



power contactor, AC-3e/AC-3, 95 A, 45 kW / 400 V, 3-pole, 500 V AC, 50/60 Hz, auxiliary contacts: 1 NO + 1 NC, screw terminal, size: S3

|  |                            |
|--|----------------------------|
| <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>   | S3                         |
| <b>product extension</b>   |                            |
| • function module for communication  | No                         |
| • auxiliary switch   | Yes                        |
| <b>power loss [W] for rated value of the current</b>   |                            |
| • at AC in hot operating state   | 19.8 W                     |
| • at AC in hot operating state per pole  | 6.6 W                      |
| • without load current share typical   | 25 W                       |
| <b>type of calculation of power loss depending on pole</b>   | quadratic                  |
| <b>insulation voltage</b>  |                            |
| • 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                      |
| <b>surge voltage resistance</b>  |                            |
| • of main circuit rated value  | 8 kV                       |
| • of auxiliary circuit rated value   | 6 kV                       |
| maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1 | 690 V                      |
| <b>shock resistance at rectangular impulse</b>   |                            |
| • at AC  | 10.3g / 5 ms, 6. g / 10 ms |
| <b>shock resistance with sine pulse</b>  |                            |
| • at AC  | 16.3g / 5 ms, 10.g / 10 ms |
| <b>mechanical service life (operating 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 Prohibition (Date)</b>  | 03/01/2017                 |
| <b>Weight</b>  | 1.711 kg                   |
| <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 %                       |

| Environmental footprint  |                    |
|--|--------------------|
| Environmental Product Declaration(EPD)                                 | Yes                |
| global warming potential [CO2 eq] total                                | 405 kg             |
| global warming potential [CO2 eq] during manufacturing                 | 7.66 kg            |
| global warming potential [CO2 eq] during operation                     | 399 kg             |
| global warming potential [CO2 eq] after end of life                    | -1.19 kg           |
| Main circuit   |                    |
| <b>number of poles for main current circuit</b>                        | 3                  |
| <b>number of NO contacts for main contacts</b>                         | 3                  |
| <b>number of NC contacts for main contacts</b>                         | 0                  |
| <b>operating voltage</b>   |                    |
| • at AC-3 rated value maximum  | 1 000 V            |
| • at AC-3e rated value maximum   | 1 000 V            |
| <b>operational current</b>   |                    |
| • at AC-1 at 400 V at ambient temperature 40 °C rated value            | 130 A              |
| • at AC-1  |                    |
| — up to 690 V at ambient temperature 40 °C rated value                 | 130 A              |
| — up to 690 V at ambient temperature 60 °C rated value                 | 110 A              |
| • at AC-3  |                    |
| — at 400 V rated value   | 95 A               |
| — at 500 V rated value   | 95 A               |
| — at 690 V rated value   | 78 A               |
| — at 1000 V rated value  | 30 A               |
| • at AC-3e   |                    |
| — at 400 V rated value   | 95 A               |
| — at 500 V rated value   | 95 A               |
| — at 690 V rated value   | 78 A               |
| — at 1000 V rated value  | 30 A               |
| • at AC-4 at 400 V rated value   | 80 A               |
| • at AC-5a up to 690 V rated value                                     | 114 A              |
| • at AC-5b up to 400 V rated value                                     | 95 A               |
| • at AC-6a   |                    |
| — up to 230 V for current peak value n=20 rated value                  | 84.4 A             |
| — up to 400 V for current peak value n=20 rated value                  | 84.4 A             |
| — up to 500 V for current peak value n=20 rated value                  | 84.4 A             |
| — up to 690 V for current peak value n=20 rated value                  | 58 A               |
| • at AC-6a   |                    |
| — up to 230 V for current peak value n=30 rated value                  | 56.3 A             |
| — up to 400 V for current peak value n=30 rated value                  | 56.3 A             |
| — up to 500 V for current peak value n=30 rated value                  | 56.3 A             |
| — up to 690 V for current peak value n=30 rated value                  | 56.3 A             |
| minimum cross-section in main circuit at maximum AC-1 rated value      | 50 mm <sup>2</sup> |
| <b>operational current for approx. 200000 operating cycles at AC-4</b> |                    |
| • at 400 V rated value   | 42 A               |
| • at 690 V rated value   | 30 A               |
| <b>operational current</b>   |                    |
| • <b>at 1 current path at DC-1</b>                                     |                    |
| — at 24 V rated value  | 100 A              |
| — at 60 V rated value  | 60 A               |
| — at 110 V rated value   | 9 A                |
| — at 220 V rated value   | 2 A                |
| — at 440 V rated value   | 0.6 A              |
| — at 600 V rated value   | 0.4 A              |
| • <b>with 2 current paths in series at DC-1</b>                        |                    |
| — at 24 V rated value  | 100 A              |
| — at 60 V rated value  | 100 A              |
| — at 110 V rated value   | 100 A              |

