



Failsafe reversing starter, 3RM1, 500 V, 0 - 0.12 kW, 0.1 - 0.5 A, 110-230 V AC, spring-loaded terminal (push-in)

|   |  |
|---|--|
| product brand name  | SIRIUS   |
| product category  | Motor starter  |
| product designation   | Failsafe reversing starters  |
| design of the product   | With electronic overload protection and safety-related disconnection   |
| product type designation  | 3RM1   |
| <b>General technical data</b>   |  |
| equipment variant according to IEC 60947-4-2  | 3  |
| product function  | fail-safe reversing starter  |
| <ul style="list-style-type: none"> <li>intrinsic device protection</li> </ul>                                 | Yes  |
| <ul style="list-style-type: none"> <li>for power supply reverse polarity protection</li> </ul>                | Yes  |
| suitability for operation device connector 3ZY12  | No   |
| power loss [W] for rated value of the current   |  |
| <ul style="list-style-type: none"> <li>at AC in hot operating state per pole</li> </ul>                       | 0.01 W   |
| <ul style="list-style-type: none"> <li>without load current share typical</li> </ul>                          | 3.22 W   |
| insulation voltage rated value  | 500 V  |
| overvoltage category  | III  |
| surge voltage resistance rated value  | 6 kV   |
| maximum permissible voltage for protective separation   |  |
| <ul style="list-style-type: none"> <li>between main and auxiliary circuit</li> </ul>                          | 500 V  |
| <ul style="list-style-type: none"> <li>between control and auxiliary circuit</li> </ul>                       | 250 V  |
| shock resistance  | 6g / 11 ms   |
| operating frequency maximum   | 1 1/s  |
| reference code according to IEC 81346-2   | Q  |
| Substance Prohibitance (Date)   | 03/01/2017   |
| SVHC substance name   | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8<br>2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7 |
| product function  |  |
| <ul style="list-style-type: none"> <li>direct start</li> </ul>  | No   |
| <ul style="list-style-type: none"> <li>reverse starting</li> </ul>  | Yes  |
| product function short circuit protection   | No   |
| <b>Electromagnetic compatibility</b>  |  |
| EMC emitted interference according to IEC 60947-1   | class A  |
| EMC immunity according to IEC 60947-1   | Class A  |
| conducted interference  |  |
| <ul style="list-style-type: none"> <li>due to burst according to IEC 61000-4-4</li> </ul>                     | 3 kV / 5 kHz   |
| <ul style="list-style-type: none"> <li>due to conductor-earth surge according to IEC 61000-4-5</li> </ul>     | 4 kV signal lines 2 kV   |
| <ul style="list-style-type: none"> <li>due to conductor-conductor surge according to IEC 61000-4-5</li> </ul> | 2 kV   |
| <ul style="list-style-type: none"> <li>due to high-frequency radiation according to IEC 61000-4-6</li> </ul>  | 10 V   |

