



power contactor, AC-3e/AC-3, 9 A, 4 kW / 400 V, 3-pole, 120 V AC, 50/60 Hz, auxiliary contacts: 1 NO, screw terminal, size: S00

|  |                            |
|--|----------------------------|
| product brand name   | SIRIUS                     |
| product designation  | Power contactor            |
| product type designation   | 3RT2                       |
| <b>General technical data</b>  |                            |
| size of contactor  | S00                        |
| 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   | 0.9 W                      |
| • at AC in hot operating state per pole  | 0.3 W                      |
| • without load current share typical   | 1.1 W                      |
| type of calculation of power loss depending on pole  | quadratic                  |
| insulation voltage   |                            |
| • of main circuit with degree of pollution 3 rated value   | 690 V                      |
| • of auxiliary circuit with degree of pollution 3 rated value  | 690 V                      |
| surge voltage resistance   |                            |
| • of main circuit rated value  | 6 kV                       |
| • of auxiliary circuit rated value   | 6 kV                       |
| maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1 | 400 V                      |
| shock resistance at rectangular impulse  |                            |
| • at AC  | 6,7g / 5 ms, 4,2g / 10 ms  |
| shock resistance with sine pulse   |                            |
| • at AC  | 10,5g / 5 ms, 6,6g / 10 ms |
| mechanical service life (operating cycles)   |                            |
| • of contactor typical   | 30 000 000                 |
| • of the contactor with added electronically optimized auxiliary switch block typical                        | 5 000 000                  |
| • of the contactor with added auxiliary switch block typical   | 10 000 000                 |
| reference code according to IEC 81346-2  | Q                          |
| Substance Prohibitance (Date)  | 10/01/2009                 |
| Weight   | 0.233 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 %                       |

