



power contactor AC-1 275 A / 690 V / 40 °C 3-pole, U<sub>c</sub>: 72 V DC (0.7-1.25) PLC input 24-110 V DC drive: electronic auxiliary contacts 2 NO + 2 NC main circuit: busbar control and auxiliary circuit: spring-loaded terminal extended rated condition railroad IEC 60077

|  |   |
|--|---|
| <b>product brand name</b>  | SIRIUS  |
| <b>product designation</b>   | Power contactor   |
| <b>design of the product</b>   | With extended operating range   |
| <b>product type designation</b>  | 3RT14   |
| <b>General technical data</b>  |   |
| <b>size of contactor</b>   | S6  |
| <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   | 60 W  |
| • at AC in hot operating state per pole  | 20 W  |
| • without load current share typical   | 2.8 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  | 500 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   |
| shock resistance for railway applications according to EN 61373  | Category 1, Class B   |
| <b>shock resistance at rectangular impulse</b>   |   |
| • at DC  | 8,5g / 5 ms, 4,2g / 10 ms   |
| <b>shock resistance with sine pulse</b>  |   |
| • at DC  | 13,4g / 5 ms, 6,5g / 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 Prohibitance (Date)</b>   | 09/06/2016  |
| <b>SVHC substance name</b>   | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8<br>2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7<br>Perfluorobutane sulfonic acid (PFBS) and its salts - -<br>Melamine - 108-78-1 |
| <b>Net Weight</b>  | 3.4 kg  |
| <b>Ambient conditions</b>  |   |

|   |                     |
|---|---------------------|
| installation altitude at height above sea level maximum               | 2 000 m             |
| <b>ambient temperature</b>  |                     |
| • during operation  | -40 ... +70 °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 %                |
| <b>Main circuit</b>   |                     |
| <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   | 690 V               |
| <b>operational current</b>  |                     |
| • at AC-1 at 400 V at ambient temperature 40 °C rated value           | 275 A               |
| • at AC-1   |                     |
| — up to 690 V at ambient temperature 40 °C rated value                | 275 A               |
| — up to 690 V at ambient temperature 60 °C rated value                | 250 A               |
| • at AC-2 at 400 V rated value  | 97 A                |
| • at AC-3   |                     |
| — at 400 V rated value  | 97 A                |
| — at 500 V rated value  | 97 A                |
| — at 690 V rated value  | 97 A                |
| <b>minimum cross-section in main circuit</b>                          |                     |
| • at maximum AC-1 rated value   | 140 mm <sup>2</sup> |
| • at maximum Ith rated value  | 140 mm <sup>2</sup> |
| <b>operational current</b>  |                     |
| • <b>at 1 current path at DC-1</b>                                    |                     |
| — at 24 V rated value   | 250 A               |
| — at 110 V rated value  | 18 A                |
| — at 220 V rated value  | 3.4 A               |
| — at 440 V rated value  | 0.8 A               |
| — at 600 V rated value  | 0.5 A               |
| • <b>with 2 current paths in series at DC-1</b>                       |                     |
| — at 24 V rated value   | 250 A               |
| — at 110 V rated value  | 250 A               |
| — at 220 V rated value  | 20 A                |
| — at 440 V rated value  | 3.2 A               |
| — at 600 V rated value  | 1.6 A               |
| • <b>with 3 current paths in series at DC-1</b>                       |                     |
| — at 24 V rated value   | 250 A               |
| — at 110 V rated value  | 250 A               |
| — at 220 V rated value  | 250 A               |
| — at 440 V rated value  | 11.5 A              |
| — at 600 V rated value  | 4 A                 |
| • <b>at 1 current path at DC-3 at DC-5</b>                            |                     |
| — at 24 V rated value   | 250 A               |
| — at 110 V rated value  | 2.5 A               |
| — at 220 V rated value  | 0.6 A               |
| — at 440 V rated value  | 0.17 A              |
| — at 600 V rated value  | 0.12 A              |
| • <b>with 2 current paths in series at DC-3 at DC-5</b>               |                     |
| — at 24 V rated value   | 250 A               |
| — at 110 V rated value  | 250 A               |
| — at 220 V rated value  | 2.5 A               |
| — at 440 V rated value  | 0.65 A              |
| — at 600 V rated value  | 0.37 A              |

