



power contactor, AC-3e/AC-3, 38 A, 18.5 kW / 400 V, 3-pole, 230 V AC, 50/60 Hz, 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 | 2.7 W |
| 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 AC | 8,3g / 5 ms, 5,3g / 10 ms |
| shock resistance with sine pulse | |
| • at AC | 13,5g / 5 ms, 8,3g / 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 |
| 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 |

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| Global Warming Potential [CO2 eq] total | 74.2 kg |
| Global Warming Potential [CO2 eq] during manufacturing | 1.9 kg |
| Global Warming Potential [CO2 eq] during operation | 72.4 kg |
| Global Warming Potential [CO2 eq] after end of life | -0.117 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 ² |
| 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 |
| • with 3 current paths in series at DC-1 | |
| — at 24 V rated value | 35 A |

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| — 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 | |
| — at 24 V rated value | 20 A |
| — at 60 V rated value | 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 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 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 | |
| — at 230 V rated value | 11 kW |
| — at 400 V rated value | 18.5 kW |
| — at 500 V rated value | 18.5 kW |
| — at 690 V rated value | 18.5 kW |
| ● at AC-3e | |
| — at 230 V rated value | 11 kW |
| — at 400 V rated value | 18.5 kW |
| — at 500 V rated value | 18.5 kW |
| — at 690 V rated value | 18.5 kW |
| operating power for approx. 200000 operating cycles at AC-4 | |
| ● at 400 V rated value | 6 kW |
| ● at 690 V rated value | 10.3 kW |
| operating apparent power at AC-6a | |
| ● up to 230 V for current peak value n=20 rated value | 12.2 kVA |
| ● up to 400 V for current peak value n=20 rated value | 21.3 kVA |
| ● up to 500 V for current peak value n=20 rated value | 26.6 kVA |
| ● up to 690 V for current peak value n=20 rated value | 25 kVA |
| operating apparent power at AC-6a | |
| ● up to 230 V for current peak value n=30 rated value | 8.1 kVA |
| ● up to 400 V for current peak value n=30 rated value | 14.2 kVA |
| ● up to 500 V for current peak value n=30 rated value | 18.5 kVA |
| ● up to 690 V for current peak value n=30 rated value | 25 kVA |
| short-time withstand current in cold operating state up to 40 °C | |
| ● limited to 1 s switching at zero current maximum | 593 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 5 s switching at zero current maximum | 341 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 10 s switching at zero current maximum | 260 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 30 s switching at zero current maximum | 199 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 60 s switching at zero current maximum | 162 A; Use minimum cross-section acc. to AC-1 rated value |
| no-load switching frequency | |
| ● at AC | 5 000 1/h |
| operating frequency | |
| ● at AC-1 maximum | 1 000 1/h |

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| <ul style="list-style-type: none"> • at AC-2 maximum | 750 1/h |
| <ul style="list-style-type: none"> • at AC-3 maximum | 750 1/h |
| <ul style="list-style-type: none"> • at AC-3e maximum | 750 1/h |
| <ul style="list-style-type: none"> • at AC-4 maximum | 250 1/h |
| Control circuit/ Control | |
| type of voltage of the control supply voltage | AC |
| control supply voltage at AC | |
| <ul style="list-style-type: none"> • at 50 Hz rated value | 230 V |
| <ul style="list-style-type: none"> • at 60 Hz rated value | 230 V |
| operating range factor control supply voltage rated value of magnet coil at AC | |
| <ul style="list-style-type: none"> • at 50 Hz | 0.8 ... 1.1 |
| <ul style="list-style-type: none"> • at 60 Hz | 0.85 ... 1.1 |
| apparent pick-up power of magnet coil at AC | |
| <ul style="list-style-type: none"> • at 50 Hz | 81 VA |
| <ul style="list-style-type: none"> • at 60 Hz | 79 VA |
| inductive power factor with closing power of the coil | |
| <ul style="list-style-type: none"> • at 50 Hz | 0.72 |
| <ul style="list-style-type: none"> • at 60 Hz | 0.74 |
| apparent holding power of magnet coil at AC | |
| <ul style="list-style-type: none"> • at 50 Hz | 10.5 VA |
| <ul style="list-style-type: none"> • at 60 Hz | 8.5 VA |
| inductive power factor with the holding power of the coil | |
| <ul style="list-style-type: none"> • at 50 Hz | 0.25 |
| <ul style="list-style-type: none"> • at 60 Hz | 0.28 |
| closing delay | |
| <ul style="list-style-type: none"> • at AC | 8 ... 40 ms |
| opening delay | |
| <ul style="list-style-type: none"> • at AC | 4 ... 16 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 contact | 1 |
| number of NO contacts for auxiliary contacts instantaneous contact | 1 |
| operational current at AC-12 maximum | 10 A |
| operational current at AC-15 | |
| <ul style="list-style-type: none"> • at 230 V rated value | 10 A |
| <ul style="list-style-type: none"> • at 400 V rated value | 3 A |
| <ul style="list-style-type: none"> • at 500 V rated value | 2 A |
| <ul style="list-style-type: none"> • at 690 V rated value | 1 A |
| operational current at DC-12 | |
| <ul style="list-style-type: none"> • at 24 V rated value | 10 A |
| <ul style="list-style-type: none"> • at 48 V rated value | 6 A |
| <ul style="list-style-type: none"> • at 60 V rated value | 6 A |
| <ul style="list-style-type: none"> • at 110 V rated value | 3 A |
| <ul style="list-style-type: none"> • at 125 V rated value | 2 A |
| <ul style="list-style-type: none"> • at 220 V rated value | 1 A |
| <ul style="list-style-type: none"> • at 600 V rated value | 0.15 A |
| operational current at DC-13 | |
| <ul style="list-style-type: none"> • at 24 V rated value | 10 A |
| <ul style="list-style-type: none"> • at 48 V rated value | 2 A |
| <ul style="list-style-type: none"> • at 60 V rated value | 2 A |
| <ul style="list-style-type: none"> • at 110 V rated value | 1 A |
| <ul style="list-style-type: none"> • at 125 V rated value | 0.9 A |
| <ul style="list-style-type: none"> • at 220 V rated value | 0.3 A |
| <ul style="list-style-type: none"> • 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 | |

