SIEMENS

Data sheet 3RT2046-3SF30



power contactor, AC-3e/AC-3, 95 A, 45 kW / 400 V, 3-pole, 83-150 V AC/DC, 50/60 Hz, with integrated varistor, auxiliary contacts: 1 NC, main circuit: screw terminal, control and auxiliary circuit: spring-loaded terminal, size: S3, F-PLC-IN

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
 at AC in hot operating state per pole 	6.6 W
 without load current share typical 	3.5 W
type of calculation of power loss depending on pole	quadratic
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 protective separation between coil and main contacts according to EN 60947-1	690 V
shock resistance at rectangular impulse	
• at AC	10.3g / 5 ms, 6,.g / 10 ms
• at DC	6.7 g / 5 ms, 4g / 10 ms
shock resistance with sine pulse	
• at AC	16.3g / 5 ms, 10.g / 10 ms
• at DC	10.6 g / 5 ms, 6.3 g / 10 ms
mechanical service life (operating cycles)	
of contactor typical	5 000 000
 of the contactor with added electronically optimized auxiliary switch block typical 	5 000 000
 of the contactor with added auxiliary switch block typical 	5 000 000
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	01/29/2021
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5
Weight	1.827 kg
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 according to IEC 60068-2-30 maximum	95 %
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 at AC-1 	130 A
up to 690 V at ambient temperature 40 °C rated value	130 A
— up to 690 V at ambient temperature 60 $^{\circ}\text{C}$ 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 at AC-5b up to 400 V rated value	114 A
at AC-5b up to 400 V rated value at AC-6a	95 A
 at AC-6a up to 230 V for current peak value n=20 rated value 	84.4.0
 up to 230 V for current peak value n=20 rated value up to 400 V for current peak value n=20 rated value 	84.4 A 84.4 A
— up to 500 V for current peak value n=20 rated value — 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 mm²
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	400 A
— at 24 V rated value	100 A
— at 60 V rated value	60 A
— at 110 V rated value	9 A 2 A
— at 220 V rated value — at 440 V rated value	0.6 A
— at 440 V rated value — at 600 V rated value	0.6 A 0.4 A
at 600 v rated value with 2 current paths in series at DC-1	V.T /\
with 2 current paths in series at DC-1 — at 24 V rated value	100 A
— at 60 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
ut 170 v lated value	

— at 600 V rated value	1 A
with 3 current paths in series at DC-1	
— at 24 V rated value	100 A
— at 60 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
• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	40 A
— at 60 V rated value	6 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 60 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 60 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
• at AC-3	
— 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
• at AC-3e	
— 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-	
at 400 V rated value	22 kW
at 690 V rated value	27.4 kW
operating apparent power at AC-6a	
up to 400 V for current peak value n=20 rated value	58 000 VA
up to 500 V for current peak value n=20 rated value up to 500 V for current peak value n=20 rated value	73 000 VA
up to 690 V for current peak value n=20 rated value up to 690 V for current peak value n=20 rated value	69 000 VA
operating apparent power at AC-6a	
up to 230 V for current peak value n=30 rated value	22 400 VA
up to 400 V for current peak value n=30 rated value up to 400 V for current peak value n=30 rated value	39 000 VA
up to 500 V for current peak value n=30 rated value up to 500 V for current peak value n=30 rated value	48 700 VA
up to 690 V for current peak value n=30 rated value up to 690 V for current peak value n=30 rated value	67 300 VA
short-time withstand current in cold operating state up to	0.000 (1)
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	1 000 1/h
at DC	1 000 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-3e maximum	850 1/h
at AC-4 maximum	250 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	83 150 V
at 60 Hz rated value	83 150 V
control supply voltage at DC rated value	83 150 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
type of PLC-control input according to IEC 60947-1	Type 1
consumed current at PLC-control input according to IEC 60947-1 maximum	11 mA
voltage at PLC-control input rated value	24 V
operating range factor of the voltage at PLC-control input	0.8 1.1
design of the surge suppressor	with varistor
inrush current peak	25 A
duration of inrush current peak	10 µs
locked-rotor current mean value	1.2 A
locked-rotor current peak	2.7 A
duration of locked-rotor current	150 ms
holding current mean value	0.016 A
apparent pick-up power of magnet coil at AC	
• at 50 Hz	163 VA
● at 60 Hz	163 VA
apparent holding power	
 at minimum rated control supply voltage at DC 	1.8 VA
 at maximum rated control supply voltage at DC 	1.8 VA
apparent holding power	
 at minimum rated control supply voltage at AC 	
— at 50 Hz	2.4 VA
— at 60 Hz	2.4 VA
 at maximum rated control supply voltage at AC 	
— at 50 Hz	2.4 VA
— at 60 Hz	2.4 VA
apparent holding power of magnet coil at AC	
● at 50 Hz	2.4 VA
● at 60 Hz	2.4 VA
inductive power factor with the holding power of the coil	
● at 50 Hz	0.95
● at 60 Hz	0.95
closing power of magnet coil at DC	130 W
holding power of magnet coil at DC	1.8 W
closing delay	
• at AC	50 70 ms
• at DC	50 70 ms
opening delay	

