## **SIEMENS**

Data sheet 3RT2024-1BB40



power contactor, AC-3e/AC-3, 12 A, 5.5 kW / 400 V, 3-pole, 24 V DC, auxiliary contacts: 1 NO + 1 NC, screw terminal

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>	0.9 W
<ul> <li>at AC in hot operating state per pole</li> </ul>	0.3 W
<ul> <li>without load current share typical</li> </ul>	5.9 W
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
<ul> <li>of auxiliary circuit rated value</li> </ul>	6 kV
maximum permissible voltage for safe isolation 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)	
of contactor typical	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
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 poles for main current circuit 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> </ul>	40 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	40 A
<ul> <li>up to 690 V at ambient temperature 60 °C rated value</li> <li>at AC-3</li> </ul>	35 A
— at 400 V rated value	12 A
— at 500 V rated value	12 A
— at 690 V rated value	9 A
• at AC-3e	
— at 400 V rated value	12 A
— at 500 V rated value	12 A
— at 690 V rated value	9 A
<ul> <li>at AC-4 at 400 V rated value</li> </ul>	12.5 A
<ul> <li>at AC-5a up to 690 V rated value</li> </ul>	35.2 A
<ul> <li>at AC-5b up to 400 V rated value</li> </ul>	9.9 A
at AC-6a  — up to 230 V for current peak value n=20 rated	11.4 A
value — 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	11.3 A
— up to 690 V for current peak value n=20 rated value	9 A
<ul> <li>at AC-6a         <ul> <li>up to 230 V for current peak value n=30 rated value</li> </ul> </li> </ul>	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	7.6 A
— up to 690 V for current peak value n=30 rated value	7.6 A 10 mm <sup>2</sup>
minimum cross-section in main circuit at maximum AC-1 rated value operational current for approx. 200000 operating	10 mm
cycles at AC-4	
• at 400 V rated value	5.5 A
• at 690 V rated value	5.5 A
operational current	
at 1 current path at DC-1	
— at 24 V rated value	35 A
— at 110 V rated value	4.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.4 A 0.25 A
<ul> <li>— at 600 V rated value</li> <li>with 2 current paths in series at DC-1</li> </ul>	0.25 A
— at 24 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	5 A
— at 440 V rated value	1A
— 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 110 V rated value	35 A
— at 220 V rated value	35 A
— at 440 V rated value	2.9 A

at COO V rated value	4.4.0
— at 600 V rated value	1.4 A
• at 1 current path at DC-3 at DC-5	20. A
— at 24 V rated value	20 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1 A 0.09 A
— at 440 V rated value	0.09 A 0.06 A
— at 600 V rated value	0.06 A
<ul> <li>with 2 current paths in series at DC-3 at DC-5</li> <li>— at 24 V rated value</li> </ul>	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	0.10 A
— at 24 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	0.071
• at AC-3	
— at 230 V rated value	3 kW
— at 400 V rated value	5.5 kW
— at 500 V rated value	5.5 kW
— at 690 V rated value	7.5 kW
• at AC-3e	
— at 230 V rated value	3 kW
— at 400 V rated value	5.5 kW
— at 500 V rated value	5.5 kW
— at 690 V rated value	7.5 kW
operating power for approx. 200000 operating cycles	
at AC-4	
<ul> <li>at 400 V rated value</li> </ul>	2.6 kW
at 690 V rated value	4.6 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	7.8 kVA
up to 500 V for current peak value n=20 rated value	9.8 kVA
• up to 690 V for current peak value n=20 rated value	10.7 kVA
operating apparent power at AC-6a	0.11/4
• 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	6.5 kVA
• up to 690 V for current peak value n=30 rated value	9 kVA
short-time withstand current in cold operating state up to 40 °C	
Iimited to 1 s switching at zero current maximum	210 A; Use minimum cross-section acc. to AC-1 rated value
limited to 5 s switching at zero current maximum	210 A; Use minimum cross-section acc. to AC-1 rated value
Iimited to 10 s switching at zero current maximum	170 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 30 s switching at zero current maximum</li> </ul>	126 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 60 s switching at zero current maximum</li> </ul>	105 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
• at DC	1 500 1/h
operating frequency	
at AC-1 maximum	1 000 1/h
• at AC-2 maximum	1 000 1/h
• at AC-3 maximum	1 000 1/h
<ul> <li>at AC-3e maximum</li> </ul>	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	0.5 11
• 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	1
instantaneous contact	
number of NO contacts for auxiliary contacts instantaneous contact	1
operational current at AC-12 maximum	10 A
operational current at AC-15	
<ul> <li>at 230 V rated value</li> </ul>	10 A
<ul> <li>at 400 V rated value</li> </ul>	3 A
<ul><li>at 500 V rated value</li></ul>	2 A
<ul><li>at 690 V rated value</li></ul>	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	40.4
at 24 V rated value     at 48 V rated value	10 A 2 A
<ul> <li>at 48 V rated value</li> <li>at 60 V rated value</li> </ul>	2 A
at 110 V rated value     at 110 V rated value	1 A
at 110 V rated value     at 125 V rated value	0.9 A
at 123 V rated value     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	ridaity switching per 100 million (17 V, 1 milly)
full-load current (FLA) for 3-phase AC motor	
at 480 V rated value	11 A
at 600 V rated value	11 A
yielded mechanical performance [hp]	
for single-phase AC motor	
— at 110/120 V rated value	1 hp
— at 230 V rated value	2 hp
• for 3-phase AC motor	
— at 200/208 V rated value	3 hp
<ul> <li>at 220/230 V rated value</li> </ul>	3 hp
— at 460/480 V rated value	7.5 hp
— at 575/600 V rated value	10 hp
contact rating of auxiliary contacts according to UL	A600 / P600
Short-circuit protection	
design of the fuse link	
<ul> <li>for short-circuit protection of the main circuit</li> </ul>	
<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	gG: 10 A (500 V, 1 kA)
required	
Installation/ mounting/ dimensions	
mounting position	+/-180° rotation possible on vertical mounting surface; can be tilted
factoring mothed	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
side-by-side mounting	Yes
height	85 mm
width	45 mm
depth	107 mm
required spacing	107 11111
with side-by-side mounting	
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
for grounded parts	
— forwards	10 mm
— upwards	10 mm
— at the side	6 mm
— downwards	10 mm
<ul> <li>for live parts</li> </ul>	
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	6 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
<ul> <li>at contactor for auxiliary contacts</li> </ul>	Screw-type terminals
<ul><li>of magnet coil</li></ul>	Screw-type terminals
type of connectable conductor cross-sections	
<ul> <li>for main contacts</li> </ul>	
— solid	2x (1 2.5 mm²), 2x (2.5 10 mm²)
— solid or stranded	2x (1 2.5 mm²), 2x (2.5 10 mm²)
— finely stranded with core end processing	2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm²
at 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	· 10 · · · · · ·
contacts	
<ul> <li>solid or stranded</li> </ul>	0.5 2.5 mm²
<ul> <li>finely stranded with core end processing</li> </ul>	0.5 2.5 mm²
type of connectable conductor cross-sections	
<ul> <li>for auxiliary contacts</li> </ul>	
<ul><li>— solid or stranded</li></ul>	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 mm²), 2x (0.75 2.5 mm²)
<ul> <li>at AWG cables for auxiliary contacts</li> </ul>	2x (20 16), 2x (18 14)
AWG number as coded connectable conductor cross	
section  • for main contacts	16 8
for auxiliary contacts	20 14
Safety related data	
product function	
mirror contact according to IEC 60947-4-1	Yes
B10 value with high demand rate according to SN 31920	450 000
proportion of dangerous failures	
with low demand rate according to SN 31920	40 %
with high demand rate according to SN 31920	73 %
failure rate [FIT] with low demand rate according to SN 31920	100 FIT
T1 value for proof test interval or service life according to IEC 61508	20 y
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

