



Fail-safe direct starter, 3RM1, 500 V, 0 - 0.12 kW, 0.1 - 0.5 A, 24 V DC, screw terminals

|                                                       |                                                                                                                                                                                                                                                     |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product brand name                                    | SIRIUS                                                                                                                                                                                                                                              |
| product category                                      | Motor starter                                                                                                                                                                                                                                       |
| product designation                                   | Fail-safe direct starter                                                                                                                                                                                                                            |
| design of the product                                 | With electronic overload protection and safety-related disconnection                                                                                                                                                                                |
| product type designation                              | 3RM1                                                                                                                                                                                                                                                |
| <b>General technical data</b>                         |                                                                                                                                                                                                                                                     |
| equipment version according to IEC 60947-4-2          | 3                                                                                                                                                                                                                                                   |
| product function                                      | fail-safe direct starter                                                                                                                                                                                                                            |
| • intrinsic device protection                         | Yes                                                                                                                                                                                                                                                 |
| • for power supply reverse polarity protection        | Yes                                                                                                                                                                                                                                                 |
| suitability for operation device connector 3ZY12      | Yes                                                                                                                                                                                                                                                 |
| power loss [W] for rated value of the current         |                                                                                                                                                                                                                                                     |
| • at AC in hot operating state per pole               | 0.01 W                                                                                                                                                                                                                                              |
| • without load current share typical                  | 1.37 W                                                                                                                                                                                                                                              |
| insulation voltage rated value                        | 500 V                                                                                                                                                                                                                                               |
| overvoltage category                                  | III                                                                                                                                                                                                                                                 |
| surge voltage resistance rated value                  | 6 kV                                                                                                                                                                                                                                                |
| maximum permissible voltage for protective separation |                                                                                                                                                                                                                                                     |
| • between main and auxiliary circuit                  | 500 V                                                                                                                                                                                                                                               |
| • between control and auxiliary circuit               | 250 V                                                                                                                                                                                                                                               |
| shock resistance                                      | 6 g / 11 ms                                                                                                                                                                                                                                         |
| vibration resistance                                  | 1 ... 6 Hz, 15 mm; 20 m/s <sup>2</sup> , 500 Hz                                                                                                                                                                                                     |
| operating frequency maximum                           | 1 1/s                                                                                                                                                                                                                                               |
| reference code according to IEC 81346-2               | Q                                                                                                                                                                                                                                                   |
| Substance Prohibitance (day/month/year)               | 03/01/2017                                                                                                                                                                                                                                          |
| SVHC substance name                                   | Lead CAS-No. 7439-92-1<br>Lead monoxide (lead oxide) CAS-No. 1317-36-8<br>2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5<br>Melamine CAS-No. 108-78-1<br>6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol CAS-No. 119-47-1 |
| Net Weight                                            | 0.301 kg                                                                                                                                                                                                                                            |
| product function                                      |                                                                                                                                                                                                                                                     |
| • direct start                                        | Yes                                                                                                                                                                                                                                                 |
| • reverse starting                                    | No                                                                                                                                                                                                                                                  |
| 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> <li>• due to conductor-earth surge according to IEC 61000-4-5</li> <li>• due to conductor-conductor surge according to IEC 61000-4-5</li> <li>• due to high-frequency radiation according to IEC 61000-4-6</li> </ul> | 3 kV / 5 kHz<br>4 kV signal lines 2 kV<br>2 kV<br>10 V              |
| <b>field-based interference according to IEC 61000-4-3</b>                                                                                                                                                                                                                                                  | 10 V/m                                                              |
| <b>electrostatic discharge according to IEC 61000-4-2</b>                                                                                                                                                                                                                                                   | 6 kV contact discharge / 8 kV air discharge                         |
| <b>conducted HF interference emissions according to CISPR11</b>                                                                                                                                                                                                                                             | Class B for the domestic, business and commercial environments      |
| <b>field-bound HF interference emission according to CISPR11</b>                                                                                                                                                                                                                                            | Class B for the domestic, business and commercial environments      |
| <b>Safety related data</b>                                                                                                                                                                                                                                                                                  |                                                                     |
| product function suitable for safety function                                                                                                                                                                                                                                                               | Yes                                                                 |
| <b>suitability for use</b>                                                                                                                                                                                                                                                                                  |                                                                     |
| <ul style="list-style-type: none"> <li>• safety-related switching on</li> <li>• safety-related switching OFF</li> </ul>                                                                                                                                                                                     | No<br>Yes                                                           |
| <b>safe state</b>                                                                                                                                                                                                                                                                                           | Load circuit open                                                   |
| <b>test wear-related service life necessary</b>                                                                                                                                                                                                                                                             | Yes                                                                 |
| <b>function test interval maximum</b>                                                                                                                                                                                                                                                                       | 1 a                                                                 |
| <b>diagnostics test interval by internal test function maximum</b>                                                                                                                                                                                                                                          | 600 s                                                               |
| <b>stop category according to IEC 60204-1</b>                                                                                                                                                                                                                                                               | 0                                                                   |
| <b>proportion of dangerous failures</b>                                                                                                                                                                                                                                                                     |                                                                     |
| <ul style="list-style-type: none"> <li>• with low demand rate according to SN 31920</li> <li>• with high demand rate according to SN 31920</li> </ul>                                                                                                                                                       | 0.6 %<br>40 %                                                       |
| <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>                                                                                                                                                                                                                                        | 16 FIT                                                              |
| <b>IEC 62061</b>                                                                                                                                                                                                                                                                                            |                                                                     |
| <b>Safety Integrity Level (SIL) according to IEC 62061</b>                                                                                                                                                                                                                                                  | SIL 3                                                               |
