SIEMENS

Data sheet 3RT2047-1SP30



power contactor, AC-3e/AC-3, 110 A, 55 kW / 400 V, 3-pole, 175-280 V AC/DC, 50/60 Hz, with integrated varistor, auxiliary contacts: 1 NC, screw 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 	23.7 W	
 at AC in hot operating state per pole 	7.9 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	1.837 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	110 A
— at 500 V rated value	110 A
— at 690 V rated value	98 A
— at 1000 V rated value	30 A
• at AC-3e	
— at 400 V rated value	110 A
— at 500 V rated value	110 A
— at 690 V rated value	98 A
— at 1000 V rated value	30 A
• at AC-4 at 400 V rated value	97 A
at AC-5a up to 690 V rated value at AC-5b up to 400 V rated value	120 A
at AC-5b up to 400 V rated value at AC-6c	110 A
 at AC-6a up to 230 V for current peak value n=20 rated value 	08 Λ
 up to 230 V for current peak value n=20 rated value up to 400 V for current peak value n=20 rated value 	98 A 98 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	98 A
— up to 690 V for current peak value n=20 rated value	98 A
at AC-6a	
— up to 230 V for current peak value n=30 rated value	65.3 A
— up to 400 V for current peak value n=30 rated value	65.3 A
— up to 500 V for current peak value n=30 rated value	65.3 A
— up to 690 V for current peak value n=30 rated value	65.3 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	46 A
at 690 V rated value	36 A
operational current	
• at 1 current path at DC-1	400.4
— at 24 V rated value	100 A
— at 60 V rated value	60 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 24 V rated value — at 60 V rated value	100 A
— at 60 V rated value — at 110 V rated value	100 A
— at 110 V rated value — at 220 V rated value	10 A
— at 440 V rated value	1.8 A
— at 770 v rateu value	1.07

— 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 	55 kW			
• at AC-3				
— at 230 V rated value	30 kW			
— at 400 V rated value	55 kW			
— at 500 V rated value	75 kW			
— at 690 V rated value	90 kW			
— at 1000 V rated value	37 kW			
• at AC-3e				
— at 230 V rated value	30 kW			
— at 400 V rated value	55 kW			
— at 500 V rated value	75 kW			
— at 690 V rated value	90 kW			
— at 1000 V rated value	37 kW			
operating power for approx. 200000 operating cycles at AC-				
at 400 V rated value	24.3 kW			
at 690 V rated value	32.9 kW			
operating apparent power at AC-6a				
up to 400 V for current peak value n=20 rated value	67 000 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	84 000 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	117 000 VA			
operating apparent power at AC-6a				
up to 230 V for current peak value n=30 rated value	26 000 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	45 200 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	45 200 VA 56 500 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	78 000 VA			
short-time withstand current in cold operating state up to				
40 °C				
 limited to 1 s switching at zero current maximum 	1 960 A; Use minimum cross-section acc. to AC-1 rated value			
 limited to 5 s switching at zero current maximum 	1 502 A; Use minimum cross-section acc. to AC-1 rated value			
 limited to 10 s switching at zero current maximum 	1 095 A; Use minimum cross-section acc. to AC-1 rated value			

- limited to 20 a quitabing at more current maggins as	707 A. Llee mainimum erose coefficiences to A.C. 4 material value		
limited to 30 s switching at zero current maximum	707 A; Use minimum cross-section acc. to AC-1 rated value		
limited to 60 s switching at zero current maximum	562 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	200 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	175 280 V		
at 60 Hz rated value	175 280 V		
control supply voltage at DC rated value	175 280 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	43 A		
duration of inrush current peak	10 μs		
locked-rotor current mean value	0.5 A		
locked-rotor current peak	1.2 A		
duration of locked-rotor current	1.2 A 150 ms		
holding current mean value	0.01 A		
apparent pick-up power of magnet coil at AC			
• at 50 Hz	163 VA		
• at 60 Hz	163 VA		
apparent holding power	100 V/		
at minimum rated control supply voltage at DC	1.8 VA		
,	1.8 VA		
at maximum rated control supply voltage at DC apparent holding power	1.0 VA		
at minimum rated control supply voltage at AC			
at minimum rated control supply voltage at AC at 50 Hz	0.41/4		
	2.4 VA		
— at 60 Hz	2.4 VA		
at maximum rated control supply voltage at AC	2.4.VA		
— at 50 Hz	2.4 VA		
— at 60 Hz	2.4 VA		
apparent holding power of magnet coil at AC	2.4.VA		
• at 50 Hz	2.4 VA		
• at 60 Hz	2.4 VA		
inductive power factor with the holding power of the coil	0.05		
• 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			

