SIEMENS

Data sheet 3RN2023-1DW30



Thermistor motor prot. relay Device for warning and tripping 22.5 mm enclosure Screw terminals 1 NO contact + 1 CO contact US = 24 V-240 V AC/DC Manual/Auto/Remote RESET with ATEX certification 3 LEDs (READY/WARNING/TRIPPED) Protective separation Test/Reset button Open-circuit monitoring Short-circuit monitoring Non-volatile 2 separate PTC sensor circuits

Figure similar

Article number

Product brand name	SIRIUS
Product category	SIRIUS 3RN2 thermistor motor protection
Product designation	Thermistor motor protection relay
Product type designation	3RN2

General technical data		
Display version LED		Yes
Power loss [W] for rated value of the current		
 at AC in hot operating state 	W	1.8
 at DC in hot operating state 	W	1.8
Insulation voltage		
 for overvoltage category III according to IEC 60664 		
 — with degree of pollution 3 rated value 	V	300
Degree of pollution		3
Surge voltage resistance rated value	kV	6
maximum permissible voltage for safe isolation		
 between auxiliary and auxiliary circuit 	V	300

 between control and auxiliary circuit 	V	300
Protection class IP	_	IP20
Shock resistance		
● acc. to IEC 60068-2-27		11g / 15 ms
Vibration resistance		
● acc. 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	Α	5
contacts maximum		
Equipment marking		
 acc. to DIN 40719 extended according to IEC 		К
204-2 acc. to IEC 750		
● acc. to DIN EN 61346-2		К
• acc. to DIN EN 81346-2		K

Control circuit/ Control		
Type of voltage of the control supply voltage		AC/DC
Control supply voltage at AC		
● at 50 Hz rated value	V	24 240
● at 60 Hz rated value	V	24 240
Control supply voltage at DC		
• rated value	V	24 240
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	Α	0.7
• at 240 V	Α	12
Duration of inrush current peak		
● at 24 V	ms	0.25
● at 240 V	ms	0.2

Measuring circuit		
Buffering time in the event of power failure minimum	ms	30
Dynamician		
Precision Relative metering precision	%	2
Troidave moterning production	70	2
Auxiliary circuit		
Material of switching contacts		AgSnO2
Number of NC contacts		
• for auxiliary contacts		0
Number of NO contacts		
for auxiliary contacts		1
Number of CO contacts		
for auxiliary contacts		1
Operating current of auxiliary contacts at DC-13		
● at 24 V	Α	1
● at 125 V	Α	0.2
● at 250 V	Α	0.1
Main circuit		
Operating frequency rated value	Hz	50 60
Outputs		
Ampacity of the output relay at AC-15		
● at 250 V at 50/60 Hz	Α	3
Ampacity of the output relay at DC-13		
● at 24 V	Α	1
● at 125 V	Α	0.2
Continuous current of the DIAZED fuse link of the	Α	6
output relay		
Electromagnetic compatibility		
Conducted interference		
due to burst acc. to IEC 61000-4-4		2 kV (power ports) / 1 kV (signal ports)
 due to conductor-earth surge acc. to IEC 61000-4-5 		2 kV (line to ground)
 due to conductor-conductor surge acc. to IEC 61000-4-5 		1 kV (line to line)
Electrostatic discharge acc. to IEC 61000-4-2		6 kV contact discharge / 8 kV air discharge
Galvanic isolation		
Design of the electrical isolation		Protective separation
Galvanic isolation		
 between entrance and outlet 		Yes
between the outputs		Yes
• between the voltage supply and other circuits		Yes

