



Thermistor motor protection relay Standard evaluation unit 22.5 mm enclosure Spring-type terminal 2 change-over contacts US = 24 V-240 V AC/DC Manual/Auto/Remote reset with ATEX approval 2 LEDs (READY/TRIPPED) galvanic isolation Test/reset button Wire break monitoring Short circuit monitoring non-volatile

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|--|---|
| <b>product brand name</b>  | SIRIUS  |
| <b>product category</b>  | SIRIUS 3RN2 thermistor motor protection   |
| <b>product designation</b>   | Thermistor motor protection relay   |
| <b>design of the product</b>   | Standard evaluation unit with ATEX approval, open-circuit and short-circuit detection in the sensor circuit, non-volatile |
| <b>product type designation</b>  | 3RN2  |
| <b>General technical data</b>  |   |
| <b>product function</b>  | thermistor motor protection   |
| <b>display version LED</b>   | Yes   |
| insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value  | 300 V   |
| <b>degree of pollution</b>   | 3   |
| <b>surge voltage resistance rated value</b>  | 4 kV  |
| <b>protection class IP</b>   | IP20  |
| shock resistance according to IEC 60068-2-27   | 11g / 15 ms   |
| vibration resistance according to IEC 60068-2-6  | 10 ... 55 Hz: 0.35 mm   |
| mechanical service life (switching cycles) typical   | 10 000 000  |
| electrical endurance (switching cycles) at AC-15 at 230 V typical  | 100 000   |
| <b>thermal current of the switching element with contacts maximum</b>  | 5 A   |
| <b>reference code according to IEC 81346-2</b>   | K   |
| <b>Substance Prohibitance (Date)</b>   | 05/28/2009  |
| <b>Product Function</b>  |   |
| <b>product function</b>  |   |
| <ul style="list-style-type: none"> <li>• error memory</li> <li>• dynamic open-circuit detection</li> <li>• external reset</li> <li>• auto-RESET</li> <li>• manual RESET</li> </ul> | <ul style="list-style-type: none"> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> </ul>                 |
| <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> <li>• at 60 Hz rated value</li> </ul>   | <ul style="list-style-type: none"> <li>24 ... 240 V</li> <li>24 ... 240 V</li> </ul>                                      |
| <b>control supply voltage at DC</b>  |   |
| <ul style="list-style-type: none"> <li>• rated value</li> </ul>  | 24 ... 240 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  |

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|--|---|
| <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>inrush current peak</b>   |   |
| <ul style="list-style-type: none"> <li>• at 24 V</li> </ul>  | 0.7 A                                       |
| <ul style="list-style-type: none"> <li>• at 240 V</li> </ul>   | 12 A  |
| <b>duration of inrush current peak</b>   |   |
| <ul style="list-style-type: none"> <li>• at 24 V</li> </ul>  | 0.25 ms                                     |
| <ul style="list-style-type: none"> <li>• at 240 V</li> </ul>   | 0.2 ms                                      |
| <b>Measuring circuit</b>   |   |
| <b>buffering time in the event of power failure minimum</b>  | 40 ms                                       |
| <b>Precision</b>   |   |
| <b>relative metering precision</b>   | 2 %   |
| <b>Auxiliary circuit</b>   |   |
| <b>material of switching contacts</b>  | AgSnO <sub>2</sub>                          |
| <b>number of NC contacts for auxiliary contacts</b>  | 0   |
| <b>number of NO contacts for auxiliary contacts</b>  | 0   |
| number of CO contacts for auxiliary contacts   | 2   |
| <b>operational current of auxiliary contacts at DC-13</b>  |   |
| <ul style="list-style-type: none"> <li>• at 24 V</li> </ul>  | 1 A   |
| <ul style="list-style-type: none"> <li>• at 125 V</li> </ul>   | 0.2 A                                       |
| <ul style="list-style-type: none"> <li>• at 250 V</li> </ul>   | 0.1 A                                       |
| <b>Main circuit</b>  |   |
| <b>operating frequency rated value</b>   | 50 ... 60 Hz                                |
| ampacity of the output relay at AC-15 at 250 V at 50/60 Hz   | 3 A   |
| <b>ampacity of the output relay at DC-13</b>   |   |
| <ul style="list-style-type: none"> <li>• at 24 V</li> </ul>  | 1 A   |
| <ul style="list-style-type: none"> <li>• at 125 V</li> </ul>   | 0.2 A                                       |
| <b>continuous current of the DIAZED fuse link of the output relay</b>  | 6 A   |
| <b>Electromagnetic compatibility</b>   |   |
| <b>conducted interference</b>  |   |
| <ul style="list-style-type: none"> <li>• due to burst according to IEC 61000-4-4</li> </ul>                                    | 2 kV (power ports) / 1 kV (signal ports)    |
| <ul style="list-style-type: none"> <li>• due to conductor-earth surge according to IEC 61000-4-5</li> </ul>                    | 2 kV (line to ground)                       |
| <ul style="list-style-type: none"> <li>• due to conductor-conductor surge according to IEC 61000-4-5</li> </ul>                | 1 kV (line to line)                         |
| <b>electrostatic discharge according to IEC 61000-4-2</b>  | 6 kV contact discharge / 8 kV air discharge |
| <b>Galvanic isolation</b>  |   |
| <b>design of the electrical isolation</b>  | galvanic isolation                          |
| <b>galvanic isolation</b>  |   |
| <ul style="list-style-type: none"> <li>• between input and output</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>• between the outputs</li> </ul>  | Yes   |
| <ul style="list-style-type: none"> <li>• between the voltage supply and other circuits</li> </ul>                              | Yes   |
| <b>Safety related data</b>   |   |
| Safety Integrity Level (SIL) according to IEC 61508  | 1   |
| performance level (PL) according to EN ISO 13849-1   | c   |
| category according to EN ISO 13849-1   | 1   |
| <b>Safe failure fraction (SFF)</b>   | 74 %  |
| <b>average diagnostic coverage level (DC<sub>avg</sub>)</b>  | 18 %  |
| <b>failure rate [FIT]</b>  |   |
| <ul style="list-style-type: none"> <li>• at rate of recognizable hazardous failures (<math>\lambda_{dd}</math>)</li> </ul>     | 0.000000068 1/h                             |
| <ul style="list-style-type: none"> <li>• at rate of non-recognizable hazardous failures (<math>\lambda_{du}</math>)</li> </ul> | 0.000000031 1/h                             |
| PFHD with high demand rate according to EN 62061   | 0.000000038 1/h                             |