a at AC	20 F7 ma		
• at AC	38 57 ms		
• at DC	38 57 ms		
recovery time after power failure typical	2.1 s		
arcing time	10 20 ms		
control version of the switch operating mechanism Auxiliary circuit	Fail-safe PLC input (F-PLC-IN)		
	1		
number of NC contacts for auxiliary contacts instantaneous contact	1		
number of NO contacts for auxiliary contacts instantaneous contact	0		
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	96 A		
at 600 V rated value	99 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	40 hp		
— at 460/480 V rated value	75 hp		
— at 575/600 V rated value	100 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	C characteristic: 10 A; 0.4 kA		
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: 200A (690V,100kA), aM: 100A (690V,100kA), BS88: 160A (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 side-by-side mounting	Yes		
fastening method	screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715		
	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 Screw-type terminals		
of magnet coil	Screw-type terminals		
type of connectable conductor cross-sections	odow type terminate		
• 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)		
connectable conductor cross-section for main contacts	27 (10 170), 17 (10 2)		
• solid	2.5 16 mm²		
• stranded	6 70 mm²		
finely stranded with core end processing	2.5 50 mm ²		
connectable conductor cross-section for auxiliary contacts	2.5 50 11111		
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	0.0 2.0 mm		
for auxiliary contacts			
— solid or stranded	2v (0.5		
finely stranded with core end processing	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)		
for AWG cables for auxiliary contacts	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²) 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 according to IEC 60947-4-1	Yes		
positively driven operation according to IEC 60947-5-1	No		
suitable for safety function	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 high demand rate according to SN 31920	40 % 73 %		
B10 value with high demand rate according to SN 31920	1 000 000		
failure rate [FIT] with low demand rate according to SN	100 FIT		
31920			
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 Approval

EMV

Functional Saftey

Test Certificates

Marine / Shipping





Type Examination Cer**tificate**

Type Test Certificates/Test Report

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



Marine / Shipping other Railway **Environment**







Confirmation

Special Test Certificate

Environmental Confirmations

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=3RT2047-1SP30

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2047-1SP30

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2047-1SP30

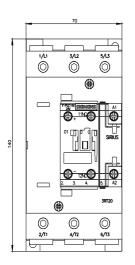
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

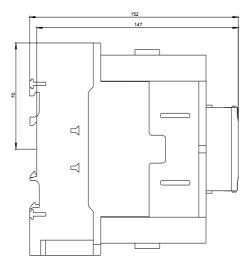
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2047-1SP30&lang=en

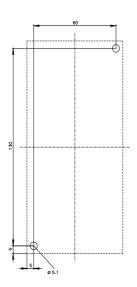
Characteristic: Tripping characteristics, I2t, Let-through current

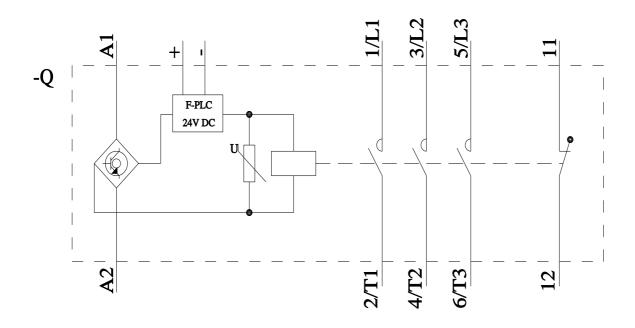
https://support.industry.siemens.com/cs/ww/en/ps/3RT2047

Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2047-1SP30&objecttype=14&gridview=view1









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