

power contactor, AC-3 95 A, 45 kW / 400 V 1 NO + 1 NC, 48 V AC, 50/60 Hz 3-pole, 3 NO, Size S3 screw terminal



|                                                     |                             |
|-----------------------------------------------------|-----------------------------|
| Product brand name                                  | SIRIUS                      |
| Product designation                                 | Power contactor             |
| Product type designation                            | 3RT2                        |
| General technical data                              |                             |
| Size of contactor                                   | S3                          |
| Product extension                                   |                             |
| • function module for communication                 | No                          |
| • Auxiliary switch                                  | Yes                         |
| Surge voltage resistance                            |                             |
| • of main circuit rated value                       | 8 kV                        |
| • of auxiliary circuit rated value                  | 6 kV                        |
| maximum permissible voltage for safe isolation      |                             |
| • between coil and main contacts acc. to EN 60947-1 | 690 V                       |
| Protection class IP                                 |                             |
| • on the front                                      | IP20                        |
| • of the terminal                                   | IP00                        |
| Shock resistance at rectangular impulse             |                             |
| • at AC                                             | 6.7 g / 5 ms, 4.0 g / 10 ms |

|                                                                                         |                              |
|-----------------------------------------------------------------------------------------|------------------------------|
| <b>Shock resistance with sine pulse</b>                                                 |                              |
| • at AC                                                                                 | 10.6 g / 5 ms, 6.3 g / 10 ms |
| <b>Mechanical service life (switching cycles)</b>                                       |                              |
| • of contactor typical                                                                  | 10 000 000                   |
| • of the contactor with added electronics-compatible auxiliary switch block typical     | 5 000 000                    |
| • of the contactor with added auxiliary switch block typical                            | 10 000 000                   |
| <b>Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750</b> | K                            |
| <b>Reference code acc. to DIN EN 81346-2</b>                                            | Q                            |

#### Ambient conditions

|                                                        |                |
|--------------------------------------------------------|----------------|
| <b>Installation altitude at height above sea level</b> |                |
| • maximum                                              | 2 000 m        |
| <b>Ambient temperature</b>                             |                |
| • during operation                                     | -25 ... +60 °C |
| • during storage                                       | -55 ... +80 °C |

#### 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                                      | 1 000 V |
| <b>Operating 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   |
| — up to 1000 V at ambient temperature 40 °C rated value            | 70 A    |
| — up to 1000 V at ambient temperature 60 °C rated value            | 60 A    |
| • at AC-2 at 400 V rated value                                     | 95 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 AC-4 at 400 V rated value                                     | 80 A    |
| <b>Connectable conductor cross-section in main circuit at AC-1</b> |         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• at 60 °C minimum permissible</li> <li>• at 40 °C minimum permissible</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 35 mm <sup>2</sup><br>50 mm <sup>2</sup>                                                                                    |
| <b>Operating current 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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 42 A<br>30 A                                                                                                                |
| <b>Operating current</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                             |
| <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 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 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 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> | 100 A<br>9 A<br>2 A<br>0.6 A<br>0.4 A<br>100 A<br>100 A<br>10 A<br>1.8 A<br>1 A<br>100 A<br>100 A<br>80 A<br>4.5 A<br>2.6 A |
| <b>Operating current</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                             |
| <ul style="list-style-type: none"> <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 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 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 110 V rated value</li> </ul> </li> </ul>                                                                         | 40 A<br>2.5 A<br>1 A<br>0.15 A<br>0.06 A<br>100 A<br>100 A<br>7 A<br>0.42 A<br>0.16 A<br>100 A<br>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-1                                                                                     |              |
| — at 230 V rated value                                                                        | 49 kW        |
| — at 230 V at 60 °C rated value                                                               | 42 kW        |
| — at 400 V rated value                                                                        | 86 kW        |
| — at 400 V at 60 °C rated value                                                               | 72 kW        |
| — at 690 V rated value                                                                        | 148 kW       |
| — at 690 V at 60 °C rated value                                                               | 125 kW       |
| • 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        |
| <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>Thermal short-time current limited to 10 s</b>                                             | 760 A        |
| <b>Power loss [W] at AC-3 at 400 V for rated value of the operating current per conductor</b> | 6.6 W        |
| <b>No-load switching frequency</b>                                                            |              |
| • at AC                                                                                       | 5 000 1/h    |
| <b>Operating frequency</b>                                                                    |              |
| • at AC-1 maximum                                                                             | 900 1/h      |
| • at AC-2 maximum                                                                             | 350 1/h      |
| • at AC-3 maximum                                                                             | 850 1/h      |
| • at AC-4 maximum                                                                             | 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>                                                           |              |
| • at 50 Hz rated value                                                                        | 48 V         |
| • at 60 Hz rated value                                                                        | 48 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                                                                                    | 348 V·A      |

