## **SIEMENS**

Data sheet 3RN2023-1DW30

0151110



thermistor motor protection relay device for warning and tripping 22.5 mm enclosure screw terminal 1 NO contact + 1 CO contact Us = 24 V-240 V AC/DC manual/auto/remote RESET with ATEX approval 3 LEDs (ready/warning/tripped) safe electrical isolation test/RESET button wire-break monitoring short-circuit monitoring non-volatile 2 separate PTC sensor circuits

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 and 2 sensor circuits for warning and disconnection, open-circuit and short-circuit detection in both sensor circuits, safe disconnection, 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>	1.8 W
at DC in hot operating state	1.8 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	6 kV
maximum permissible voltage for protective separation	
<ul> <li>between auxiliary and auxiliary circuit</li> </ul>	300 V
<ul> <li>between control and auxiliary circuit</li> </ul>	300 V
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 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1
Weight	0.187 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	
<ul> <li>at 50 Hz rated value</li> </ul>	24 240 V
<ul> <li>at 60 Hz rated value</li> </ul>	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	
• 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	0.7 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	30 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	1
	1
number of CO contacts for auxiliary contacts	'
operational current of auxiliary contacts at DC-13  • at 24 V	1.A
● at 24 V ● at 125 V	0.2 A
• at 250 V	0.1 A
Main circuit	F0 00 H-
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	
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)
-	
<ul> <li>due to conductor-earth surge according to IEC 61000-4-5</li> <li>due to conductor-conductor surge according to IEC 61000-4-5</li> </ul>	2 kV (line to ground) 1 kV (line to line)
<ul> <li>due to conductor-earth surge according to IEC 61000-4-5</li> <li>due to conductor-conductor surge according to IEC</li> </ul>	2 kV (line to ground)
due to conductor-earth surge according to IEC 61000-4-5     due to conductor-conductor surge according to IEC 61000-4-5  electrostatic discharge according to IEC 61000-4-2  Galvanic isolation	2 kV (line to ground) 1 kV (line to line) 6 kV contact discharge / 8 kV air discharge
due to conductor-earth surge according to IEC 61000-4-5     due to conductor-conductor surge according to IEC 61000-4-5     electrostatic discharge according to IEC 61000-4-2  Galvanic isolation  design of the electrical isolation	2 kV (line to ground) 1 kV (line to line)
• due to conductor-earth surge according to IEC 61000-4-5     • due to conductor-conductor surge according to IEC 61000-4-5     electrostatic discharge according to IEC 61000-4-2  Galvanic isolation  design of the electrical isolation  galvanic isolation	2 kV (line to ground) 1 kV (line to line) 6 kV contact discharge / 8 kV air discharge  Protective separation
due to conductor-earth surge according to IEC 61000-4-5     due to conductor-conductor surge according to IEC 61000-4-5     electrostatic discharge according to IEC 61000-4-2  Galvanic isolation  design of the electrical isolation  galvanic isolation  • between input and output	2 kV (line to ground) 1 kV (line to line) 6 kV contact discharge / 8 kV air discharge  Protective separation  Yes
due to conductor-earth surge according to IEC 61000-4-5     due to conductor-conductor surge according to IEC 61000-4-5  electrostatic discharge according to IEC 61000-4-2  Galvanic isolation  design of the electrical isolation  galvanic isolation      between input and output     between the outputs	2 kV (line to ground) 1 kV (line to line) 6 kV contact discharge / 8 kV air discharge  Protective separation  Yes Yes
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• due to conductor-earth surge according to IEC 61000-4-5     • due to conductor-conductor surge according to IEC 61000-4-5     electrostatic discharge according to IEC 61000-4-2  Galvanic isolation  design of the electrical isolation  galvanic isolation  • between input and output  • between the outputs  • between the voltage supply and other circuits  Safety related data  failure rate [FIT] at rate of recognizable hazardous failures	2 kV (line to ground) 1 kV (line to line) 6 kV contact discharge / 8 kV air discharge  Protective separation  Yes Yes
due to conductor-earth surge according to IEC 61000-4-5     due to conductor-conductor surge according to IEC 61000-4-5 electrostatic discharge according to IEC 61000-4-2  Galvanic isolation design of the electrical isolation galvanic isolation     between input and output     between the outputs     between the voltage supply and other circuits  Safety related data	2 kV (line to ground) 1 kV (line to line) 6 kV contact discharge / 8 kV air discharge  Protective separation  Yes Yes Yes
<ul> <li>due to conductor-earth surge according to IEC 61000-4-5</li> <li>due to conductor-conductor surge according to IEC 61000-4-5</li> <li>electrostatic discharge according to IEC 61000-4-2</li> <li>Galvanic isolation</li> <li>design of the electrical isolation</li> <li>galvanic isolation</li> <li>between input and output</li> <li>between the outputs</li> <li>between the voltage supply and other circuits</li> <li>Safety related data</li> <li>failure rate [FIT] at rate of recognizable hazardous failures (\lambdadd)</li> <li>failure rate [FIT] at rate of non-recognizable hazardous</li> </ul>	2 kV (line to ground) 1 kV (line to line)  6 kV contact discharge / 8 kV air discharge  Protective separation  Yes Yes Yes Yes