Safety Integrity Level (SIL) acc. to IEC 61508 Performance level (PL) acc. to EN ISO 13849-1 Category acc. to EN ISO 13849-1 3	Safety related data				
Category acc. to EN ISO 13849-1 Safe failure fraction (SFF) Average diagnostic coverage level (DCavg) Failure rate [FIT] • at rate of recognizable hazardous failures (Add) • at rate of non-recognizable hazardous failures (Add) (Adu) PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • solid • solid • solid • stranded Tightening torque	Safety Integrity Level (SIL) acc. to IEC 61508		1		
Safe failure fraction (SFF) Average diagnostic coverage level (DCavg) Failure rate [FIT] • at rate of recognizable hazardous failures (Add) • at rate of non-recognizable hazardous failures (Add) PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd y 303 Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing AWG number as coded connectable conductor cross-section • solid • finely stranded with core end processing AWG number as coded connectable conductor cross-section • solid • stranded Tightening torque	Performance level (PL) acc. to EN ISO 13849-1		С		
Average diagnostic coverage level (DCavg) Failure rate [FIT] • at rate of recognizable hazardous failures (\(\lambda\d)\) • at rate of non-recognizable hazardous failures (\(\lambda\d)\) • pFHD with high demand rate acc. to EN 62061 I/h • 0.00000038 PFDavg with low demand rate acc. to IEC 61508 MTTFd y 303 Hardware fault tolerance acc. to IEC 61508 T value for proof test interval or service life acc. to IEC 61508 T value for proof test interval or service life acc. to IEC 61508 Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing AWG number as coded connectable conductor cross-section • solid • stranded Tightening torque	Category acc. to EN ISO 13849-1		1		
Failure rate [FIT] • at rate of recognizable hazardous failures (\lambda\dd) • at rate of non-recognizable hazardous failures (\lambda\dd) • at rate of non-recognizable hazardous failures (\lambda\dd) • At rate of non-recognizable hazardous failures (\lambda\dd) (\lambda\dd) PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd ### ### ### ### ### ### ### ### ### #	Safe failure fraction (SFF)	%	74		
 at rate of recognizable hazardous failures (\lambda\text{dd}) at rate of non-recognizable hazardous failures (\lambda\text{dd}) (\lambda\text{du}) PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd MTTFd y 303 Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 T2 value for proof test interval or service life acc. to IEC 61508 T2 very of electrical connections/Terminals Product function removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections solid finely stranded with core end processing at AWG conductors solid finely stranded with core end processing AWG number as coded connectable conductor cross-section solid solid solid stranded Tightening torque 	Average diagnostic coverage level (DCavg)	%	18		
a trate of non-recognizable hazardous failures (\(\lambda\text{tdu}\)) PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing AWG number as coded connectable conductor cross-section • solid • solid • stranded Tightening torque	Failure rate [FIT]				
(\lambda\data) PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd y 303 Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • at AWG number as coded connectable conductor cross-section • solid • finely stranded with core end processing AWG number as coded connectable conductor cross-section • solid • stranded Tightening torque	• at rate of recognizable hazardous failures (λdd)	1/h 0.000000068			
PFHD with high demand rate acc. to EN 62061 PFDavg with low demand rate acc. to IEC 61508 MTTFd MTTFd Y 303 Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductor solid Connectable conductor cross-section • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing AWG number as coded connectable conductor cross-section • solid • solid • stranded Tightening torque	at rate of non-recognizable hazardous failures	1/h 0.00000031			
PFDavg with low demand rate acc. to IEC 61508 MTTFd Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • solid • finely stranded with core end processing • solid • stranded Tightening torque	(λdu)				
MTTFd y 303 Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • solid • solid • finely stranded with core end processing • solid • stranded Tightening torque	PFHD with high demand rate acc. to EN 62061	1/h	0.00000038		
Hardware fault tolerance acc. to IEC 61508 T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • solid • stranded Tightening torque	PFDavg with low demand rate acc. to IEC 61508		0.0041		
T1 value for proof test interval or service life acc. to IEC 61508 Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • at AWG number as coded connectable conductor cross section • solid • solid • solid • stranded Tightening torque	MTTFd	У	303		
Connections/Terminals Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • stranded Tightening torque	Hardware fault tolerance acc. to IEC 61508		0		
Connections/Terminals Product function • removable terminal for auxiliary and control circuit Yes Type of electrical connection screw-type terminals Type of connectable conductor cross-sections 1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²) • solid 1x (0.5 4 mm²), 2x (0.5 1.5 mm²) • at AWG conductors solid 1x (20 12), 2x (20 14) Connectable conductor cross-section mm² • solid mm² • finely stranded with core end processing mm² AWG number as coded connectable conductor cross section 20 4 • solid 20 12 • stranded 20 12	T1 value for proof test interval or service life acc. to	у	3		
Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductor solid Connectable conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • stranded Tightening torque	IEC 61508				
Product function • removable terminal for auxiliary and control circuit Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductor solid Connectable conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • finely stranded with core end processing • solid • stranded Tightening torque	Connections/Terminals				
Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • at AWG conductor cross-section • solid • finely stranded with core end processing • solid • finely stranded with core end processing AWG number as coded connectable conductor cross section • solid • solid • solid • solid • solid • stranded Tightening torque					
Type of electrical connection Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • at AWG number as coded connectable conductor cross-section • solid • stranded Tightening torque	removable terminal for auxiliary and control		Yes		
Type of connectable conductor cross-sections • solid • finely stranded with core end processing • at AWG conductors solid Connectable conductor cross-section • solid • finely stranded with core end processing • at AWG number as coded connectable conductor cross-section • solid • stranded Tightening torque	-				
 solid finely stranded with core end processing at AWG conductors solid 1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²) 1x (0.5 4 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14) Connectable conductor cross-section solid finely stranded with core end processing awg mm² 0.5 4 AWG number as coded connectable conductor cross section solid solid 20 12 Tightening torque 1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²) 1x (20 12, 2x (20 14) Tightening torque 1x (0.5 4 mm²), 2x (0.5 2.5 mm²) 1x (0.5 4 mm²), 2x (0.5 1.5 mm²) 1x (20 14) Tightening torque	Type of electrical connection		screw-type terminals		
 finely stranded with core end processing at AWG conductors solid 1x (0.5 4 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14) Connectable conductor cross-section solid finely stranded with core end processing AWG number as coded connectable conductor cross section solid stranded 20 12 Tightening torque 	Type of connectable conductor cross-sections				
 at AWG conductors solid Connectable conductor cross-section solid finely stranded with core end processing AWG number as coded connectable conductor cross section solid stranded Tightening torque 1x (20 12), 2x (20 14) mm² 0.5 4 0.5 4 20 12 20 12 	• solid		1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²)		
 at AWG conductors solid Connectable conductor cross-section solid finely stranded with core end processing AWG number as coded connectable conductor cross section solid stranded Tightening torque 1x (20 12), 2x (20 14) mm² 0.5 4 mm² 0.5 4 20 12 20 12 20 12	 finely stranded with core end processing 		1x (0.5 4 mm²), 2x (0.5 1.5 mm²)		
 solid finely stranded with core end processing AWG number as coded connectable conductor cross section solid stranded Tightening torque 0.5 4 0.5 4 20 12 20 12 	at AWG conductors solid		1x (20 12), 2x (20 14)		
 • finely stranded with core end processing mm² 0.5 4 AWG number as coded connectable conductor cross section • solid • stranded 20 12 Tightening torque 	Connectable conductor cross-section				
AWG number as coded connectable conductor cross section • solid • stranded Tightening torque	• solid	mm²	0.5 4		
AWG number as coded connectable conductor cross section • solid • stranded Tightening torque	finely stranded with core end processing	mm²	0.5 4		
section 20 12 ● stranded 20 12 Tightening torque 20 12	· · · · · · · · · · · · · · · · · · ·				
• stranded 20 12 Tightening torque					
Tightening torque	• solid		20 12		
	• stranded		20 12		
	Tightening torque				
• with screw-type terminals N·m 0.6 0.8		N·m	0.6 0.8		
Installation/ mounting/ dimensions					
Mounting position any	- 1		·		
Mounting type screw and snap-on mounting onto 35 mm standar mounting rail	Mounting type		screw and snap-on mounting onto 35 mm standard mounting rail		
Height mm 100	Height	mm	100		
Width mm 22.5	Width	mm	22.5		
Depth mm 90	Depth	mm	90		
Required spacing	Required spacing				
with side-by-side mounting	with side-by-side mounting				