|  |   |
|--|---|
| field-based interference according to IEC 61000-4-3                                      | 10 V/m  |
| electrostatic discharge according to IEC 61000-4-2                                       | 6 kV contact discharge / 8 kV air discharge   |
| conducted HF interference emissions according to CISPR11                                 | Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| field-bound HF interference emission according to CISPR11                                | Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| <b>Safety related data</b>   |   |
| safe state   | Load circuit open   |
| function test interval maximum   | 1 a   |
| diagnostics test interval by internal test function maximum                              | 600 s   |
| stop category according to IEC 60204-1   | 0   |
| B10d value   | 1 300 000   |
| failure rate [FIT] at rate of recognizable hazardous failures (Add)                      | 1 400 FIT   |
| failure rate [FIT] at rate of non-recognizable hazardous failures (Adu)                  | 16 FIT  |
| average diagnostic coverage level (DCavg)  | 99 %  |
| MTTFd  | 75 a  |
| <b>IEC 62061</b>   |   |
| SIL Claim Limit (subsystem) according to EN 62061  | SILCL 3   |
| PFHD with high demand rate according to IEC 62061  | 2E-8 1/h  |
| <b>ISO 13849</b>   |   |
| performance level (PL) according to EN ISO 13849-1                                       | e   |
| category according to EN ISO 13849-1   | 4   |
| <b>IEC 61508</b>   |   |
| <b>Safety Integrity Level (SIL)</b>  |   |
| • according to IEC 61508   | 3   |
| safety device type according to IEC 61508-2  | Type B  |
| PFDavg with low demand rate according to IEC 61508                                       | 1.75E-5   |
| Safe failure fraction (SFF)  | 99.4 %  |
| <b>Electrical Safety</b>   |   |
| protection class IP on the front according to IEC 60529                                  | IP20  |
| touch protection on the front according to IEC 60529                                     | finger-safe   |
| <b>ATEX</b>  |   |
| Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX                     | SIL2  |
| PFHD with high demand rate according to IEC 61508 relating to ATEX                       | 5E-8 1/h  |
| PFDavg with low demand rate according to IEC 61508 relating to ATEX                      | 0.0005  |
| hardware fault tolerance according to IEC 61508 relating to ATEX                         | 0   |
| T1 value for proof test interval or service life according to IEC 61508 relating to ATEX | 3 a   |
| <b>Main circuit</b>  |   |
| number of poles for main current circuit   | 3   |
| design of the switching contact  | Hybrid  |
| adjustable current response value current of the current-dependent overload release      | 0.1 ... 0.5 A   |
| minimum load [%]   | 20 %; from set rated current  |
| type of the motor protection   | solid-state   |
| operating voltage rated value  | 48 ... 500 V  |
| relative symmetrical tolerance of the operating voltage                                  | 10 %  |
| operating frequency 1 rated value  | 50 Hz   |
| operating frequency 2 rated value  | 60 Hz   |
| relative symmetrical tolerance of the operating frequency                                | 10 %  |
| operational current  |   |
| • at AC at 400 V rated value   | 0.5 A   |
| • at AC-3 at 400 V rated value   | 0.5 A   |
| • at AC-53a at 400 V at ambient temperature 40 °C rated value                            | 0.5 A   |
| ampacity when starting maximum   | 4 A   |
| operating power for 3-phase motors at 400 V at 50 Hz                                     | 0 ... 0.12 kW   |
| <b>Inputs/ Outputs</b>   |   |