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
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	3 a
61508	
Connections/ Terminals	
product component removable terminal for auxiliary and control circuit	Yes
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)
<ul> <li>for AWG cables solid</li> </ul>	1x (20 12), 2x (20 14)
connectable conductor cross-section	
• solid	0.5 4 mm²
<ul> <li>finely stranded with core end processing</li> </ul>	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
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
• for grounded parts	0
— 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
— backwards — upwards	0 mm 0 mm
<ul><li>backwards</li><li>upwards</li><li>downwards</li></ul>	0 mm 0 mm 0 mm
<ul><li>backwards</li><li>upwards</li><li>downwards</li><li>at the side</li></ul>	0 mm 0 mm
<ul><li>backwards</li><li>upwards</li><li>downwards</li></ul>	0 mm 0 mm 0 mm

ambient temperature	
<ul> <li>during operation</li> </ul>	-25 +60 °C
<ul> <li>during storage</li> </ul>	-40 +85 °C
during transport	-40 +85 °C
relative humidity during operation maximum	70 %
explosion protection category for dust	[Ex t] [Ex p]
explosion protection category for gas	[Ex e] [Ex d] [Ex px]
A	

Approvals Certificates

**General Product Approval** 















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=3RN2023-1DW30

Cax online generator

 $\underline{\text{http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en\&mlfb=3RN2023-1DW30}$ 

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

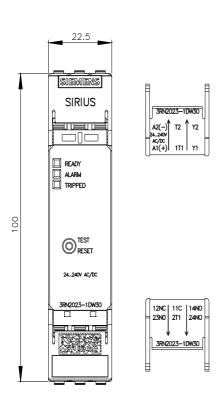
https://support.industry.siemens.com/cs/ww/en/ps/3RN2023-1DW30

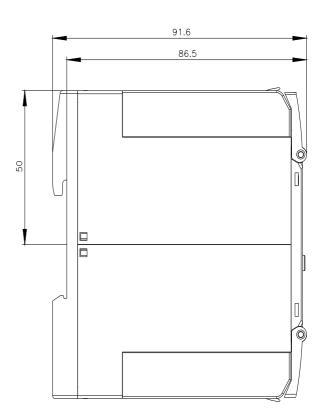
 $Image\ database\ (product\ images,\ 2D\ dimension\ drawings,\ 3D\ models,\ device\ circuit\ diagrams,\ EPLAN\ macros,\ ...)$ 

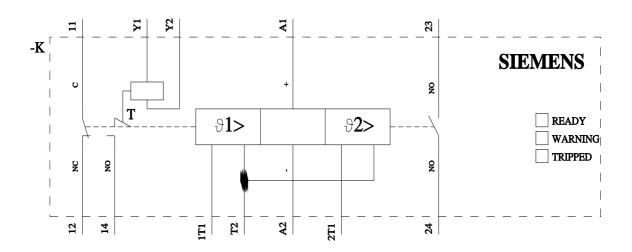
http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RN2023-1DW30&lang=en

Characteristic: Derating

https://support.industry.siemens.com/cs/ww/en/ps/3RN2023-1DW30/manual







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