



thermistor motor protection relay standard evaluation unit 22.5 mm enclosure screw terminal 2 changeover contacts  $U_s = 24\text{ V-240 V AC/DC}$  manual/auto/remote RESET with ATEX approval 2 LEDs (ready/tripped) safe electrical 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
<b>General technical data</b>	
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
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 24 V typical	100 000
• 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 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1
Weight	0.182 kg
<b>Product Function</b>	
product function	
• error memory	Yes
• dynamic open-circuit detection	Yes
• external reset	Yes
• auto-RESET	Yes
• manual RESET	Yes
<b>Control circuit/ Control</b>	
type of voltage of the control supply voltage	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>	24 ... 240 V 24 ... 240 V
<b>control supply voltage at DC rated value</b>	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> <li>full-scale value</li> </ul>	0.85 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> <li>full-scale value</li> </ul>	0.85 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> <li>full-scale value</li> </ul>	0.85 1.1
<b>inrush current peak</b>	
<ul style="list-style-type: none"> <li>at 24 V</li> <li>at 240 V</li> </ul>	0.7 A 12 A
<b>duration of inrush current peak</b>	
<ul style="list-style-type: none"> <li>at 24 V</li> <li>at 240 V</li> </ul>	0.25 ms 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
number of CO contacts for auxiliary contacts	2
operational current of auxiliary contacts at AC-15 maximum	3 A
<b>operational current of auxiliary contacts at DC-13</b>	
<ul style="list-style-type: none"> <li>at 24 V</li> <li>at 125 V</li> <li>at 250 V</li> </ul>	1 A 0.2 A 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> <li>at 125 V</li> </ul>	1 A 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> <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> </ul>	2 kV (power ports) / 1 kV (signal ports) 2 kV (line to ground) 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>	
<ul style="list-style-type: none"> <li>between input and output</li> <li>between the outputs</li> <li>between the voltage supply and other circuits</li> </ul>	Yes Yes 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>	
<b>Safety Integrity Level (SIL) according to IEC 62061</b>	SIL 1
PFHD with high demand rate according to IEC 62061	3.76E-7 1/h
<b>ISO 13849</b>	
performance level (PL) according to EN ISO 13849-1	c
category according to EN ISO 13849-1	1
<b>performance level (PL) according to ISO 13849-1</b>	PL c
<b>IEC 61508</b>	
Safety Integrity Level (SIL) according to IEC 61508	1
<b>safety device type according to IEC 61508-2</b>	Type B
PFDavg with low demand rate according to IEC 61508	0.0041
<b>Safe failure fraction (SFF)</b>	74 %
hardware fault tolerance according to IEC 61508	0
T1 value for proof test interval or service life according to IEC 61508	3 a
<b>Connections/ Terminals</b>	
<b>product component removable terminal for auxiliary and control circuit</b>	Yes
<b>type of electrical connection</b>	screw terminal
• for auxiliary and control circuit	screw-type terminals
<b>type of connectable conductor cross-sections</b>	
• solid	1x (0.5 ... 4 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]

### Approvals Certificates

General Product Approval	EMV
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For use in hazardous locations	Test Certificates	Maritime application
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[Miscellaneous](#)

[Type Test Certificates/Test Report](#)



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 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=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)



