



contactor AC-1, 160 A, 400 V / 40 °C, 4-pole, 230 V AC, 50/60 Hz, auxiliary contacts: 1 NO + 1 NC, screw terminal, size: S3

|                                                                               |                              |
|-------------------------------------------------------------------------------|------------------------------|
| product brand name                                                            | SIRIUS                       |
| product designation                                                           | Contactor                    |
| product type designation                                                      | 3RT23                        |
| <b>General technical data</b>                                                 |                              |
| size of contactor                                                             | S3                           |
| 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                                                | 61.6 W                       |
| • at AC in hot operating state per pole                                       | 15.4 W                       |
| • without load current share typical                                          | 8.8 W                        |
| type of calculation of power loss current-dependent                           | quadratic                    |
| insulation voltage                                                            |                              |
| • of main circuit with degree of pollution 3 rated value                      | 690 V                        |
| • of the auxiliary and control circuit with degree of pollution 3 rated value | 690 V                        |
| surge voltage resistance                                                      |                              |
| • of main circuit rated value                                                 | 8 kV                         |
| • of auxiliary circuit rated value                                            | 6 kV                         |
| shock resistance at rectangular impulse                                       |                              |
| • at AC                                                                       | 6.7 g / 5 ms, 4.0 g / 10 ms  |
| shock resistance with sine pulse                                              |                              |
| • at AC                                                                       | 10.6 g / 5 ms, 6.3 g / 10 ms |
| mechanical service life (operating cycles)                                    |                              |
| • of contactor typical                                                        | 10 000 000                   |
| • of the contactor with added auxiliary switch block typical                  | 10 000 000                   |
| reference code according to IEC 81346-2                                       | Q                            |
| Substance Prohibittance (day/month/year)                                      | 09/01/2017                   |
| Net Weight                                                                    | 1.909 kg                     |
| <b>Ambient conditions</b>                                                     |                              |
| 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 %                         |
| <b>Main circuit</b>                                                           |                              |

