SIEMENS

Data sheet 3RT2045-1SP30



power contactor, AC-3e/AC-3, 80 A, 37 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 	15.9 W	
 at AC in hot operating state per pole 	5.3 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	1.825 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 	125 A
— up to 690 V at ambient temperature 40 °C rated value	125 A
— up to 690 V at ambient temperature 60 $^{\circ}\text{C}$ rated value	105 A
• at AC-3	
— at 400 V rated value	80 A
— at 500 V rated value	80 A
— at 690 V rated value	58 A
— at 1000 V rated value	30 A
• at AC-3e	
— at 400 V rated value	80 A
— at 500 V rated value	80 A
— at 690 V rated value	58 A
— at 1000 V rated value	30 A
 at AC-4 at 400 V rated value 	66 A
• at AC-5a up to 690 V rated value	110 A
at AC-5b up to 400 V rated value	80 A
• at AC-6a	00 A
— up to 230 V for current peak value n=20 rated value	80 A
— up to 400 V for current peak value n=20 rated value	80 A
 up to 500 V for current peak value n=20 rated value up to 690 V for current peak value n=20 rated value 	80 A 58 A
at AC-6a	30 A
— up to 230 V for current peak value n=30 rated value	54 A
— up to 400 V for current peak value n=30 rated value	54 A
— up to 500 V for current peak value n=30 rated value	54 A
— up to 690 V for current peak value n=30 rated value	54 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	34 A
at 690 V rated value	24 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
— 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 reted value.	100 A
— at 24 V rated value	100 A
— at 60 V rated value	100 A
— at 110 V rated value	100 A 10 A
— at 220 V rated value— 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 	37 kW			
• at AC-3				
— at 230 V rated value	22 kW			
— at 400 V rated value	37 kW			
— at 500 V rated value	45 kW			
— at 690 V rated value	55 kW			
— at 1000 V rated value	37 kW			
• at AC-3e				
— at 230 V rated value	22 kW			
— at 400 V rated value	37 kW			
— at 500 V rated value	45 kW			
— at 690 V rated value	55 kW			
— at 1000 V rated value	37 kW			
operating power for approx. 200000 operating cycles at AC-				
at 400 V rated value	17.9 kW			
at 690 V rated value	21.8 kW			
operating apparent power at AC-6a				
up to 400 V for current peak value n=20 rated value	55 000 VA			
 up to 500 V for current peak value n=20 rated value 	69 000 VA			
 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	21 500 VA			
• up to 400 V for current peak value n=30 rated value	37 400 VA			
• up to 500 V for current peak value n=30 rated value	46 700 VA			
• up to 690 V for current peak value n=30 rated value	64 500 VA			
short-time withstand current in cold operating state up to 40 °C				
 limited to 1 s switching at zero current maximum 	1 500 A; Use minimum cross-section acc. to AC-1 rated value			
 limited to 5 s switching at zero current maximum 	1 186 A; Use minimum cross-section acc. to AC-1 rated value			
 limited to 10 s switching at zero current maximum 	851 A; Use minimum cross-section acc. to AC-1 rated value			

limited to 00 - witching at a superior	500 A. Haraminimum anna aratism and to A.O. A material color		
Iimited to 30 s switching at zero current maximum	538 A; Use minimum cross-section acc. to AC-1 rated value		
limited to 60 s switching at zero current maximum	423 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	400 1/h		
• at AC-3 maximum	1 000 1/h		
 at AC-3e maximum 	1 000 1/h		
at AC-4 maximum	300 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	32 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	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			
 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	38 57 mg		
• at AC • at DC	38 57 ms 38 57 ms		
recovery time after power failure typical	38 5/ ms 2.1 s		
arcing time	10 20 ms		
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 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	1A		
operational current at DC-12	40.4		
at 24 V rated value at 48 V rated value	10 A		
at 48 V rated value at 60 V rated value	6 A 6 A		
at 100 V rated value at 110 V rated value	3 A		
at 110 V rated value at 125 V rated value	2 A		
at 125 V rated value at 220 V rated value	1.4		
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	1A		
• 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	77 A		
at 600 V rated value	62 A		
yielded mechanical performance [hp]			
 for single-phase AC motor 			
— at 110/120 V rated value	7.5 hp		
— at 230 V rated value	15 hp		
• for 3-phase AC motor			
— at 200/208 V rated value	25 hp		
— at 220/230 V rated value	30 hp		
— at 460/480 V rated value	60 hp		
— at 575/600 V rated value	60 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	-0.050 A (000 V 400 IA) -14 400 A (000 V 400 I V 500 000 A (417 V 500		
— 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: 160A (690V,100kA), aM: 80A (690V,100kA), BS88: 125A (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		
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		
— 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		
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)		
for 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)		
for 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			
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 	73 %		
B10 value with high demand rate according to SN 31920	1 000 000		
failure rate [FIT] with low demand rate according to SN 31920	100 FIT		
MTBF	52 a		
	0£ u		

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=3RT2045-1SP30

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2045-1SP30

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2045-1SP30

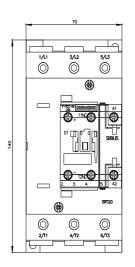
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

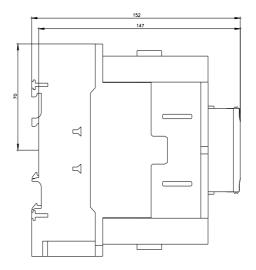
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2045-1

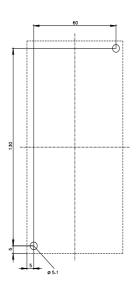
Characteristic: Tripping characteristics, I2t, Let-through current

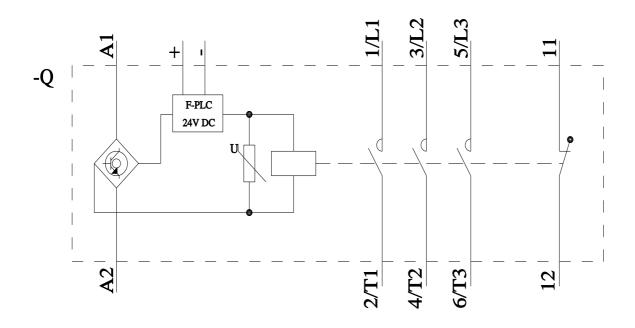
https://support.industry.siemens.com/cs/ww/en/ps/3RT204

Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2045-1SP30&objecttype=14&gridview=view1









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