— forwards	mm	0
— Backwards	mm	0
— upwards	mm	0
— downwards	mm	0
— at the side	mm	0
• for grounded parts		
— forwards	mm	0
— Backwards	mm	0
— upwards	mm	0
— at the side	mm	0
— downwards	mm	0
• for live parts		
— forwards	mm	0
— Backwards	mm	0
— upwards	mm	0
— downwards	mm	0
— at the side	mm	0

Ambient conditions				
Installation altitude at height above sea level				
• maximum	m	2 000		
Ambient temperature				
during operation	°C	-25 + 60		
during storage	°C	-40 +85		
 during transport 	°C	-40 + 85		
Relative humidity				
during operation	%	70		
Explosion protection category for dust		[Ex t] [Ex p]		

Certificates/approvals

General Product Approval	EMC	For use in	Declaration of
		hazardous	Conformity
		locations	













Test Certificates	Marine / Ship	pping		other	
Type Test Certificates/Test Report	Lloyd's Register	PRS	DNV-GL DNVGL.COM/AF	Confirmation	

Further information

Information- and Downloadcenter (Catalogs, Brochures,...)

http://www.siemens.com/industrial-controls/catalogs

Industry Mall (Online ordering system)

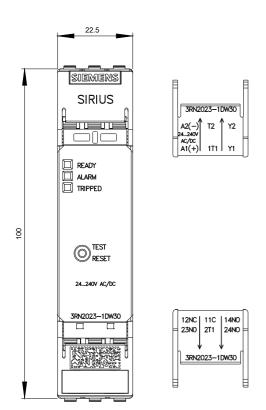
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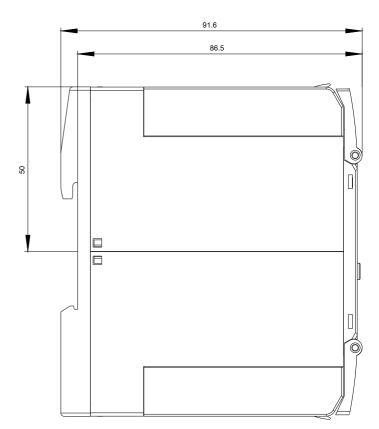
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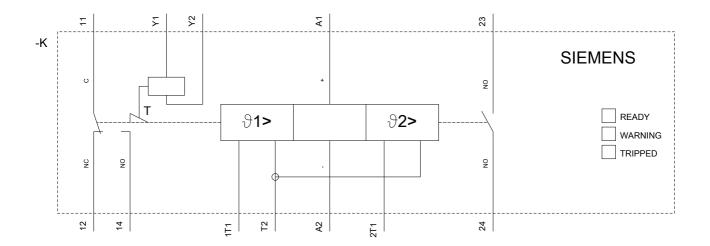
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2023-1DW30

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







last modified: 09/25/2017