



power contactor, AC-3e/AC-3, 12 A, 5.5 kW / 400 V, 3-pole, 220 V AC, 50/60 Hz, auxiliary contacts: 1 NO + 1 NC, screw terminal, size: S0

|  |                            |
|--|----------------------------|
| product brand name   | SIRIUS                     |
| product designation  | Power contactor            |
| product type designation   | 3RT2                       |
| General technical data   |                            |
| size of contactor  | S0                         |
| 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   | 2 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  | 7,5g / 5 ms, 4,7g / 10 ms  |
| shock resistance with sine pulse   |                            |
| • at AC  | 11,8g / 5 ms, 7,4g / 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)  | 10/01/2009                 |
| Weight   | 0.406 kg                   |
| Ambient conditions   |                            |
| 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                           | 74.2 kg            |
| global warming potential [CO2 eq] during manufacturing            | 1.9 kg             |
| global warming potential [CO2 eq] during operation                | 72.4 kg            |
| global warming potential [CO2 eq] after end of life               | -0.117 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       | 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  | 12 A               |
| — at 500 V rated value  | 12 A               |
| — at 690 V rated value  | 9 A                |
| • at AC-3e  |                    |
| — at 400 V rated value  | 12 A               |
| — at 500 V rated value  | 12 A               |
| — at 690 V rated value  | 9 A                |
| • at AC-4 at 400 V rated value                                    | 12.5 A             |
| • at AC-5a up to 690 V rated value                                | 35.2 A             |
| • at AC-5b up to 400 V rated value                                | 9.9 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             | 11.3 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             | 7.6 A              |
| — up to 690 V for current peak value n=30 rated value             | 7.6 A              |
| minimum cross-section in main circuit at maximum AC-1 rated value | 10 mm <sup>2</sup> |
| operational current for approx. 200000 operating cycles at AC-4   |                    |
| • at 400 V rated value  | 5.5 A              |
| • at 690 V rated value  | 5.5 A              |
| operational current   |                    |
| • at 1 current path at DC-1                                       |                    |
| — at 24 V rated value   | 35 A               |
| — at 60 V rated value   | 20 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             |
| • with 2 current paths in series at DC-1                          |                    |
| — at 24 V rated value   | 35 A               |
| — at 60 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              |

|   |   |
|---|---|
| <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 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> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul> | 35 A  |
|   | 35 A  |
|   | 35 A  |
|   | 35 A  |
|   | 2.9 A   |
|   | 1.4 A   |
|   | 20 A  |
|   | 5 A   |
|   | 1 A   |
|   | 0.09 A  |
|   | 0.06 A  |
|   | 35 A  |
|   | 35 A  |
|   | 15 A  |
|   | 3 A   |
|   | 0.27 A  |
|   | 0.16 A  |
|   | 35 A  |
|   | 35 A  |
|   | 35 A  |
|   | 10 A  |
|   | 0.6 A   |
|   | 0.6 A   |
| operating power   |   |
| <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>   | 3 kW  |
|   | 5.5 kW  |
|   | 5.5 kW  |
|   | 7.5 kW  |
|   | 3 kW  |
|   | 5.5 kW  |
|   | 5.5 kW  |
|   | 7.5 kW  |
|   | 7.5 kW  |
| operating power for approx. 200000 operating cycles at AC-4   |   |
| <ul style="list-style-type: none"> <li>• at 400 V rated value</li> <li>• at 690 V rated value</li> </ul>  | 2.6 kW  |
|   | 4.6 kW  |
|   | 4.6 kW  |
| operating apparent power at AC-6a   |   |
| <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   |
|   | 7.8 kVA   |
|   | 9.8 kVA   |
|   | 10.7 kVA  |
|   | 10.7 kVA  |
| operating apparent power at AC-6a   |   |
| <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   |
|   | 5.2 kVA   |
|   | 6.5 kVA   |
|   | 9 kVA   |
|   | 9 kVA   |
| short-time withstand current in cold operating state up to 40 °C  |   |
| <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>   | 210 A; Use minimum cross-section acc. to AC-1 rated value |
|   | 210 A; Use minimum cross-section acc. to AC-1 rated value |
|   | 170 A; Use minimum cross-section acc. to AC-1 rated value |
|   | 126 A; Use minimum cross-section acc. to AC-1 rated value |
|   | 105 A; Use minimum cross-section acc. to AC-1 rated value |
| no-load switching frequency   |   |
| <ul style="list-style-type: none"> <li>• at AC</li> </ul>   | 5 000 1/h   |