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|---|--|
| <ul style="list-style-type: none"> <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> <li>— at 220 V rated value</li> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul>   | <p>250 A</p> <p>250 A</p> <p>250 A</p> <p>1.4 A</p> <p>0.75 A</p>  |
| <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> </ul>  | <p>55 kW</p> <p>30 kW</p> <p>55 kW</p> <p>55 kW</p> <p>90 kW</p>   |
| <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> | <p>2 900 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>2 084 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>1 480 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>968 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>801 A; Use minimum cross-section acc. to AC-1 rated value</p> |
| <b>no-load switching frequency</b> <ul style="list-style-type: none"> <li>• at DC</li> </ul>  | <p>1 000 1/h</p>   |
| <b>operating frequency</b> <ul style="list-style-type: none"> <li>• at AC-1 maximum</li> </ul>  | <p>600 1/h</p>   |
| <b>operating frequency</b> <ul style="list-style-type: none"> <li>• at DC-1 maximum</li> </ul>  | <p>400 1/h</p>   |
| <b>Ratings for railway applications</b>   |  |
| <b>thermal current (I<sub>th</sub>) up to 690 V</b> <ul style="list-style-type: none"> <li>• up to 40 °C according to IEC 60077 rated value</li> <li>• up to 70 °C according to IEC 60077 rated value</li> </ul>  | <p>275 A</p> <p>190 A</p>  |
| <b>Control circuit/ Control</b>   |  |
| <b>type of voltage</b>  | DC   |
| <b>type of voltage of the control supply voltage</b>  | DC   |
| <b>control supply voltage at DC rated value</b>   | 72 V   |
| <b>operating range factor control supply voltage rated value of magnet coil at DC</b> <ul style="list-style-type: none"> <li>• initial value</li> <li>• full-scale value</li> </ul>   | <p>0.7</p> <p>1.25</p>   |
| <b>consumed current at PLC-control input according to IEC 60947-1 maximum</b>   | 2 mA   |
| <b>voltage at PLC-control input</b>   | 24 ... 110 V   |
| <b>design of the surge suppressor</b>   | with varistor  |
| <b>closing power of magnet coil at DC</b>   | 320 W  |
| <b>holding power of magnet coil at DC</b>   | 2.8 W  |
| <b>closing delay</b> <ul style="list-style-type: none"> <li>• at DC</li> </ul>  | <p>35 ... 75 ms</p>  |
| <b>opening delay</b> <ul style="list-style-type: none"> <li>• at DC</li> </ul>  | <p>80 ... 90 ms</p>  |
| <b>arcing time</b>  | 10 ... 15 ms   |
| <b>control version of the switch operating mechanism</b>  | PLC-IN or Standard A1 - A2 (adjustable)  |
| <b>Auxiliary circuit</b>  |  |
| <b>number of NC contacts for auxiliary contacts</b> <ul style="list-style-type: none"> <li>• instantaneous contact</li> </ul>   | <p>2</p> <p>2</p>  |
| <b>number of NO contacts for auxiliary contacts</b> <ul style="list-style-type: none"> <li>• instantaneous contact</li> </ul>   | <p>2</p> <p>2</p>  |
| <b>operational current at AC-12 maximum</b>   | 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> </ul>  | <p>6 A</p> <p>3 A</p> <p>2 A</p>   |

