## SIEMENS

## Data sheet

## 3RT2045-1SB30



power contactor, AC-3e/AC-3, 80 A, 37 kW / 400 V, 3-pole, 21-33 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	
<ul> <li>function module for communication</li> </ul>	No
<ul> <li>auxiliary switch</li> </ul>	Yes
power loss [W] for rated value of the current	
<ul> <li>at AC in hot operating state</li> </ul>	15.9 W
<ul> <li>at AC in hot operating state per pole</li> </ul>	5.3 W
<ul> <li>without load current share typical</li> </ul>	3.5 W
type of calculation of power loss depending on pole	quadratic
insulation voltage	
<ul> <li>of main circuit with degree of pollution 3 rated value</li> </ul>	1 000 V
<ul> <li>of auxiliary circuit with degree of pollution 3 rated value</li> </ul>	690 V
surge voltage resistance	
<ul> <li>of main circuit rated value</li> </ul>	8 kV
<ul> <li>of auxiliary circuit rated value</li> </ul>	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)	
<ul> <li>of contactor typical</li> </ul>	5 000 000
<ul> <li>of the contactor with added electronically optimized auxiliary switch block typical</li> </ul>	5 000 000
<ul> <li>of the contactor with added auxiliary switch block typical</li> </ul>	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	1.841 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	

e during operation	25 ±60 °C
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	
<ul> <li>at AC-3 rated value maximum</li> </ul>	1 000 V
<ul> <li>at AC-3e rated value maximum</li> </ul>	1 000 V
operational current	
• at AC-1 at 400 V at ambient temperature 40 °C rated value	125 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	125 A
— up to 690 V at ambient temperature 60 °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	20.4
— at 400 V rated value	80 A
— at 500 V rated value — at 690 V rated value	80 A 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	
— 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	80 A
— up to 690 V for current peak value n=20 rated value	58 A
● at AC-6a	
<ul> <li>— up to 230 V for current peak value n=30 rated value</li> </ul>	54 A
— up to 400 V for current peak value n=30 rated value	54 A
<ul> <li>— up to 500 V for current peak value n=30 rated value</li> </ul>	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 mm <sup>2</sup>
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	100 A
— at 24 V rated value — at 60 V rated value	100 A 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 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

— at 600 V rated value	1 A
<ul> <li>with 3 current paths in series at DC-1</li> </ul>	
— 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 \/ rated value	40.4
— at 24 V rated value — at 60 V rated value	40 A 6 A
— at 100 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	0.00 A
- 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
<ul> <li>with 3 current paths in series at DC-3 at DC-5</li> </ul>	
— 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- 4	
• 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
<ul> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	69 000 VA
• up to 690 V for current peak value n=20 rated value	69 000 VA
operating apparent power at AC-6a	
<ul> <li>up to 230 V for current peak value n=30 rated value</li> </ul>	21 500 VA
<ul> <li>up to 400 V for current peak value n=30 rated value</li> </ul>	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 $^\circ\text{C}$	
<ul> <li>limited to 1 s switching at zero current maximum</li> </ul>	1 500 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 5 s switching at zero current maximum</li> </ul>	1 186 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 10 s switching at zero current maximum</li> </ul>	851 A; Use minimum cross-section acc. to AC-1 rated value

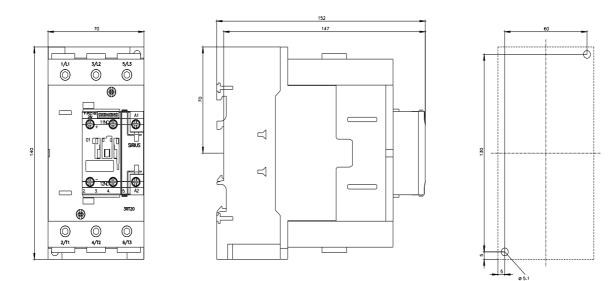
Imited to 30 s switching at zero current maximum	538 A; Use minimum cross-section acc. to AC-1 rated value
Imited to 60 s switching at zero current maximum	423 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	4 000 4/
• at AC	1 000 1/h
• at DC	1 000 1/h
operating frequency	202.44
• 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	10/20
type of voltage of the control supply voltage	AC/DC
control supply voltage at AC	24 22.14
• at 50 Hz rated value	21 33 V
at 60 Hz rated value	21 33 V
control supply voltage at DC rated value	21 33 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	Туре 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	2 A
duration of inrush current peak	100 µs
locked-rotor current mean value	4.5 A
locked-rotor current peak	7.2 A
duration of locked-rotor current	150 ms
holding current mean value	0.09 A
apparent pick-up power of magnet coil at AC	
• at 50 Hz	163 VA
• at 60 Hz	163 VA
apparent holding power	
<ul> <li>at minimum rated control supply voltage at DC</li> </ul>	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	0.41/4
— at 50 Hz	2.4 VA
— at 60 Hz	2.4 VA
at maximum rated control supply voltage at AC     at 50 Hz	2.4.1/4
— at 50 Hz — at 60 Hz	2.4 VA
	2.4 VA
apparent holding power of magnet coil at AC • at 50 Hz	2.4 VA
• at 50 Hz	2.4 VA 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	

