

Thermistor motor protection relay Standard evaluation unit 22.5 mm enclosure screw terminal 2 change-over contacts US = 24 V AC/DC Manul/Remote-Reset with ATEX approval 2 LEDs (READY/TRIPPED) galvanic isolation Test/reset button Wire break monitoring Short circuit monitoring



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
Product type designation	3RN2

General technical data	
Display version LED	Yes
Power loss [W] for rated value of the current	
• 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
Degree of pollution	3
Surge voltage resistance rated value	4 kV
Protection class IP	IP20
Shock resistance	

• acc. to IEC 60068-2-27	11g / 15 ms
<b>Vibration resistance</b>	
• acc. to IEC 60068-2-6	10 ... 55 Hz: 0.35 mm
<b>Mechanical service life (switching cycles)</b>	
• typical	10 000 000
<b>Electrical endurance (switching cycles)</b>	
• at AC-15 at 230 V typical	100 000
<b>Thermal current of the switching element with contacts maximum</b>	5 A
<b>Reference code acc. to DIN EN 81346-2</b>	K

#### Control circuit/ Control

<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 ... 24 V
• at 60 Hz rated value	24 ... 24 V
<b>Control supply voltage at DC</b>	
• rated value	24 ... 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

#### Measuring circuit

<b>Buffering time in the event of power failure minimum</b>	40 ms
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#### Precision

<b>Relative metering precision</b>	2 %
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#### Auxiliary circuit

<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

<b>Number of CO contacts</b>	
<ul style="list-style-type: none"> <li>• for auxiliary contacts</li> </ul>	2
<b>Operating 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

<b>Outputs</b>	
<b>Ampacity of the output relay at AC-15</b>	
<ul style="list-style-type: none"> <li>• at 250 V at 50/60 Hz</li> </ul>	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 acc. to IEC 61000-4-4</li> <li>• due to conductor-earth surge acc. to IEC 61000-4-5</li> <li>• due to conductor-conductor surge acc. 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 acc. 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>	
<ul style="list-style-type: none"> <li>• between entrance and outlet</li> <li>• between the outputs</li> <li>• between the voltage supply and other circuits</li> </ul>	Yes Yes No

<b>Safety related data</b>	
<b>Safety Integrity Level (SIL) acc. to IEC 61508</b>	1
<b>Performance level (PL) acc. to EN ISO 13849-1</b>	c
<b>Category acc. 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>	
<ul style="list-style-type: none"> <li>• at rate of recognizable hazardous failures (<math>\lambda_{dd}</math>)</li> <li>• at rate of non-recognizable hazardous failures (<math>\lambda_{du}</math>)</li> </ul>	0.000000068 1/h 0.000000031 1/h
<b>PFHD with high demand rate acc. to EN 62061</b>	0.000000038 1/h

PFDavg with low demand rate acc. to IEC 61508	0.0041
MTBF	97 y
MTTFd	303 y
Hardware fault tolerance acc. to IEC 61508	0
T1 value for proof test interval or service life acc. to IEC 61508	3 y

### Connections/ Terminals

<b>Product function</b>	
<ul style="list-style-type: none"> <li>removable terminal for auxiliary and control circuit</li> </ul>	Yes
<b>Type of electrical connection</b>	screw-type terminals
<ul style="list-style-type: none"> <li>for auxiliary and control current circuit</li> </ul>	screw-type terminals
<b>Type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>solid</li> </ul>	1x (0.5 ... 4.0 mm <sup>2</sup> ), 2x (0.5 ... 2.5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>finely stranded with core end processing</li> </ul>	1x (0.5 ... 4 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>at AWG conductors solid</li> </ul>	1x (20 ... 12), 2x (20 ... 14)
<b>Connectable conductor cross-section</b>	
<ul style="list-style-type: none"> <li>solid</li> </ul>	0.5 ... 4 mm <sup>2</sup>
<ul style="list-style-type: none"> <li>finely stranded with core end processing</li> </ul>	0.5 ... 4 mm <sup>2</sup>
<b>AWG number as coded connectable conductor cross section</b>	
<ul style="list-style-type: none"> <li>solid</li> </ul>	20 ... 12
<ul style="list-style-type: none"> <li>stranded</li> </ul>	20 ... 12
<b>Tightening torque</b>	
<ul style="list-style-type: none"> <li>with screw-type terminals</li> </ul>	0.6 ... 0.8 N·m

