

# SIEMENS

## Data sheet

3RT2028-1BB40



power contactor, AC-3e/AC-3, 38 A, 18.5 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	
• function module for communication	No
• auxiliary switch	Yes
power loss [W] for rated value of the current	
• at AC in hot operating state	9.6 W
• at AC in hot operating state per pole	3.2 W
• without load current share typical	5.9 W
type of calculation of power loss depending on pole	quadratic
insulation voltage	
• of main circuit with degree of pollution 3 rated value	690 V
• of auxiliary circuit with degree of pollution 3 rated value	690 V
surge voltage resistance	
• of main circuit rated value	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)	
• of contactor typical	10 000 000
• of the contactor with added electronically optimized auxiliary switch block typical	5 000 000
• of the contactor with added auxiliary switch block typical	10 000 000
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	10/01/2009
Weight	0.604 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 %

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	
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	
• at AC-1 at 400 V at ambient temperature 40 °C rated value	50 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	50 A
— up to 690 V at ambient temperature 60 °C rated value	42 A
• at AC-3	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-3e	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-4 at 400 V rated value	22 A
• at AC-5a up to 690 V rated value	44 A
• at AC-5b up to 400 V rated value	31.5 A
• at AC-6a	
— up to 230 V for current peak value n=20 rated value	30.8 A
— up to 400 V for current peak value n=20 rated value	30.8 A
— up to 500 V for current peak value n=20 rated value	30.8 A
— up to 690 V for current peak value n=20 rated value	21 A
• at AC-6a	
— up to 230 V for current peak value n=30 rated value	20.5 A
— up to 400 V for current peak value n=30 rated value	20.5 A
— up to 500 V for current peak value n=30 rated value	21.4 A
— up to 690 V for current peak value n=30 rated value	21 A
minimum cross-section in main circuit at maximum AC-1 rated value	10 mm <sup>2</sup>
operational current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	12 A
• at 690 V rated value	12 A
operational current	
• at 1 current path at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	20 A
— at 110 V rated value	4.5 A
— at 220 V rated value	1 A
— 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

<ul style="list-style-type: none"><li>• with 3 current paths in series at DC-1<ul style="list-style-type: none"><li>— at 24 V rated value</li><li>— at 60 V rated value</li><li>— at 110 V rated value</li><li>— at 220 V rated value</li><li>— at 440 V rated value</li><li>— at 600 V rated value</li></ul></li><li>• at 1 current path at DC-3 at DC-5<ul style="list-style-type: none"><li>— at 24 V rated value</li><li>— at 60 V rated value</li><li>— at 110 V rated value</li><li>— at 220 V rated value</li><li>— at 440 V rated value</li><li>— at 600 V rated value</li></ul></li><li>• with 2 current paths in series at DC-3 at DC-5<ul style="list-style-type: none"><li>— at 24 V rated value</li><li>— at 60 V rated value</li><li>— at 110 V rated value</li><li>— at 220 V rated value</li><li>— at 440 V rated value</li><li>— at 600 V rated value</li></ul></li><li>• with 3 current paths in series at DC-3 at DC-5<ul style="list-style-type: none"><li>— at 24 V rated value</li><li>— at 60 V rated value</li><li>— at 110 V rated value</li><li>— at 220 V rated value</li><li>— at 440 V rated value</li><li>— at 600 V rated value</li></ul></li></ul>	35 A 35 A 35 A 35 A 2.9 A 1.4 A  20 A 5 A 2.5 A 1 A 0.09 A 0.06 A  35 A 35 A 15 A 3 A 0.27 A 0.16 A  35 A 35 A 35 A 10 A 0.6 A 0.6 A
<b>operating power</b> <ul style="list-style-type: none"><li>• at AC-3<ul style="list-style-type: none"><li>— at 230 V rated value</li><li>— at 400 V rated value</li><li>— at 500 V rated value</li><li>— at 690 V rated value</li></ul></li><li>• at AC-3e<ul style="list-style-type: none"><li>— at 230 V rated value</li><li>— at 400 V rated value</li><li>— at 500 V rated value</li><li>— at 690 V rated value</li></ul></li></ul>	11 kW 18.5 kW 18.5 kW 18.5 kW  11 kW 18.5 kW 18.5 kW 18.5 kW
<b>operating power for approx. 200000 operating cycles at AC-4</b> <ul style="list-style-type: none"><li>• at 400 V rated value</li><li>• at 690 V rated value</li></ul>	6 kW 10.3 kW
<b>operating apparent power at AC-6a</b> <ul style="list-style-type: none"><li>• up to 230 V for current peak value n=20 rated value</li><li>• up to 400 V for current peak value n=20 rated value</li><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>	12.2 kVA 21.3 kVA 26.6 kVA 25 kVA
<b>operating apparent power at AC-6a</b> <ul style="list-style-type: none"><li>• up to 230 V for current peak value n=30 rated value</li><li>• up to 400 V for current peak value n=30 rated value</li><li>• up to 500 V for current peak value n=30 rated value</li><li>• up to 690 V for current peak value n=30 rated value</li></ul>	8.1 kVA 14.2 kVA 18.5 kVA 25 kVA
<b>short-time withstand current in cold operating state up to 40 °C</b> <ul style="list-style-type: none"><li>• limited to 1 s switching at zero current maximum</li><li>• limited to 5 s switching at zero current maximum</li><li>• limited to 10 s switching at zero current maximum</li><li>• limited to 30 s switching at zero current maximum</li><li>• limited to 60 s switching at zero current maximum</li></ul>	593 A; Use minimum cross-section acc. to AC-1 rated value 341 A; Use minimum cross-section acc. to AC-1 rated value 260 A; Use minimum cross-section acc. to AC-1 rated value 199 A; Use minimum cross-section acc. to AC-1 rated value 162 A; Use minimum cross-section acc. to AC-1 rated value
<b>no-load switching frequency</b>	