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|---|--|
| <b>PFDavg with low demand rate according to IEC 61508</b>   | 0.0041   |
| <b>MTBF</b>   | 97 y   |
| <b>MTTFd</b>  | 303 y  |
| <b>hardware fault tolerance according to IEC 61508</b>  | 0  |
| <b>Connections/ Terminals</b>   |  |
| <b>product component removable terminal for auxiliary and control circuit</b>   | Yes  |
| <b>type of electrical connection</b><br>• for auxiliary and control circuit   | spring-loaded terminal (push-in)<br>spring-loaded terminals (push-in)  |
| <b>type of connectable conductor cross-sections</b><br>• solid<br>• finely stranded with core end processing<br>• finely stranded without core end processing<br>• at AWG cables solid<br>• at AWG cables stranded  | 0.5 ... 4 mm <sup>2</sup><br>0.5 ... 2.5 mm <sup>2</sup><br>0.5 ... 4 mm <sup>2</sup><br>20 ... 12<br>20 ... 12      |
| <b>connectable conductor cross-section</b><br>• solid<br>• finely stranded with core end processing<br>• finely stranded without core end processing  | 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>AWG number as coded connectable conductor cross section</b><br>• solid<br>• stranded   | 20 ... 12<br>20 ... 12   |
| <b>Installation/ mounting/ dimensions</b>   |  |
| <b>mounting position</b>  | any  |
| <b>fastening method</b>   | screw and snap-on mounting onto 35 mm standard mounting rail   |
| <b>height</b>   | 100 mm   |
| <b>width</b>  | 22.5 mm  |
| <b>depth</b>  | 90 mm  |
| <b>required spacing</b><br>• with side-by-side mounting<br>— forwards<br>— backwards<br>— upwards<br>— downwards<br>— at the side<br>• for grounded parts<br>— forwards<br>— backwards<br>— upwards<br>— at the side<br>— downwards<br>• for live parts<br>— forwards<br>— backwards<br>— upwards<br>— downwards<br>— at the side | 0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm<br>0 mm |
| <b>Ambient conditions</b>   |  |
| installation altitude at height above sea level maximum   | 2 000 m  |
| <b>ambient temperature</b><br>• during operation<br>• during storage<br>• during transport  | -25 ... +60 °C<br>-40 ... +85 °C<br>-40 ... +85 °C   |
| relative humidity during operation  | 70 %   |
| <b>explosion protection category for dust</b>   | [Ex t] [Ex p]  |
| <b>explosion protection category for gas</b>  | [Ex e] [Ex d] [Ex px]  |
| <b>Certificates/ approvals</b>  |  |
| <b>General Product Approval</b>   | <b>EMC</b>   |



[Confirmation](#)



| For use in hazardous locations | Declaration of Conformity | Test Certificates | Marine / Shipping |
|--------------------------------|---------------------------|-------------------|-------------------|
|--------------------------------|---------------------------|-------------------|-------------------|



[Type Test Certificates/Test Report](#)



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Further information

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=3RN2012-2BW30>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2012-2BW30>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-2BW30>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RN2012-2BW30&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2012-2BW30&lang=en)

Characteristic: Derating

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-2BW30/manual>

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