## **SIEMENS**

Data sheet 3RN2011-1BA30



thermistor motor protection relay standard evaluation unit 22.5 mm enclosure screw terminal 2 changeover contacts Us = 24 V AC/DC manual/remote RESET with ATEX approval 2 LEDs (ready/tripped) electrical 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	
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
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	К
Substance Prohibitance (Date)	07/01/2006
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1
Weight	0.18 kg
Product Function	
product function	
• error memory	No
<ul> <li>dynamic open-circuit detection</li> </ul>	Yes
external reset	Yes
• auto-RESET	No
• 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 V
at 60 Hz rated value	24 V
control supply voltage at DC rated value	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)
due to conductor-earth surge according to IEC 61000-4-5	2 kV (line to ground)
due to conductor-conductor surge according to IEC	1 kV (line to line)
61000-4-5	
electrostatic discharge according to IEC 61000-4-2	6 kV contact discharge / 8 kV air discharge
Galvanic isolation	
design of the electrical isolation	galvanic isolation
galvanic isolation	
<ul> <li>between input and output</li> </ul>	Yes
• between the outputs	Yes
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	
150 13649	

performance level (PL) according to EN ISO 13849-1	PL c
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 control circuit	Yes
type of electrical connection	screw terminal
<ul> <li>for auxiliary and control circuit</li> </ul>	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
height width	100 mm
width	22.5 mm
width depth	
width depth required spacing	22.5 mm
width depth required spacing • with side-by-side mounting	22.5 mm 90 mm
width depth required spacing  • with side-by-side mounting — forwards	22.5 mm 90 mm
width depth required spacing • with side-by-side mounting — forwards — backwards	22.5 mm 90 mm 0 mm 0 mm
width depth required spacing  • with side-by-side mounting — forwards — backwards — upwards	22.5 mm 90 mm 0 mm 0 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm
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
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
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
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
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
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  • at the side  • for grounded parts  — forwards  — backwards  — upwards  — upwards  — at the side	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards	22.5 mm 90 mm 0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
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  • at the side  • for grounded parts  — forwards  — backwards  — upwards  — upwards  — at the side	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — at the side  • at the side  — downwards  — backwards  — upwards  — at the side  — downwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — odwnwards  — of or grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
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	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — backwards  — upwards  — of the side  — downwards  — at the side  — downwards  — at the side  — downwards  • for live parts  — forwards  — backwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — downwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — upwards  — the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  • upwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
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  — of or grounded parts  — forwards  — backwards  — upwards  — at the side  — downwards  • for live parts  — forwards  — backwards  — upwards  — backwards  — upwards  — downwards	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
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  — at the side  — downwards  — backwards  — upwards  — at the side	22.5 mm 90 mm  0 mm 0 mm 0 mm 0 mm 0 mm 0 mm
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
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  — 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
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  • 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 mm
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for live parts  — forwards  — backwards  — 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
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  for live parts  forwards  backwards  upwards  at the side  downwards  for live parts  forwards  backwards  upwards  at the side  downwards  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
width  depth  required spacing  • with side-by-side mounting  — forwards  — backwards  — upwards  — at the side  • for grounded parts  — forwards  — backwards  — upwards  — at the side  • for live parts  — forwards  — backwards  — 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

explosion protection category for gas

[Ex e] [Ex d] [Ex px]

**Approvals Certificates** 

**General Product Approval** 

EMV













For use in hazardous locations

**Test Certificates** 

Marine / Shipping





Type Test Certificates/Test Report







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=3RN2011-1BA30

Cax online generator

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

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

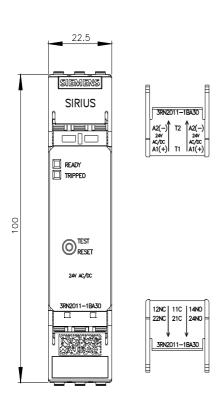
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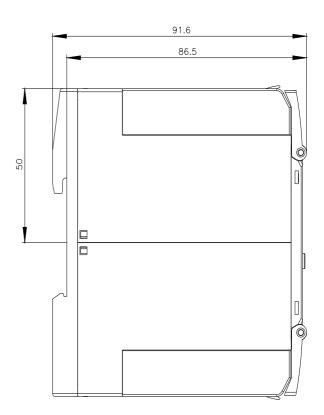
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

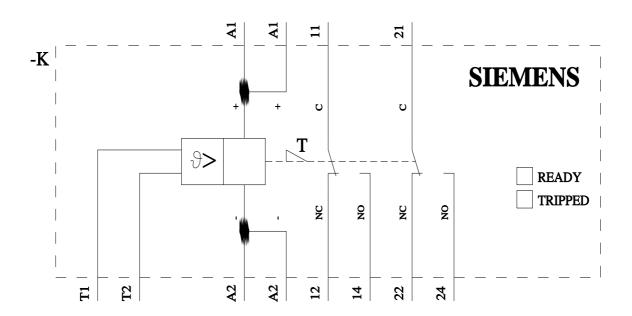
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**Characteristic: Derating** 

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







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