



contactor AC-1, 160 A, 690 V / 40 °C, 3-pole, 175-280 V AC/DC, 50/60 Hz, with integrated varistor, auxiliary contacts: 1 NO + 1 NC, main circuit: box terminal, control and auxiliary circuit: screw terminal size: S3

|   |   |
|---|---|
| product brand name  | SIRIUS  |
| product designation   | Contactor   |
| product type designation  | 3RT24   |
| <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  | 38.4 W  |
| • at AC in hot operating state per pole   | 12.8 W  |
| • without load current share typical  | 1.8 W   |
| type of calculation of power loss depending on pole                                   | quadratic   |
| insulation voltage  |   |
| • of main circuit with degree of pollution 3 rated value                              | 1 000 V   |
| • of auxiliary 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   | 10.3g / 5 ms, 6. g / 10 ms  |
| • at DC   | 6.7 g / 5 ms, 4g / 10 ms  |
| shock resistance with sine pulse  |   |
| • at AC   | 16.3g / 5 ms, 10. g / 10 ms   |
| • at DC   | 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 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)   | 04/28/2017  |
| SVHC substance name   | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8<br>2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5 |
| Weight  | 1.808 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>  |  |
| number of poles for main current circuit   | 3  |
| number of NO contacts for main contacts  | 3  |
| number of NC contacts for main contacts  | 0  |
| type of voltage for main current circuit   | AC   |
| operational current  |  |
| <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> <li>up to 690 V at ambient temperature 55 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> </ul> </li> <li>at AC-3 <ul style="list-style-type: none"> <li>at 400 V rated value</li> <li>at 690 V rated value</li> </ul> </li> </ul>   | 160 A<br>140 A<br>140 A<br>44 A<br>44 A  |
| minimum cross-section in main circuit at maximum AC-1 rated value  | 70 mm <sup>2</sup>   |
| operational current  |  |
| <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 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-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>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> </ul> </li> </ul> | 140 A<br>80 A<br>12 A<br>2.5 A<br>0.8 A<br>0.48 A<br>140 A<br>140 A<br>140 A<br>13 A<br>2.4 A<br>1.3 A<br>140 A<br>140 A<br>140 A<br>140 A<br>6 A<br>3.4 A<br>6 A<br>3 A<br>1.25 A<br>0.35 A<br>0.15 A<br>0.1 A<br>140 A<br>140 A<br>140 A<br>1.75 A<br>0.42 A<br>0.27 A<br>140 A<br>140 A<br>140 A<br>4 A |

|   |                  |
|---|------------------|
| — at 440 V rated value  | 0.8 A            |
| — at 600 V rated value  | 0.45 A           |
| <b>no-load switching frequency</b>  |                  |
| • at AC   | 1 000 1/h        |
| • at DC   | 1 000 1/h        |
| operating frequency at AC-1 maximum   | 650 1/h          |
| <b>Control circuit/ Control</b>   |                  |
| <b>type of voltage</b>  | AC/DC            |
| <b>type of voltage of the control supply voltage</b>                                  | AC/DC            |
| <b>control supply voltage at AC</b>   |                  |
| • at 50 Hz rated value  | 175 ... 280 V    |
| • at 60 Hz rated value  | 175 ... 280 V    |
| <b>control supply voltage at DC rated value</b>                                       | 175 ... 280 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>operating range factor control supply voltage rated value of magnet coil at AC</b> |                  |
| • at 50 Hz  | 0.8 ... 1.1      |
| • at 60 Hz  | 0.8 ... 1.1      |
| <b>design of the surge suppressor</b>   | with varistor    |
| <b>inrush current peak</b>  | 65 A             |
| <b>duration of inrush current peak</b>  | 5 µs             |
| <b>locked-rotor current mean value</b>  | 0.44 A           |
| <b>locked-rotor current peak</b>  | 1.2 A            |
| <b>duration of locked-rotor current</b>   | 150 ms           |
| <b>holding current mean value</b>   | 10 mA            |
| <b>apparent pick-up power of magnet coil at AC</b>                                    |                  |
| • at 50 Hz  | 151 VA           |
| • at 60 Hz  | 151 VA           |
| <b>apparent holding power of magnet coil at AC</b>                                    |                  |
| • at 50 Hz  | 3.5 VA           |
| • at 60 Hz  | 3.5 VA           |
| <b>closing power of magnet coil at DC</b>   | 76 W             |
| <b>holding power of magnet coil at DC</b>   | 2.7 W            |
| <b>closing delay</b>  |                  |
| • at AC   | 50 ... 70 ms     |
| • at DC   | 50 ... 70 ms     |
| <b>opening delay</b>  |                  |
| • at AC   | 38 ... 57 ms     |
| • at DC   | 38 ... 57 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                |
| operational current at AC-12 maximum  | 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-13</b>   |                  |
| • at 24 V rated value   | 10 A             |
| • at 48 V rated value   | 2 A              |
| • at 60 V rated value   | 2 A              |