| <b>ISO 13849</b>                                                                                                                                                                                                                                                                                            |                                                                     |
| category according to EN ISO 13849-1                                                                                                                                                                                                                                                                        | 4                                                                   |
| <b>performance level (PL) according to ISO 13849-1</b>                                                                                                                                                                                                                                                      | PL e                                                                |
| category according to ISO 13849-1                                                                                                                                                                                                                                                                           | 4                                                                   |
| device type according to ISO 13849-1                                                                                                                                                                                                                                                                        | 1                                                                   |
| <b>overdimensioning according to ISO 13849-2 necessary</b>                                                                                                                                                                                                                                                  | No                                                                  |
| <b>IEC 61508</b>                                                                                                                                                                                                                                                                                            |                                                                     |
| <b>Safety Integrity Level (SIL)</b>                                                                                                                                                                                                                                                                         |                                                                     |
| <ul style="list-style-type: none"> <li>• according to IEC 61508</li> </ul>                                                                                                                                                                                                                                  | 3                                                                   |
| <b>safety device type according to IEC 61508-2</b>                                                                                                                                                                                                                                                          | Type B                                                              |
| <b>PFHD with high demand rate according to IEC 61508</b>                                                                                                                                                                                                                                                    | 2E-8 1/h                                                            |
| PFDavg with low demand rate according to IEC 61508                                                                                                                                                                                                                                                          | 1.75E-5                                                             |
| <b>Safe failure fraction (SFF)</b>                                                                                                                                                                                                                                                                          | 99.4 %                                                              |
| hardware fault tolerance according to IEC 61508                                                                                                                                                                                                                                                             | 1                                                                   |
| T1 value for proof test interval or service life according to IEC 61508                                                                                                                                                                                                                                     | 20 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                                                         |
| <b>ATEX</b>                                                                                                                                                                                                                                                                                                 |                                                                     |
| <b>Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX</b>                                                                                                                                                                                                                                 | SIL 2                                                               |
| <b>PFHD with high demand rate according to IEC 61508 relating to ATEX</b>                                                                                                                                                                                                                                   | 5E-8 1/h                                                            |
| <b>PFDavg with low demand rate according to IEC 61508 relating to ATEX</b>                                                                                                                                                                                                                                  | 0.0005                                                              |
| <b>hardware fault tolerance according to IEC 61508 relating to ATEX</b>                                                                                                                                                                                                                                     | 0                                                                   |
| <b>T1 value for proof test interval or service life according to IEC 61508 relating to ATEX</b>                                                                                                                                                                                                             | 3 a                                                                 |
| certificate of suitability according to ATEX directive 2014/34/EU                                                                                                                                                                                                                                           | BVS 12 ATEX F 002 X                                                 |
| <b>type of protection according to ATEX directive 2014/34/EU</b>                                                                                                                                                                                                                                            | II (2)G [Ex e] [Ex d] [Ex px], II (2)D [Ex t] [Ex p], I (M2) [Ex d] |
| <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 <ul style="list-style-type: none"> <li>at AC at 400 V rated value</li> <li>at AC-3 at 400 V rated value</li> <li>at AC-53a at 400 V at ambient temperature 40 °C rated value</li> </ul>                                                                                           | 0.5 A<br>0.5 A<br>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>                                                                                                                                                                                                                                                                                |                                             |
| input voltage at digital input at DC rated value                                                                                                                                                                                                                                                      | 24 V                                        |
| input current at digital input <ul style="list-style-type: none"> <li>for signal &lt;1&gt; at DC</li> <li>with signal &lt;0&gt; at DC</li> </ul>                                                                                                                                                      | 8 mA<br>1 mA                                |
| number of CO contacts for auxiliary contacts                                                                                                                                                                                                                                                          | 1                                           |
| operational current of auxiliary contacts at AC-15 at 230 V maximum                                                                                                                                                                                                                                   | 3 A                                         |
| operational current of auxiliary contacts at DC-13 at 24 V maximum                                                                                                                                                                                                                                    | 1 A                                         |
| <b>Control circuit/ Control</b>                                                                                                                                                                                                                                                                       |                                             |
| type of voltage of the control supply voltage                                                                                                                                                                                                                                                         | DC                                          |
| control supply voltage at DC rated value                                                                                                                                                                                                                                                              | 19.2 ... 30 V                               |
| relative negative tolerance of the control supply voltage at DC                                                                                                                                                                                                                                       | 20 %                                        |
| relative positive tolerance of the control supply voltage at DC                                                                                                                                                                                                                                       | 25 %                                        |
| control supply voltage 1 at DC rated value                                                                                                                                                                                                                                                            | 24 V                                        |
| operating range factor control supply voltage rated value at DC <ul style="list-style-type: none"> <li>initial value</li> <li>full-scale value</li> </ul>                                                                                                                                             | 0.8<br>1.25                                 |
| control current at DC <ul style="list-style-type: none"> <li>in standby mode of operation</li> <li>during operation</li> </ul>                                                                                                                                                                        | 13 mA<br>57 mA                              |
| inrush current peak <ul style="list-style-type: none"> <li>at 24 V</li> <li>at DC at 24 V</li> <li>at DC at 24 V at switching on of motor</li> </ul>                                                                                                                                                  | 0.28 A; values at 25 °C<br>300 mA<br>130 mA |
| duration of inrush current peak <ul style="list-style-type: none"> <li>at 24 V</li> <li>at DC at 24 V</li> <li>at DC at 24 V at switching on of motor</li> </ul>                                                                                                                                      | 85 ms<br>80 ms<br>20 ms                     |
| power loss [W] in auxiliary and control circuit <ul style="list-style-type: none"> <li>in switching state OFF <ul style="list-style-type: none"> <li>with bypass circuit</li> </ul> </li> <li>in switching state ON <ul style="list-style-type: none"> <li>with bypass circuit</li> </ul> </li> </ul> | 0.35 W<br>1.37 W                            |
| <b>Response times</b>                                                                                                                                                                                                                                                                                 |                                             |
| ON-delay time                                                                                                                                                                                                                                                                                         | 65 ... 76 ms                                |
| OFF-delay time                                                                                                                                                                                                                                                                                        | 30 ... 43 ms                                |
| <b>Power Electronics</b>                                                                                                                                                                                                                                                                              |                                             |
| operational current                                                                                                                                                                                                                                                                                   |                                             |

