## **SIEMENS**

Data sheet 3RN2012-1BA30



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
General technical data	
product function	thermistor motor protection
display version LED	Yes
power loss [W] for rated value of the current	
<ul> <li>at AC in hot operating state</li> </ul>	1.2 W
<ul> <li>at DC in hot operating state</li> </ul>	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
Product Function	
product function	
• error memory	Yes
<ul> <li>dynamic open-circuit detection</li> </ul>	Yes
external reset	Yes
• auto-RESET	Yes
manual RESET	Yes
Control circuit/ Control	
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	

DC	
• initial value	0.85
full-scale value	1.1
operating range factor control supply voltage rated value at AC at 50 Hz	
• initial value	0.85
full-scale value	1.1
operating range factor control supply voltage rated value at AC at 60 Hz	
• initial value	0.85
full-scale value	1.1
inrush current peak	
• at 24 V	0.5 A
duration of inrush current peak	
• at 24 V	50 ms
Measuring circuit	
buffering time in the event of power failure minimum	40 ms
Precision	
relative metering precision	2 %
Auxiliary circuit	
material of switching contacts	AgSnO2
number of NC contacts for auxiliary contacts	0
number of NO contacts for auxiliary contacts	0
number of CO contacts for auxiliary contacts	2
operational current of auxiliary contacts at DC-13	
● at 24 V	1 A
● at 125 V	0.2 A
● at 250 V	0.1 A
Main circuit	
operating frequency rated value	50 60 Hz
ampacity of the output relay at AC-15 at 250 V at 50/60 Hz	3 A
ampacity of the output relay at DC-13	
• at 24 V	1 A
• at 125 V	0.2 A
continuous current of the DIAZED fuse link of the output relay	6 A
Electromagnetic compatibility	
conducted interference	
<ul> <li>due to burst according to IEC 61000-4-4</li> </ul>	2 kV (power ports) / 1 kV (signal ports)
<ul> <li>due to conductor-earth surge according to IEC 61000-4-5</li> </ul>	2 kV (line to ground)
<ul> <li>due to conductor-conductor surge according to IEC 61000-4-5</li> </ul>	1 kV (line to line)
electrostatic discharge according to IEC 61000-4-2	6 kV contact discharge / 8 kV air discharge
Galvanic isolation	o it. solitate distributed to it. all distributed
design of the electrical isolation	galvanic isolation
galvanic isolation	<u> </u>
between input and output	Yes
between the outputs	Yes
between the outputs     between the voltage supply and other circuits	No
Safety related data	
failure rate [FIT] at rate of recognizable hazardous failures (λdd)	6.8E-8 1/h
failure rate [FIT] at rate of non-recognizable hazardous failures (λdu)	3.08E-7 1/h
average diagnostic coverage level (DCavg)	18 %
MTBF	97 a
MTTFd	303 a
IEC 62061	
Safety Integrity Level (SIL) according to IEC 62061	SIL 1
PFHD with high demand rate according to IEC 62061	3.76E-7 1/h
ISO 13849	
performance level (PL) according to EN ISO 13849-1	PL c
<u> </u>	

