



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) 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, 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 | 4 kV |
| protection class IP | 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 (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 |
| 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 |
| operating range factor control supply voltage rated value at DC | |
| • initial value | 0.85 |
| • full-scale value | 1.1 |
| operating range factor control supply voltage rated value at | |

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| AC at 50 Hz | |
| <ul style="list-style-type: none"> initial value full-scale value | 0.85 1.1 |
| operating range factor control supply voltage rated value at AC at 60 Hz | |
| <ul style="list-style-type: none"> initial value full-scale value | 0.85 1.1 |
| inrush current peak | |
| <ul style="list-style-type: none"> at 24 V at 240 V | 0.7 A 12 A |
| duration of inrush current peak | |
| <ul style="list-style-type: none"> at 24 V at 240 V | 0.25 ms 0.2 ms |
| Measuring circuit | |
| buffering time in the event of power failure minimum | 40 ms |
| Precision | |
| relative metering precision | 2 % |
| Auxiliary circuit | |
| material of switching contacts | AgSnO ₂ |
| number of NC contacts for auxiliary contacts | 0 |
| number of NO contacts for auxiliary contacts | 0 |
| number of CO contacts for auxiliary contacts | 2 |
| operational current of auxiliary contacts at DC-13 | |
| <ul style="list-style-type: none"> at 24 V at 125 V at 250 V | 1 A 0.2 A 0.1 A |
| Main circuit | |
| operating frequency rated value | 50 ... 60 Hz |
| ampacity of the output relay at AC-15 at 250 V at 50/60 Hz | 3 A |
| ampacity of the output relay at DC-13 | |
| <ul style="list-style-type: none"> at 24 V at 125 V | 1 A 0.2 A |
| continuous current of the DIAZED fuse link of the output relay | 6 A |
| Electromagnetic compatibility | |
| conducted interference | |
| <ul style="list-style-type: none"> due to burst according to IEC 61000-4-4 due to conductor-earth surge according to IEC 61000-4-5 due to conductor-conductor surge according to IEC 61000-4-5 | 2 kV (power ports) / 1 kV (signal ports) 2 kV (line to ground) 1 kV (line to line) |
| electrostatic discharge according to IEC 61000-4-2 | 6 kV contact discharge / 8 kV air discharge |
| Galvanic isolation | |
| design of the electrical isolation | galvanic isolation |
| galvanic isolation | |
| <ul style="list-style-type: none"> between input and output between the outputs between the voltage supply and other circuits | Yes Yes Yes |
| Safety related data | |
| 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 |
| Safe failure fraction (SFF) | 74 % |
| average diagnostic coverage level (DCavg) | 18 % |
| failure rate [FIT] | |
| <ul style="list-style-type: none"> at rate of recognizable hazardous failures (λ_{dd}) at rate of non-recognizable hazardous failures (λ_{du}) | 6.8E-8 1/h 3.08E-7 1/h |
| PFHD with high demand rate according to EN 62061 | 3.76E-7 1/h |
| PFDavg with low demand rate according to IEC 61508 | 0.0041 |
| MTBF | 97 a |
| MTTFd | 303 a |
| hardware fault tolerance according to IEC 61508 | 0 |

| Connections/ Terminals | |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product component removable terminal for auxiliary and control circuit | Yes |
| type of electrical connection • for auxiliary and control circuit | screw-type terminals screw-type terminals |
| type of connectable conductor cross-sections • solid • finely stranded with core end processing • for AWG cables solid | 1x (0.5 ... 4.0 mm ²), 2x (0.5 ... 2.5 mm ²) 1x (0.5 ... 4 mm ²), 2x (0.5 ... 1.5 mm ²) 1x (20 ... 12), 2x (20 ... 14) |
| connectable conductor cross-section • solid • finely stranded with core end processing | 0.5 ... 4 mm ² 0.5 ... 4 mm ² |
| AWG number as coded connectable conductor cross section • solid • stranded | 20 ... 12 20 ... 12 |
| tightening torque with screw-type terminals | 0.6 ... 0.8 N·m |

| Installation/ mounting/ dimensions | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| mounting position | any |
| fastening method | screw and snap-on mounting onto 35 mm DIN rail |
| height | 100 mm |
| width | 22.5 mm |
| depth | 90 mm |
| required spacing • with side-by-side mounting — forwards — backwards — upwards — downwards — at the side • for grounded parts — forwards — backwards — upwards — at the side — downwards • for live parts — forwards — backwards — upwards — downwards — at the side | 0 mm 0 mm |

| Ambient conditions | |
|--------------------------------------------------------------------------------------------|----------------------------------------------------|
| installation altitude at height above sea level maximum | 2 000 m |
| ambient temperature • during operation • during storage • during transport | -25 ... +60 °C -40 ... +85 °C -40 ... +85 °C |
| relative humidity during operation | 70 % |
| explosion protection category for dust | [Ex t] [Ex p] |
| explosion protection category for gas | [Ex e] [Ex d] [Ex px] |

| Certificates/ approvals | |
|--------------------------|-----|
| General Product Approval | EMC |



[Confirmation](#)



For use in hazardous locations

Declaration of Conformity

Test Certificates

Marine / Shipping



[Explosion Protection Certificate](#)



[Type Test Certificates/Test Report](#)



Marine / Shipping

other



[Confirmation](#)

Further information

Siemens has decided to exit the Russian market (see here).

