



Power contactor, AC-3 9 A, 4 kW / 400 V 2 NO + 2 NC, 230 V AC, 50 / 60 Hz, 3-pole, Size S0, Screw terminal Captive auxiliary switch

|   |                            |
|---|----------------------------|
| <b>product brand name</b>   | SIRIUS                     |
| <b>product designation</b>  | Power contactor            |
| <b>product type designation</b>   | 3RT2                       |
| <b>General technical data</b>   |                            |
| <b>size of contactor</b>  | S0                         |
| <b>product extension</b>  |                            |
| • function module for communication   | No                         |
| • auxiliary switch  | No                         |
| <b>power loss [W] for rated value of the current</b>  |                            |
| • at AC in hot operating state  | 0.6 W                      |
| • at AC in hot operating state per pole   | 0.2 W                      |
| • without load current share typical  | 7.9 W                      |
| <b>insulation voltage</b>   |                            |
| • of main circuit with degree of pollution 3 rated value  | 690 V                      |
| • of auxiliary circuit with degree of pollution 3 rated value   | 690 V                      |
| <b>surge voltage resistance</b>   |                            |
| • of main circuit rated value   | 6 kV                       |
| • of auxiliary circuit rated value  | 6 kV                       |
| maximum permissible voltage for safe isolation between coil and main contacts according to EN 60947-1 | 400 V                      |
| <b>shock resistance at rectangular impulse</b>  |                            |
| • at AC   | 7,5g / 5 ms, 4,7g / 10 ms  |
| <b>shock resistance with sine pulse</b>   |                            |
| • at AC   | 11,8g / 5 ms, 7,4g / 10 ms |
| <b>mechanical service life (switching cycles)</b>   |                            |
| • 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                 |
| <b>reference code according to IEC 81346-2</b>  | Q                          |
| <b>Substance Prohibitance (Date)</b>  | 10/01/2009                 |
| <b>Ambient conditions</b>   |                            |
| installation altitude at height above sea level maximum   | 2 000 m                    |
| <b>ambient temperature</b>  |                            |
| • during operation  | -25 ... +60 °C             |
| • during storage  | -55 ... +80 °C             |
| <b>relative humidity minimum</b>  | 10 %                       |
| <b>relative humidity at 55 °C according to IEC 60068-2-30 maximum</b>                                 | 95 %                       |

## Main circuit

|  |                    |
|--|--------------------|
| <b>number of poles for main current circuit</b>                        | 3                  |
| <b>number of NO contacts for main contacts</b>                         | 3                  |
| <b>operating voltage</b>   |                    |
| • at AC-3 rated value maximum  | 690 V              |
| • at AC-3e rated value maximum   | 690 V              |
| <b>operational current</b>   |                    |
| • at AC-1 at 400 V at ambient temperature 40 °C rated value            | 40 A               |
| • at AC-1  |                    |
| — up to 690 V at ambient temperature 40 °C rated value                 | 40 A               |
| — up to 690 V at ambient temperature 60 °C rated value                 | 35 A               |
| • at AC-3  |                    |
| — at 400 V rated value   | 9 A                |
| — at 500 V rated value   | 9 A                |
| — at 690 V rated value   | 9 A                |
| • at AC-3e   |                    |
| — at 400 V rated value   | 9 A                |
| — at 500 V rated value   | 9 A                |
| — at 690 V rated value   | 9 A                |
| • at AC-4 at 400 V rated value   | 8.5 A              |
| • at AC-5a up to 690 V rated value                                     | 35.2 A             |
| • at AC-5b up to 400 V rated value                                     | 7.4 A              |
| • at AC-6a   |                    |
| — up to 230 V for current peak value n=20 rated value                  | 11.4 A             |
| — up to 400 V for current peak value n=20 rated value                  | 11.4 A             |
| — up to 500 V for current peak value n=20 rated value                  | 9.1 A              |
| — up to 690 V for current peak value n=20 rated value                  | 9 A                |
| • at AC-6a   |                    |
| — up to 230 V for current peak value n=30 rated value                  | 7.6 A              |
| — up to 400 V for current peak value n=30 rated value                  | 7.6 A              |
| — up to 500 V for current peak value n=30 rated value                  | 6.1 A              |
| — up to 690 V for current peak value n=30 rated value                  | 6.1 A              |
| minimum cross-section in main circuit at maximum AC-1 rated value      | 10 mm <sup>2</sup> |
| <b>operational current for approx. 200000 operating cycles at AC-4</b> |                    |
| • at 400 V rated value   | 4.1 A              |
| • at 690 V rated value   | 3.3 A              |
| <b>operational current</b>   |                    |
| • <b>at 1 current path at DC-1</b>                                     |                    |
| — at 24 V rated value  | 35 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             |
| • <b>with 2 current paths in series at DC-1</b>                        |                    |
| — at 24 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              |
| • <b>with 3 current paths in series at DC-1</b>                        |                    |