|                                                                  |              |
|------------------------------------------------------------------|--------------|
| • at 60 Hz                                                       | 296 V·A      |
| <b>Inductive power factor with closing power of the coil</b>     |              |
| • at 50 Hz                                                       | 0.62         |
| • at 60 Hz                                                       | 0.55         |
| <b>Apparent holding power of magnet coil at AC</b>               |              |
| • at 50 Hz                                                       | 25 V·A       |
| • at 60 Hz                                                       | 18 V·A       |
| <b>Inductive power factor with the holding power of the coil</b> |              |
| • at 50 Hz                                                       | 0.35         |
| • at 60 Hz                                                       | 0.41         |
| <b>Closing delay</b>                                             |              |
| • at AC                                                          | 13 ... 50 ms |
| <b>Opening delay</b>                                             |              |
| • at AC                                                          | 10 ... 21 ms |
| <b>Arcing time</b>                                               | 10 ... 20 ms |

#### Auxiliary circuit

|                                                     |        |
|-----------------------------------------------------|--------|
| <b>Number of NC contacts for auxiliary contacts</b> |        |
| • instantaneous contact                             | 1      |
| <b>Number of NO contacts for auxiliary contacts</b> |        |
| • instantaneous contact                             | 1      |
| Operating current at AC-12 maximum                  | 10 A   |
| <b>Operating 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>Operating 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>Operating 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  |

|                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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 three-phase AC motor</b>                                                                                                                                                                                                                                                               |                                                                                                                                                                                                |
| <ul style="list-style-type: none"> <li>• at 480 V rated value</li> </ul>                                                                                                                                                                                                                                              | 96 A                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• at 600 V rated value</li> </ul>                                                                                                                                                                                                                                              | 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> </ul>                                                                                                                           | 10 hp<br>20 hp                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>• for three-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>                                                | 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>                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                |
| <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: 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                                                           |
| <b>Mounting type</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>                                                                                                                                                                                                                                                                                                         | 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</li> </ul>                                                                             | 20 mm<br>10 mm<br>10 mm<br>0 mm                                                                                                                                                                |

|                  |       |
|------------------|-------|
| — forwards       | 20 mm |
| — upwards        | 10 mm |
| — at the side    | 10 mm |
| — downwards      | 10 mm |
| • for live parts |       |
| — forwards       | 20 mm |
| — upwards        | 10 mm |
| — downwards      | 10 mm |
| — at the side    | 10 mm |

## Connections/Terminals

|                                                                   |                                                                       |
|-------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Type of electrical connection</b>                              |                                                                       |
| • for main current circuit                                        | screw-type terminals                                                  |
| • for auxiliary and control current circuit                       | screw-type terminals                                                  |
| <b>Type of connectable conductor cross-sections</b>               |                                                                       |
| • for main contacts                                               |                                                                       |
| — finely stranded with core end processing                        | 2x (2.5 ... 35 mm <sup>2</sup> ), 1x (2.5 ... 50 mm <sup>2</sup> )    |
| • at AWG conductors for main contacts                             | 2x (10 ... 1/0), 1x (10 ... 2)                                        |
| <b>Connectable conductor cross-section for main contacts</b>      |                                                                       |
| • solid                                                           | 2.5 ... 16 mm <sup>2</sup>                                            |
| • stranded                                                        | 6 ... 70 mm <sup>2</sup>                                              |
| • finely stranded with core end processing                        | 2.5 ... 50 mm <sup>2</sup>                                            |
| <b>Connectable conductor cross-section for auxiliary contacts</b> |                                                                       |
| • single or multi-stranded                                        | 0.5 ... 2.5 mm <sup>2</sup>                                           |
| • finely stranded with core end processing                        | 0.5 ... 2.5 mm <sup>2</sup>                                           |
| <b>Type of connectable conductor cross-sections</b>               |                                                                       |
| • for auxiliary contacts                                          |                                                                       |
| — single or multi-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> ) |
| • at AWG conductors for auxiliary contacts                        | 2x (20 ... 16), 2x (18 ... 14)                                        |
| <b>AWG number as coded connectable conductor cross section</b>    |                                                                       |
| • for main contacts                                               | 10 ... 2                                                              |
| • for auxiliary contacts                                          | 20 ... 14                                                             |