|   |  |
|---|--|
| <b>operational current at DC-12</b>   |  |
| <ul style="list-style-type: none"> <li>● at 24 V rated value</li> <li>● at 48 V rated value</li> <li>● at 60 V rated value</li> <li>● at 110 V rated value</li> <li>● at 125 V rated value</li> <li>● at 220 V rated value</li> <li>● at 600 V rated value</li> </ul>   | 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>   | 6 A<br>2 A<br>2 A<br>1 A<br>0.9 A<br>0.3 A<br>0.1 A  |
| <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>99 A   |
| <b>yielded mechanical performance [hp]</b>  |  |
| <ul style="list-style-type: none"> <li>● for 3-phase AC motor               <ul style="list-style-type: none"> <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>  | 40 hp<br>75 hp<br>100 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 coordination 2 required</li> </ul> </li> <li>● for short-circuit protection of the auxiliary switch required</li> </ul>   | gG: 355 A (690 V, 100 kA)<br>gR: 350 A (690 V, 100 kA)<br>gG: 10 A (500 V, 1 kA)   |
| <b>Installation/ mounting/ dimensions</b>   |  |
| <b>mounting position</b>  | with vertical mounting surface +/-90° rotatable, with vertical mounting surface +/- 22.5° tiltable to the front and back |
| fastening method side-by-side mounting  | Yes  |
| <b>fastening method</b>   | screw fixing   |
| <b>height</b>   | 172 mm   |
| <b>width</b>  | 120 mm   |
| <b>depth</b>  | 170 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>10 mm<br><br>20 mm<br>10 mm<br>10 mm<br>10 mm<br><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> </ul>  | screw-type terminals<br>spring-loaded terminals  |
| <b>width of connection bar</b>   | 17 mm  |
| <b>thickness of connection bar</b>   | 3 mm   |
| <b>diameter of holes</b>   | 9 mm   |
| <b>number of holes</b>   | 1  |
| <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 or stranded</li> </ul> </li> <li>• for AWG cables for main contacts</li> </ul>   | 2x (25 ... 120 mm <sup>2</sup> )<br>4 ... 250 kcmil  |
| <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</li> <li>— solid or stranded</li> <li>— finely stranded with core end processing</li> <li>— finely stranded without core end processing</li> </ul> </li> <li>• for AWG cables for auxiliary contacts</li> </ul> | 2x (0.25 ... 2.5 mm <sup>2</sup> )<br>2x (0,25 ... 2,5 mm <sup>2</sup> )<br>2x (0.25 ... 1.5 mm <sup>2</sup> )<br>2x (0.25 ... 2.5 mm <sup>2</sup> )<br>2x (24 ... 14) |
| <b>AWG number as coded connectable conductor cross section for auxiliary contacts</b>  | 24 ... 14  |

**Safety related data**

|   |           |
|---|-----------|
| <b>product function</b>   |           |
| <ul style="list-style-type: none"> <li>• mirror contact according to IEC 60947-4-1</li> <li>• positively driven operation according to IEC 60947-5-1</li> </ul> | Yes<br>No |

**Electrical Safety**

|  |  |
|--|--|
| <b>protection class IP on the front according to IEC 60529</b> | IP00; IP20 with box terminal/cover                                       |
| <b>touch protection on the front according to IEC 60529</b>    | finger-safe, for vertical contact from the front with box terminal/cover |

**Communication/ Protocol**

|   |    |
|---|----|
| <b>product function bus communication</b> | No |
|---|----|

**Approvals Certificates**

|                    |                          |
|--------------------|--------------------------|
| <b>Environment</b> | General Product Approval |
|--------------------|--------------------------|

[Environmental Confirmations](#)



|                                 |            |                          |                          |              |
|---------------------------------|------------|--------------------------|--------------------------|--------------|
| <b>General Product Approval</b> | <b>EMV</b> | <b>Functional Safety</b> | <b>Test Certificates</b> | <b>other</b> |
|---------------------------------|------------|--------------------------|--------------------------|--------------|



[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



|              |                |
|--------------|----------------|
| <b>other</b> | <b>Railway</b> |
|--------------|----------------|

[Confirmation](#)

[Miscellaneous](#)

[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

**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=3RT1456-2XJ46-0LA2>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT1456-2XJ46-0LA2>