|   |               |
|---|---------------|
| <b>input voltage at digital input</b>   |               |
| <ul style="list-style-type: none"> <li>• at DC rated value</li> </ul>                     | 110 V         |
| <ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at DC</li> </ul>           | 0 ... 40 V    |
| <ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at DC</li> </ul>            | 79 ... 121    |
| <b>input voltage at digital input</b>   |               |
| <ul style="list-style-type: none"> <li>• at AC rated value</li> </ul>                     | 110 V         |
| <ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at AC</li> </ul>           | 0 ... 40 V    |
| <ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at AC</li> </ul>            | 93 ... 253 V  |
| <b>input current at digital input</b>   |               |
| <ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at DC</li> </ul>            | 1.5 mA        |
| <ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at DC</li> </ul>           | 0.25 mA       |
| <b>input current at digital input with signal &lt;0&gt; at AC</b>                         |               |
| <ul style="list-style-type: none"> <li>• at 110 V</li> </ul>                              | 0.2 mA        |
| <ul style="list-style-type: none"> <li>• at 230 V</li> </ul>                              | 0.4 mA        |
| <b>input current at digital input for signal &lt;1&gt; at AC</b>                          |               |
| <ul style="list-style-type: none"> <li>• at 110 V</li> </ul>                              | 1.1 mA        |
| <ul style="list-style-type: none"> <li>• at 230 V</li> </ul>                              | 2.3 mA        |
| number of CO contacts for auxiliary contacts  | 1             |
| <b>operational current of auxiliary contacts at AC-15 at 230 V maximum</b>                | 3 A           |
| <b>operational current of auxiliary contacts at DC-13 at 24 V maximum</b>                 | 1 A           |
| <b>Control circuit/ Control</b>   |               |
| <b>type of voltage of the control supply voltage</b>                                      | AC/DC         |
| <b>control supply voltage at AC</b>   |               |
| <ul style="list-style-type: none"> <li>• at 50 Hz rated value</li> </ul>                  | 110 ... 230 V |
| <ul style="list-style-type: none"> <li>• at 60 Hz rated value</li> </ul>                  | 110 ... 230 V |
| <b>relative negative tolerance of the control supply voltage at AC at 60 Hz</b>           | 15 %          |
| <b>relative positive tolerance of the control supply voltage at AC at 60 Hz</b>           | 10 %          |
| <b>control supply voltage 1 at AC</b>   |               |
| <ul style="list-style-type: none"> <li>• at 50 Hz</li> </ul>                              | 110 ... 230 V |
| <ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>                              | 110 ... 230 V |
| <b>control supply voltage frequency</b>   |               |
| <ul style="list-style-type: none"> <li>• 1 rated value</li> </ul>                         | 50 Hz         |
| <ul style="list-style-type: none"> <li>• 2 rated value</li> </ul>                         | 60 Hz         |
| <b>relative negative tolerance of the control supply voltage at DC</b>                    | 15 %          |
| <b>relative positive tolerance of the control supply voltage at DC</b>                    | 10 %          |
| control supply voltage 1 at DC rated value  | 110 V         |
| <b>operating range factor control supply voltage rated value at DC</b>                    |               |
| <ul style="list-style-type: none"> <li>• initial value</li> </ul>                         | 0.85          |
| <ul style="list-style-type: none"> <li>• full-scale value</li> </ul>                      | 1.1           |
| <b>operating range factor control supply voltage rated value at AC at 50 Hz</b>           |               |
| <ul style="list-style-type: none"> <li>• initial value</li> </ul>                         | 0.85          |
| <ul style="list-style-type: none"> <li>• full-scale value</li> </ul>                      | 1.1           |
| <b>operating range factor control supply voltage rated value at AC at 60 Hz</b>           |               |
| <ul style="list-style-type: none"> <li>• initial value</li> </ul>                         | 0.85          |
| <ul style="list-style-type: none"> <li>• full-scale value</li> </ul>                      | 1.1           |
| <b>control current at AC</b>  |               |
| <ul style="list-style-type: none"> <li>• at 110 V in standby mode of operation</li> </ul> | 8 mA          |
| <ul style="list-style-type: none"> <li>• at 230 V in standby mode of operation</li> </ul> | 6 mA          |
| <ul style="list-style-type: none"> <li>• at 110 V when switching on</li> </ul>            | 40 mA         |
| <ul style="list-style-type: none"> <li>• at 230 V when switching on</li> </ul>            | 25 mA         |
| <ul style="list-style-type: none"> <li>• at 110 V during operation</li> </ul>             | 25 mA         |
| <ul style="list-style-type: none"> <li>• at 230 V during operation</li> </ul>             | 14 mA         |
| <b>control current at DC</b>  |               |
| <ul style="list-style-type: none"> <li>• in standby mode of operation</li> </ul>          | 4 mA          |

