



Thermistor motor protection relay Device for warning and switching-off 22.5 mm enclosure Spring-type terminal 1 NO contact + 1 CO contact US = 24 V-240 V AC/DC Manual/Auto/Remote reset with ATEX approval 3 LEDs (READY/WARNING/TRIPPED) Safe galvanic isolation Test/reset button Wire break monitoring Short circuit monitoring non-volatile 2 separate PTC sensor circuits

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 and 2 sensor circuits for warning and disconnection, open-circuit and short-circuit detection in both sensor circuits, 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 <ul style="list-style-type: none"> <li>• between auxiliary and auxiliary circuit</li> <li>• between control and auxiliary circuit</li> </ul>	300 V 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

### Product Function

product function <ul style="list-style-type: none"> <li>• error memory</li> <li>• dynamic open-circuit detection</li> <li>• external reset</li> <li>• auto-RESET</li> <li>• manual RESET</li> </ul>	Yes Yes Yes Yes Yes
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### Control circuit/ Control

type of voltage of the control supply voltage	AC/DC
control supply voltage at AC <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
control supply voltage at DC <ul style="list-style-type: none"> <li>• rated value</li> </ul>	24 ... 240 V
operating range factor control supply voltage rated value at	

<b>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>		30 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>		1
<b>number of CO contacts for auxiliary contacts</b>		1
<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>Safety Integrity Level (SIL) according to IEC 61508</b>		1
<b>performance level (PL) according to EN ISO 13849-1</b>		c
<b>category according to EN ISO 13849-1</b>		1
<b>Safe failure fraction (SFF)</b>		74 %
<b>average diagnostic coverage level (DCavg)</b>		18 %
<b>failure rate [FIT]</b>	• at rate of recognizable hazardous failures ( $\lambda_{dd}$ )	6.8E-8 1/h
	• at rate of non-recognizable hazardous failures ( $\lambda_{du}$ )	3.08E-7 1/h
<b>PFHD with high demand rate according to EN 62061</b>		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
<b>Connections/ Terminals</b>	
product component removable terminal for auxiliary and control circuit	Yes
type of electrical connection	spring-loaded terminal (push-in)
• for auxiliary and control circuit	spring-loaded terminals (push-in)
type of connectable conductor cross-sections	
• solid	0.5 ... 4 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 2.5 mm <sup>2</sup>
• finely stranded without core end processing	0.5 ... 4 mm <sup>2</sup>
• for AWG cables solid	20 ... 12
• for AWG cables stranded	20 ... 12
connectable conductor cross-section	
• solid	0.5 ... 4 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 2.5 mm <sup>2</sup>
• finely stranded without core end processing	0.5 ... 4 mm <sup>2</sup>
AWG number as coded connectable conductor cross section	
• solid	20 ... 12
• stranded	20 ... 12
<b>Installation/ mounting/ dimensions</b>	
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
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	
• during operation	-25 ... +60 °C
• during storage	-40 ... +85 °C
• during transport	-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]
<b>Certificates/ approvals</b>	
General Product Approval	EMC



[Confirmation](#)



For use in hazardous locations

Declaration of Conformity

Test Certificates

Marine / Shipping



[Explosion Protection Certificate](#)



EG-Konf.



[Type Test Certificates/Test Report](#)



LRS

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=3RN2023-2DW30>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2023-2DW30>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2023-2DW30>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RN2023-2DW30&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2023-2DW30&lang=en)

Characteristic: Derating

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2023-2DW30/manual>