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• at 110 V rated value</li> <li>• at 125 V rated value</li> <li>• at 220 V rated value</li> <li>• at 600 V rated value</li> </ul>  | 1 A<br>0.9 A<br>0.3 A<br>0.1 A  |
| <b>contact reliability of auxiliary contacts</b>  | 1 faulty switching per 100 million (17 V, 1 mA)   |
| <b>Short-circuit protection</b>   |   |
| design of the miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V   | C characteristic: 10 A; 0.4 kA  |
| <b>design of the fuse link</b> <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 coordination 2 required</li> </ul> </li> <li>• for short-circuit protection of the auxiliary switch required</li> </ul>  | gG: 250 A (690 V, 100 kA)<br>gR: 250 A (690 V, 100 kA)<br>gG: 10 A (690 V, 1 kA)  |
| <b>Installation/ mounting/ dimensions</b>   |   |
| <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>  | 70 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   |
| <b>Connections/ Terminals</b>   |   |
| <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>   | box terminal<br>screw-type terminals<br>Screw-type terminals<br>Screw-type terminals  |
| <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>— solid</li> <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 (2.5 ... 16 mm²)<br>2x (2.5 ... 16 mm²), 2x (10 ... 50 mm²), 1x (10 ... 70 mm²)<br>2x (2.5 ... 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> </ul> </li> </ul>   | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)   |

|   |   |
|---|---|
| — solid or stranded   | 2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> ) |
| — finely stranded with core end processing  | 2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> ) |
| • for AWG cables for auxiliary contacts   | 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>  |  |
| • 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; safety-related disconnection via A1 A2      |
| <b>service life maximum</b>  | 20 a   |
| <b>proportion of dangerous failures</b>                              |  |
| • with low demand rate according to SN 31920                         | 40 %   |
| • with high demand rate according to SN 31920                        | 73 %   |
| <b>B10 value with high demand rate according to SN 31920</b>         | 1 000 000  |
| <b>failure rate [FIT] with low demand rate according to SN 31920</b> | 100 FIT  |
| ISO 13849  |  |
| <b>device type according to ISO 13849-1</b>                          | 3  |
| <b>overdimensioning according to ISO 13849-2 necessary</b>           | Yes  |
| IEC 61508  |  |
| <b>safety device type according to IEC 61508-2</b>                   | Type A   |
| Electrical Safety  |  |
| <b>protection class IP on the front according to IEC 60529</b>       | IP20   |
| <b>touch protection on the front according to IEC 60529</b>          | finger-safe, for vertical contact from the front |

#### Approvals Certificates

##### General Product Approval



EG-Konf.



UL

[KC](#)



| EMV | Test Certificates | Maritime application |
|-----|-------------------|----------------------|
|-----|-------------------|----------------------|



RCM

[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



ABS



DNV



LRS

| Maritime application | other | Railway |
|----------------------|-------|---------|
|----------------------|-------|---------|



PRS



RINA



RMRS



[Confirmation](#)

[Special Test Certificate](#)

#### Environment

[Environmental Confirmations](#)

#### 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=3RT2448-1NP30>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2448-1NP30>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2448-1NP30>

