



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

|                          |                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| product brand name       | SIRIUS                                                                                                                                        |
| product category         | SIRIUS 3RN2 thermistor motor protection                                                                                                       |
| product designation      | Thermistor motor protection relay                                                                                                             |
| design of the product    | Standard evaluation unit with ATEX approval, open-circuit and short-circuit detection in the sensor circuit, safe disconnection, non-volatile |
| product type designation | 3RN2                                                                                                                                          |

| General technical data                                                                                        |                                                                                                       |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| product function                                                                                              | thermistor motor protection                                                                           |
| display version LED                                                                                           | Yes                                                                                                   |
| insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value | 300 V                                                                                                 |
| degree of pollution                                                                                           | 3                                                                                                     |
| surge voltage resistance rated value                                                                          | 6 kV                                                                                                  |
| maximum permissible voltage for protective separation                                                         |                                                                                                       |
| • between auxiliary and auxiliary circuit                                                                     | 300 V                                                                                                 |
| • between control and auxiliary circuit                                                                       | 300 V                                                                                                 |
| protection class IP                                                                                           | IP20                                                                                                  |
| shock resistance according to IEC 60068-2-27                                                                  | 11g / 15 ms                                                                                           |
| mechanical service life (operating cycles) typical                                                            | 10 000 000                                                                                            |
| electrical endurance (operating cycles) at AC-15 at 230 V typical                                             | 100 000                                                                                               |
| thermal current of the switching element with contacts maximum                                                | 5 A                                                                                                   |
| reference code according to IEC 81346-2                                                                       | K                                                                                                     |
| Substance Prohibitance (Date)                                                                                 | 05/28/2009                                                                                            |
| SVHC substance name                                                                                           | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8<br>Dicyclohexyl phthalate (DCHP) - 84-61-7 |

| Product Function                 |     |
|----------------------------------|-----|
| product function                 |     |
| • error memory                   | Yes |
| • dynamic open-circuit detection | Yes |
| • external reset                 | Yes |
| • auto-RESET                     | Yes |
| • manual RESET                   | Yes |

| Control circuit/ Control                      |              |
|-----------------------------------------------|--------------|
| type of voltage of the control supply voltage | AC/DC        |
| control supply voltage at AC                  |              |
| • at 50 Hz rated value                        | 24 ... 240 V |
| • at 60 Hz rated value                        | 24 ... 240 V |
| control supply voltage at DC rated value      |              |
| •                                             | 24 ... 240 V |

|                                                                                                      |                                             |
|------------------------------------------------------------------------------------------------------|---------------------------------------------|
| <b>operating range factor control supply voltage rated value at DC</b>                               |                                             |
| • initial value                                                                                      | 0.85                                        |
| • full-scale value                                                                                   | 1.1                                         |
| <b>operating range factor control supply voltage rated value at AC at 50 Hz</b>                      |                                             |
| • initial value                                                                                      | 0.85                                        |
| • full-scale value                                                                                   | 1.1                                         |
| <b>operating range factor control supply voltage rated value at AC at 60 Hz</b>                      |                                             |
| • initial value                                                                                      | 0.85                                        |
| • full-scale value                                                                                   | 1.1                                         |
| <b>inrush current peak</b>                                                                           |                                             |
| • at 24 V                                                                                            | 0.7 A                                       |
| • at 240 V                                                                                           | 12 A                                        |
| <b>duration of inrush current peak</b>                                                               |                                             |
| • at 24 V                                                                                            | 0.25 ms                                     |
| • at 240 V                                                                                           | 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>                                                                | AgSnO2                                      |
| <b>number of NC contacts for auxiliary contacts</b>                                                  | 0                                           |
| <b>number of NO contacts for auxiliary contacts</b>                                                  | 0                                           |
| <b>number of CO contacts for auxiliary contacts</b>                                                  | 2                                           |
| <b>operational current of auxiliary contacts at DC-13</b>                                            |                                             |
| • at 24 V                                                                                            | 1 A                                         |
| • at 125 V                                                                                           | 0.2 A                                       |
| • at 250 V                                                                                           | 0.1 A                                       |
| <b>Main circuit</b>                                                                                  |                                             |
| <b>operating frequency rated value</b>                                                               | 50 ... 60 Hz                                |
| <b>ampacity of the output relay at AC-15 at 250 V at 50/60 Hz</b>                                    | 3 A                                         |
| <b>ampacity of the output relay at DC-13</b>                                                         |                                             |
| • at 24 V                                                                                            | 1 A                                         |
| • at 125 V                                                                                           | 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>                                                                        |                                             |
| • due to burst according to IEC 61000-4-4                                                            | 2 kV (power ports) / 1 kV (signal ports)    |
| • due to conductor-earth surge according to IEC 61000-4-5                                            | 2 kV (line to ground)                       |
| • due to conductor-conductor surge according to IEC 61000-4-5                                        | 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>                                                            | Protective separation                       |
| <b>galvanic isolation</b>                                                                            |                                             |
| • between input and output                                                                           | Yes                                         |
| • between the outputs                                                                                | Yes                                         |
| • between the voltage supply and other circuits                                                      | Yes                                         |
| <b>Safety related data</b>                                                                           |                                             |
| <b>failure rate [FIT] at rate of recognizable hazardous failures (<math>\lambda_{dd}</math>)</b>     | 6.8E-8 1/h                                  |
| <b>failure rate [FIT] at rate of non-recognizable hazardous failures (<math>\lambda_{du}</math>)</b> | 3.08E-7 1/h                                 |
| <b>average diagnostic coverage level (DCavg)</b>                                                     | 18 %                                        |
| <b>MTBF</b>                                                                                          | 97 a                                        |
| <b>MTTFd</b>                                                                                         | 303 a                                       |
| <b>IEC 62061</b>                                                                                     |                                             |
| PFHD with high demand rate according to IEC 62061                                                    | 3.76E-7 1/h                                 |

