

Power contactor, AC-3 38 A, 18.5 kW / 400 V 2 NO + 2 NC, 220 V AC 50/60 Hz, 3-pole Size S0, screw terminals Removable auxiliary switch



product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2

General technical data	
<b>Size of contactor</b>	S0
<ul style="list-style-type: none"> <li>Product extension function module for communication</li> </ul>	No
<ul style="list-style-type: none"> <li>product extension auxiliary switch</li> </ul>	No
<ul style="list-style-type: none"> <li>power loss [W] for rated value of the current at AC in hot operating state</li> </ul>	11.4 W
<ul style="list-style-type: none"> <li>power loss [W] for rated value of the current at AC in hot operating state per pole</li> </ul>	3.8 W
<b>power loss [W] for rated value of the current without load current share typical</b>	10.5 W
<b>Surge voltage resistance</b>	
<ul style="list-style-type: none"> <li>of main circuit rated value</li> </ul>	6 kV
<ul style="list-style-type: none"> <li>of auxiliary circuit rated value</li> </ul>	6 kV
<b>maximum permissible voltage for safe isolation</b>	

<ul style="list-style-type: none"> <li>• between coil and main contacts acc. to EN 60947-1</li> </ul>	400 V
<b>protection class IP</b>	
<ul style="list-style-type: none"> <li>• on the front</li> </ul>	IP20
<ul style="list-style-type: none"> <li>• of the terminal</li> </ul>	IP20
<b>Shock resistance at rectangular impulse</b>	
<ul style="list-style-type: none"> <li>• at AC</li> </ul>	8,3g / 5 ms, 5,3g / 10 ms
<b>Shock resistance with sine pulse</b>	
<ul style="list-style-type: none"> <li>• at AC</li> </ul>	13,5g / 5 ms, 8,3g / 10 ms
<b>Mechanical service life (switching cycles)</b>	
<ul style="list-style-type: none"> <li>• of contactor typical</li> </ul>	10 000 000
<ul style="list-style-type: none"> <li>• of the contactor with added electronics-compatible auxiliary switch block typical</li> </ul>	5 000 000
<ul style="list-style-type: none"> <li>• of the contactor with added auxiliary switch block typical</li> </ul>	10 000 000
<b>reference code acc. to DIN EN 81346-2</b>	Q

Ambient conditions	
<ul style="list-style-type: none"> <li>• installation altitude at height above sea level maximum</li> </ul>	2 000 m
<ul style="list-style-type: none"> <li>• ambient temperature during operation</li> </ul>	-25 ... +60 °C
<ul style="list-style-type: none"> <li>• ambient temperature during storage</li> </ul>	-55 ... +80 °C

Main circuit	
<b>number of poles for main current circuit</b>	3
<b>Number of NO contacts for main contacts</b>	3
<ul style="list-style-type: none"> <li>• operating voltage at AC-3 rated value maximum</li> </ul>	690 V
<ul style="list-style-type: none"> <li>• Operating current at AC-1 at 400 V <ul style="list-style-type: none"> <li>— at ambient temperature 40 °C rated value</li> </ul> </li> </ul>	50 A
<ul style="list-style-type: none"> <li>• Operating current at AC-1 <ul style="list-style-type: none"> <li>— up to 690 V at ambient temperature 40 °C rated value</li> <li>— up to 690 V at ambient temperature 60 °C rated value</li> </ul> </li> </ul>	50 A 42 A
<ul style="list-style-type: none"> <li>• Operating current at AC-2 at 400 V rated value</li> </ul>	38 A
<ul style="list-style-type: none"> <li>• <ul style="list-style-type: none"> <li>— operating current at AC-3 at 400 V rated value</li> <li>— Operating current at AC-3 at 500 V rated value</li> <li>— Operating current at AC-3 at 690 V rated value</li> </ul> </li> </ul>	38 A 32 A 21 A
<ul style="list-style-type: none"> <li>• Operating current at AC-4 at 400 V rated value</li> </ul>	22 A