|                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• at 40 °C rated value</li> <li>• at 50 °C rated value</li> <li>• at 55 °C rated value</li> <li>• at 60 °C rated value</li> </ul>                                                                                                                                                                                                                                         | 0.5 A<br>0.5 A<br>0.5 A<br>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>                                                                                                                                                                                                                                                                                                                                                                                                     | 141.5 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                                                                                                                  |
| <b>ambient temperature</b>                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                          |
| <ul style="list-style-type: none"> <li>• during operation</li> <li>• during storage</li> <li>• during transport</li> </ul>                                                                                                                                                                                                                                                                                       | -25 ... +60 °C<br>-40 ... +70 °C<br>-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> <li>• PROFIsafe protocol</li> </ul>                                                                                                                                                                                                                                                                                                           | No<br>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>                                                                                                                                                                                                                                                                                                                                                                             | screw-type terminals for main circuit, screw-type terminals for control circuit                                          |
| <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control circuit</li> </ul>                                                                                                                                                                                                                                                                                        | screw-type terminals<br>screw-type terminals                                                                             |
| <b>wire length for motor unshielded maximum</b>                                                                                                                                                                                                                                                                                                                                                                  | 100 m                                                                                                                    |
| type of connectable conductor cross-sections for main contacts                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                          |
| <ul style="list-style-type: none"> <li>• solid</li> <li>• finely stranded with core end processing</li> </ul>                                                                                                                                                                                                                                                                                                    | 1x (0,5 ... 4 mm²), 2x (0,5 ... 2,5 mm²)<br>1x (0,5 ... 4 mm²), 2x (0,5 ... 1,5 mm²)                                     |
| <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> </ul>                                                                                                                                                                                                                                                                                        | 0.5 ... 4 mm²<br>0.5 ... 4 mm²                                                                                           |
| <b>connectable conductor cross-section for auxiliary contacts</b>                                                                                                                                                                                                                                                                                                                                                |                                                                                                                          |
| <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> </ul>                                                                                                                                                                                                                                                                                        | 0.5 ... 2.5 mm²<br>0.5 ... 2.5 mm²                                                                                       |
| <b>type of connectable conductor cross-sections</b>                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |
| <ul style="list-style-type: none"> <li>• for auxiliary contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• for AWG cables for auxiliary contacts</li> </ul>                                                                                                                                                                       | 1x (0,5 ... 2,5 mm²), 2x (1,0 ... 1,5 mm²)<br>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)<br>1x (20 ... 14), 2x (18 ... 16) |
| <b>AWG number as coded connectable conductor cross</b>                                                                                                                                                                                                                                                                                                                                                           | 20 ... 12                                                                                                                |