|  |   |
|--|---|
| <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>  | 35 A<br>35 A<br>35 A<br>2.9 A<br>1.4 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> <li>— at 110 V rated value</li> <li>— at 220 V rated value</li> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul>  | 20 A<br>2.5 A<br>1 A<br>0.09 A<br>0.06 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> <li>— at 110 V rated value</li> <li>— at 220 V rated value</li> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul>   | 35 A<br>15 A<br>3 A<br>0.27 A<br>0.16 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> <li>— at 110 V rated value</li> <li>— at 220 V rated value</li> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul>   | 35 A<br>35 A<br>10 A<br>0.6 A<br>0.6 A  |
| <b>operating power</b> <ul style="list-style-type: none"> <li>● at AC-3           <ul style="list-style-type: none"> <li>— at 230 V rated value</li> <li>— at 400 V rated value</li> <li>— at 500 V rated value</li> <li>— at 690 V rated value</li> </ul> </li> <li>● at AC-3e           <ul style="list-style-type: none"> <li>— at 230 V rated value</li> <li>— at 400 V rated value</li> <li>— at 500 V rated value</li> <li>— at 690 V rated value</li> </ul> </li> </ul> | 2.2 kW<br>4 kW<br>4 kW<br>7.5 kW<br><br>2.2 kW<br>4 kW<br>4 kW<br>7.5 kW  |
| <b>operating power for approx. 200000 operating cycles at AC-4</b> <ul style="list-style-type: none"> <li>● at 400 V rated value</li> <li>● at 690 V rated value</li> </ul>  | 2 kW<br>2.5 kW  |
| <b>operating apparent power at AC-6a</b> <ul style="list-style-type: none"> <li>● up to 230 V for current peak value n=20 rated value</li> <li>● up to 400 V for current peak value n=20 rated value</li> <li>● up to 500 V for current peak value n=20 rated value</li> <li>● up to 690 V for current peak value n=20 rated value</li> </ul>  | 4.5 kVA<br>7.8 kVA<br>7.8 kVA<br>10.7 kVA   |
| <b>operating apparent power at AC-6a</b> <ul style="list-style-type: none"> <li>● up to 230 V for current peak value n=30 rated value</li> <li>● up to 400 V for current peak value n=30 rated value</li> <li>● up to 500 V for current peak value n=30 rated value</li> <li>● up to 690 V for current peak value n=30 rated value</li> </ul>  | 3 kVA<br>5.2 kVA<br>5.2 kVA<br>7.2 kVA  |
| <b>short-time withstand current in cold operating state up to 40 °C</b> <ul style="list-style-type: none"> <li>● limited to 1 s switching at zero current maximum</li> <li>● limited to 5 s switching at zero current maximum</li> <li>● limited to 10 s switching at zero current maximum</li> <li>● limited to 30 s switching at zero current maximum</li> <li>● limited to 60 s switching at zero current maximum</li> </ul>  | 170 A; Use minimum cross-section acc. to AC-1 rated value<br>170 A; Use minimum cross-section acc. to AC-1 rated value<br>122 A; Use minimum cross-section acc. to AC-1 rated value<br>78 A; Use minimum cross-section acc. to AC-1 rated value<br>68 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> </ul>   | 5 000 1/h   |
| <b>operating frequency</b> <ul style="list-style-type: none"> <li>● at AC-1 maximum</li> <li>● at AC-2 maximum</li> <li>● at AC-3 maximum</li> </ul>   | 1 000 1/h<br>1 000 1/h<br>1 000 1/h   |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• at AC-3e maximum</li> <li>• at AC-4 maximum</li> </ul>   | <p>1 000 1/h</p> <p>300 1/h</p>  |
| <b>Control circuit/ Control</b>   |  |
| <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> <li>• at 60 Hz rated value</li> </ul>  | <p>230 V</p> <p>230 V</p>  |
| <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>  | <p>0.8 ... 1.1</p> <p>0.85 ... 1.1</p>   |
| <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>  | <p>68 VA</p> <p>67 VA</p>  |
| <b>inductive power factor with closing power of the coil</b>  |  |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>  | <p>0.72</p> <p>0.74</p>  |
| <b>apparent holding power of magnet coil at AC</b>  |  |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>  | <p>7.9 VA</p> <p>6.5 VA</p>  |
