## **SIEMENS**

Data sheet 3RT2023-1BB40



power contactor, AC-3e/AC-3, 9 A, 4 kW / 400 V, 3-pole, 24 V DC, auxiliary contacts: 1 NO + 1 NC, screw terminal, size: S0  $\,$ 

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S0
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>	0.6 W
<ul> <li>at AC in hot operating state per pole</li> </ul>	0.2 W
<ul> <li>without load current share typical</li> </ul>	5.9 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>	690 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>	6 kV
of auxiliary circuit rated value	6 kV
maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1	400 V
shock resistance at rectangular impulse	
• at DC	10g / 5 ms, 7,5g / 10 ms
shock resistance with sine pulse	
• at DC	15g / 5 ms, 10g / 10 ms
mechanical service life (operating cycles)	
<ul> <li>of contactor typical</li> </ul>	10 000 000
<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>	10 000 000
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	10/01/2009
Weight	0.596 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	
<ul> <li>during operation</li> </ul>	-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 %

Environmental footprint	
Environmental Product Declaration(EPD)	Yes
global warming potential [CO2 eq] total	221 kg
global warming potential [CO2 eq] during manufacturing	2.65 kg
global warming potential [CO2 eq] during operation	219 kg
global warming potential [CO2 eq] after end of life	-0.639 kg
Main circuit	1000
number of poles for main current circuit	3
number of NO contacts for main contacts	3
operating voltage	
at AC-3 rated value maximum	690 V
at AC-3e rated value maximum	690 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>	40 A
— up to 690 V at ambient temperature 40 °C rated value	40 A
— up to 690 V at ambient temperature 60 $^{\circ}\text{C}$ rated value	35 A
• at AC-3	
— at 400 V rated value	9 A
— at 500 V rated value	9 A
— at 690 V rated value	9 A
• at AC-3e	
— at 400 V rated value	9 A
— at 500 V rated value	9 A
— at 690 V rated value	9 A
at AC-4 at 400 V rated value	8.5 A
at AC-5a up to 690 V rated value     at AC-5b up to 400 V rated value	35.2 A
<ul><li>at AC-5b up to 400 V rated value</li><li>at AC-6a</li></ul>	7.4 A
— up to 230 V for current peak value n=20 rated value	11.4 A
— up to 400 V for current peak value n=20 rated value	11.4 A
— up to 500 V for current peak value n=20 rated value	9.1 A
— up to 690 V for current peak value n=20 rated value	9 A
• at AC-6a	
— up to 230 V for current peak value n=30 rated value	7.6 A
up to 400 V for current peak value n=30 rated value	7.6 A
— up to 500 V for current peak value n=30 rated value	6.1 A
— up to 690 V for current peak value n=30 rated value	6.1 A
minimum cross-section in main circuit at maximum AC-1 rated value	10 mm²
operational current for approx. 200000 operating cycles at AC-4	
at 400 V rated value	4.1 A
at 690 V rated value	3.3 A
operational current	
at 1 current path at DC-1      at 24 V rated value.	2E A
— at 24 V rated value — at 60 V rated value	35 A 20 A
— at 100 V rated value  — at 110 V rated value	4.5 A
— at 220 V rated value	1A
— at 440 V rated value	0.4 A
— at 600 V rated value	0.25 A
with 2 current paths in series at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	5 A
— at 440 V rated value	1 A
— at 600 V rated value	0.8 A