category according to EN ISO 13849-1	1	
performance level (PL) according to ISO 13849-1	PL c	
IEC 61508		
Safety Integrity Level (SIL) according to IEC 61508	1	
safety device type according to IEC 61508-2	Type B	
PFDavg with low demand rate according to IEC 61508	0.0041	
Safe failure fraction (SFF)	74 %	
hardware fault tolerance according to IEC 61508	0	
T1 value for proof test interval or service life according to IEC 61508	3 a	
Connections/ Terminals		
product component removable terminal for auxiliary and	Yes	
control circuit		
type of electrical connection	screw terminal	
for auxiliary and control circuit	screw-type terminals	
type of connectable conductor cross-sections		
• solid	1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²)	
<ul> <li>finely stranded with core end processing</li> </ul>	1x (0.5 4 mm²), 2x (0.5 1.5 mm²)	
for AWG cables solid	1x (20 12), 2x (20 14)	
connectable conductor cross-section		
• solid	0.5 4 mm²	
finely stranded with core end processing	0.5 4 mm²	
AWG number as coded connectable conductor cross section		
• solid	20 12	
• stranded	20 12	
tightening torque with screw-type terminals	0.6 0.8 N·m	
Installation/ mounting/ dimensions		
mounting position	any	
fastening method	screw and snap-on mounting onto 35 mm DIN rail	
-		
height	100 mm	
	100 mm 22.5 mm	
height		
height width	22.5 mm	
height width depth	22.5 mm	
height width depth required spacing	22.5 mm	
height width depth required spacing • with side-by-side mounting	22.5 mm 90 mm	
height width depth required spacing  • with side-by-side mounting — forwards	22.5 mm 90 mm	
height width depth required spacing  • with side-by-side mounting — forwards — backwards	22.5 mm 90 mm 0 mm 0 mm	
height width depth required spacing  • with side-by-side mounting — forwards — backwards — upwards — downwards — at the side	22.5 mm 90 mm 0 mm 0 mm 0 mm	
height width depth required spacing  • with side-by-side mounting — forwards — backwards — upwards — downwards — at the side • for grounded parts	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height width depth required spacing  • with side-by-side mounting — forwards — backwards — upwards — downwards — at the side  • for grounded parts — forwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — upwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — at the side  • a the side  • a the side  • a the side  — backwards  — backwards  — backwards  — at the side	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — at the side  • the side  • downwards  — backwards  — backwards  — upwards  — at the side  — downwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  — at the side  — downwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — forwards  • for love parts  — forwards  — backwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  • for live parts  — forwards  — backwards  — upwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — backwards  — upwards  — downwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  — at the side  — downwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  — hackwards  — downwards  — at the side  — downwards  — hackwards  — upwards  — backwards  — upwards  — downwards  — at the side	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — backwards  — upwards  — at the side  Ambient conditions	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  — at the side  Ambient conditions  installation altitude at height above sea level maximum	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  — at the side  — downwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  — backwards  — upwards  — backwards  — upwards  — at the side  Ambient conditions  installation altitude at height above sea level maximum  ambient temperature	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • of or live parts  — for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  Ambient conditions  installation altitude at height above sea level maximum  ambient temperature  • during operation	22.5 mm  90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 m	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  Ambient conditions  installation altitude at height above sea level maximum  ambient temperature  • during operation  • during storage	22.5 mm  90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 m	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — backwards  — upwards  — backwards  — at the side  Ambient conditions  installation altitude at height above sea level maximum  ambient temperature  • during operation  • during storage  • during transport	22.5 mm  90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 m	
height  width  depth  required spacing  • with side-by-side mounting  — forwards — backwards — upwards — downwards — at the side  • for grounded parts — forwards — backwards — upwards — at the side — downwards — at the side — downwards  • for live parts — forwards — backwards — upwards — at the side — downwards — to for live parts — forwards — backwards — upwards — at the side  Ambient conditions  installation altitude at height above sea level maximum  ambient temperature  • during operation • during storage • during transport  relative humidity during operation maximum	22.5 mm  90 mm  0 mm	
height  width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — backwards  — upwards  — backwards  — upwards  — installation altitude at height above sea level maximum  ambient temperature  • during operation  • during storage  • during transport	22.5 mm  90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 m	

## **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

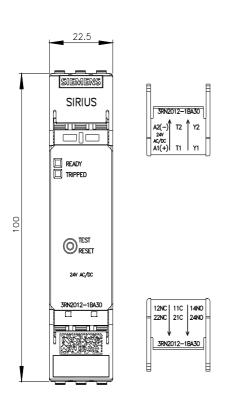
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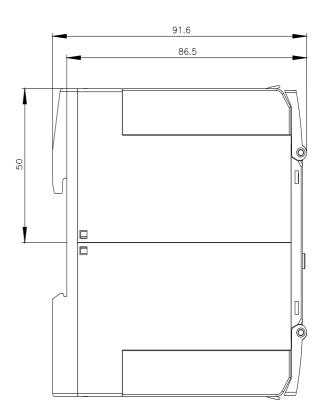
https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BA30 Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

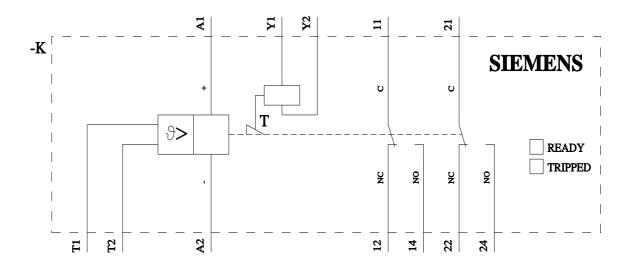
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**Characteristic: Derating** 

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