| | |
|---|---|
| <ul style="list-style-type: none"> • at 480 V rated value • at 600 V rated value | <p>34 A 27 A</p> |
| yielded mechanical performance [hp] <ul style="list-style-type: none"> • for single-phase AC motor <ul style="list-style-type: none"> — at 110/120 V rated value — at 230 V rated value • for 3-phase AC motor <ul style="list-style-type: none"> — at 200/208 V rated value — at 220/230 V rated value — at 460/480 V rated value — at 575/600 V rated value | <p>3 hp 5 hp 10 hp 10 hp 25 hp 25 hp</p> |
| contact rating of auxiliary contacts according to UL | <p>A600 / P600</p> |
| Short-circuit protection | |
| design of the fuse link <ul style="list-style-type: none"> • for short-circuit protection of the main circuit <ul style="list-style-type: none"> — with type of coordination 1 required — with type of assignment 2 required • for short-circuit protection of the auxiliary switch required | <p>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)</p> |
| Installation/ mounting/ dimensions | |
| mounting position | <p>+/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface</p> |
| <ul style="list-style-type: none"> • fastening method • fastening method side-by-side mounting | <p>screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715 Yes</p> |
| height | <p>85 mm</p> |
| width | <p>45 mm</p> |
| depth | <p>97 mm</p> |
| required spacing <ul style="list-style-type: none"> • with side-by-side mounting <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side • for grounded parts <ul style="list-style-type: none"> — forwards — upwards — at the side — downwards • for live parts <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side | <p>10 mm 10 mm 10 mm 0 mm 10 mm 10 mm 6 mm 10 mm 10 mm 10 mm 10 mm 6 mm</p> |
| Connections/ Terminals | |
| type of electrical connection <ul style="list-style-type: none"> • for main current circuit • for auxiliary and control circuit • at contactor for auxiliary contacts • of magnet coil | <p>screw-type terminals screw-type terminals Screw-type terminals Screw-type terminals</p> |
| type of connectable conductor cross-sections <ul style="list-style-type: none"> • for main contacts <ul style="list-style-type: none"> — solid — solid or stranded — finely stranded with core end processing • for AWG cables for main contacts | <p>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)</p> |
| connectable conductor cross-section for main contacts <ul style="list-style-type: none"> • solid • stranded • finely stranded with core end processing | <p>1 ... 10 mm² 1 ... 10 mm² 1 ... 10 mm²</p> |
| connectable conductor cross-section for auxiliary contacts <ul style="list-style-type: none"> • solid or stranded | <p>0.5 ... 2.5 mm²</p> |

| | |
|--|--|
| <ul style="list-style-type: none"> finely stranded with core end processing | 0.5 ... 2.5 mm ² |
| type of connectable conductor cross-sections <ul style="list-style-type: none"> for auxiliary contacts <ul style="list-style-type: none"> — solid or stranded — finely stranded with core end processing for AWG cables for auxiliary contacts | 2x (0.5 ... 1.5 mm ²), 2x (0.75 ... 2.5 mm ²) 2x (0.5 ... 1.5 mm ²), 2x (0.75 ... 2.5 mm ²) 2x (20 ... 16), 2x (18 ... 14) |
| AWG number as coded connectable conductor cross section <ul style="list-style-type: none"> for main contacts for auxiliary contacts | 16 ... 8 20 ... 14 |