### Installation/ mounting/ dimensions

<b>Mounting position</b>	any
<b>Mounting type</b>	screw and snap-on mounting onto 35 mm standard mounting rail
<b>Height</b>	100 mm
<b>Width</b>	22.5 mm
<b>Depth</b>	90 mm
<b>Required spacing</b>	
<ul style="list-style-type: none"> <li>with side-by-side mounting <ul style="list-style-type: none"> <li>forwards</li> <li>Backwards</li> <li>upwards</li> <li>downwards</li> <li>at the side</li> </ul> </li> </ul>	0 mm 0 mm 0 mm 0 mm 0 mm
<ul style="list-style-type: none"> <li>for grounded parts <ul style="list-style-type: none"> <li>forwards</li> <li>Backwards</li> <li>upwards</li> </ul> </li> </ul>	0 mm 0 mm 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**

<b>Installation altitude at height above sea level</b>	
• maximum	2 000 m
<b>Ambient temperature</b>	
• during operation	-25 ... +60 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
<b>Relative humidity</b>	
• during operation	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]

**Certificates/ approvals**

<b>General Product Approval</b>	<b>EMC</b>	<b>For use in hazardous locations</b>
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<b>Declaration of Conformity</b>	<b>Test Certificates</b>	<b>Marine / Shipping</b>
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<b>other</b>	<b>Railway</b>
<a href="#">Confirmation</a>	<a href="#">Confirmation</a>

## Further information

### 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?mfb=3RN2011-1BA30>

### Cax online generator

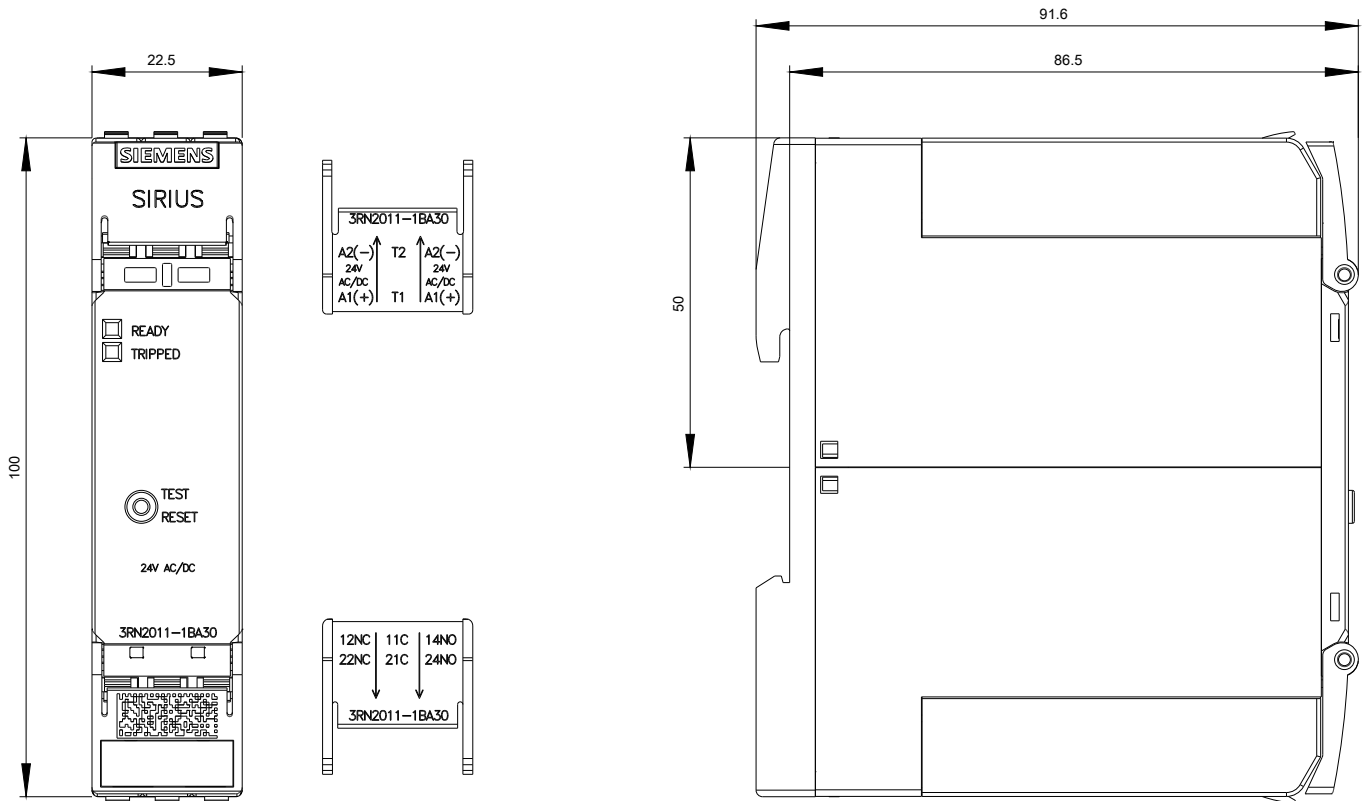
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mfb=3RN2011-1BA30>