<ul style="list-style-type: none"> <li>• Operating current at AC-5a up to 690 V rated value</li> </ul>	44 A
<ul style="list-style-type: none"> <li>• Operating current at AC-5b up to 400 V rated value</li> </ul>	31.5 A
<ul style="list-style-type: none"> <li>• Operating current at AC-6a <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> </li> </ul>	30.8 A 30.8 A 30.8 A 21 A
<ul style="list-style-type: none"> <li>• Operating current at AC-6a <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> </li> </ul>	20.5 A 20.5 A 21.4 A 21 A
<b>Minimum cross-section in main circuit</b>	
<ul style="list-style-type: none"> <li>• at maximum AC-1 rated value</li> </ul>	10 mm <sup>2</sup>
<b>Operating current 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>	12 A 12 A
<b>Operating current</b>	
<ul style="list-style-type: none"> <li>• at 1 current path at DC-1 <ul style="list-style-type: none"> <li>— at 24 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-1 <ul style="list-style-type: none"> <li>— at 24 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-1 <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul>	35 A 4.5 A 1 A 0.4 A 0.25 A  35 A 35 A 5 A 1 A 0.8 A  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
<b>Operating current</b>	
• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1 A
— 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 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 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-2 at 400 V rated value	18.5 kW
•	
— operating power at AC-3 at 230 V rated value	11 kW
— operating power at AC-3 at 400 V rated value	18.5 kW
— operating power at AC-3 at 500 V rated value	18.5 kW
— operating power at AC-3 at 690 V rated value	18.5 kW
<b>Operating power for approx. 200000 operating cycles at AC-4</b>	
• at 400 V rated value	6 kW
• at 690 V rated value	10.3 kW
<b>Operating apparent output at AC-6a</b>	
• up to 230 V for current peak value n=20 rated value	12.2 kV·A
• up to 400 V for current peak value n=20 rated value	21.3 kV·A

<ul style="list-style-type: none"> <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>	26.6 kV·A 25 kV·A
<b>Operating apparent output 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 kV·A 14.2 kV·A 18.5 kV·A 25 kV·A
<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 395 A; Use minimum cross-section acc. to AC-1 rated value 260 A; Use minimum cross-section acc. to AC-1 rated value 186 A; Use minimum cross-section acc. to AC-1 rated value 152 A; Use minimum cross-section acc. to AC-1 rated value
<b>No-load switching frequency</b> <ul style="list-style-type: none"> <li>• at AC</li> <li>• Operating frequency at AC-1 maximum</li> <li>• Operating frequency at AC-2 maximum</li> <li>• operating frequency at AC-3 maximum</li> <li>• Operating frequency at AC-4 maximum</li> </ul>	5 000 1/h 1 000 1/h 750 1/h 750 1/h 250 1/h
<b>Control circuit/ Control</b>	
<b>Type of voltage of the control supply voltage</b> <ul style="list-style-type: none"> <li>• Control supply voltage at AC at 50 Hz rated value</li> <li>• Control supply voltage at AC at 60 Hz rated value</li> </ul>	AC 220 V 220 V
<b>Operating range factor control supply voltage rated value of magnet coil at AC</b> <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>	0.8 ... 1.1 0.85 ... 1.1
<b>Apparent pick-up power of magnet coil at AC</b> <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>	81 V·A 79 V·A

<b>Inductive power factor with closing power of the coil</b>	
• at 50 Hz	0.72
• at 60 Hz	0.74
<b>Apparent holding power of magnet coil at AC</b>	
• at 50 Hz	10.5 V·A
• at 60 Hz	8.5 V·A
<b>Inductive power factor with the holding power of the coil</b>	
• at 50 Hz	0.25
• at 60 Hz	0.28
<b>Closing delay</b>	
• at AC	8 ... 40 ms
<b>Opening delay</b>	
• at AC	4 ... 16 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	2
• Number of NO contacts for auxiliary contacts instantaneous contact	2
Operating current at AC-12 maximum	10 A
<b>Operating current at AC-15</b>	
• at 230 V rated value	6 A
• at 400 V rated value	3 A
• at 500 V rated value	2 A
• at 690 V rated value	1 A
• Operating current at DC-12 at 24 V rated value	10 A
• operating current at DC-12 at 48 V rated value	6 A
• Operating current at DC-12 at 60 V rated value	6 A
• operating current at DC-12 at 110 V rated value	3 A
• Operating current at DC-12 at 125 V rated value	2 A
• Operating current at DC-12 at 220 V rated value	1 A
• Operating current at DC-12 at 600 V rated value	0.15 A
• Operating current at DC-13 at 24 V rated value	6 A
• operating current at DC-13 at 48 V rated value	2 A
• Operating current at DC-13 at 60 V rated value	2 A
• operating current at DC-13 at 110 V rated value	1 A

<ul style="list-style-type: none"> <li>• Operating current at DC-13 at 125 V rated value</li> </ul>	0.9 A
<ul style="list-style-type: none"> <li>• Operating current at DC-13 at 220 V rated value</li> </ul>	0.3 A
<ul style="list-style-type: none"> <li>• Operating current at DC-13 at 600 V rated value</li> </ul>	0.1 A
<b>contact reliability of auxiliary contacts</b>	1 faulty switching per 100 million (17 V, 1 mA)

