		
— at 690 V rated value	75 kW		
— at 1000 V rated value	37 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 power at AC-6a			
 up to 230 V for current peak value n=20 rated value 	33 kV·A		
 up to 400 V for current peak value n=20 rated value 	58 kV·A		
 up to 500 V for current peak value n=20 rated value 	73 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 	22.4 kV·A		
 up to 400 V for current peak value n=30 rated value 	39 kV·A		
 up to 500 V for current peak value n=30 rated value 	48.7 kV·A		
• up to 690 V for current peak value n=30 rated value	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 	1 725 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 5 s switching at zero current maximum 	1 297 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 10 s switching at zero current maximum 	946 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 30 s switching at zero current maximum 	610 A; Use minimum cross-section acc. to AC-1 rated value		
 limited to 60 s switching at zero current maximum 	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	900 1/h		
• at AC-2 maximum	350 1/h		
• at AC-3 maximum	850 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	110 V		
● at 60 Hz rated value	120 V		

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		
apparent pick-up power of magnet coil at AC	0.0 1.1		
• at 50 Hz	326 \/. \		
• at 60 Hz	326 V·A 326 V·A		
inductive power factor with closing power of the coil	320 V A		
• at 50 Hz	0.62		
• at 60 Hz	0.55		
apparent holding power of magnet coil at AC	0.55		
• at 50 Hz	22 V·A		
• at 60 Hz	22 V·A		
inductive power factor with the holding power of the	22 V N		
coil			
● at 50 Hz	0.36		
● at 60 Hz	0.4		
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	2		
instantaneous contact			
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	C A		
• 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	00.4		
• at 480 V rated value	96 A		
at 600 V rated value	77 A		
yielded mechanical performance [hp]			
• for single-phase AC motor	401		
— at 110/120 V rated value	10 hp		
— at 230 V rated value	20 hp		
• for 3-phase AC motor			
 — at 200/208 V rated value 	30 hp		

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— 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)	
 — 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)	
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	195 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	
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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			
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		
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	c. to IEC 60529 finger-safe, for vertical contact from the front		
suitability for use			
 safety-related switching on 	Yes		
 safety-related switching OFF 	Yes		
Certificates/ approvals			

General Product Approval



Confirmation





<u>KC</u>



EMC	Functional Safety/Safety of Machinery	Declaration of Conformity	Marine / Shipping
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Type Examination
Certificate



UK Declaration of Conformity





Marine / Shipping other Dangerous Good









Confirmation

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=3RT2046-1AK64-3MA0

Cax online generator

 $\underline{\text{http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en\&mlfb=3RT2046-1AK64-3MA0}$

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AK64-3MA0

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

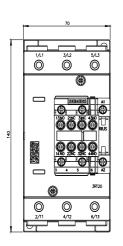
 $\underline{\text{http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-1AK64-3MA0\&lang=en}}$

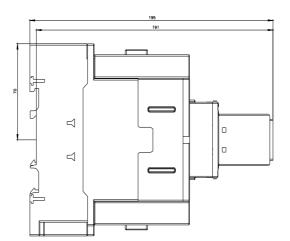
Characteristic: Tripping characteristics, I2t, Let-through current

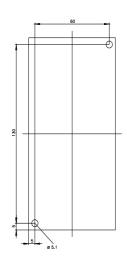
https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AK64-3MA0/char

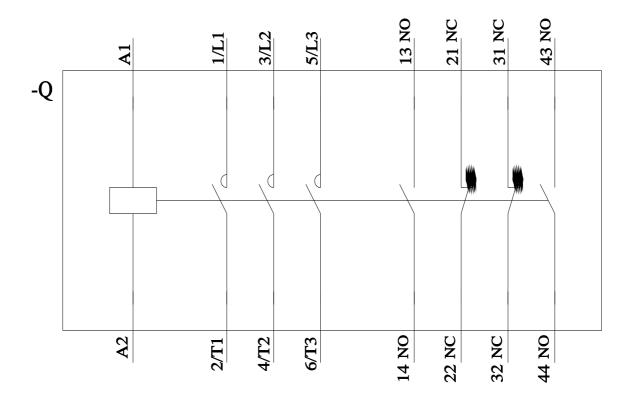
Further characteristics (e.g. electrical endurance, switching frequency)

http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-1AK64-3MA0&objecttype=14&gridview=view1









last modified:

12/23/2021