• at DC	1 500 1/h
<b>operating frequency</b>	
• at AC-1 maximum	1 000 1/h
• at AC-2 maximum	750 1/h
• at AC-3 maximum	750 1/h
• at AC-3e maximum	750 1/h
• at AC-4 maximum	250 1/h
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	DC
<b>control supply voltage at DC rated value</b>	24 V
<b>operating range factor control supply voltage rated value of magnet coil at DC</b>	
• initial value	0.8
• full-scale value	1.1
<b>closing power of magnet coil at DC</b>	5.9 W
<b>holding power of magnet coil at DC</b>	5.9 W
<b>closing delay</b>	
• at DC	50 ... 170 ms
<b>opening delay</b>	
• at DC	15 ... 18 ms
<b>arcing time</b>	10 ... 10 ms
<b>control version of the switch operating mechanism</b>	Standard A1 - A2
<b>Auxiliary circuit</b>	
number of NC contacts for auxiliary contacts instantaneous contact	1
number of NO contacts for auxiliary contacts instantaneous contact	1
operational current at AC-12 maximum	10 A
<b>operational current at AC-15</b>	
• 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
<b>operational current at DC-12</b>	
• 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
<b>operational current at DC-13</b>	
• 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
<b>contact reliability of auxiliary contacts</b>	1 faulty switching per 100 million (17 V, 1 mA)
<b>UL/CSA ratings</b>	
<b>full-load current (FLA) for 3-phase AC motor</b>	
• at 480 V rated value	34 A
• at 600 V rated value	27 A
<b>yielded mechanical performance [hp]</b>	
• for single-phase AC motor	
— at 110/120 V rated value	3 hp
— at 230 V rated value	5 hp
• for 3-phase AC motor	
— at 200/208 V rated value	10 hp
— at 220/230 V rated value	10 hp