with 3 current paths in series at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	35 A
— at 440 V rated value	2.9 A
— at 600 V rated value	1.4 A
at 1 current path at DC-3 at DC-5	LHA
— at 24 V rated value	20 A
— at 60 V rated value	5 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1A
— at 440 V rated value	0.09 A
— at 600 V rated value	0.06 A
with 2 current paths in series at DC-3 at DC-5  at 24 V reted value.	25 A
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	15 A
— at 220 V rated value	3 A
— at 440 V rated value	0.27 A
— at 600 V rated value	0.16 A
with 3 current paths in series at DC-3 at DC-5  at 24 V reted value.	25.4
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	10 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.6 A
operating power	
• at AC-3	0.01114
— at 230 V rated value	2.2 kW
— at 400 V rated value	4 kW
— at 500 V rated value	4 kW
— at 690 V rated value	7.5 kW
• at AC-3e	0.01114
— at 230 V rated value	2.2 kW
— at 400 V rated value	4 kW
— at 500 V rated value	4 kW
— at 690 V rated value	7.5 kW
operating power for approx. 200000 operating cycles at AC-	
at 400 V rated value	2 kW
at 690 V rated value	2.5 kW
operating apparent power at AC-6a	
up to 230 V for current peak value n=20 rated value	4.5 kVA
up to 400 V for current peak value n=20 rated value  up to 400 V for current peak value n=20 rated value	7.8 kVA
up to 500 V for current peak value n=20 rated value	7.8 kVA
up to 690 V for current peak value n=20 rated value	10.7 kVA
operating apparent power at AC-6a	
up to 230 V for current peak value n=30 rated value	3 kVA
up to 400 V for current peak value n=30 rated value	5.2 kVA
up to 500 V for current peak value n=30 rated value	5.2 kVA
up to 690 V for current peak value n=30 rated value	7.2 kVA
short-time withstand current in cold operating state up to 40 °C	
Iimited to 1 s switching at zero current maximum	170 A; Use minimum cross-section acc. to AC-1 rated value
limited to 5 s switching at zero current maximum	170 A; Use minimum cross-section acc. to AC-1 rated value
limited to 10 s switching at zero current maximum	140 A; Use minimum cross-section acc. to AC-1 rated value
limited to 30 s switching at zero current maximum	104 A; Use minimum cross-section acc. to AC-1 rated value
limited to 60 s switching at zero current maximum	88 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
<b>3</b> 41 - <b>3</b>	

-1.00	4 500 4/1-
• at DC	1 500 1/h
operating frequency	4 000 4/1
• at AC-1 maximum	1 000 1/h
• at AC-2 maximum	1 000 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	DC
control supply voltage at DC rated value	24 V
operating range factor control supply voltage rated value of	
magnet coil at DC	
• initial value	0.8
• full-scale value	1.1
closing power of magnet coil at DC	5.9 W
holding power of magnet coil at DC	5.9 W
closing delay	
• at DC	50 170 ms
opening delay	
• at DC	15 18 ms
arcing time	10 10 ms
control version of the switch operating mechanism	Standard A1 - A2
Auxiliary circuit	
number of NC contacts for auxiliary contacts instantaneous	1
number of NO contacts for auxiliary contacts instantaneous	1
contact	
operational current at AC-12 maximum	10 A
operational current at AC-15	
at 230 V rated value	10 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
<ul> <li>at 220 V rated value</li> </ul>	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	7.6 A
at 600 V rated value	9 A
yielded mechanical performance [hp]	
• for single-phase AC motor	
— at 110/120 V rated value	1 hp
	1 hp
— at 230 V rated value	1 hp
• for 3-phase AC motor	2 ha
— at 200/208 V rated value	2 hp
— at 220/230 V rated value	3 hp

at 400/400 V ==t==t==t==	- F. ha
— at 460/480 V rated value	5 hp
— at 575/600 V rated value	7.5 hp
contact rating of auxiliary contacts according to UL hort-circuit protection	A600 / P600
design of the miniature circuit breaker for short-circuit protection	C characteristic: 10 A; 0.4 kA
of the auxiliary circuit up to 230 V	C Grandelenstic. 10 A, 0.4 AA
design of the fuse link	
• for short-circuit protection of the main circuit	
<ul> <li>— with type of coordination 1 required</li> </ul>	gG: 63A (690V,100kA), aM: 32A (690V,100kA), BS88: 63A (415V,80kA)
<ul> <li>— with type of assignment 2 required</li> </ul>	gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A (415V,80kA)
for short-circuit protection of the auxiliary switch required	gG: 10 A (500 V, 1 kA)
stallation/ 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	85 mm
width	45 mm
depth	107 mm
required spacing	
with side-by-side mounting	40
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
for grounded parts     forwards	10 mm
— forwards	10 mm
— upwards — at the side	10 mm
— at the side  — downwards	10 mm
for live parts	IV IIIII
— forwards	10 mm
— upwards	10 mm
— dpwards — downwards	10 mm
— at the side	6 mm
onnections/ 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	
— solid	2x (1 2.5 mm²), 2x (2.5 10 mm²)
— solid or stranded	2x (1 2.5 mm²), 2x (2.5 10 mm²)
<ul> <li>finely stranded with core end processing</li> </ul>	2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm²
for AWG cables for main contacts	2x (16 12), 2x (14 8)
connectable conductor cross-section for main contacts	
• solid	1 10 mm²
• stranded	1 10 mm²
finely stranded with core end processing	1 10 mm²
connectable conductor cross-section for auxiliary contacts	
<ul> <li>solid or stranded</li> </ul>	0.5 2.5 mm <sup>2</sup>
finely stranded with core end processing	0.5 2.5 mm²
finely stranded with core end processing type of connectable conductor cross-sections	
finely stranded with core end processing  type of connectable conductor cross-sections     for auxiliary contacts	0.5 2.5 mm²
finely stranded with core end processing  type of connectable conductor cross-sections     for auxiliary contacts     — solid or stranded	0.5 2.5 mm <sup>2</sup> 2x (0.5 1.5 mm <sup>2</sup> ), 2x (0.75 2.5 mm <sup>2</sup> )
finely stranded with core end processing  type of connectable conductor cross-sections     for auxiliary contacts         — solid or stranded         — finely stranded with core end processing	0.5 2.5 mm <sup>2</sup> 2x (0.5 1.5 mm <sup>2</sup> ), 2x (0.75 2.5 mm <sup>2</sup> )  2x (0.5 1.5 mm <sup>2</sup> ), 2x (0.75 2.5 mm <sup>2</sup> )
finely stranded with core end processing  type of connectable conductor cross-sections     for auxiliary contacts     — solid or stranded	0.5 2.5 mm <sup>2</sup> 2x (0.5 1.5 mm <sup>2</sup> ), 2x (0.75 2.5 mm <sup>2</sup> )