|                                                                        |                                                                      |
|------------------------------------------------------------------------|----------------------------------------------------------------------|
| ISO 13849                                                              |                                                                      |
| performance level (PL) according to EN ISO 13849-1                     | c                                                                    |
| category according to EN ISO 13849-1                                   | 1                                                                    |
| IEC 61508                                                              |                                                                      |
| Safety Integrity Level (SIL) according to IEC 61508                    | 1                                                                    |
| <b>PFDavg with low demand rate according to IEC 61508</b>              | 0.0041                                                               |
| <b>Safe failure fraction (SFF)</b>                                     | 74 %                                                                 |
| <b>Connections/ Terminals</b>                                          |                                                                      |
| product component removable terminal for auxiliary and control circuit | Yes                                                                  |
| <b>type of electrical connection</b>                                   | screw-type terminals                                                 |
| • for auxiliary and control circuit                                    | screw-type terminals                                                 |
| <b>type of connectable conductor cross-sections</b>                    |                                                                      |
| • solid                                                                | 1x (0.5 ... 4.0 mm <sup>2</sup> ), 2x (0.5 ... 2.5 mm <sup>2</sup> ) |
| • finely stranded with core end processing                             | 1x (0.5 ... 4 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )   |
| • for AWG cables solid                                                 | 1x (20 ... 12), 2x (20 ... 14)                                       |
| <b>connectable conductor cross-section</b>                             |                                                                      |
| • solid                                                                | 0.5 ... 4 mm <sup>2</sup>                                            |
| • finely stranded with core end processing                             | 0.5 ... 4 mm <sup>2</sup>                                            |
| <b>AWG number as coded connectable conductor cross section</b>         |                                                                      |
| • solid                                                                | 20 ... 12                                                            |
| • stranded                                                             | 20 ... 12                                                            |
| tightening torque with screw-type terminals                            | 0.6 ... 0.8 N·m                                                      |
| <b>Installation/ mounting/ dimensions</b>                              |                                                                      |
| <b>mounting position</b>                                               | any                                                                  |
| <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>                                                           | 90 mm                                                                |
| <b>required spacing</b>                                                |                                                                      |
| • with side-by-side mounting                                           |                                                                      |
| — forwards                                                             | 0 mm                                                                 |
| — backwards                                                            | 0 mm                                                                 |
| — upwards                                                              | 0 mm                                                                 |
| — downwards                                                            | 0 mm                                                                 |
| — at the side                                                          | 0 mm                                                                 |
| • for grounded parts                                                   |                                                                      |
| — forwards                                                             | 0 mm                                                                 |
| — backwards                                                            | 0 mm                                                                 |
| — upwards                                                              | 0 mm                                                                 |
| — at the side                                                          | 0 mm                                                                 |
| — downwards                                                            | 0 mm                                                                 |
| • for live parts                                                       |                                                                      |
| — forwards                                                             | 0 mm                                                                 |
| — backwards                                                            | 0 mm                                                                 |
| — upwards                                                              | 0 mm                                                                 |
| — downwards                                                            | 0 mm                                                                 |
| — at the side                                                          | 0 mm                                                                 |
| <b>Ambient conditions</b>                                              |                                                                      |
| installation altitude at height above sea level maximum                | 2 000 m                                                              |
| <b>ambient temperature</b>                                             |                                                                      |
| • during operation                                                     | -25 ... +60 °C                                                       |
| • during storage                                                       | -40 ... +85 °C                                                       |
| • during transport                                                     | -40 ... +85 °C                                                       |
| relative humidity during operation maximum                             | 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>Approvals Certificates</b>                                          |                                                                      |
| <b>General Product Approval</b>                                        |                                                                      |



[Confirmation](#)



EMV

For use in hazardous locations

Test Certificates

Marine / Shipping



[Type Test Certificates/Test Report](#)



Marine / Shipping

other

[Confirmation](#)



#### 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=3RN2013-1BW30>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2013-1BW30>