|                                                                                |           |
|--------------------------------------------------------------------------------|-----------|
| section for main contacts                                                      |           |
| AWG number as coded connectable conductor cross section for auxiliary contacts | 20 ... 14 |
| UL/CSA ratings                                                                 |           |
| operational current at AC at 480 V according to UL 508                         | 0.5 A     |
| Approvals Certificates                                                         |           |
| General Product Approval                                                       | EMV       |



|     |                                |                   |                   |       |
|-----|--------------------------------|-------------------|-------------------|-------|
| EMV | For use in hazardous locations | Functional Safety | Test Certificates | other |
|-----|--------------------------------|-------------------|-------------------|-------|



[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)



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

[Special Test Certificate](#)

[Environmental Confirmations](#)

#### 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=3RM1101-1AA04>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1101-1AA04>

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

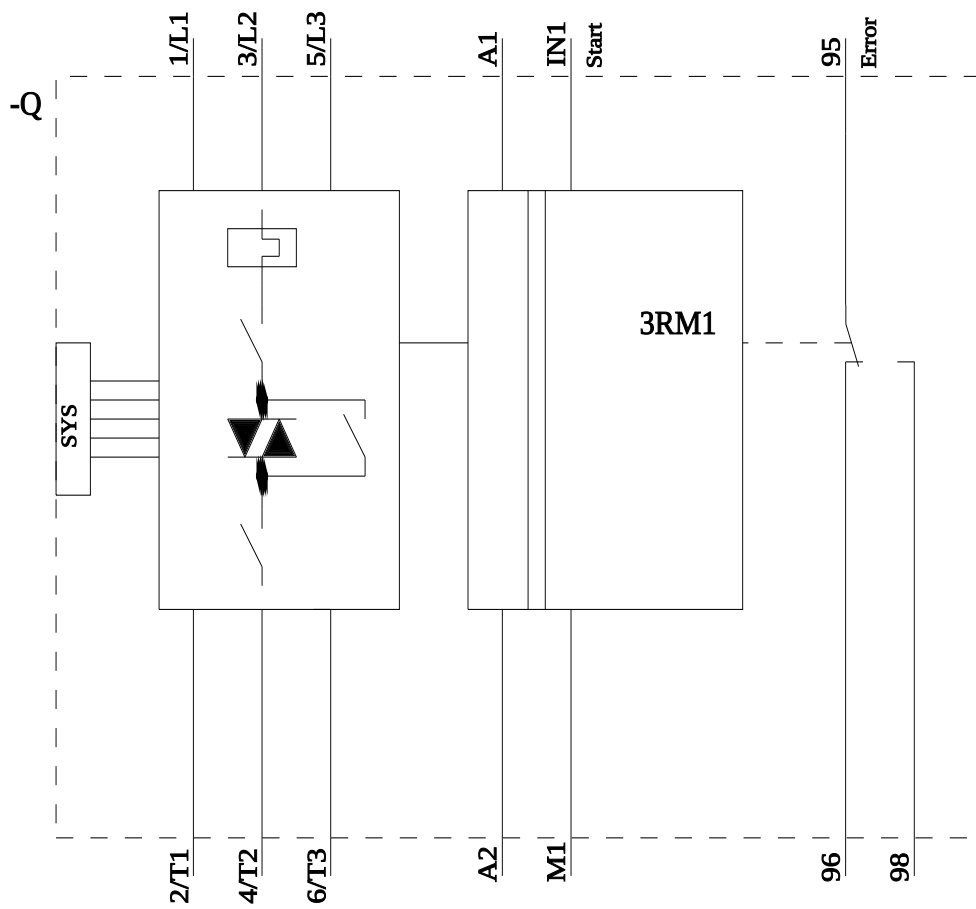
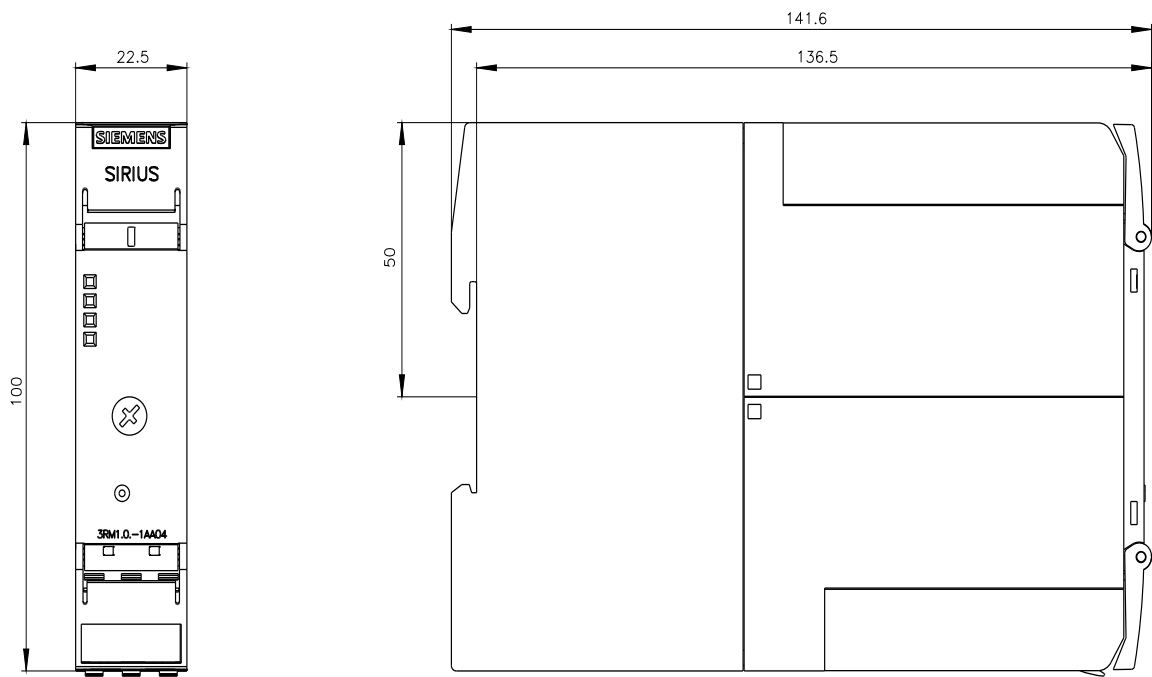
<https://support.industry.siemens.com/cs/ww/en/ps/3RM1101-1AA04>

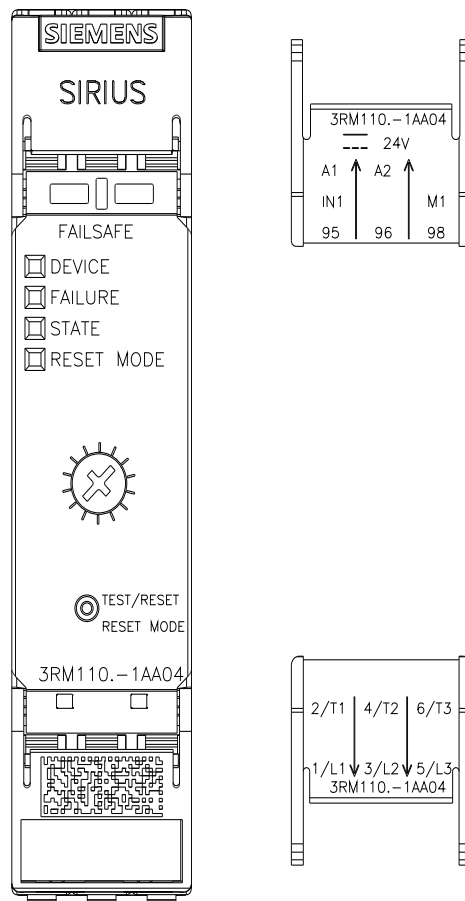
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1101-1AA04&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1101-1AA04&lang=en)

Characteristic curves

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





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