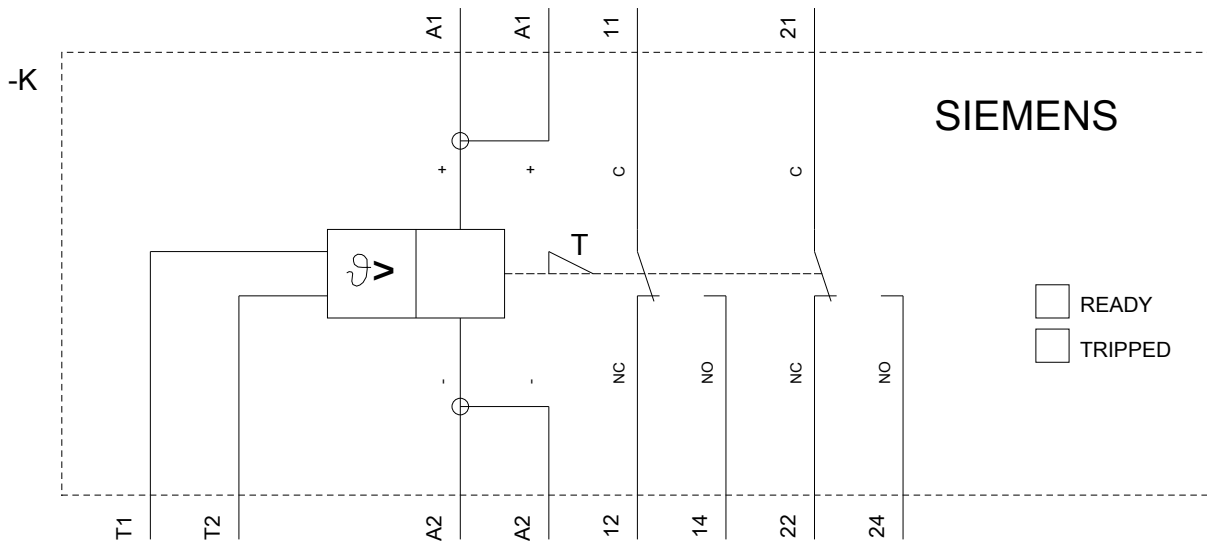
### Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<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, ...)

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





last modified:

04/09/2020