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

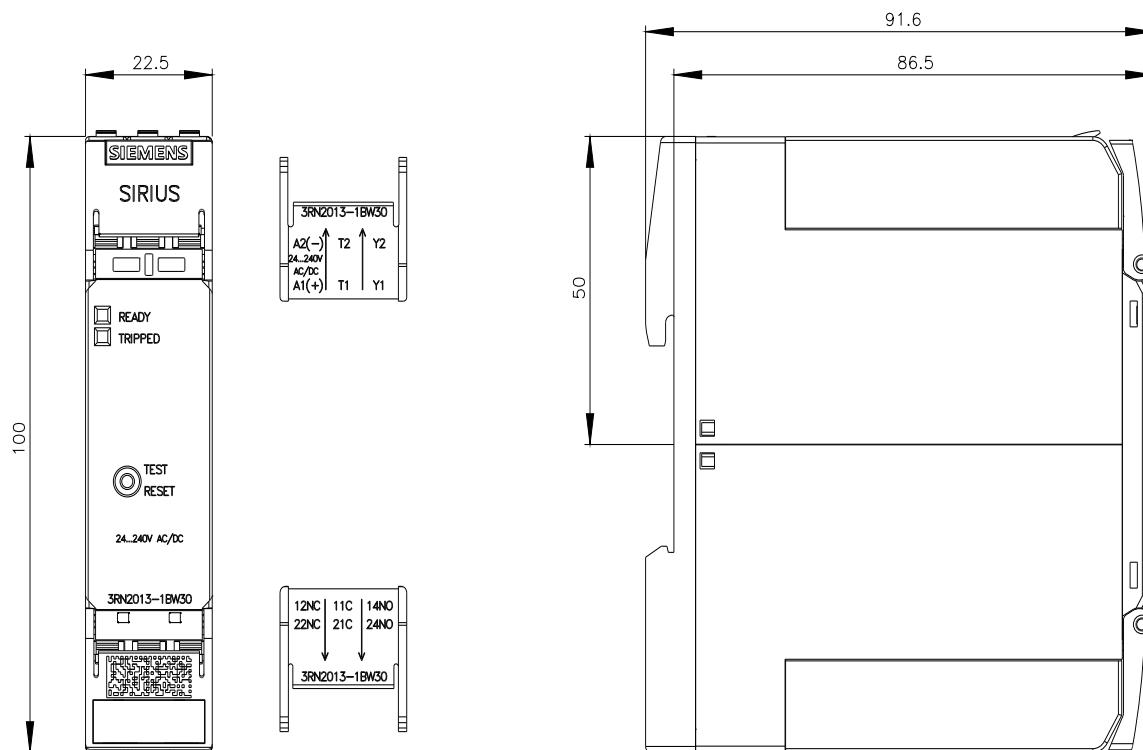
<https://support.industry.siemens.com/cs/ww/en/ps/3RN2013-1BW30>

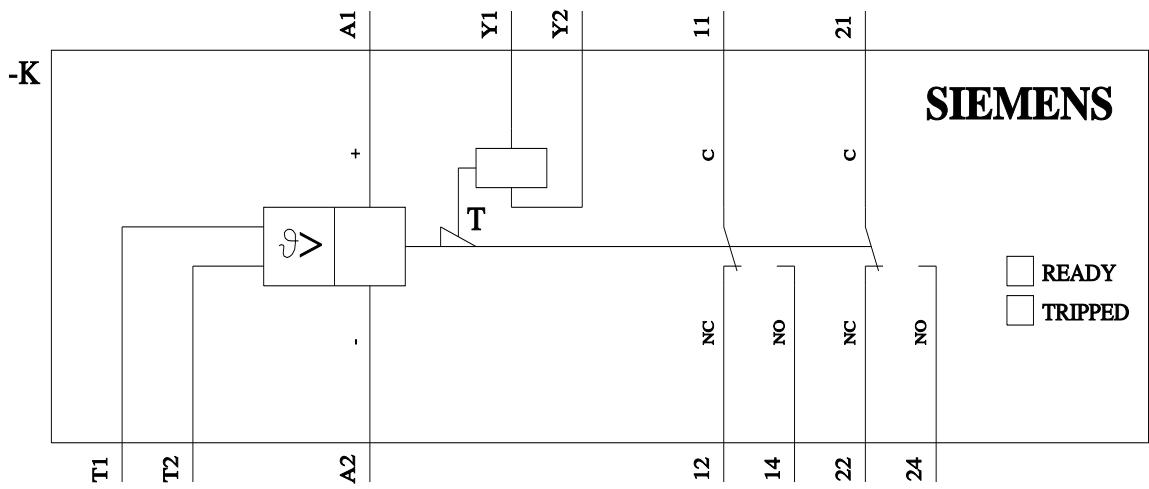
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RN2013-1BW30&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2013-1BW30&lang=en)

Characteristic: Derating

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2013-1BW30/manual>





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