|   |   |
|---|---|
| <b>operating frequency</b>  |   |
| • at AC-1 maximum   | 1 000 1/h                                       |
| • at AC-2 maximum   | 1 000 1/h                                       |
| • at AC-3 maximum   | 1 000 1/h                                       |
| • at AC-3e maximum  | 1 000 1/h                                       |
| • at AC-4 maximum   | 300 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>   |   |
| • at 50 Hz rated value  | 220 V   |
| • at 60 Hz rated value  | 220 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  | 68 VA   |
| • at 60 Hz  | 67 VA   |
| <b>inductive power factor with closing power of the coil</b>                          |   |
| • at 50 Hz  | 0.72  |
| • at 60 Hz  | 0.74  |
| <b>apparent holding power of magnet coil at AC</b>                                    |   |
| • at 50 Hz  | 7.9 VA  |
| • at 60 Hz  | 6.5 VA  |
| <b>inductive power factor with the holding power of the coil</b>                      |   |
| • at 50 Hz  | 0.25  |
| • at 60 Hz  | 0.28  |
| <b>closing delay</b>  |   |
| • at AC   | 8 ... 40 ms                                     |
| <b>opening delay</b>  |   |
| • at AC   | 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                    | 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>   |   |
| • at 230 V rated value  | 10 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 60 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) |

| UL/CSA ratings  |  |
|---|--|
| <b>full-load current (FLA) for 3-phase AC motor</b>   |  |
| • at 480 V rated value  | 11 A   |
| • at 600 V rated value  | 11 A   |
| <b>yielded mechanical performance [hp]</b>  |  |
| • for single-phase AC motor   |  |
| — at 110/120 V rated value  | 1 hp   |
| — at 230 V rated value  | 2 hp   |
| • for 3-phase AC motor  |  |
| — at 200/208 V rated value  | 3 hp   |
| — at 220/230 V rated value  | 3 hp   |
| — at 460/480 V rated value  | 7.5 hp   |
| — at 575/600 V rated value  | 10 hp  |
| <b>contact rating of auxiliary contacts according to UL</b>   | A600 / P600  |
| Short-circuit protection  |  |
| 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>  |  |
| • for short-circuit protection of the main circuit  |  |
| — with type of coordination 1 required  | gG: 63A (690V,100kA), aM: 32A (690V,100kA), BS88: 63A (415V,80kA)  |
| — with type of assignment 2 required  | gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A (415V,80kA)  |
| • for short-circuit protection of the auxiliary switch required   | gG: 10 A (500 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>   | 85 mm  |
| <b>width</b>  | 45 mm  |
| <b>depth</b>  | 97 mm  |
| <b>required spacing</b>   |  |
| • with side-by-side mounting  |  |
| — forwards  | 10 mm  |
| — upwards   | 10 mm  |
| — downwards   | 10 mm  |
| — at the side   | 0 mm   |
| • for grounded parts  |  |
| — forwards  | 10 mm  |
| — upwards   | 10 mm  |
| — at the side   | 6 mm   |
| — downwards   | 10 mm  |
| • for live parts  |  |
| — forwards  | 10 mm  |
| — upwards   | 10 mm  |
| — downwards   | 10 mm  |
| — at the side   | 6 mm   |
| Connections/ Terminals  |  |
| <b>type of electrical connection</b>  |  |
| • for main current circuit  | screw-type terminals   |
| • for auxiliary and control circuit   | screw-type terminals   |
| • at contactor for auxiliary contacts   | Screw-type terminals   |
| • of magnet coil  | Screw-type terminals   |
| <b>type of connectable conductor cross-sections</b>   |  |
| • for main contacts   |  |
| — solid   | 2x (1 ... 2.5 mm²), 2x (2.5 ... 10 mm²)  |
| — solid or stranded   | 2x (1 ... 2.5 mm²), 2x (2.5 ... 10 mm²)  |
| — finely stranded with core end processing  | 2x (1 ... 2.5 mm²), 2x (2.5 ... 6 mm²), 1x 10 mm²  |
| • for AWG cables for main contacts  | 2x (16 ... 12), 2x (14 ... 8)  |
| <b>connectable conductor cross-section for main contacts</b>  |  |
| • solid   | 1 ... 10 mm²   |
| • stranded  | 1 ... 10 mm²   |