|   |          |
|---|----------|
| — at 220 V rated value  | 10 A     |
| — at 440 V rated value  | 1.8 A    |
| — at 600 V rated value  | 1 A      |
| <b>● with 3 current paths in series at DC-1</b>                         |          |
| — at 24 V rated value   | 100 A    |
| — at 60 V rated value   | 100 A    |
| — at 110 V rated value  | 100 A    |
| — at 220 V rated value  | 80 A     |
| — at 440 V rated value  | 4.5 A    |
| — at 600 V rated value  | 2.6 A    |
| <b>● at 1 current path at DC-3 at DC-5</b>                              |          |
| — at 24 V rated value   | 40 A     |
| — at 60 V rated value   | 6 A      |
| — at 110 V rated value  | 2.5 A    |
| — at 220 V rated value  | 1 A      |
| — at 440 V rated value  | 0.15 A   |
| — at 600 V rated value  | 0.06 A   |
| <b>● with 2 current paths in series at DC-3 at DC-5</b>                 |          |
| — at 24 V rated value   | 100 A    |
| — at 60 V rated value   | 100 A    |
| — at 110 V rated value  | 100 A    |
| — at 220 V rated value  | 7 A      |
| — at 440 V rated value  | 0.42 A   |
| — at 600 V rated value  | 0.16 A   |
| <b>● with 3 current paths in series at DC-3 at DC-5</b>                 |          |
| — at 24 V rated value   | 100 A    |
| — at 60 V rated value   | 100 A    |
| — at 110 V rated value  | 100 A    |
| — at 220 V rated value  | 35 A     |
| — at 440 V rated value  | 0.8 A    |
| — at 600 V rated value  | 0.35 A   |
| <b>operating power</b>  |          |
| ● at AC-2 at 400 V rated value  | 45 kW    |
| ● at AC-3   |          |
| — at 230 V rated value  | 22 kW    |
| — at 400 V rated value  | 45 kW    |
| — at 500 V rated value  | 55 kW    |
| — at 690 V rated value  | 75 kW    |
| — at 1000 V rated value   | 37 kW    |
| ● at AC-3e  |          |
| — at 230 V rated value  | 22 kW    |
| — at 400 V rated value  | 45 kW    |
| — at 500 V rated value  | 55 kW    |
| — at 690 V rated value  | 75 kW    |
| — at 1000 V rated value   | 37 kW    |
| <b>operating power for approx. 200000 operating cycles at AC-4</b>      |          |
| ● at 400 V rated value  | 22 kW    |
| ● at 690 V rated value  | 27.4 kW  |
| <b>operating apparent power at AC-6a</b>                                |          |
| ● up to 230 V for current peak value n=20 rated value                   | 33 kVA   |
| ● up to 400 V for current peak value n=20 rated value                   | 58 kVA   |
| ● up to 500 V for current peak value n=20 rated value                   | 73 kVA   |
| ● up to 690 V for current peak value n=20 rated value                   | 69 kVA   |
| <b>operating apparent power at AC-6a</b>                                |          |
| ● up to 230 V for current peak value n=30 rated value                   | 22.4 kVA |
| ● up to 400 V for current peak value n=30 rated value                   | 39 kVA   |
| ● up to 500 V for current peak value n=30 rated value                   | 48.7 kVA |
| ● up to 690 V for current peak value n=30 rated value                   | 67.3 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> | 1 725 A; Use minimum cross-section acc. to AC-1 rated value<br>1 297 A; Use minimum cross-section acc. to AC-1 rated value<br>946 A; Use minimum cross-section acc. to AC-1 rated value<br>610 A; Use minimum cross-section acc. to AC-1 rated value<br>486 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> <li>• at AC-3e               <ul style="list-style-type: none"> <li>— maximum</li> </ul> </li> <li>• at AC-4 maximum</li> </ul>   | 900 1/h<br>350 1/h<br>850 1/h<br>850 1/h<br>250 1/h   |
| <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>  | 500 V<br>500 V  |
| <b>operating range factor control supply voltage rated value of magnet coil at AC</b>   |   |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>  | 0.8 ... 1.1<br>0.85 ... 1.1   |
