



thermistor motor protection relay standard evaluation unit 22.5 mm enclosure
 screw terminal 2 changeover contacts $U_s = 24 \text{ V AC/DC}$ 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	
• at AC in hot operating state	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	11 g / 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 24 V typical	100 000
• 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)	07/01/2006
SVHC substance name	Lead monoxide (lead oxide) CAS-No. 1317-36-8 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol CAS-No. 119-47-1
Net Weight	0.17 kg
Product Function	
product function	
• error memory	No
• dynamic open-circuit detection	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

<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> initial value 	0.85
<ul style="list-style-type: none"> full-scale value 	1.1
operating range factor control supply voltage rated value at AC at 50 Hz	
<ul style="list-style-type: none"> initial value 	0.85
<ul style="list-style-type: none"> full-scale value 	1.1
operating range factor control supply voltage rated value at AC at 60 Hz	
<ul style="list-style-type: none"> initial value 	0.85
<ul style="list-style-type: none"> full-scale value 	1.1
inrush current peak	
<ul style="list-style-type: none"> at 24 V 	0.5 A
duration of inrush current peak	
<ul style="list-style-type: none"> 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 AC-15 maximum	3 A
operational current of auxiliary contacts at DC-13	
<ul style="list-style-type: none"> at 24 V 	1 A
<ul style="list-style-type: none"> at 125 V 	0.2 A
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> at 24 V 	1 A
<ul style="list-style-type: none"> at 125 V 	0.2 A
continuous current of the DIAZED fuse link of the output relay	6 A
Electromagnetic compatibility	
conducted interference	
<ul style="list-style-type: none"> due to burst according to IEC 61000-4-4 	2 kV (power ports) / 1 kV (signal ports)
<ul style="list-style-type: none"> due to conductor-earth surge according to IEC 61000-4-5 	2 kV (line to ground)
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> between input and output 	Yes
<ul style="list-style-type: none"> between the outputs 	Yes
<ul style="list-style-type: none"> between the voltage supply and other circuits 	No
Safety related data	
failure rate [FIT] at rate of recognizable hazardous failures (λ_{dd})	7E-8 1/h
failure rate [FIT] at rate of non-recognizable hazardous failures (λ_{du})	3.1E-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	3.8E-7 1/h
ISO 13849	
performance level (PL) according to EN ISO 13849-1	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
• for auxiliary and control circuit	screw-type terminals
type of connectable conductor cross-sections	
• solid	1x (0.5 ... 4 mm ²), 2x (0.5 ... 2.5 mm ²)
• finely stranded with core end processing	1x (0.5 ... 4 mm ²), 2x (0.5 ... 1.5 mm ²)
• for AWG cables solid	1x (20 ... 12), 2x (20 ... 14)
connectable conductor cross-section	
• solid	0.5 ... 4 mm ²
• finely stranded with core end processing	0.5 ... 4 mm ²
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	
— 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
— upwards	0 mm
— downwards	0 mm
— at the side	0 mm
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	