| Environmental footprint   |                   |
|---|-------------------|
| Environmental Product Declaration(EPD)                            | Yes               |
| global warming potential [CO2 eq] total                           | 39.6 kg           |
| global warming potential [CO2 eq] during manufacturing            | 1.18 kg           |
| global warming potential [CO2 eq] during operation                | 38.5 kg           |
| global warming potential [CO2 eq] after end of life               | -0.155 kg         |
| Main circuit  |                   |
| number of poles for main current circuit                          | 3                 |
| number of NO contacts for main contacts                           | 3                 |
| operating voltage   |                   |
| • at AC-3 rated value maximum                                     | 690 V             |
| • at AC-3e rated value maximum                                    | 690 V             |
| operational current   |                   |
| • at AC-1 at 400 V at ambient temperature 40 °C rated value       | 22 A              |
| • at AC-1   |                   |
| — up to 690 V at ambient temperature 40 °C rated value            | 22 A              |
| — up to 690 V at ambient temperature 60 °C rated value            | 20 A              |
| • at AC-3   |                   |
| — at 400 V rated value  | 9 A               |
| — at 500 V rated value  | 7.7 A             |
| — at 690 V rated value  | 6.7 A             |
| • at AC-3e  |                   |
| — at 400 V rated value  | 9 A               |
| — at 500 V rated value  | 7.7 A             |
| — at 690 V rated value  | 6.7 A             |
| • at AC-4 at 400 V rated value                                    | 8.5 A             |
| • at AC-5a up to 690 V rated value                                | 19.4 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             | 5.3 A             |
| — up to 400 V for current peak value n=20 rated value             | 5.3 A             |
| — up to 500 V for current peak value n=20 rated value             | 5.3 A             |
| — up to 690 V for current peak value n=20 rated value             | 5 A               |
| • at AC-6a  |                   |
| — up to 230 V for current peak value n=30 rated value             | 3.5 A             |
| — up to 400 V for current peak value n=30 rated value             | 3.5 A             |
| — up to 500 V for current peak value n=30 rated value             | 3.6 A             |
| — up to 690 V for current peak value n=30 rated value             | 3.3 A             |
| minimum cross-section in main circuit at maximum AC-1 rated value | 4 mm <sup>2</sup> |
| operational current for approx. 200000 operating cycles at AC-4   |                   |
| • at 400 V rated value  | 4.1 A             |
| • at 690 V rated value  | 3.3 A             |
| operational current   |                   |
| • at 1 current path at DC-1                                       |                   |
| — at 24 V rated value   | 20 A              |
| — at 60 V rated value   | 20 A              |
| — at 110 V rated value  | 2.1 A             |
| — at 220 V rated value  | 0.8 A             |
| — at 440 V rated value  | 0.6 A             |
| — at 600 V rated value  | 0.6 A             |
| • with 2 current paths in series at DC-1                          |                   |
| — at 24 V rated value   | 20 A              |
| — at 60 V rated value   | 20 A              |
| — at 110 V rated value  | 12 A              |
| — at 220 V rated value  | 1.6 A             |
| — at 440 V rated value  | 0.8 A             |
| — at 600 V rated value  | 0.7 A             |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <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> </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> </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> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul> | 20 A<br>20 A<br>20 A<br>20 A<br>1.3 A<br>1 A<br><br>20 A<br>0.5 A<br>0.15 A<br><br>20 A<br>5 A<br>0.35 A<br><br>20 A<br>20 A<br>20 A<br>1.5 A<br>0.2 A<br>0.2 A  |
| <b>operating power</b> <ul style="list-style-type: none"> <li>• at AC-2 at 400 V rated value</li> <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>  | 4 kW<br><br>2.2 kW<br>4 kW<br>4 kW<br>5.5 kW<br><br>2.2 kW<br>4 kW<br>4 kW<br>5.5 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>   | 2 kVA<br>3.6 kVA<br>4.6 kVA<br>5.9 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>   | 1.3 kVA<br>2.4 kVA<br>3.1 kVA<br>4 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>   | 155 A; Use minimum cross-section acc. to AC-1 rated value<br>111 A; Use minimum cross-section acc. to AC-1 rated value<br>86 A; Use minimum cross-section acc. to AC-1 rated value<br>66 A; Use minimum cross-section acc. to AC-1 rated value<br>55 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>  | 10 000 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>750 1/h<br>750 1/h  |