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>during operation</li> </ul>   | 30 mA   |
| <b>inrush current peak</b>   |   |
| <ul style="list-style-type: none"> <li>at AC at 110 V</li> </ul>   | 1 200 mA  |
| <ul style="list-style-type: none"> <li>at AC at 230 V</li> </ul>   | 2 900 mA  |
| <ul style="list-style-type: none"> <li>at AC at 110 V at switching on of motor</li> </ul>  | 1 200 mA  |
| <ul style="list-style-type: none"> <li>at AC at 230 V at switching on of motor</li> </ul>  | 2 900 mA  |
| <b>duration of inrush current peak</b>   |   |
| <ul style="list-style-type: none"> <li>at AC at 110 V</li> </ul>   | 1 ms  |
| <ul style="list-style-type: none"> <li>at AC at 230 V</li> </ul>   | 1 ms  |
| <ul style="list-style-type: none"> <li>at AC at 110 V at switching on of motor</li> </ul>  | 1 ms  |
| <ul style="list-style-type: none"> <li>at AC at 230 V at switching on of motor</li> </ul>  | 1 ms  |
| <b>power loss [W] in auxiliary and control circuit</b>   |   |
| <ul style="list-style-type: none"> <li><b>in switching state OFF</b> <ul style="list-style-type: none"> <li>with bypass circuit</li> </ul> </li> </ul>   | 1.4 W   |
| <ul style="list-style-type: none"> <li><b>in switching state ON</b> <ul style="list-style-type: none"> <li>with bypass circuit</li> </ul> </li> </ul>  | 3.22 W  |
| <b>Response times</b>  |   |
| <b>ON-delay time</b>   | 90 ... 120 ms   |
| <b>OFF-delay time</b>  | 60 ... 90 ms  |
| <b>Power Electronics</b>   |   |
| <b>operational current</b>   |   |
| <ul style="list-style-type: none"> <li>at 40 °C rated value</li> </ul>   | 0.5 A   |
| <ul style="list-style-type: none"> <li>at 50 °C rated value</li> </ul>   | 0.5 A   |
| <ul style="list-style-type: none"> <li>at 55 °C rated value</li> </ul>   | 0.5 A   |
| <ul style="list-style-type: none"> <li>at 60 °C rated value</li> </ul>   | 0.5 A   |
| <b>Installation/ mounting/ dimensions</b>  |   |
| <b>mounting position</b>   | vertical, horizontal, standing (observe derating)   |
| <b>fastening method</b>  | screw and snap-on mounting onto 35 mm DIN rail  |
| <b>height</b>  | 100 mm  |
| <b>width</b>   | 22.5 mm   |
| <b>depth</b>   | 141.6 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>backwards</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>backwards</li> <li>upwards</li> <li>at the side</li> <li>downwards</li> </ul> </li> </ul> | 0 mm<br>0 mm<br>50 mm<br>50 mm<br>0 mm<br><br>0 mm<br>0 mm<br>50 mm<br>3.5 mm<br>50 mm                                  |
| <b>Ambient conditions</b>  |   |
| installation altitude at height above sea level maximum  | 4 000 m; For derating see manual  |
| <b>ambient temperature</b>   |   |
| <ul style="list-style-type: none"> <li>during operation</li> </ul>   | -25 ... +60 °C  |
| <ul style="list-style-type: none"> <li>during storage</li> </ul>   | -40 ... +70 °C  |
| <ul style="list-style-type: none"> <li>during transport</li> </ul>   | -40 ... +70 °C  |
| environmental category during operation according to IEC 60721   | 3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 |
| relative humidity during operation   | 10 ... 95 %   |
| air pressure according to SN 31205   | 900 ... 1 060 hPa   |
| <b>Communication/ Protocol</b>   |   |
| <b>protocol is supported</b>   |   |
| <ul style="list-style-type: none"> <li>PROFINET IO protocol</li> </ul>   | No  |
| <ul style="list-style-type: none"> <li>PROFIsafe protocol</li> </ul>   | No  |
| <b>product function bus communication</b>  | No  |
| protocol is supported AS-Interface protocol  | No  |
| <b>Connections/ Terminals</b>  |   |