| <b>inductive power factor with the holding power of the coil</b>  |  |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>  | <p>0.25</p> <p>0.28</p>  |
| <b>closing delay</b>  |  |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>   | 8 ... 40 ms  |
| <b>opening delay</b>  |  |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>   | 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  |
| operational current at AC-12 maximum  | 10 A   |
| <b>operational current at AC-15</b>   |  |
| <ul style="list-style-type: none"> <li>• at 230 V rated value</li> <li>• at 400 V rated value</li> <li>• at 500 V rated value</li> <li>• at 690 V rated value</li> </ul>  | <p>6 A</p> <p>3 A</p> <p>2 A</p> <p>1 A</p>  |
| <b>operational current at DC-12</b>   |  |
| <ul style="list-style-type: none"> <li>• at 24 V rated value</li> <li>• at 48 V rated value</li> <li>• at 60 V rated value</li> <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> | <p>10 A</p> <p>6 A</p> <p>6 A</p> <p>3 A</p> <p>2 A</p> <p>1 A</p> <p>0.15 A</p>   |
| <b>operational current at DC-13</b>   |  |
| <ul style="list-style-type: none"> <li>• at 24 V rated value</li> <li>• at 48 V rated value</li> <li>• at 60 V rated value</li> <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> | <p>6 A</p> <p>2 A</p> <p>2 A</p> <p>1 A</p> <p>0.9 A</p> <p>0.3 A</p> <p>0.1 A</p> |
| <b>contact reliability of auxiliary contacts</b>  | 1 faulty switching per 100 million (17 V, 1 mA)                                    |
| <b>UL/CSA ratings</b>   |  |
| <b>full-load current (FLA) for 3-phase AC motor</b>   |  |
| <ul style="list-style-type: none"> <li>• at 480 V rated value</li> </ul>  | 7.6 A  |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>at 600 V rated value</li> </ul>  | 9 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 3-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>  | 1 hp<br>1 hp<br>2 hp<br>3 hp<br>5 hp<br>7.5 hp   |
| <b>contact rating of auxiliary contacts according to UL</b>   | A600 / Q600  |
| <b>Short-circuit protection</b>   |  |
| <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 assignment 2 required</li> </ul> </li> <li>for short-circuit protection of the auxiliary switch required</li> </ul>  | gG: 63A (690V,100kA), aM: 32A (690V,100kA), BS88: 63A (415V,80kA)<br>gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A (415V,80kA)<br>gG: 10 A (500 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   |
| <b>fastening method</b>   | screw and snap-on mounting onto 35 mm standard mounting rail according to DIN EN 60715   |
| <ul style="list-style-type: none"> <li>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> <li>upwards</li> <li>downwards</li> <li>at the side</li> </ul> </li> <li>for grounded parts <ul style="list-style-type: none"> <li>forwards</li> <li>upwards</li> <li>at the side</li> <li>downwards</li> </ul> </li> <li>for live parts <ul style="list-style-type: none"> <li>forwards</li> <li>upwards</li> <li>downwards</li> <li>at the side</li> </ul> </li> </ul> | 10 mm<br>10 mm<br>10 mm<br>0 mm<br>10 mm<br>10 mm<br>6 mm<br>10 mm<br>10 mm<br>10 mm<br>10 mm<br>10 mm<br>6 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>   | screw-type terminals<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>solid or stranded</li> <li>finely stranded with core end processing</li> </ul> </li> <li>at AWG cables for main contacts</li> </ul>  | 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 10 mm <sup>2</sup> )<br>2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 10 mm <sup>2</sup> )<br>2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup><br>2x (16 ... 12), 2x (14 ... 8) |
| <b>connectable conductor cross-section for main contacts</b> <ul style="list-style-type: none"> <li>solid</li> <li>stranded</li> <li>finely stranded with core end processing</li> </ul>  | 1 ... 10 mm <sup>2</sup><br>1 ... 10 mm <sup>2</sup><br>1 ... 10 mm <sup>2</sup>   |
| <b>connectable conductor cross-section for auxiliary</b>  |  |

