SIEMENS

Data sheet 3RN2012-1BW30



Thermistor motor protection relay Standard evaluation unit 22.5 mm enclosure screw terminal 2 change-over contacts US = 24 V-240 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
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 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 (switching cycles) typical	10 000 000
electrical endurance (switching 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	
error memory	Yes
 dynamic open-circuit detection 	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	24 240 V
at 60 Hz rated value	24 240 V
control supply voltage at DC	
rated value	24 240 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	0.05
• 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	1.1
• at 24 V	0.7 A
• at 240 V	12 A
duration of inrush current peak	
• at 24 V	0.25 ms
● at 240 V	0.2 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	6 A
output relay	
Electromagnetic compatibility	
conducted interference	
 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	2 kV (line to ground)
61000-4-5	
 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
Galvanic isolation	
design of the electrical isolation	galvanic isolation
galvanic isolation	
between input and output	Yes
 between the outputs 	Yes
 between the voltage supply and other circuits 	Yes
Safety related data	
Safety Integrity Level (SIL) according to IEC 61508	1
performance level (PL) according to EN ISO 13849-1	С
category according to EN ISO 13849-1	1
Safe failure fraction (SFF)	74 %
average diagnostic coverage level (DCavg)	18 %
failure rate [FIT]	
 at rate of recognizable hazardous failures (λdd) 	0.00000068 1/h
 at rate of non-recognizable hazardous failures (λdu) 	0.0000031 1/h
PFHD with high demand rate according to EN 62061	0.0000038 1/h
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MTBF 97 y MTTFd 303 y hardware fault tolerance according to IEC 61508 0 Connections / Terminals 7 y product component removable terminal for auxiliary and control circuit screw-type terminals type of electrical connection screw-type terminals + local for auxiliary and control circuit screw-type terminals type of connectable conductor cross-sections 1 x (0.5 4 mm²), 2x (0.5 2.5 mm²) + standed with core end processing 1 x (0.5 4 mm²), 2x (0.5 1.5 mm²) + oslid 0.5 4 mm² + standed with core end processing 0.5 4 mm² AWG number as coded connectable conductor cross-section - sold + standed with core end processing 0.5 4 mm² AWG number as coded connectable conductor cross-section - sold + standed with core end processing 0.5 4 mm² + standed with core end processing 0.5 4 mm² + standed with core end processing 0.5 4 mm² + standed with core end processing 0.5 4 mm² + standed with core end processing 0.6 0.8 Nm + standed with core end processing 0.	PFDavg with low demand rate according to IEC 61508	0.0041
MTTFd 303 y		
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and control circuit type of electrical connection • for auxiliary and control circuit type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG cables solid • finely stranded with core end processing • finely stranded with core end pro		Yes
For auxillary and control circuit Screw-type terminals		
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section • stranded 20 12 tightening torque with screw-type terminals mounting position fastening method screw and snap-on mounting onto 35 mm standard mounting rail height 100 mm width 22.5 mm depth 90 mm required spacing • with side-by-side mounting — forwards — backwards — upwards — downwards — at the side • for grounded parts — forwards — backwards — backwards — o mm — at the side • for grounded parts — forwards — upwards — at the side • for live parts — downwards — at the side — downwards — upwards — at the side • o mm A the side — downwards — upwards — upwards — at the side — downwards — o mm - at the side — downwards — o mm - at the side — downwards — o mm - for live parts — forwards — backwards — upwards — backwards — o mm - the side — downwards — o mm - the side — o mm	 finely stranded with core end processing 	0.5 4 mm²
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Installation/ mounting/ dimensions mounting position fastening method height width depth 90 mm required spacing • with side-by-side mounting — forwards — backwards — upwards — of mounting and backwards — of mounting and back	• stranded	
mounting position fastening method screw and snap-on mounting onto 35 mm standard mounting rail height width 22.5 mm depth • with side-by-side mounting — forwards — backwards — upwards — downwards — onm — forwards — onm —	tightening torque with screw-type terminals	0.6 0.8 N·m