|                                                                                                                                                                                    |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>number of poles for main current circuit</b>                                                                                                                                    | 4                  |
| <b>number of NO contacts for main contacts</b>                                                                                                                                     | 4                  |
| <b>type of voltage for main current circuit</b>                                                                                                                                    | AC                 |
| <b>operational current</b>                                                                                                                                                         |                    |
| <ul style="list-style-type: none"> <li>• at AC-1 at 400 V at ambient temperature 40 °C rated value</li> </ul>                                                                      | 160 A              |
| <ul style="list-style-type: none"> <li>• at AC-1 <ul style="list-style-type: none"> <li>— up to 690 V at ambient temperature 40 °C rated value</li> </ul> </li> </ul>              | 160 A              |
| <ul style="list-style-type: none"> <li>— up to 690 V at ambient temperature 60 °C rated value</li> </ul>                                                                           | 140 A              |
| <b>minimum cross-section in main circuit at maximum AC-1 rated value</b>                                                                                                           | 35 mm <sup>2</sup> |
| <b>operational current</b>                                                                                                                                                         |                    |
| <ul style="list-style-type: none"> <li>• <b>at 1 current path at DC-1</b> <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul>                      | 80 A               |
| <ul style="list-style-type: none"> <li>— at 60 V rated value</li> </ul>                                                                                                            | 60 A               |
| <ul style="list-style-type: none"> <li>— at 110 V rated value</li> </ul>                                                                                                           | 9 A                |
| <ul style="list-style-type: none"> <li>— at 220 V rated value</li> </ul>                                                                                                           | 2 A                |
| <ul style="list-style-type: none"> <li>— at 440 V rated value</li> </ul>                                                                                                           | 0.6 A              |
| <ul style="list-style-type: none"> <li>• <b>with 2 current paths in series at DC-1</b> <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul>         | 80 A               |
| <ul style="list-style-type: none"> <li>— at 60 V rated value</li> </ul>                                                                                                            | 80 A               |
| <ul style="list-style-type: none"> <li>— at 110 V rated value</li> </ul>                                                                                                           | 80 A               |
| <ul style="list-style-type: none"> <li>— at 220 V rated value</li> </ul>                                                                                                           | 10 A               |
| <ul style="list-style-type: none"> <li>— at 440 V rated value</li> </ul>                                                                                                           | 1.8 A              |
| <ul style="list-style-type: none"> <li>• <b>with 3 current paths in series at DC-1</b> <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul>         | 80 A               |
| <ul style="list-style-type: none"> <li>— at 60 V rated value</li> </ul>                                                                                                            | 80 A               |
| <ul style="list-style-type: none"> <li>— at 110 V rated value</li> </ul>                                                                                                           | 80 A               |
| <ul style="list-style-type: none"> <li>— at 220 V rated value</li> </ul>                                                                                                           | 80 A               |
| <ul style="list-style-type: none"> <li>— at 440 V rated value</li> </ul>                                                                                                           | 4.5 A              |
| <ul style="list-style-type: none"> <li>• <b>at 1 current path at DC-3 at DC-5</b> <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul>              | 20 A               |
| <ul style="list-style-type: none"> <li>— at 60 V rated value</li> </ul>                                                                                                            | 6.5 A              |
| <ul style="list-style-type: none"> <li>— at 110 V rated value</li> </ul>                                                                                                           | 2.5 A              |
| <ul style="list-style-type: none"> <li>— at 220 V rated value</li> </ul>                                                                                                           | 1 A                |
| <ul style="list-style-type: none"> <li>— at 440 V rated value</li> </ul>                                                                                                           | 0.15 A             |
| <ul style="list-style-type: none"> <li>• <b>with 2 current paths in series at DC-3 at DC-5</b> <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul> | 80 A               |
| <ul style="list-style-type: none"> <li>— at 60 V rated value</li> </ul>                                                                                                            | 80 A               |
| <ul style="list-style-type: none"> <li>— at 110 V rated value</li> </ul>                                                                                                           | 80 A               |
| <ul style="list-style-type: none"> <li>— at 220 V rated value</li> </ul>                                                                                                           | 7 A                |
| <ul style="list-style-type: none"> <li>— at 440 V rated value</li> </ul>                                                                                                           | 0.42 A             |
| <ul style="list-style-type: none"> <li>• <b>with 3 current paths in series at DC-3 at DC-5</b> <ul style="list-style-type: none"> <li>— at 24 V rated value</li> </ul> </li> </ul> | 80 A               |
| <ul style="list-style-type: none"> <li>— at 60 V rated value</li> </ul>                                                                                                            | 80 A               |
| <ul style="list-style-type: none"> <li>— at 110 V rated value</li> </ul>                                                                                                           | 80 A               |
| <ul style="list-style-type: none"> <li>— at 220 V rated value</li> </ul>                                                                                                           | 35 A               |
| <ul style="list-style-type: none"> <li>— at 440 V rated value</li> </ul>                                                                                                           | 0.8 A              |
| <b>no-load switching frequency</b>                                                                                                                                                 |                    |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>                                                                                                                          | 5 000 1/h          |
| <b>operating frequency</b>                                                                                                                                                         |                    |
| <ul style="list-style-type: none"> <li>• at AC-1 maximum</li> </ul>                                                                                                                | 1 000 1/s          |
| <b>Control circuit/ Control</b>                                                                                                                                                    |                    |
| <b>type of voltage</b>                                                                                                                                                             | AC                 |
| <b>type of voltage of the control supply voltage</b>                                                                                                                               | AC                 |
| <b>control supply voltage at AC</b>                                                                                                                                                |                    |
| <ul style="list-style-type: none"> <li>• at 50 Hz rated value</li> </ul>                                                                                                           | 230 V              |
| <ul style="list-style-type: none"> <li>• at 60 Hz rated value</li> </ul>                                                                                                           | 230 V              |