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>finely stranded with core end processing</li> </ul>  | 1 ... 10 mm <sup>2</sup>  |
| <b>connectable conductor cross-section for auxiliary contacts</b>   |   |
| <ul style="list-style-type: none"> <li>solid or stranded</li> </ul>   | 0.5 ... 2.5 mm <sup>2</sup>   |
| <ul style="list-style-type: none"> <li>finely stranded with core end processing</li> </ul>  | 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> </ul> | 2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> ) |
| <ul style="list-style-type: none"> <li>for AWG cables for auxiliary contacts</li> </ul>   | 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> </ul>   | 16 ... 8  |
| <ul style="list-style-type: none"> <li>for auxiliary contacts</li> </ul>  | 20 ... 14   |

|  |  |
|--|--|
| <b>Safety related data</b>   |  |
| <b>product function</b>  |  |
| <ul style="list-style-type: none"> <li>mirror contact according to IEC 60947-4-1</li> </ul>              | Yes  |
| <ul style="list-style-type: none"> <li>positively driven operation according to IEC 60947-5-1</li> </ul> | No   |
| <ul style="list-style-type: none"> <li>suitable for safety function</li> </ul>                           | 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> </ul>             | 40 %   |
| <ul style="list-style-type: none"> <li>with high demand rate according to SN 31920</li> </ul>            | 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  |
| <b>ISO 13849</b>   |  |
| <b>device type according to ISO 13849-1</b>  | 3  |
| <b>overdimensioning according to ISO 13849-2 necessary</b>   | Yes  |
| <b>IEC 61508</b>   |  |
| <b>safety device type according to IEC 61508-2</b>   | Type A   |
| <b>Electrical Safety</b>   |  |
| <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](#)



[KC](#)

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



[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



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



[Miscellaneous](#)

[Confirmation](#)

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



## 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=3RT2024-1AN20>

## Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2024-1AN20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1AN20>

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

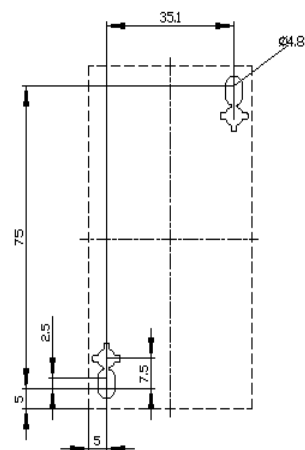
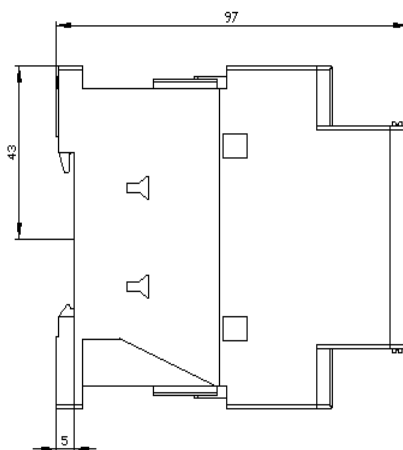
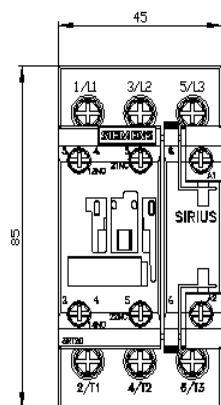
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2024-1AN20&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2024-1AN20&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1AN20/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2024-1AN20&objecttype=14&gridview=view1>









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