|   |  |
|---|--|
| <b>type of electrical connection</b>  | spring-loaded terminals (push-in) for main circuit, spring-loaded terminals (push-in) for control circuit  |
| <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control circuit</li> </ul>   | spring-loaded terminals (push-in)  |
| <b>wire length for motor unshielded maximum</b>   | 100 m  |
| <b>type of connectable conductor cross-sections for main contacts</b>   |  |
| <ul style="list-style-type: none"> <li>• solid</li> <li>• finely stranded with core end processing</li> <li>• finely stranded without core end processing</li> </ul>  | 1x (0.5 ... 4 mm <sup>2</sup> )<br>1x (0.5 ... 2.5 mm <sup>2</sup> )<br>1x (0.5 ... 4 mm <sup>2</sup> )  |
| <b>connectable conductor cross-section for main contacts</b>  |  |
| <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> <li>• finely stranded without core end processing</li> </ul>  | 0.5 ... 4 mm <sup>2</sup><br>0.5 ... 2.5 mm <sup>2</sup><br>0.5 ... 4 mm <sup>2</sup>  |
| <b>connectable conductor cross-section for auxiliary contacts</b>   |  |
| <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> <li>• finely stranded without core end processing</li> </ul>  | 0.5 ... 1.5 mm <sup>2</sup><br>0.5 ... 1 mm <sup>2</sup><br>0.5 ... 1.5 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</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> | 1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )<br>1x (0.5 ... 1.0 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )<br>1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )<br>1x (20 ... 16), 2x (20 ... 16) |
| <b>AWG number as coded connectable conductor cross section</b>  |  |
| <ul style="list-style-type: none"> <li>• for main contacts</li> <li>• for auxiliary contacts</li> </ul>   | 20 ... 12<br>20 ... 16   |

**UL/CSA ratings**

|   |       |
|---|-------|
| <b>operational current at AC at 480 V according to UL 508</b> | 0.5 A |
|---|-------|

**Approvals Certificates**

**General Product Approval**

[Confirmation](#)



|            |                                       |                          |                          |              |                |
|------------|---------------------------------------|--------------------------|--------------------------|--------------|----------------|
| <b>EMV</b> | <b>For use in hazardous locations</b> | <b>Functional Safety</b> | <b>Test Certificates</b> | <b>other</b> | <b>Railway</b> |
|------------|---------------------------------------|--------------------------|--------------------------|--------------|----------------|



[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)

[Special Test Certificate](#)

**Environment**

[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)