### UL/CSA ratings

<b>full-load current (FLA) for three-phase AC motor</b>	
<ul style="list-style-type: none"> <li>• at 480 V rated value</li> </ul>	34 A
<ul style="list-style-type: none"> <li>• at 600 V rated value</li> </ul>	27 A
<b>yielded mechanical performance [hp]</b>	
<ul style="list-style-type: none"> <li>• for single-phase AC motor <ul style="list-style-type: none"> <li>— at 110/120 V rated value</li> <li>— at 230 V rated value</li> </ul> </li> <li>• for three-phase AC motor <ul style="list-style-type: none"> <li>— at 200/208 V rated value</li> <li>— at 220/230 V rated value</li> <li>— at 460/480 V rated value</li> <li>— at 575/600 V rated value</li> </ul> </li> </ul>	3 hp 5 hp  10 hp 10 hp 25 hp 25 hp
<b>contact rating of auxiliary contacts according to UL</b>	A600 / Q600

### Short-circuit protection

<ul style="list-style-type: none"> <li>• Design of the fuse link for short-circuit protection of the main circuit with type of coordination 1 required</li> </ul>	gG: 125A (690V,100kA), aM: 50A (690V,100kA), BS88: 125A (415V,80kA)
<ul style="list-style-type: none"> <li>• Design of the fuse link for short-circuit protection of the main circuit with type of assignment 2 required</li> </ul>	gG: 50A (690V,100kA), aM: 25A (690V, 100kA), BS88: 50A (415V, 80kA)
<ul style="list-style-type: none"> <li>• design of the fuse link for short-circuit protection of the auxiliary switch required</li> </ul>	gG: 10 A (500 V, 1 kA)

### Installation/ mounting/ dimensions

<ul style="list-style-type: none"> <li>• <b>mounting position</b></li> </ul>	+/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface
<ul style="list-style-type: none"> <li>• <b>mounting type</b></li> </ul>	screw and snap-on mounting onto 35 mm standard mounting rail according to DIN EN 60715
<ul style="list-style-type: none"> <li>• mounting type side-by-side mounting</li> </ul>	Yes
<b>height</b>	85 mm
<b>width</b>	45 mm
<b>depth</b>	141 mm
<b>required spacing</b>	
<ul style="list-style-type: none"> <li>• with side-by-side mounting <ul style="list-style-type: none"> <li>— forwards</li> </ul> </li> </ul>	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
• for live parts	
— 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
• type of electrical connection for auxiliary and control current circuit	screw-type terminals
• Type of electrical connection at contactor for auxiliary contacts	Screw-type terminals
• Type of electrical connection of magnet coil	Screw-type terminals
• type of connectable conductor cross-sections for main contacts solid	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 10 mm <sup>2</sup> )
• type of connectable conductor cross-sections for main contacts single or multi-stranded	2x (1 ... 2,5 mm <sup>2</sup> ), 2x (2,5 ... 10 mm <sup>2</sup> )
• type of connectable conductor cross-sections for main contacts finely stranded with core end processing	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup>
• type of connectable conductor cross-sections at AWG conductors for main contacts	2x (16 ... 12), 2x (14 ... 8)
<b>connectable conductor cross-section for main contacts</b>	
• solid	1 ... 10 mm <sup>2</sup>
• stranded	1 ... 10 mm <sup>2</sup>
• finely stranded with core end processing	1 ... 10 mm <sup>2</sup>
<b>connectable conductor cross-section for auxiliary contacts</b>	
• single or multi-stranded	0.5 ... 2.5 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 2.5 mm <sup>2</sup>
• type of connectable conductor cross-sections for auxiliary contacts single or multi-stranded	2x (0,5 ... 1,5 mm <sup>2</sup> ), 2x (0,75 ... 2,5 mm <sup>2</sup> )



<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections for auxiliary contacts 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 style="list-style-type: none"> <li>• type of connectable conductor cross-sections at AWG conductors for auxiliary contacts</li> </ul>	2x (20 ... 16), 2x (18 ... 14)
<b>AWG number as coded connectable conductor cross section</b>	
<ul style="list-style-type: none"> <li>• for main contacts</li> </ul>	16 ... 8
<ul style="list-style-type: none"> <li>• for auxiliary contacts</li> </ul>	20 ... 14