— at 460/480 V rated value	25 hp
— at 575/600 V rated value	25 hp
contact rating of auxiliary contacts according to UL	A600 / P600
Short-circuit protection	
design of the fuse link <ul style="list-style-type: none"> <li>for short-circuit protection of the main circuit <ul style="list-style-type: none"> <li>with type of coordination 1 required</li> <li>with type of assignment 2 required</li> </ul> </li> <li>for short-circuit protection of the auxiliary switch required</li> </ul>	gG: 125A (690V,100kA), aM: 50A (690V,100kA), BS88: 125A (415V,80kA) gG: 50A (690V,100kA), aM: 25A (690V, 100kA), BS88: 50A (415V, 80kA) 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	85 mm
width	45 mm
depth	107 mm
required spacing <ul style="list-style-type: none"> <li>with side-by-side mounting <ul style="list-style-type: none"> <li>forwards</li> <li>upwards</li> <li>downwards</li> <li>at the side</li> </ul> </li> <li>for grounded parts <ul style="list-style-type: none"> <li>forwards</li> <li>upwards</li> <li>at the side</li> <li>downwards</li> </ul> </li> <li>for live parts <ul style="list-style-type: none"> <li>forwards</li> <li>upwards</li> <li>downwards</li> <li>at the side</li> </ul> </li> </ul>	10 mm 10 mm 10 mm 0 mm  10 mm 10 mm 6 mm 10 mm  10 mm 10 mm 10 mm 6 mm
Connections/ Terminals	
type of electrical connection <ul style="list-style-type: none"> <li>for main current circuit</li> <li>for auxiliary and control circuit</li> <li>at contactor for auxiliary contacts</li> <li>of magnet coil</li> </ul>	screw-type terminals screw-type terminals Screw-type terminals Screw-type terminals
type of connectable conductor cross-sections <ul style="list-style-type: none"> <li>for main contacts <ul style="list-style-type: none"> <li>solid</li> <li>solid or stranded</li> <li>finely stranded with core end processing</li> </ul> </li> <li>for AWG cables for main contacts</li> </ul>	2x (1 ... 2.5 mm²), 2x (2.5 ... 10 mm²) 2x (1 ... 2.5 mm²), 2x (2.5 ... 10 mm²) 2x (1 ... 2.5 mm²), 2x (2.5 ... 6 mm²), 1x 10 mm² 2x (16 ... 12), 2x (14 ... 8)
connectable conductor cross-section for main contacts <ul style="list-style-type: none"> <li>solid</li> <li>stranded</li> <li>finely stranded with core end processing</li> </ul>	1 ... 10 mm² 1 ... 10 mm² 1 ... 10 mm²
connectable conductor cross-section for auxiliary contacts <ul style="list-style-type: none"> <li>solid or stranded</li> <li>finely stranded with core end processing</li> </ul>	0.5 ... 2.5 mm² 0.5 ... 2.5 mm²
type of connectable conductor cross-sections <ul style="list-style-type: none"> <li>for auxiliary contacts <ul style="list-style-type: none"> <li>solid or stranded</li> <li>finely stranded with core end processing</li> </ul> </li> <li>for AWG cables for auxiliary contacts</li> </ul>	2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) 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 section <ul style="list-style-type: none"> <li>for main contacts</li> <li>for auxiliary contacts</li> </ul>	16 ... 8 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
service life maximum	20 a
test wear-related service life necessary	Yes
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
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	
General Product Approval	



Confirmation



KC

General Product Ap- proval	EMV	Functional Saftey	Test Certificates	Marine / Shipping
		<a href="#">Type Examination Cer- tificate</a>	<a href="#">Type Test Certific- ates/Test Report</a>	<a href="#">Special Test Certific- ate</a>

Marine / Shipping	other
	<a href="#">Miscellaneous</a>
	<a href="#">Confirmation</a>

Railway	Dangerous goods	Environment
<a href="#">Special Test Certific- ate</a>	<a href="#">Transport Information</a>	
		<a href="#">Environmental Con- firmations</a>

Further information
Information on the packaging <a href="https://support.industry.siemens.com/cs/ww/en/view/109813875">https://support.industry.siemens.com/cs/ww/en/view/109813875</a>
Information- and Downloadcenter (Catalogs, Brochures,...) <a href="https://www.siemens.com/ic10">https://www.siemens.com/ic10</a>
Industry Mall (Online ordering system) <a href="https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2028-1BB40">https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2028-1BB40</a>
Cax online generator <a href="http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&amp;mlfb=3RT2028-1BB40">http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&amp;mlfb=3RT2028-1BB40</a>
Service&Support (Manuals, Certificates, Characteristics, FAQs,...) <a href="https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1BB40">https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1BB40</a>
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

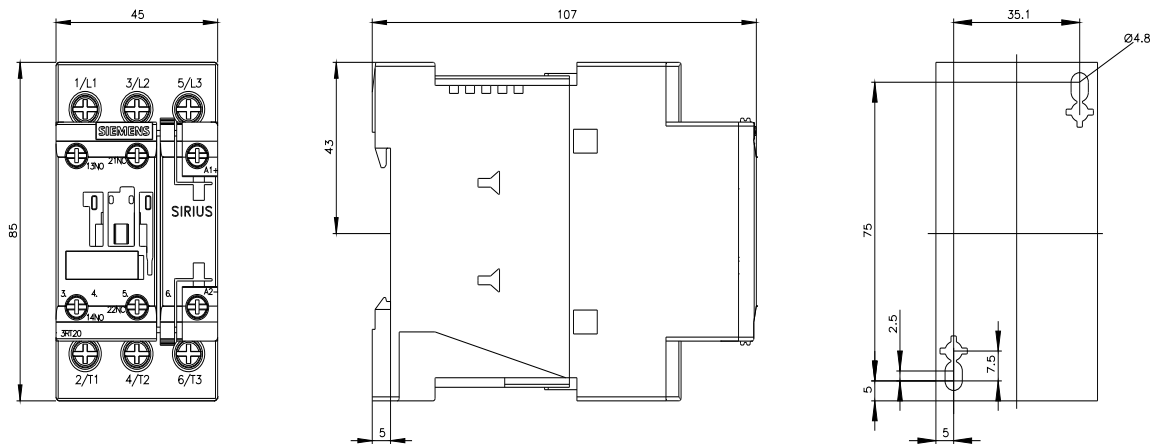
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2028-1BB40&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2028-1BB40&lang=en)

