



Thermistor motor protection relay Standard evaluation unit 22.5 mm enclosure screw terminal 2 change-over contacts US = 24 V AC/DC Manual/Auto/Remote reset with ATEX approval 2 LEDs (READY/TRIPPED) galvanic 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, 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	1.2 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
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	0.183 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
control supply voltage at AC	
• at 50 Hz rated value	24 ... 24 V
• at 60 Hz rated value	24 ... 24 V
control supply voltage at DC rated value	24 ... 24 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	0.5 A
<b>duration of inrush current peak</b>	
• at 24 V	50 ms
<b>Measuring circuit</b>	
buffering time in the event of power failure minimum	40 ms
<b>Precision</b>	
relative metering precision	2 %
<b>Auxiliary circuit</b>	
material of switching contacts	AgSnO <sub>2</sub>
number of NC contacts for auxiliary contacts	0
number of NO contacts for auxiliary contacts	0
number of CO contacts for auxiliary contacts	2
<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>	
operating frequency rated value	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
continuous current of the DIAZED fuse link of the output relay	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)
electrostatic discharge according to IEC 61000-4-2	6 kV contact discharge / 8 kV air discharge
<b>Galvanic isolation</b>	
design of the electrical isolation	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>	
failure rate [FIT] at rate of recognizable hazardous failures ( $\lambda_{dd}$ )	6.8E-8 1/h
failure rate [FIT] at rate of non-recognizable hazardous failures ( $\lambda_{du}$ )	3.08E-7 1/h
average diagnostic coverage level (DCavg)	18 %
MTBF	97 a
MTTFd	303 a
<b>IEC 62061</b>	
Safety Integrity Level (SIL) according to IEC 62061	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	PL 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 ... 4.0 mm²), 2x (0.5 ... 2.5 mm²)
• finely stranded with core end processing	1x (0.5 ... 4 mm²), 2x (0.5 ... 1.5 mm²)
• for AWG cables solid	1x (20 ... 12), 2x (20 ... 14)
<b>connectable conductor cross-section</b>	
• solid	0.5 ... 4 mm²
• finely stranded with core end processing	0.5 ... 4 mm²
<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



[Confirmation](#)



### EMV

### For use in hazardous locations

### Test Certificates

### Marine / Shipping



[Type Test Certificates/Test Report](#)



### Marine / Shipping

### other

### Environment



[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=3RN2012-1BA30>

### Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2012-1BA30>

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

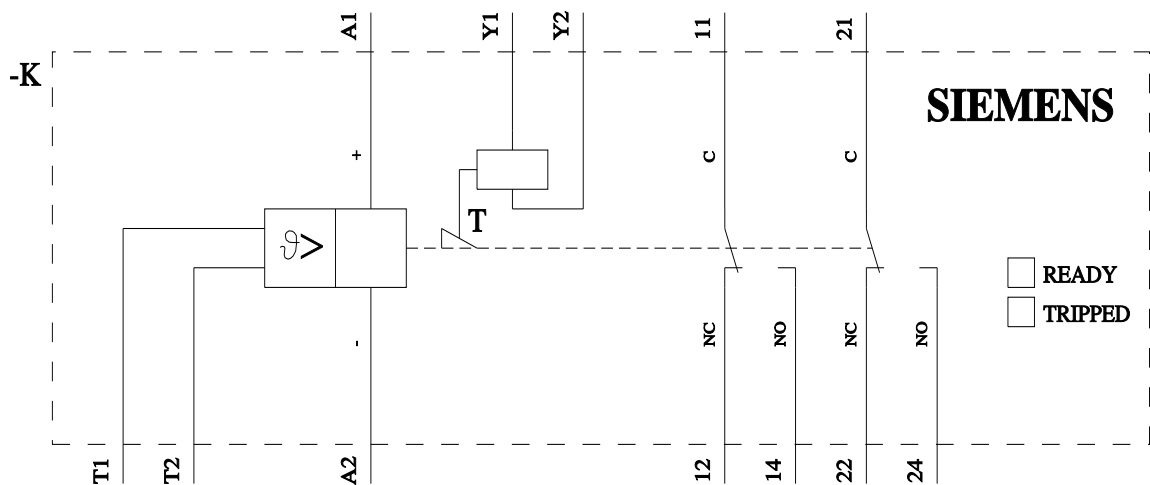
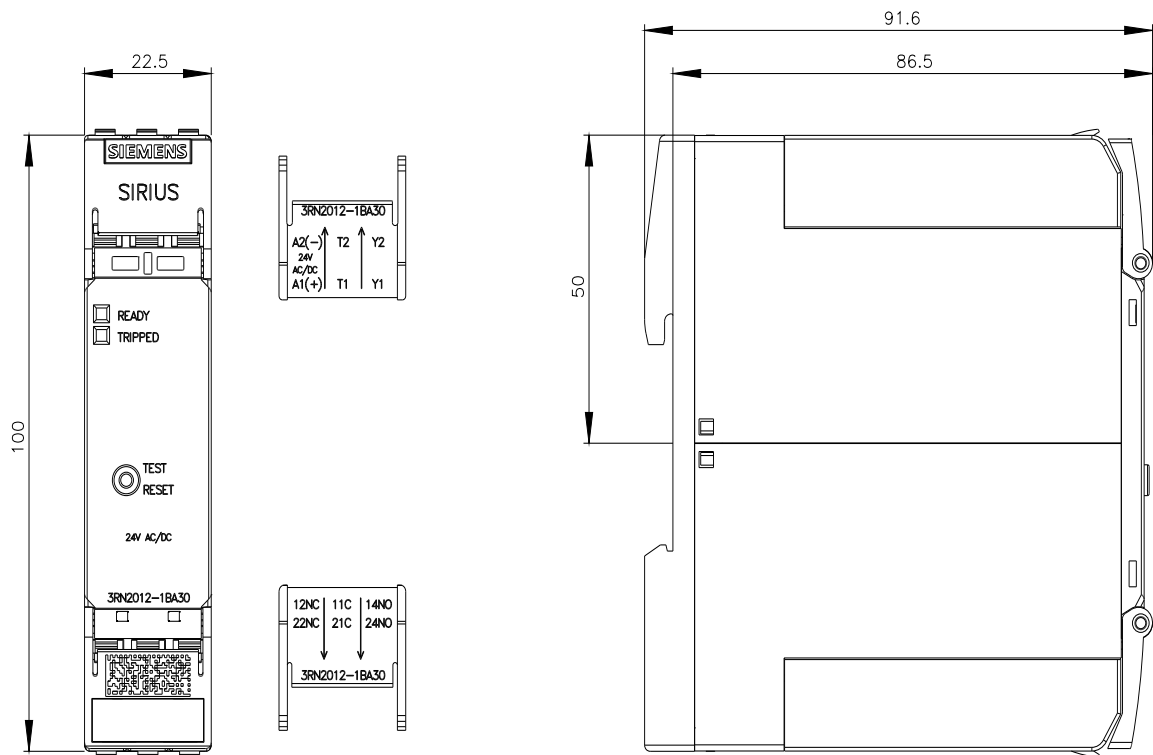
<https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BA30>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RN2012-1BA30&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2012-1BA30&lang=en)

### Characteristic: Derating

<https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BA30/manual>





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