## Safety related data

|                                          |           |
|------------------------------------------|-----------|
| <b>B10 value</b>                         |           |
| • with high demand rate acc. to SN 31920 | 1 000 000 |
| <b>Proportion of dangerous failures</b>  |           |
| • with low demand rate acc. to SN 31920  | 40 %      |
| • with high demand rate acc. to SN 31920 | 73 %      |

|                                                                           |                                                                  |
|---------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Failure rate [FIT]</b>                                                 |                                                                  |
| • with low demand rate acc. to SN 31920                                   | 100 FIT                                                          |
| <b>Product function</b>                                                   |                                                                  |
| • Mirror contact acc. to IEC 60947-4-1                                    | Yes                                                              |
| • positively driven operation acc. to IEC 60947-5-1                       | No                                                               |
| <b>T1 value for proof test interval or service life acc. to IEC 61508</b> | 20 y                                                             |
| <b>Protection against electrical shock</b>                                | finger-safe when touched vertically from front acc. to IEC 60529 |

#### Certificates/approvals

|                                 |            |                                  |
|---------------------------------|------------|----------------------------------|
| <b>General Product Approval</b> | <b>EMC</b> | <b>Declaration of Conformity</b> |
|---------------------------------|------------|----------------------------------|



|                                  |                                                    |                                          |                                     |
|----------------------------------|----------------------------------------------------|------------------------------------------|-------------------------------------|
| <b>Declaration of Conformity</b> | <b>Test Certificates</b>                           | <b>other</b>                             | <b>Railway</b>                      |
| <a href="#">Miscellaneous</a>    | <a href="#">Type Test Certificates/Test Report</a> | <a href="#">Special Test Certificate</a> | <a href="#">Confirmation</a>        |
|                                  |                                                    |                                          | <a href="#">Vibration and Shock</a> |

#### Further information

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

<http://www.siemens.com/industrial-controls/catalogs>

##### Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2046-1AH20>

##### Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2046-1AH20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AH20>

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

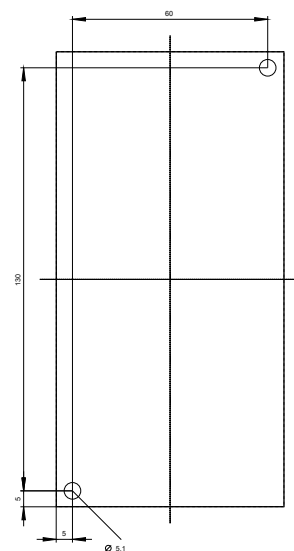
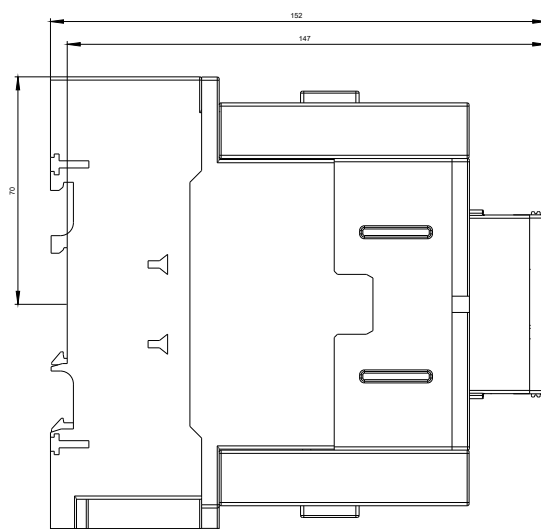
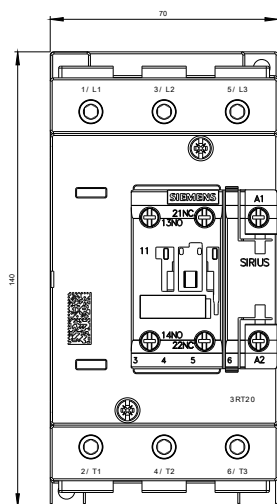
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2046-1AH20&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-1AH20&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-1AH20/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-1AH20&objecttype=14&gridview=view1>





02/07/2019