Safety related data

| | |
|---|--|
| product function <ul style="list-style-type: none"> mirror contact according to IEC 60947-4-1 | Yes |
| suitability for use safety-related switching OFF | Yes; applies only to contactor operating mechanism |
| proportion of dangerous failures <ul style="list-style-type: none"> with low demand rate according to SN 31920 with high demand rate according to SN 31920 | 40 % 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 |

IEC 61508

| | |
|--|------|
| T1 value <ul style="list-style-type: none"> for proof test interval or 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 |

Approvals Certificates

General Product Approval



[Confirmation](#)



| | | | |
|---------------------------------|------------|--------------------------|--------------------------|
| General Product Approval | EMV | Test Certificates | Marine / Shipping |
|---------------------------------|------------|--------------------------|--------------------------|

[KC](#)



[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



| | |
|--------------------------|--------------|
| Marine / Shipping | other |
|--------------------------|--------------|



[Miscellaneous](#)

| | |
|--------------|--------------------|
| other | Environment |
|--------------|--------------------|

[Confirmation](#)

[Confirmation](#)

[EPD Typ II/III \(with life cycle assessment\)](#)

Further information

Information on the packaging
<https://support.industry.siemens.com/cs/ww/en/view/109813875>
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=3RT2028-1AL20>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2028-1AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AL20>

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

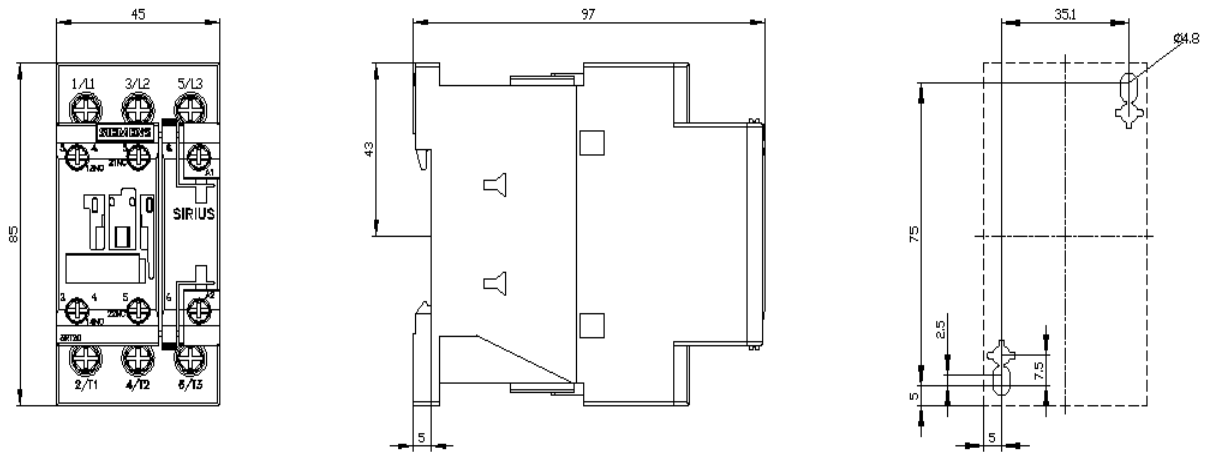
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2028-1AL20&lang=en