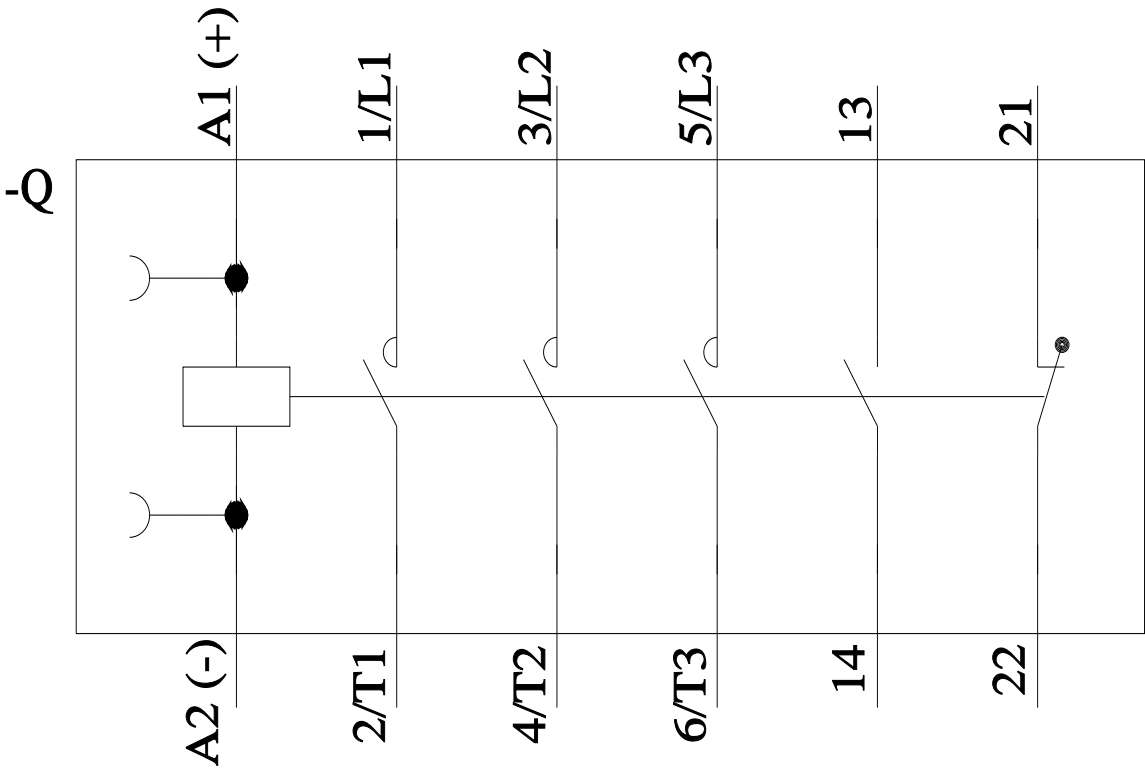
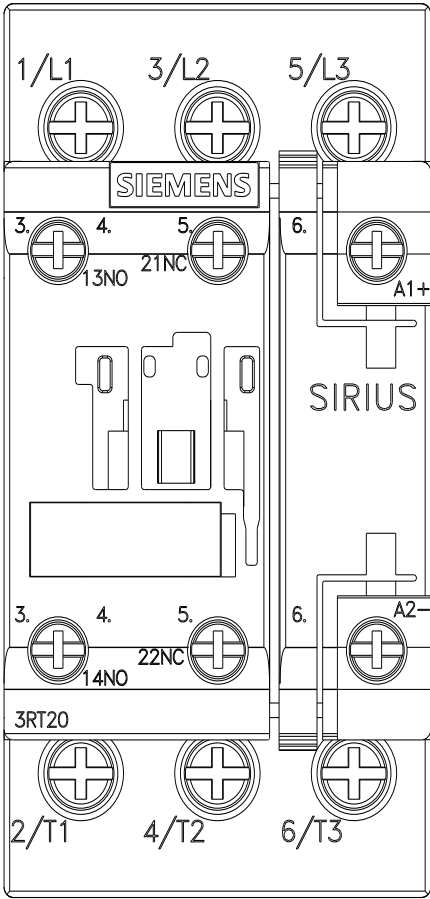
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1BB40/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-1BB40&objecttype=14&gridview=view1>





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