



thermistor motor protection relay standard evaluation unit 22.5 mm enclosure screw terminal 2 changeover contacts  $U_s = 24 \text{ V AC/DC}$  manual/remote RESET with ATEX approval 2 LEDs (ready/tripped) electrical isolation test/RESET button wire-break monitoring short-circuit monitoring

<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
<b>product type designation</b>	3RN2
<b>General technical data</b>	
<b>product function</b>	thermistor motor protection
<b>display version LED</b>	Yes
<b>power loss [W] for rated value of the current</b>	
• at AC in hot operating state	1.2 W
• at DC in hot operating state	1.2 W
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>shock resistance according to IEC 60068-2-27</b>	11g / 15 ms
<b>vibration resistance according to IEC 60068-2-6</b>	10 ... 55 Hz: 0.35 mm
<b>mechanical service life (operating cycles) typical</b>	10 000 000
<b>electrical endurance (operating cycles) at AC-15</b>	
• at 24 V typical	100 000
• 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>	07/01/2006
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1
<b>Weight</b>	0.169 kg
<b>Product Function</b>	
<b>product function</b>	
• error memory	No
• dynamic open-circuit detection	Yes
• external reset	Yes
• auto-RESET	No
• manual RESET	Yes
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	AC/DC
<b>control supply voltage at AC</b>	
• at 50 Hz rated value	24 V
• at 60 Hz rated value	24 V

<b>control supply voltage at DC rated value</b>	24 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	0.5 A
<b>duration of inrush current peak</b>	
• at 24 V	50 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
operational current of auxiliary contacts at AC-15 maximum	3 A
<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
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>	
• 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>	galvanic isolation
<b>galvanic isolation</b>	
• between input and output	Yes
• between the outputs	Yes
• between the voltage supply and other circuits	No
<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
IEC 62061	
<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 %
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	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=3RN2011-1BA30>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2011-1BA30>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2011-1BA30>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RN2011-1BA30&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2011-1BA30&lang=en)