• for main contacts	16 8
<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
service life maximum	20 a
test wear-related service life necessary	Yes
proportion of dangerous failures	
<ul> <li>with low demand rate according to SN 31920</li> </ul>	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
ISO 13849	
device type according to ISO 13849-1	3
overdimensioning according to ISO 13849-2 necessary	Yes
IEC 61508	
safety device type according to IEC 61508-2	Type 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	









Confirmation



<u>KC</u>

**General Product Ap-**

EMV

**Test Certificates** 

Marine / Shipping





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

Type Test Certificates/Test Report





Marine / Shipping









**Miscellaneous** 

other

Confirmation

Railway

Dangerous goods

Environment

**Special Test Certific-**

**Transport Information** 



**Environmental Confirmations** 

Information on the packaging

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=3RT2023-1BB40

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2023-1BB40

Service&Support (Manuals, Certificates, Characteristics, FAQs,...) https://support.industry.siemens.com/cs/ww/en/ps/3RT20

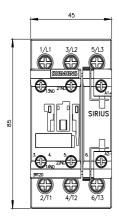
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) <a href="http://www.automation.siemens.com/bilddb/cax">http://www.automation.siemens.com/bilddb/cax</a> de.aspx?mlfb=3RT2023-1BB40&lang=en

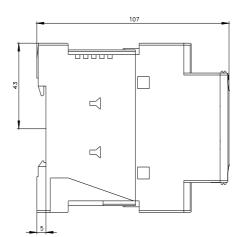
Characteristic: Tripping characteristics, I2t, Let-through current

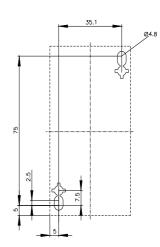
https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1BB40/char

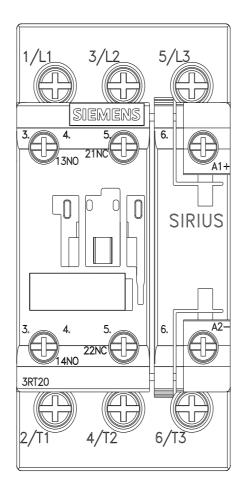
Further characteristics (e.g. electrical endurance, switching frequency)

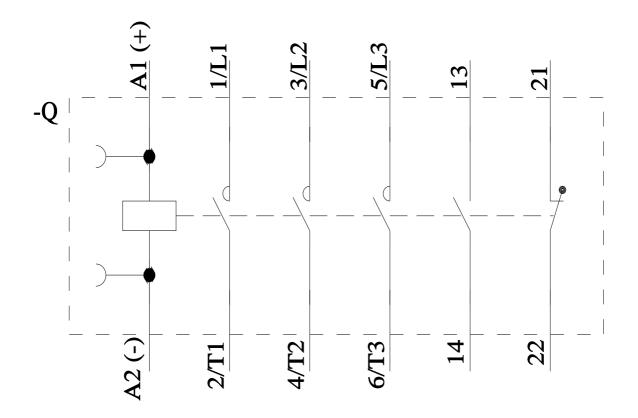
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