| <b>apparent pick-up power of magnet coil at AC</b>  |   |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>  | 348 VA<br>296 VA  |
| <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>  | 0.62<br>0.55  |
| <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>  | 25 VA<br>18 VA  |
| <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>  | 0.35<br>0.41  |
| <b>closing delay</b>  |   |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>   | 13 ... 50 ms  |
| <b>opening delay</b>  |   |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>   | 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>  |   |
| 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  |
| <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>  | 6 A<br>3 A<br>2 A<br>1 A  |
| <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>   | 10 A<br>6 A<br>6 A<br>3 A<br>2 A<br>1 A<br>0.15 A   |
| <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>   | 10 A<br>2 A<br>2 A<br>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>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> <li>• at 600 V rated value</li> </ul>  | 96 A<br>77 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>   | 10 hp<br>20 hp<br>30 hp<br>30 hp<br>75 hp<br>75 hp   |
| <b>contact rating of auxiliary contacts according to UL</b>   | A600 / P600  |
| <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), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA)<br>gG: 160 A (690 V, 100 kA), aM: 100 A (690 V, 100 kA), BS88: 125 A (415 V, 80 kA)<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   |
| 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>20 mm<br>10 mm<br>10 mm<br>10 mm<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>  | 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>— finely stranded with core end processing</li> </ul> </li> <li>for AWG cables for main contacts</li> </ul>  | 2x (2.5 ... 35 mm <sup>2</sup> ), 1x (2.5 ... 50 mm <sup>2</sup> )<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>stranded</li> <li>finely stranded with core end processing</li> </ul>  | 2.5 ... 16 mm <sup>2</sup><br>6 ... 70 mm <sup>2</sup><br>2.5 ... 50 mm <sup>2</sup>   |
| <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 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>for 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 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 60947-5-1</li> <li>suitable for safety function</li> </ul> | Yes<br>No<br>Yes                                 |
| suitability for use safety-related switching OFF  | Yes  |
| <b>service life maximum</b>   | 20 a   |
| <b>test wear-related service life necessary</b>   | Yes  |
| <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 %                                     |
| <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



KC



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



[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



|                      |       |         |                 |
|----------------------|-------|---------|-----------------|
| Maritime application | other | Railway | Dangerous goods |
|----------------------|-------|---------|-----------------|



[Confirmation](#)

[Special Test Certificate](#)

[Transport Information](#)

## 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=3RT2046-1AQ20>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2046-1AQ20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AQ20>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2046-1AQ20&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-1AQ20&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AQ20/char>

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

<https://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-1AQ20&objecttype=14&gridview=view1>





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