|                                                                                                                  |                                                 |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| <b>operating range factor control supply voltage rated value of magnet coil at AC</b>                            |                                                 |
| • at 50 Hz                                                                                                       | 0.8 ... 1.1                                     |
| • at 60 Hz                                                                                                       | 0.85 ... 1.1                                    |
| <b>apparent pick-up power of magnet coil at AC</b>                                                               |                                                 |
| • at 50 Hz                                                                                                       | 348 V·A                                         |
| • at 60 Hz                                                                                                       | 296 V·A                                         |
| <b>inductive power factor with closing power of the coil</b>                                                     |                                                 |
| • at 50 Hz                                                                                                       | 0.62                                            |
| • at 60 Hz                                                                                                       | 0.55                                            |
| <b>apparent holding power of magnet coil at AC</b>                                                               |                                                 |
| • at 50 Hz                                                                                                       | 25 V·A                                          |
| • at 60 Hz                                                                                                       | 18 V·A                                          |
| <b>inductive power factor with the holding power of the coil</b>                                                 |                                                 |
| • at 50 Hz                                                                                                       | 0.35                                            |
| • at 60 Hz                                                                                                       | 0.41                                            |
| <b>closing delay</b>                                                                                             |                                                 |
| • at AC                                                                                                          | 13 ... 50 ms                                    |
| <b>opening delay</b>                                                                                             |                                                 |
| • at AC                                                                                                          | 10 ... 21 ms                                    |
| <b>arcing time</b>                                                                                               | 10 ... 20 ms                                    |
| <b>control version of the switch operating mechanism</b>                                                         | Standard A1 - A2                                |
| <b>Auxiliary circuit</b>                                                                                         |                                                 |
| <b>number of NC contacts for auxiliary contacts</b>                                                              | 1                                               |
| • attachable                                                                                                     | 2                                               |
| • instantaneous contact                                                                                          | 1                                               |
| <b>number of NO contacts for auxiliary contacts</b>                                                              | 1                                               |
| • attachable                                                                                                     | 2                                               |
| • instantaneous contact                                                                                          | 1                                               |
| <b>operational current at AC-12 maximum</b>                                                                      | 10 A                                            |
| <b>operational 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                                             |
| <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 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>contact rating of auxiliary contacts according to UL</b>                                                      | A600 / P600                                     |
| <b>Short-circuit protection</b>                                                                                  |                                                 |
| <b>design of the miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V</b> | C characteristic: 10 A; 0.4 kA                  |
| <b>design of the fuse link</b>                                                                                   |                                                 |
| • for short-circuit protection of the main circuit                                                               |                                                 |
| — with type of coordination 1 required                                                                           | gG: 250 A (690 V, 100 kA)                       |

- with type of coordination 2 required
- for short-circuit protection of the auxiliary switch required

gR: 250 A (690 V, 100 kA)

gG: 10 A (690 V, 1 kA)

#### Installation/ mounting/ dimensions

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>mounting position</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | +/-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                                                                                                                                  |
| <b>fastening method</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715                                                             |
| <b>height</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 140 mm                                                                                                                               |
| <b>width</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 96 mm                                                                                                                                |
| <b>depth</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 152 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> <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> | 20 mm<br>10 mm<br>10 mm<br>0 mm<br><br>20 mm<br>10 mm<br>10 mm<br>10 mm<br><br>20 mm<br>10 mm<br>10 mm<br>10 mm                      |