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

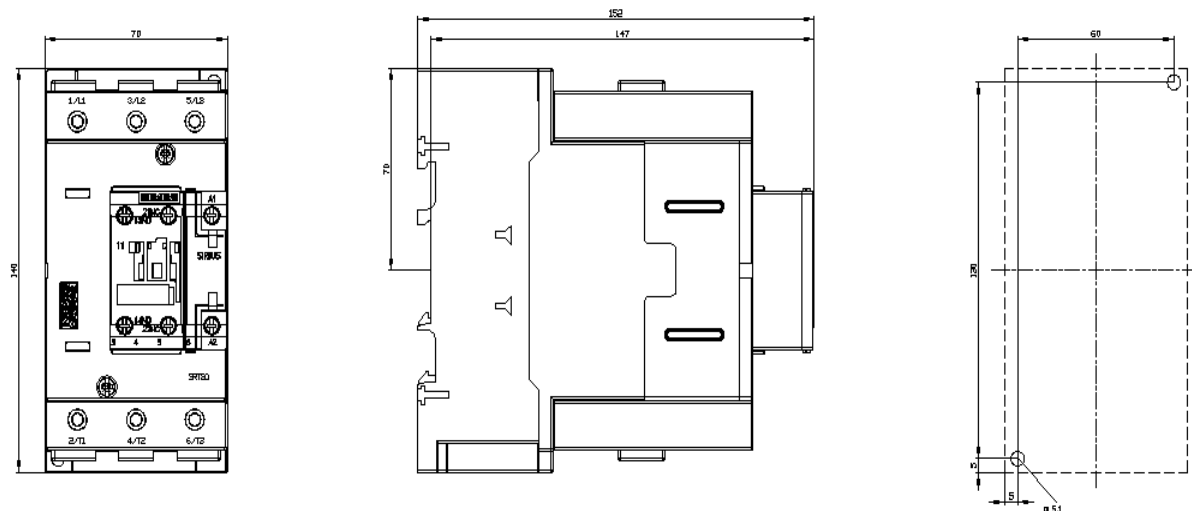
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2448-1NP30&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2448-1NP30&lang=en)

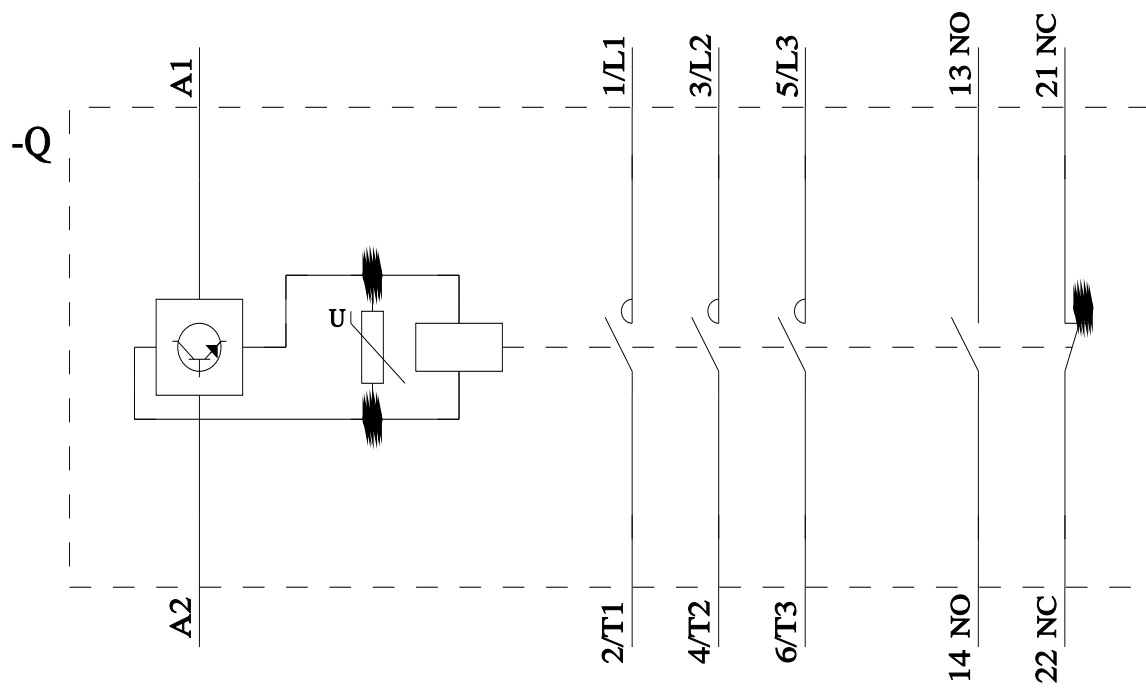
Characteristic: Tripping characteristics,  $I^2t$ , Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2448-1NP30/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2448-1NP30&objecttype=14&gridview=view1>





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