● at AC ● at DC 38 57 ms 38 57 ms recovery time after power failure typical 2.1 s arcing time 10 20 ms	
recovery time after power failure typical 2.1 s	
control version of the switch operating mechanism Fail-safe PLC input (F-PLC-IN)	
Auxiliary circuit	
number of NC contacts for auxiliary contacts instantaneous 1	
contact number of NO contacts for auxiliary contacts instantaneous 0	
number of NO contacts for auxiliary contacts 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 A	
at 48 V rated value 6 A 6 A	
at 60 V rated value 6 A 3 A	
 at 110 V rated value at 125 V rated value 2 A 	
at 125 V rated value at 220 V rated value 1 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 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 3-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 miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V	
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 (4 kA)	15 V, 80
— with type of assignment 2 required gG: 160 A (690 V, 100 kA), aM: 100 A (690 V, 100 kA), BS88: 125 A (4 kA)	15 V, 80
• 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 forw backward by +/- 22.5° on vertical mounting surface	vard and
fastening method side-by-side mounting Yes	
fastening method screw and snap-on mounting onto 35 mm DIN rail according to DIN EN	60715

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
	10 mm
— upwards	
— 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	spring-loaded terminals
at contactor for auxiliary contacts	Spring-type terminals
• of magnet coil	Spring-type terminals
type of connectable conductor cross-sections	- 1 3 VF
• for main contacts	
finely stranded with core end processing	2x (2.5 35 mm²), 1x (2.5 50 mm²)
for AWG cables for main contacts	2x (10 1/0), 1x (10 2)
	28 (10 1/0), 18 (10 2)
connectable conductor cross-section for main contacts	0.5 402
• solid	2.5 16 mm²
• stranded	6 70 mm ²
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
 finely stranded without core end processing 	0.5 2.5 mm²
type of connectable conductor cross-sections	
 for auxiliary contacts 	
— solid or stranded	2x (0.5 2.5 mm²)
 finely stranded with core end processing 	2x (0.5 1.5 mm²)
— finely stranded without core end processing	2x (0.5 2.5 mm²)
for AWG cables for auxiliary contacts	2x (20 16)
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 according to IEC 60947-4-1	Yes
• positively driven operation according to IEC 60947-5-1	No
suitable for safety function authority for use safety related authority OFF.	Yes
suitability for use safety-related switching OFF	Yes
safe state	off
test wear-related service life necessary	Yes
diagnostics test interval by internal test function maximum	28 800 s
stop category according to IEC 60204-1	0
proportion of dangerous failures	
 with low demand rate according to SN 31920 	40 %
with low demand rate according to SN 31920with high demand rate according to SN 31920	40 % 73 %

failure rate [FIT] with low demand rate according to SN 31920	100 FIT
MTBF	52 a
IEC 62061	
Safety Integrity Level (SIL) according to IEC 62061	SIL 2
PFHD with high demand rate according to IEC 62061	7.7E-8 1/h
ISO 13849	
performance level (PL) according to ISO 13849-1	PL c
category according to ISO 13849-1	2
device type according to ISO 13849-1	1
overdimensioning according to ISO 13849-2 necessary	Yes
IEC 61508	
Safety Integrity Level (SIL) according to IEC 61508	2
safety device type according to IEC 61508-2	Type B
PFHD with high demand rate according to IEC 61508	7.7E-8 1/h
PFDavg with low demand rate according to IEC 61508	0.0067
Safe failure fraction (SFF)	96 %
hardware fault tolerance according to IEC 61508	0
T1 value of service life according to IEC 61508	20 a
Electrical Safety	
protection class IP on the front according to IEC 60529	IP20
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front
Approvals Certificates	

General Product Approval







Confirmation



<u>KC</u>

General Product Ap-

EMV

Functional Saftey

Test Certificates

Marine / Shipping





Type Examination Certificate

Type Test Certificates/Test Report

Special Test Certific-



Marine / Shipping





Confirmation

other

Railway

Special Test Certific-<u>ate</u>

Environmental Confirmations

Environment

Further information

Information on the packaging

https://support.industry.siemens.com/cs/ww/en/view/109813875

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=3RT2046-3SF30

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2046-3SF30

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-3SF30

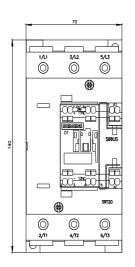
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

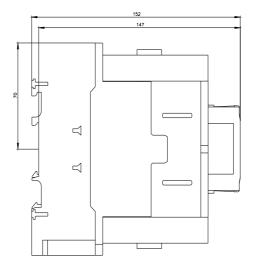
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-3SF30&lang=en

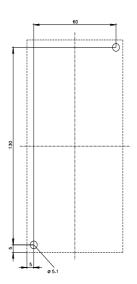
Characteristic: Tripping characteristics, I²t, Let-through current

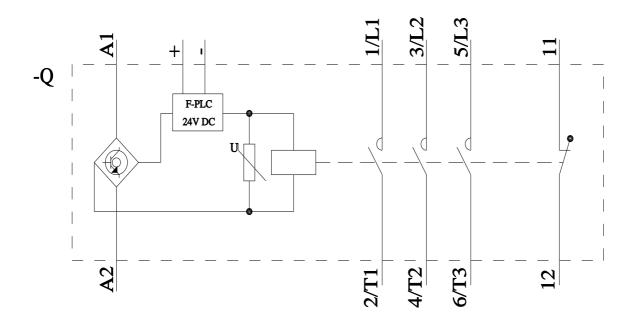
https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-3SF30/char

Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-3SF30&objecttype=14&gridview=view1









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