#### Connections/ Terminals

|                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>type of electrical connection</b>                                                                                                                                                                                                                                    |                                                                                                                                                                                                                             |
| <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<br>screw-type terminals<br>Screw-type terminals<br>screw terminal                                                                                                                                      |
| <b>type of connectable conductor cross-sections</b>                                                                                                                                                                                                                     |                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>• for main contacts <ul style="list-style-type: none"> <li>— stranded</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 (6 ... 16 mm²), 2x (10 ... 50 mm²), 1x (10 ... 70 mm²)<br>2x (2.5 ... 16 mm²), 2x (6 ... 16 mm²), 2x (10 ... 50 mm²), 1x (10 ... 70 mm²)<br>2x (2.5 ... 35 mm²), 1x (2.5 ... 50 mm²)<br>2x (10 ... 1/0), 1x (10 ... 2/0) |
| <b>connectable conductor cross-section for main contacts</b>                                                                                                                                                                                                            |                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>• solid</li> <li>• solid or stranded</li> <li>• stranded</li> <li>• finely stranded with core end processing</li> </ul>                                                                                                          | 2.5 ... 16 mm²<br>4 ... 70 mm²<br>6 ... 70 mm²<br>2.5 ... 50 mm²                                                                                                                                                            |
| <b>connectable conductor cross-section for auxiliary contacts</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                             |
| <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<br>0.5 ... 2.5 mm²                                                                                                                                                                                          |
| <b>type of connectable conductor cross-sections</b>                                                                                                                                                                                                                     |                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>• for auxiliary 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 auxiliary contacts</li> </ul> | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)<br>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)<br>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)<br>2x (20 ... 16), 2x (18 ... 14)                                                 |
| <b>AWG number extended as coded connectable conductor cross section for main contacts</b>                                                                                                                                                                               | 10 ... 2/0                                                                                                                                                                                                                  |
| <b>AWG number as coded connectable conductor cross section for auxiliary contacts</b>                                                                                                                                                                                   | 20 ... 14                                                                                                                                                                                                                   |

#### Safety related data

|                                                                                                                                                                |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>product function</b>                                                                                                                                        |           |
| <ul style="list-style-type: none"> <li>• mirror contact according to IEC 60947-4-1</li> <li>• positively driven operation according to IEC 60947-5-</li> </ul> | Yes<br>No |

|                                                            |                                                  |
|------------------------------------------------------------|--------------------------------------------------|
| 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 |
| Communication/ Protocol                                    |                                                  |
| product function bus communication                         | No                                               |
| Approvals Certificates                                     |                                                  |
| Environmental Product Declaration                          |                                                  |
| • global warming potential [CO2 eq] / during manufacturing | 9.57 kg                                          |
| • global warming potential [CO2 eq] / during operation     | 473 kg                                           |
| • global warming potential [CO2 eq] / after end of life    | -1.54 kg                                         |
| • global warming potential [CO2 eq] / total                | 481 kg                                           |
| Environment                                                | General Product Approval                         |

[Environmental Confirmations](#)



|                          |     |                                          |                                                    |
|--------------------------|-----|------------------------------------------|----------------------------------------------------|
| General Product Approval | EMV | Test Certificates                        | Maritime application                               |
|                          |     | <a href="#">Special Test Certificate</a> | <a href="#">Type Test Certificates/Test Report</a> |
|                          |     |                                          |                                                    |
|                          |     |                                          |                                                    |

|                      |       |                                          |
|----------------------|-------|------------------------------------------|
| Maritime application | other | Railway                                  |
|                      |       |                                          |
|                      |       |                                          |
|                      |       | <a href="#">Special Test Certificate</a> |

## Dangerous goods

[Transport Information](#)

## Further information

### Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

### Information for data generation and storage

<https://support.industry.siemens.com/cs/ww/en/view/109995012>

### 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=3RT2348-1AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2348-1AL20>

