



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

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| 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 |
| power loss [W] for rated value of the current | |
| • at AC in hot operating state | 1.7 W |
| • at DC in hot operating state | 1.7 W |
| 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 |
| 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 |
| SVHC substance name | Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 |
| Weight | 0.192 kg |
| 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 | |

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| <ul style="list-style-type: none"> • at 50 Hz rated value • 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 | |
| <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 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 | AgSnO2 |
| 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 | Protective separation |
| 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 | |
| failure rate [FIT] at rate of recognizable hazardous failures (λ_{dd}) | 6.8E-8 1/h |
| failure rate [FIT] at rate of non-recognizable hazardous failures (λ_{du}) | 3.08E-7 1/h |
| average diagnostic coverage level (DCavg) | 18 % |
| MTBF | 97 a |

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| MTTFd | 303 a |
| IEC 62061 | |
| 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 | PL c |
| category according to EN ISO 13849-1 | 1 |
| IEC 61508 | |
| Safety Integrity Level (SIL) according to IEC 61508 | 1 |
| safety device type according to IEC 61508-2 | Type B |
| PFDavg with low demand rate according to IEC 61508 | 0.0041 |
| Safe failure fraction (SFF) | 74 % |
| hardware fault tolerance according to IEC 61508 | 0 |
| T1 value for proof test interval or service life according to IEC 61508 | 3 a |
| Connections/ Terminals | |
| product component removable terminal for auxiliary and control circuit | Yes |
| type of electrical connection | screw terminal |
| • for auxiliary and control circuit | screw-type terminals |
| type of connectable conductor cross-sections | |
| • solid | 1x (0.5 ... 4.0 mm ²), 2x (0.5 ... 2.5 mm ²) |
| • finely stranded with core end processing | 1x (0.5 ... 4 mm ²), 2x (0.5 ... 1.5 mm ²) |
| • for AWG cables solid | 1x (20 ... 12), 2x (20 ... 14) |
| connectable conductor cross-section | |
| • solid | 0.5 ... 4 mm ² |
| • finely stranded with core end processing | 0.5 ... 4 mm ² |
| AWG number as coded connectable conductor cross section | |
| • solid | 20 ... 12 |
| • stranded | 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 | 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 |
| Ambient conditions | |
| installation altitude at height above sea level maximum | 2 000 m |
| ambient temperature | |
| • during operation | -25 ... +60 °C |
| • during storage | -40 ... +85 °C |

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| • during transport | -40 ... +85 °C |
| relative humidity during operation maximum | 70 % |
| explosion protection category for dust | [Ex t] [Ex p] |
| explosion protection category for gas | [Ex e] [Ex d] [Ex px] |

Approvals Certificates

General Product Approval



[Confirmation](#)



| EMV | For use in hazardous locations | Test Certificates | Marine / Shipping |
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[Type Test Certificates/Test Report](#)



| Marine / Shipping | other | Environment |
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[Confirmation](#)

[Environmental Confirmations](#)

Further information

Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

Information- and Downloadcenter (Catalogs, Brochures,...)

<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=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

Characteristic: Derating

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