Yes

Certificates/ approvals

## **General Product Approval**





Confirmation



<u>KC</u>



EMC

Functional Safety/Safety of Machinery

**Declaration of Conformity** 

**Test Certificates** 



Type Examination
Certificate





Type Test Certificates/Test Report

Special Test Certificate

## Marine / Shipping













other

Railway Dai

**Dangerous Good** 

Environmental Confirmations Confirmation



Vibration and Shock

<u>Transport Information</u>

## **Further information**

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=3RT2024-1BB40

Cax online generator

 $\underline{http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en\&mlfb=3RT2024-1BB40}$ 

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1BB40

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

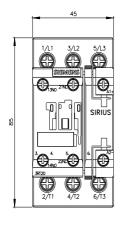
http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RT2024-1BB40&lang=en

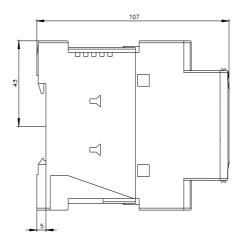
Characteristic: Tripping characteristics, I2t, Let-through current

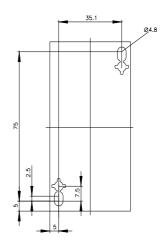
https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1BB40/char

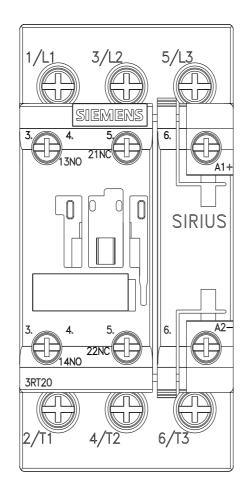
Further characteristics (e.g. electrical endurance, switching frequency)

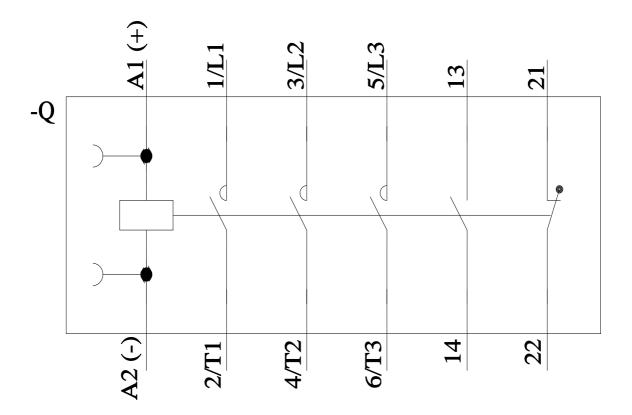
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2024-1BB40&objecttype=14&gridview=view1











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