## **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	
<ul> <li>function module for communication</li> </ul>	No
auxiliary switch	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
• 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
<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)	
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
<ul> <li>at AC-3e rated value maximum</li> </ul>	1 000 V
operational current	
<ul> <li>at AC-1 at 400 V at ambient temperature 40 °C rated value</li> <li>at AC-1</li> </ul>	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
<ul> <li>at AC-4 at 400 V rated value</li> </ul>	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 80 A
<ul> <li>up to 500 V for current peak value n=20 rated value</li> <li>up to 690 V for current peak value n=20 rated value</li> </ul>	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 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	
— 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
<ul><li>— at 220 V rated value</li><li>— at 440 V rated value</li></ul>	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
<ul> <li>at 1 current path at DC-3 at DC-5</li> </ul>	
— 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
<ul> <li>with 2 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	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	
<ul> <li>at AC-2 at 400 V rated value</li> </ul>	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
<ul> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	69 000 VA
<ul> <li>up to 690 V for current peak value n=20 rated value</li> </ul>	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	
<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

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	
<ul> <li>at minimum rated control supply voltage at DC</li> </ul>	1.8 VA
<ul> <li>at maximum rated control supply voltage at DC</li> </ul>	1.8 VA
apparent holding power	
<ul> <li>at minimum rated control supply voltage at AC</li> </ul>	
— at 50 Hz	2.4 VA
— at 60 Hz	2.4 VA
<ul> <li>at maximum rated control supply voltage at AC</li> </ul>	
— 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
	50 70 ms

140	00 57
• 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	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
<ul> <li>at 500 V rated value</li> </ul>	2 A
at 690 V rated value	1 A
operational current at DC-12	
<ul> <li>at 24 V rated value</li> </ul>	10 A
<ul> <li>at 48 V rated value</li> </ul>	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
<ul><li>at 600 V rated value</li></ul>	0.15 A
operational current at DC-13	
<ul><li>at 24 V rated value</li></ul>	10 A
• at 48 V rated value	2 A
<ul><li>at 60 V rated value</li></ul>	2 A
<ul> <li>at 110 V rated value</li> </ul>	1 A
<ul> <li>at 125 V rated value</li> </ul>	0.9 A
<ul> <li>at 220 V rated value</li> </ul>	0.3 A
<ul> <li>at 600 V rated value</li> </ul>	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	
<ul> <li>at 480 V rated value</li> </ul>	77 A
<ul><li>at 600 V rated value</li></ul>	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 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)
• 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 DIN rail according to DIN EN 60715
height	140 mm
width	70 mm
depth	152 mm
required spacing	

• with side by side mounting	
<ul><li>with side-by-side mounting</li><li>forwards</li></ul>	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
for grounded parts	O IIIIII
-	20 mm
— forwards	20 mm 10 mm
— upwards	
— at the side	10 mm
— downwards	10 111111
• for live parts	20 mm
— forwards	10 mm
— upwards — downwards	10 mm
— at the side	10 mm
— at the side  Connections/ Terminals	10 111111
type of electrical connection	corou tupo terminale
for main current circuit     for auxiliary and control circuit	screw-type terminals
for auxiliary and control circuit     at contactor for auxiliary contacts	screw-type terminals
at contactor for auxiliary contacts     of magnet coil	Screw type terminals
of magnet coil  type of connectable conductor cross sections	Screw-type terminals
type of connectable conductor cross-sections	
for main contacts  finally stranded with core and processing	2v /2 5 35 mm²\ 1v /2 5 50 mm²\
— finely stranded with core end processing	2x (2.5 35 mm²), 1x (2.5 50 mm²)
for AWG cables for main contacts     connectable conductor cross-section for main contacts	2x (10 1/0), 1x (10 2)
	2.5 16 mm²
• solid	2.5 16 mm²
stranded     finally attracted with core and processing	6 70 mm <sup>2</sup> 2.5 50 mm <sup>2</sup>
• finely stranded with core end processing	2.5 50
connectable conductor cross-section for auxiliary contacts  • solid or stranded	0.5 2.5 mm²
	0.5 2.5 mm²
finely stranded with core end processing  type of compostable conductor group costions	0.5 2.5 IIIIIF
type of connectable conductor cross-sections	
• for auxiliary contacts	2v (0 F 4 F mm²\ 2v (0 7F 2 F mm²\
solid or stranded     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	2X (20 10), 2X (10 14)
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
<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 31920	100 FIT
MTBF	52 a
IEC 62061	
PFHD with high demand rate according to IEC 62061	7.7E-8 1/h
ISO 13849	

performance level (PL) according to ISO 13849-1	С
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
Annua vala Cartificates	

Approvals Certificates

## **General Product Approval**







Confirmation



<u>KC</u>

**General Product Ap**proval

**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 Certific-**<u>ate</u>

**Environmental Confirmations** 

Information on the packaging

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

Information- and Downloadcenter (Catalogs, Brochures,...)

Industry Mall (Online ordering system)

 $\underline{\text{https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2045-1SP30} \\$ 

Cax online generator

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

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

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

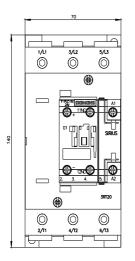
http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RT2045-1SP30&lang=en

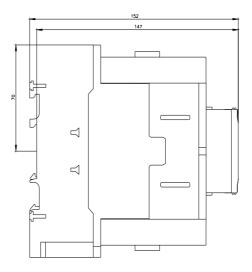
Characteristic: Tripping characteristics, I2t, Let-through current

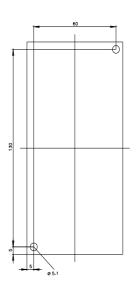
https://support.industry.siemens.com/cs/ww/en/ps/3RT2045-1SP30/char

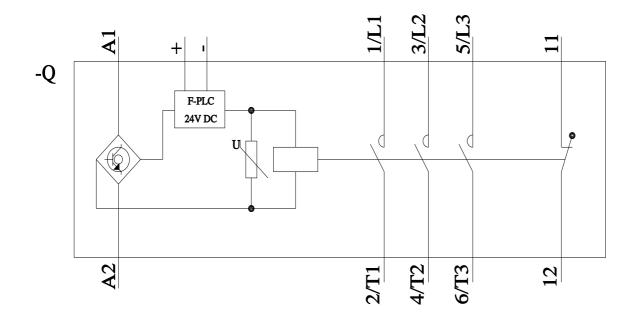
Further characteristics (e.g. electrical endurance, switching frequency)

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