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• at AC-3e maximum</li> </ul>                  | 750 1/h   |
| <ul style="list-style-type: none"> <li>• at AC-4 maximum</li> </ul>                   | 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> </ul>              | 120 V   |
| <ul style="list-style-type: none"> <li>• at 60 Hz rated value</li> </ul>              | 120 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> </ul>                          | 0.8 ... 1.1                                     |
| <ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>                          | 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> </ul>                          | 27 VA   |
| <ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>                          | 24.3 VA   |
| <b>inductive power factor with closing power of the coil</b>                          |   |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> </ul>                          | 0.8   |
| <ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>                          | 0.75  |
| <b>apparent holding power of magnet coil at AC</b>                                    |   |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> </ul>                          | 4.2 VA  |
| <ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>                          | 3.3 VA  |
| <b>inductive power factor with the holding power of the coil</b>                      |   |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> </ul>                          | 0.25  |
| <ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>                          | 0.25  |
| <b>closing delay</b>  |   |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>                             | 9 ... 35 ms                                     |
| <b>opening delay</b>  |   |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>                             | 4 ... 15 ms                                     |
| <b>arcing time</b>  | 10 ... 15 ms                                    |
| <b>control version of the switch operating mechanism</b>                              | Standard A1 - A2                                |
| <b>Auxiliary circuit</b>  |   |
| 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> </ul>              | 10 A  |
| <ul style="list-style-type: none"> <li>• at 400 V rated value</li> </ul>              | 3 A   |
| <ul style="list-style-type: none"> <li>• at 500 V rated value</li> </ul>              | 2 A   |
| <ul style="list-style-type: none"> <li>• at 690 V rated value</li> </ul>              | 1 A   |
| <b>operational current at DC-12</b>   |   |
| <ul style="list-style-type: none"> <li>• at 24 V rated value</li> </ul>               | 10 A  |
| <ul style="list-style-type: none"> <li>• at 48 V rated value</li> </ul>               | 6 A   |
| <ul style="list-style-type: none"> <li>• at 60 V rated value</li> </ul>               | 6 A   |
| <ul style="list-style-type: none"> <li>• at 110 V rated value</li> </ul>              | 3 A   |
| <ul style="list-style-type: none"> <li>• at 125 V rated value</li> </ul>              | 2 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 600 V rated value</li> </ul>              | 0.15 A  |
| <b>operational current at DC-13</b>   |   |
| <ul style="list-style-type: none"> <li>• at 24 V rated value</li> </ul>               | 10 A  |
| <ul style="list-style-type: none"> <li>• at 48 V rated value</li> </ul>               | 2 A   |
| <ul style="list-style-type: none"> <li>• at 60 V rated value</li> </ul>               | 2 A   |
| <ul style="list-style-type: none"> <li>• at 110 V rated value</li> </ul>              | 1 A   |
| <ul style="list-style-type: none"> <li>• at 125 V rated value</li> </ul>              | 0.9 A   |
| <ul style="list-style-type: none"> <li>• at 220 V rated value</li> </ul>              | 0.3 A   |
| <ul style="list-style-type: none"> <li>• at 600 V rated value</li> </ul>              | 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> </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</li> </ul>         |   |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>— at 110/120 V rated value</li> <li>— at 230 V rated value</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>  | 0.33 hp<br>1 hp<br><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>   |  |
| 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 assignment 2 required</li> </ul> </li> <li>• for short-circuit protection of the auxiliary switch required</li> </ul>  | gG: 35A (690V,100kA), aM: 20A (690V,100kA), BS88: 35A (415V,80kA)<br>gG: 20A (690V,100kA), aM: 16A (690V, 100kA), BS88: 20A (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   |
| 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>   | 58 mm  |
| <b>width</b>  | 45 mm  |
| <b>depth</b>  | 73 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><br>10 mm<br>10 mm<br>6 mm<br>10 mm<br><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>• for AWG cables for main contacts</li> </ul>   | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²), 2x 4 mm²<br>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²), 2x 4 mm²<br>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)<br>2x (20 ... 16), 2x (18 ... 14), 2x 12 |
| <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>  | 0.5 ... 4 mm²<br>0.5 ... 4 mm²<br>0.5 ... 2.5 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 ... 4 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</li> </ul>  |  |

|  |   |
|--|---|
| — solid or stranded  | 2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> ), 2x 4 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), 2x 12   |
| <b>AWG number as coded connectable conductor cross section</b> |   |
| • for main contacts  | 20 ... 12   |
| • for auxiliary contacts                                       | 20 ... 12   |

| Safety related data  |  |
|--|--|
| <b>product function</b>  |  |
| • mirror contact according to IEC 60947-4-1                          | Yes; with 3RH29                                  |
| • positively driven operation according to IEC 60947-5-1             | No   |
| • suitable for safety function                                       | 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>                              |  |
| • 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



[Confirmation](#)



EG-Konf.



UL

[KC](#)

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



RCM

[Special Test Certificate](#)

[Type Test Certificate/Test Report](#)



ABS



BUREAU  
VERITAS

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



DNV



LRS



PRS



RINA



RMRS

[Miscellaneous](#)

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

[Confirmation](#)

[Special Test Certificate](#)



[Environmental Confirmations](#)

#### Further information

##### Information on the packaging

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

Information- and Downloadcenter (Catalogs, Brochures,...)

<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2016-1AK21>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2016-1AK21>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AK21>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2016-1AK21&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2016-1AK21&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AK21/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2016-1AK21&objecttype=14&gridview=view1>