fastening method	Installation/ mounting/ dimensions	
height	mounting position	any
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 — forgounded parts 0 mm — backwards 0 mm — backwards 0 mm — at the side 0 mm — downwards 0 mm — for live parts 0 mm — forwards 0 mm — backwards 0 mm — ommade 0 mm — downwards 0 mm — downwards 0 mm — downwards 0 mm — backwards 0 mm — ommade 0 mm — downwards 0 mm — downwards 0 mm — downwards 0 mm — at the side 0 m	fastening method	screw and snap-on mounting onto 35 mm standard mounting rail
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required spacing with side-by-side mounting - forwards - backwards - upwards - downwards - at the side for grounded parts - forwards - backwards - upwards - backwards - many backwa	width	22.5 mm
with side-by-side mounting — forwards — backwards — upwards — upwards — downwards — at the side — for grounded parts — forwards — backwards — backwards — upwards — upwards — o mm — at the side — o mm — torwards — o mm — backwards — o mm — backwards — o mm — backwards — o mm — at the side — o mm — at the side — o mm — downwards — o mm — downwards — o mm — at the side — o mm — at the side Ambient conditions installation altitude at height above sea level maximum ambient temperature • during operation • during storage • during transport — 40 +85 °C relative humidity during operation explosion protection category for dust [Ex t] [Ex p] explosion protection category for gas Certificates/ approvals	depth	90 mm
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- downwards - at the side 0 mm • for grounded parts - forwards 0 mm - backwards 0 mm - upwards 0 mm - at the side 0 mm - at the side 0 mm - downwards 0 mm • for live parts - forwards 0 mm - backwards 0 mm - backwards 0 mm - backwards 0 mm - upwards 0 mm - upwards 0 mm - downwards 0 mm - at the side 0 mm - downwards 0 mm - at the side 0 mm - at the sid	— backwards	0 mm
- at the side • for grounded parts - forwards - backwards - upwards - at the side - downwards • for live parts - forwards - backwards - backwards - mm - backwards - for live parts - forwards - backwards - upwards - upwards - upwards - upwards - downwards - at the side Ambient conditions installation altitude at height above sea level maximum ambient temperature • during operation • during storage • during transport - 40 +85 °C relative humidity during operation explosion protection category for dust explosion protection category for gas [Ex t] [Ex p] explosion protection category for gas [Ex e] [Ex d] [Ex px]	— upwards	0 mm
for grounded parts — forwards — backwards — upwards — upwards — at the side — downwards — for live parts — forwards — backwards — packwards — backwards — backwards — upwards — upwards — upwards — upwards — downwards — upwards — upwards — downwards — at the side — omm Ambient conditions installation altitude at height above sea level maximum ambient temperature • during operation • during storage • during transport — 40 +85 °C relative humidity during operation — explosion protection category for dust [Ex t] [Ex p] explosion protection category for gas Certificates/ approvals	— downwards	0 mm
	— at the side	0 mm
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- at the side	— backwards	0 mm
- downwards • for live parts - forwards - backwards - upwards - upwards - downwards - at the side Ambient conditions installation altitude at height above sea level maximum ambient temperature • during operation • during storage • during transport - during transport relative humidity during operation explosion protection category for dust explosion protection category for gas Certificates/ approvals	— upwards	0 mm
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Certificates/ approvals		
		[Ex e] [Ex u] [Ex px]
General Product Approval		
Constant Todate Approval	General Product Approval	EMC



Confirmation









For use in hazardous locations Declaration of Conformity

Test Certificates

Marine / Shipping





Type Test Certificates/Test Report







other

Confirmation

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?mlfb=3RN2012-1BW30

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2012-1BW30

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

https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BW30

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RN2012-1BW30&lang=en

Characteristic: Derating

https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-1BW30/manual

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