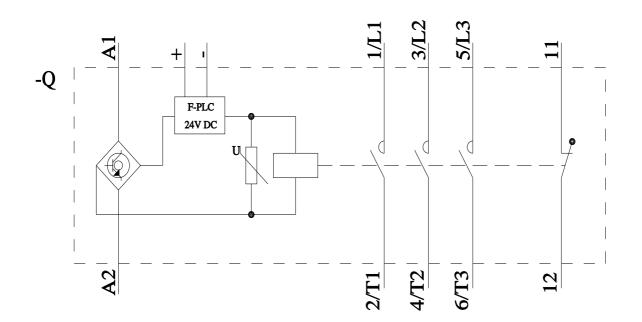
• at AC	38 57 ms
• at DC	38 57 ms
recovery time after power failure typical	2.1 s
arcing time	
control version of the switch operating mechanism	Fail-safe PLC input (F-PLC-IN)
Auxiliary circuit	
number of NC contacts for auxiliary contacts instantaneous contact	1
number of NO contacts for auxiliary contacts instantaneous contact	0
operational current at AC-12 maximum	10 A
operational current at AC-15	
<ul> <li>at 230 V rated value</li> </ul>	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 0.15 A
at 600 V rated value	0.15 A
operational current at DC-13 • at 24 V rated value	10 A
at 24 V rated value     at 48 V rated value	10 A 2 A
at 60 V rated value	2 A 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]	
<ul> <li>for single-phase AC motor</li> </ul>	
— 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	
— 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)
<ul> <li>for short-circuit protection of the auxiliary switch required</li> </ul>	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

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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
<ul> <li>for auxiliary and control circuit</li> </ul>	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	
<ul> <li>finely stranded with core end processing</li> </ul>	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 mm <sup>2</sup>
<ul> <li>finely stranded with core end processing</li> </ul>	2.5 50 mm <sup>2</sup>
connectable conductor cross-section for auxiliary contacts	
solid or stranded	0.5 2.5 mm²
<ul> <li>finely stranded with core end processing</li> </ul>	0.5 2.5 mm <sup>2</sup>
type of connectable conductor cross-sections	
for auxiliary contacts	
— solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
<ul> <li>finely stranded with core end processing</li> </ul>	2x (0.5 1.5 mm <sup>2</sup> ), 2x (0.75 2.5 mm <sup>2</sup> )
<ul> <li>for AWG cables for auxiliary contacts</li> </ul>	2x (20 16), 2x (18 14)
AWG number as coded connectable conductor cross section	
<ul> <li>for main contacts</li> </ul>	10 2
<ul> <li>for auxiliary contacts</li> </ul>	20 14
Safety related data	
product function	
<ul> <li>mirror contact according to IEC 60947-4-1</li> </ul>	Yes
<ul> <li>positively driven operation according to IEC 60947-5-1</li> </ul>	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	
<ul> <li>with low demand rate according to SN 31920</li> </ul>	40 %
<ul> <li>with high demand rate according to SN 31920</li> </ul>	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						
	(SIL) according to IEC		SIL 2			
PFHD with high deman	d rate according to IEC	62061	7.7E-	8 1/h		
ISO 13849						
performance level (PL	.) according to ISO 138	849-1	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 (S	SIL) according to IEC 61	508	2			
safety device type acc	cording to IEC 61508-2	2	Туре	В		
PFHD with high demand rate according to IEC 61508		7.7E-	8 1/h			
PFDavg with low demand rate according to IEC 61508		0.006	7			
Safe failure fraction (			96 %			
•	e according to IEC 6150	)8	0			
	according to IEC 61508		20 a			
Electrical Safety			20 a			
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