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

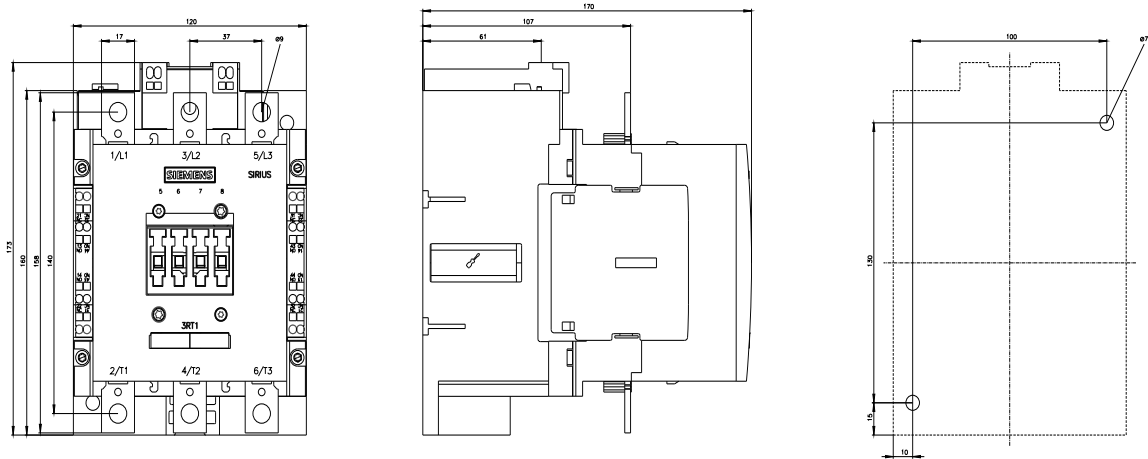
[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT1456-2XJ46-0LA2&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT1456-2XJ46-0LA2&lang=en)

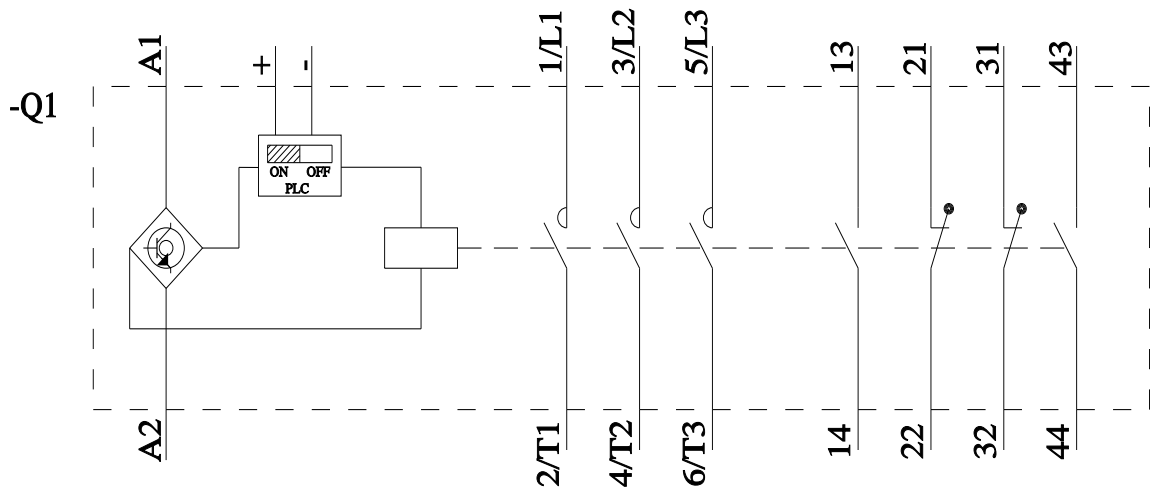
Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT1456-2XJ46-0LA2>

Characteristic curves

[https://curves.simaris.siemens.com/curves/<mmp\\_prod\\_noCOMP="HAUPT"></mmp\\_prod\\_no>](https://curves.simaris.siemens.com/curves/<mmp_prod_noCOMP=)





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