Safety related data	
<b>B10 value</b>	
<ul style="list-style-type: none"> <li>• with high demand rate acc. to SN 31920</li> </ul>	1 000 000
<b>proportion of dangerous failures</b>	
<ul style="list-style-type: none"> <li>• with low demand rate acc. to SN 31920</li> </ul>	40 %
<ul style="list-style-type: none"> <li>• with high demand rate acc. to SN 31920</li> </ul>	73 %
<b>failure rate [FIT]</b>	
<ul style="list-style-type: none"> <li>• with low demand rate acc. to SN 31920</li> </ul>	100 FIT
<b>Product function</b>	
<ul style="list-style-type: none"> <li>• Mirror contact acc. to IEC 60947-4-1</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• positively driven operation acc. to IEC 60947-5-1</li> </ul>	No
<b>T1 value for proof test interval or service life acc. to IEC 61508</b>	20 y
<b>protection against electrical shock</b>	finger-safe
Suitability for use safety-related switching OFF	Yes

### Certificates/ approvals

General Product Approval	EMC
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[KC](#)



Functional Safety/Safety of Machinery	Declaration of Conformity	Test Certificates	Marine / Shipping
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[Type Examination Certificate](#)



[Miscellaneous](#)

[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



Marine / Shipping	other
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[Confirmation](#)

other
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### 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=3RT2028-1AN24>

**Cax online generator**

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2028-1AN24>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AN24>

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

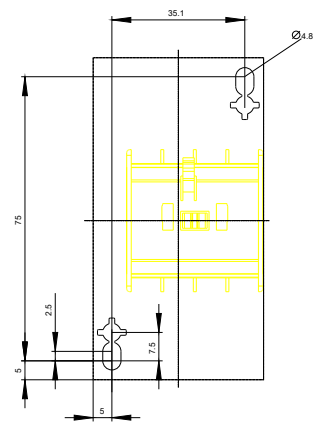
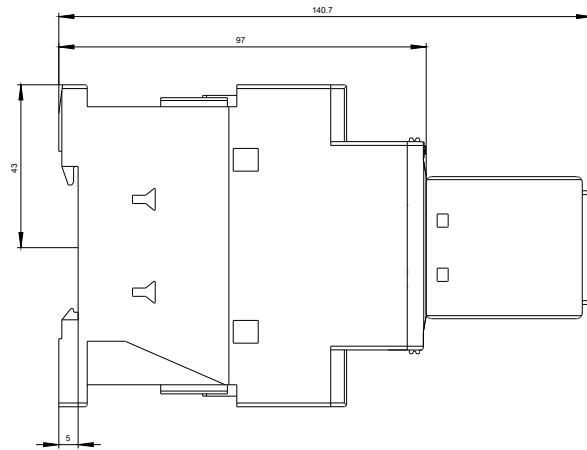
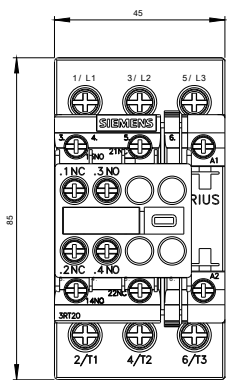
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2028-1AN24&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2028-1AN24&lang=en)