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|---|--|
| <b>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 mm <sup>2</sup><br>0.5 ... 2.5 mm <sup>2</sup>   |
| <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 or stranded</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• at AWG cables for auxiliary contacts</li> </ul> | 2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> )<br>2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> )<br>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> <li>• for auxiliary contacts</li> </ul>   | 16 ... 8<br>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 60947-5-1</li> </ul> | Yes<br>No  |
| B10 value with high demand rate according to SN 31920   | 450 000  |
| <b>proportion of dangerous failures</b>   |  |
| <ul style="list-style-type: none"> <li>• with low demand rate according to SN 31920</li> <li>• with high demand rate according to SN 31920</li> </ul>           | 40 %<br>73 %                                     |
| failure rate [FIT] with low demand rate according to SN 31920   | 100 FIT  |
| T1 value for proof test interval or service life according to IEC 61508   | 20 y   |
| <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 |
| <b>suitability for use</b>  |  |
| <ul style="list-style-type: none"> <li>• safety-related switching OFF</li> </ul>  | Yes  |

**Certificates/ approvals**

**General Product Approval**



[Confirmation](#)



[KC](#)



|            |  |                                  |                          |                          |
|------------|--|----------------------------------|--------------------------|--------------------------|
| <b>EMC</b> | <b>Functional Safety/Safety of Machinery</b> | <b>Declaration of Conformity</b> | <b>Test Certificates</b> | <b>Marine / Shipping</b> |
|------------|--|----------------------------------|--------------------------|--------------------------|



[Type Examination Certificate](#)



[Type Test Certificates/Test Report](#)



|                          |              |
|--------------------------|--------------|
| <b>Marine / Shipping</b> | <b>other</b> |
|--------------------------|--------------|



[Confirmation](#)

**other**



[Confirmation](#)

#### 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=3RT2023-1AL24-3MA0>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2023-1AL24-3MA0>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1AL24-3MA0>

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

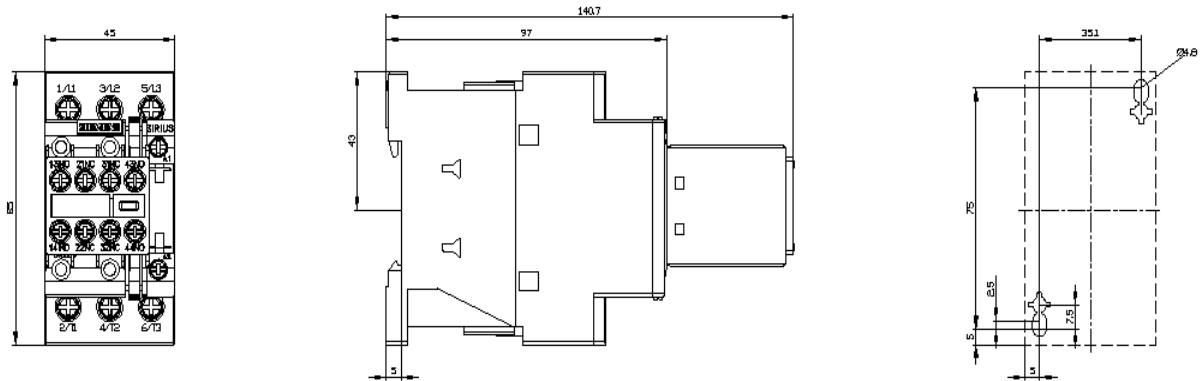
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2023-1AL24-3MA0&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2023-1AL24-3MA0&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1AL24-3MA0/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2023-1AL24-3MA0&objecttype=14&gridview=view1>



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