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

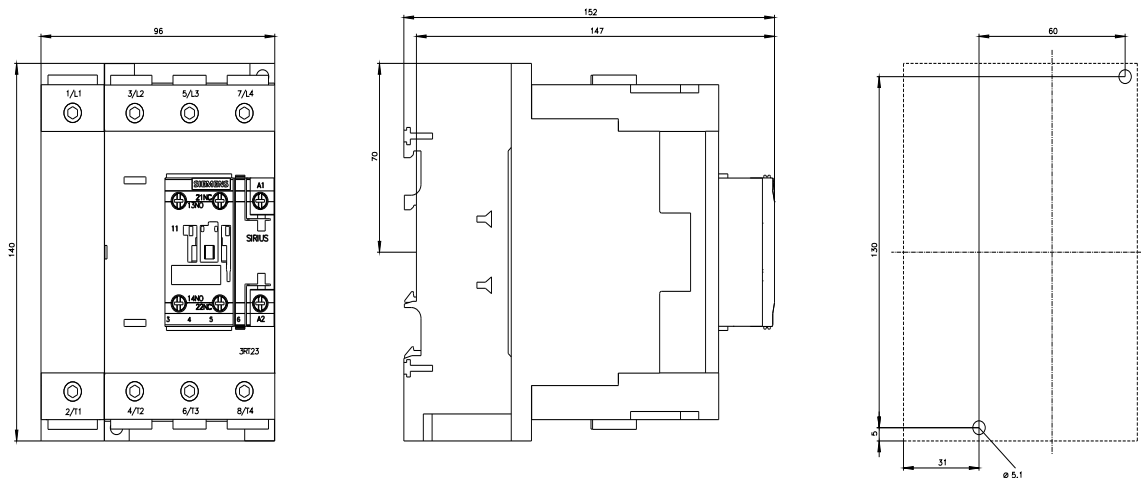
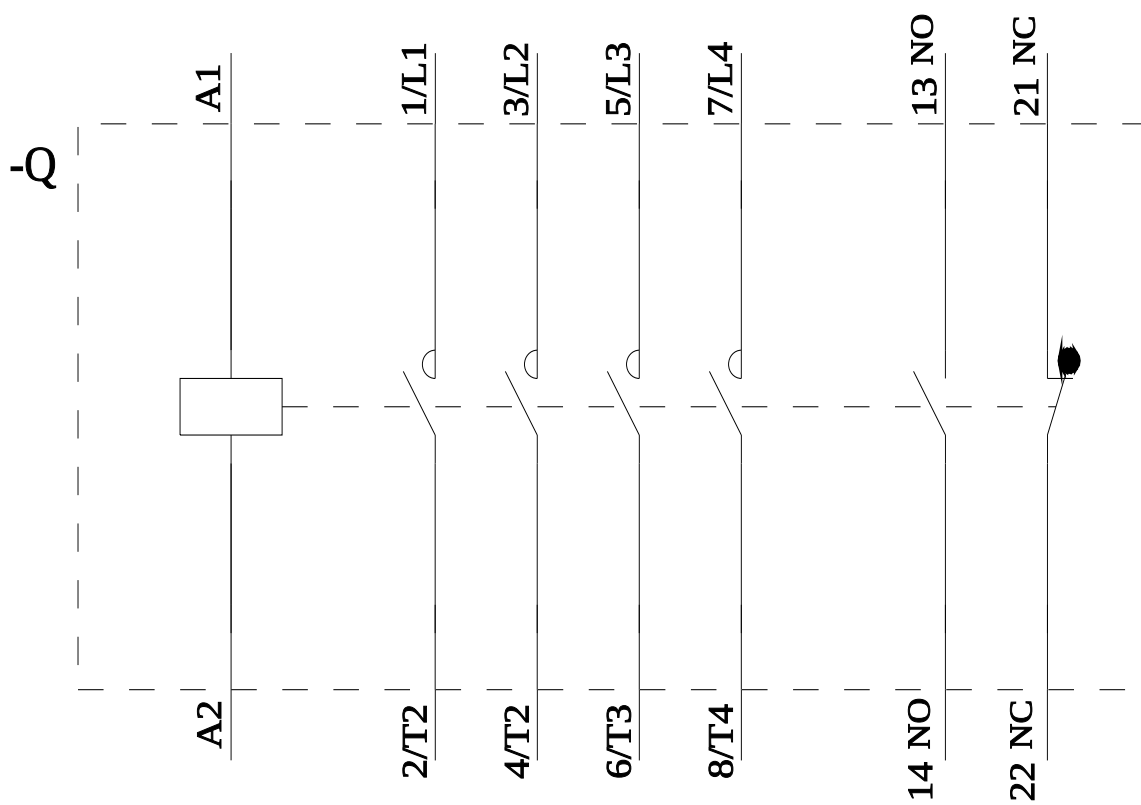
[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2348-1AL20&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2348-1AL20&lang=en)

### Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2348-1AL20>

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