<https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business>

Siemens is working on the renewal of the current EAC certificates.

Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).

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=3RN2012-1BW30>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2012-1BW30>

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

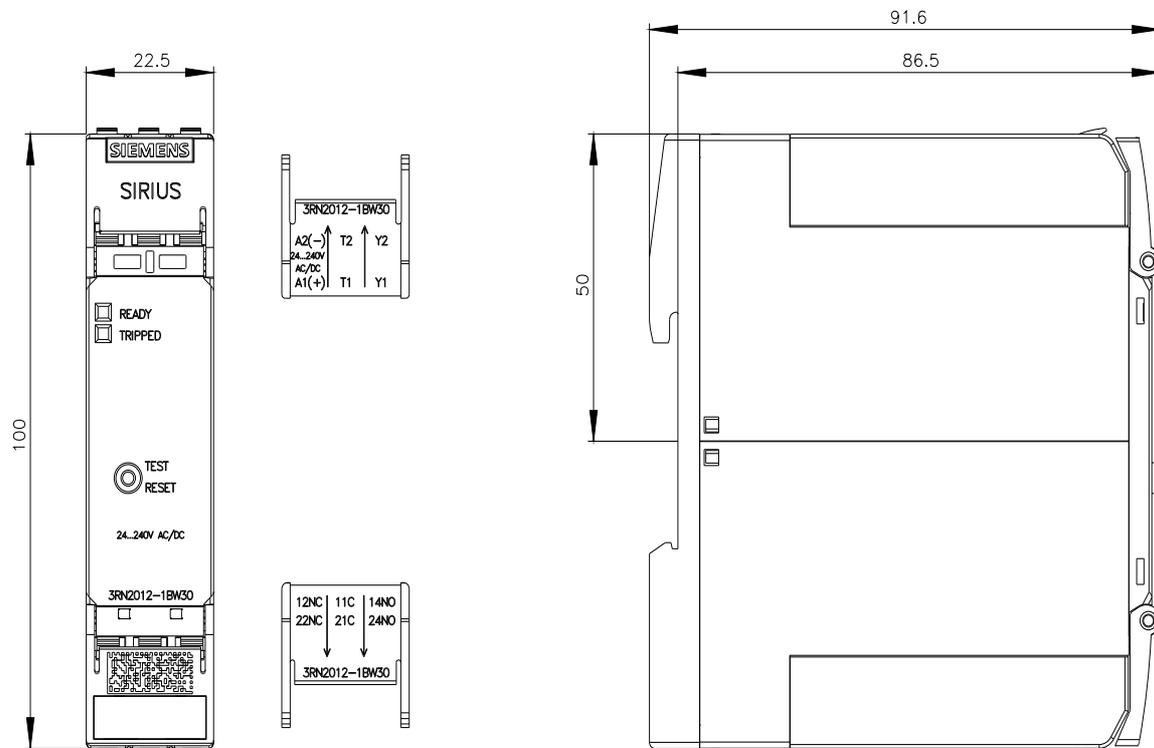
<https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BW30>

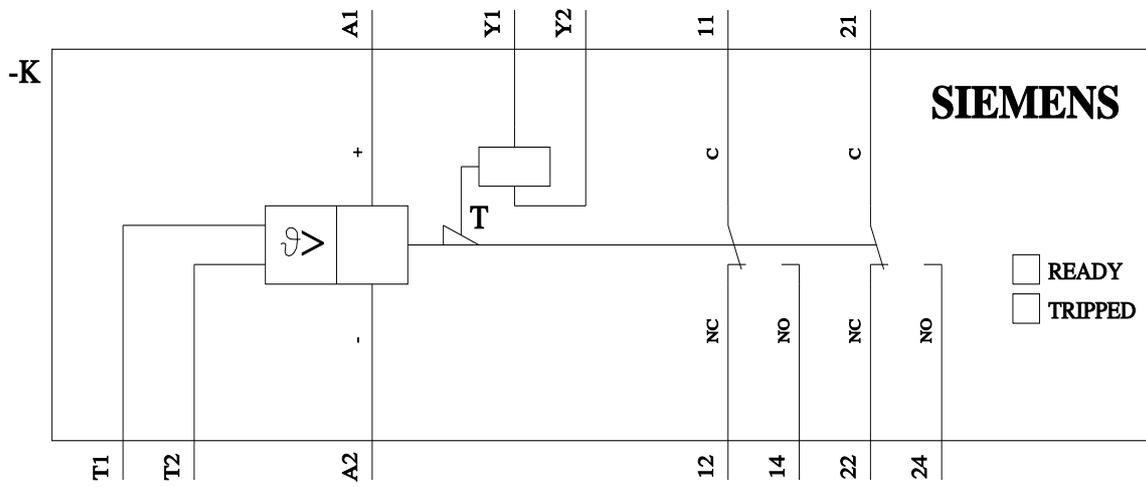
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2012-1BW30&lang=en

Characteristic: Derating

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BW30/manual>





last modified:

11/21/2022 