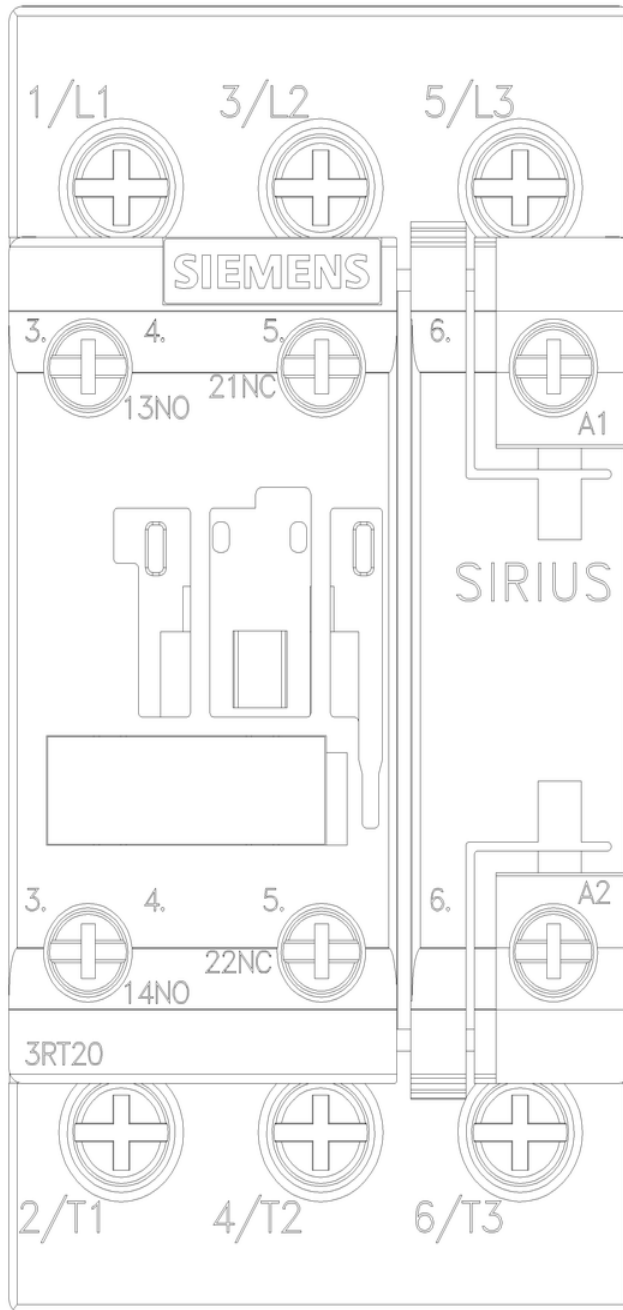
Characteristic: Tripping characteristics, I²t, Let-through current

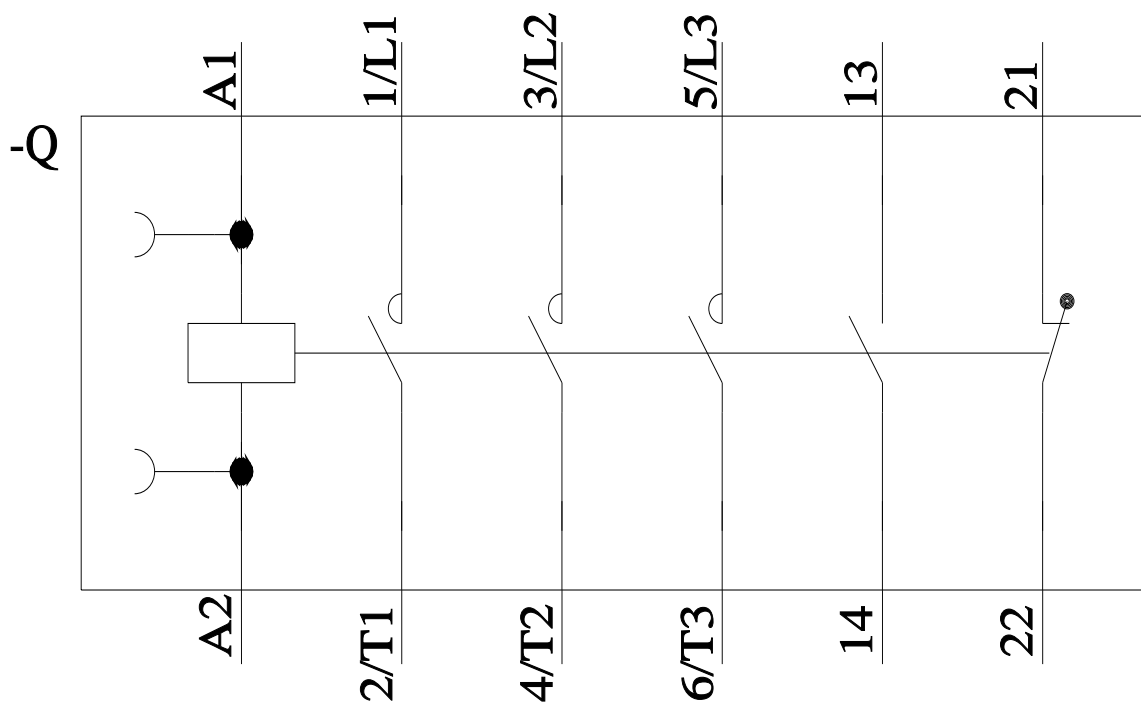
<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AL20/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-1AL20&objecttype=14&gridview=view1>







last modified:

1/17/2024 