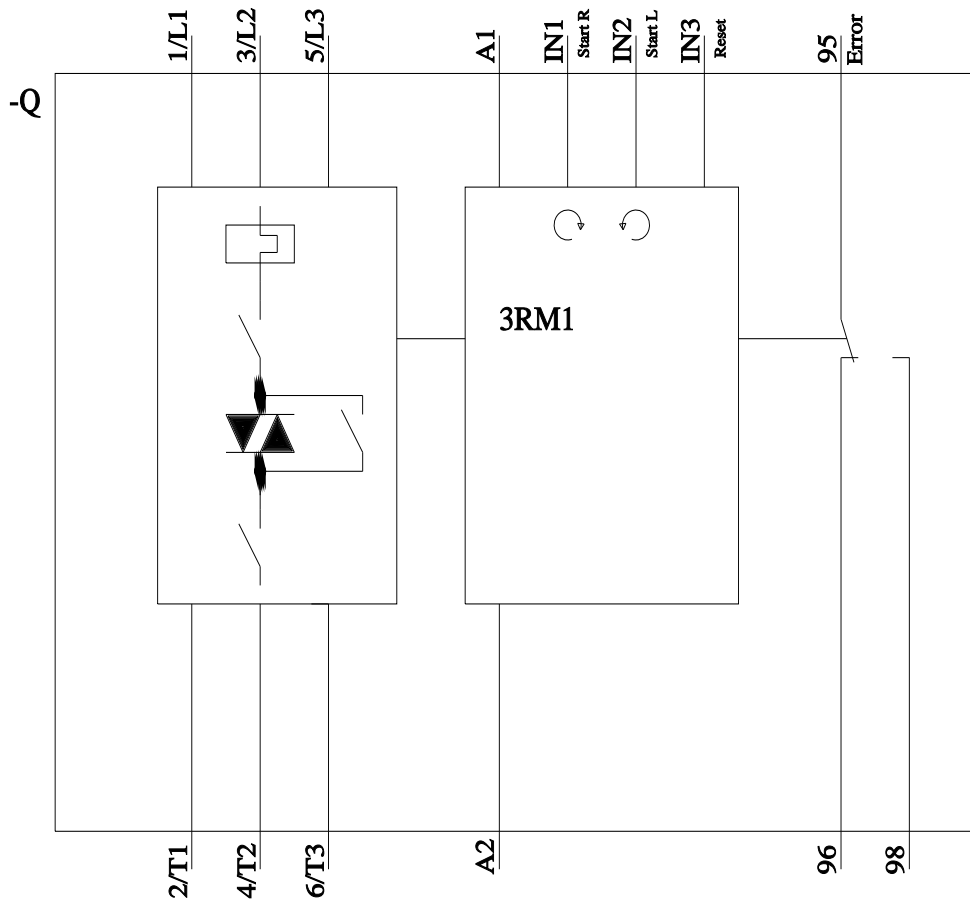
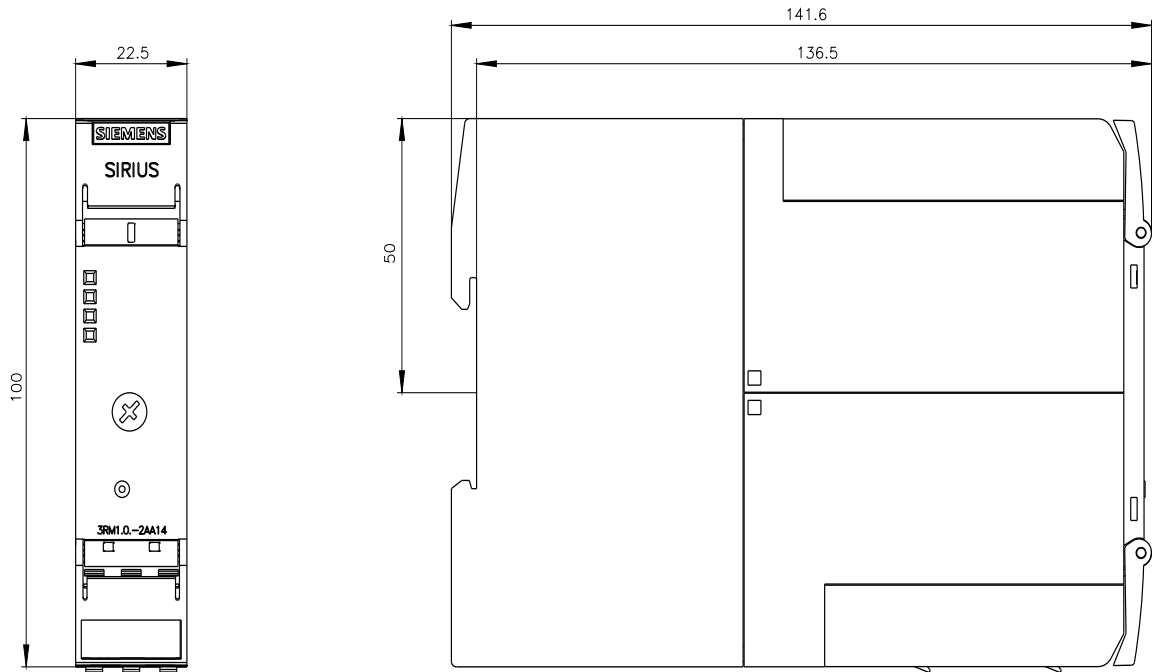
<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1301-2AA14>

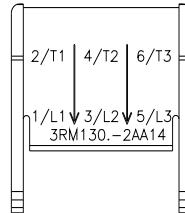
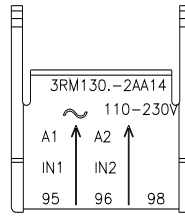
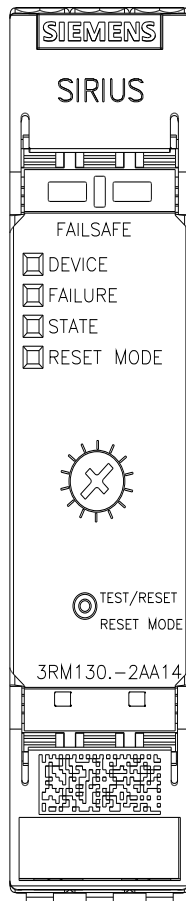
Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1301-2AA14>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1301-2AA14>





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