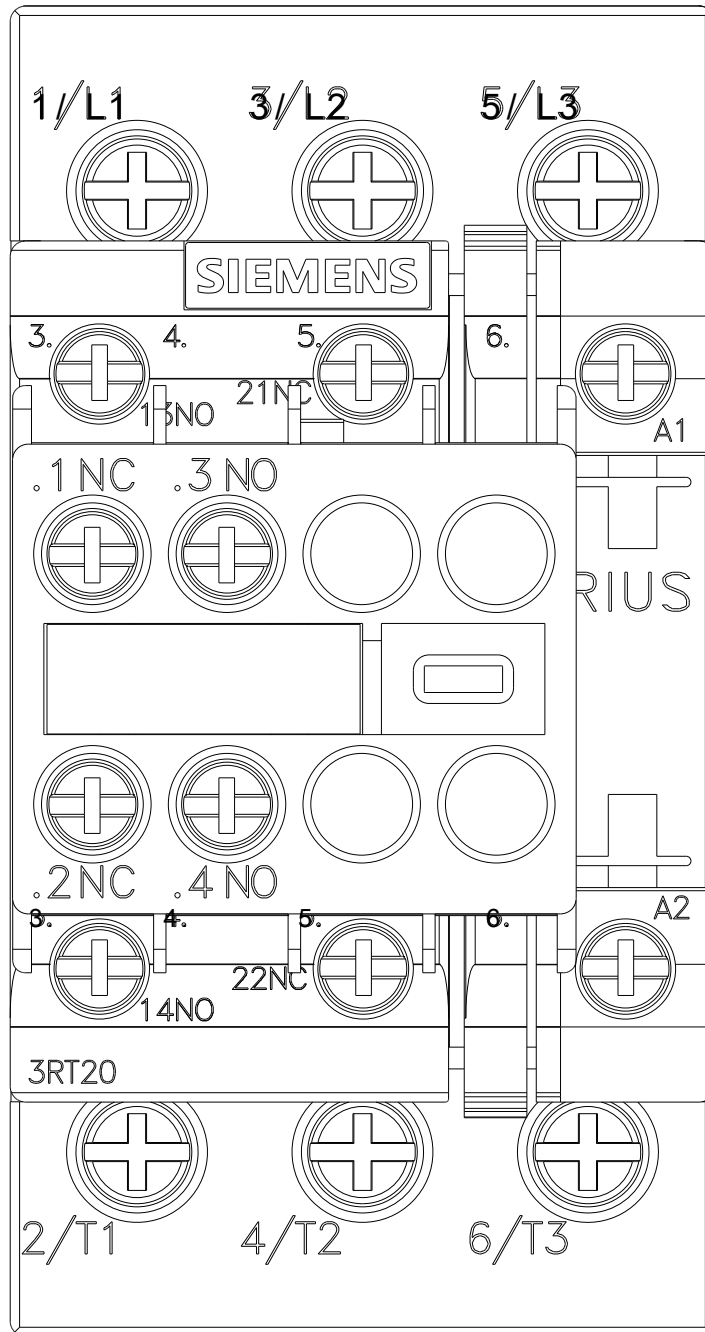
**Characteristic: Tripping characteristics, I<sup>2</sup>t, Let-through current**

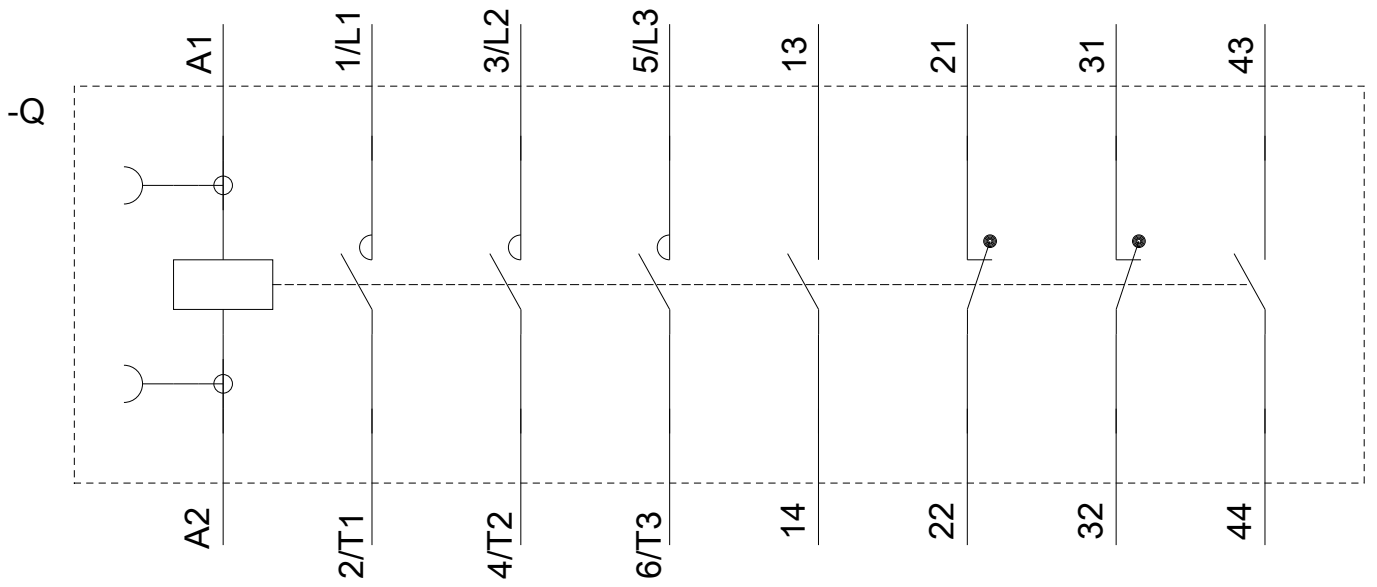
<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AN24/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-1AN24&objecttype=14&gridview=view1>







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