



Type	Compact units		Standard devices			Multifunction units	Warning + disconnection	Multiple motor protection
	3RN1000	3RN1010	3RN1011	3RN1012	3RN1013	3RN1022	3RN1062	
<b>Evaluation unit</b>								
Rated insulation voltage $U_i$ (pollution degree 3)	V	300						
Rated impulse withstand voltage $U_{imp}$	kV	4						
<b>Connection type</b>		 <b>Screw terminals</b>						
<ul style="list-style-type: none"> <li>Terminal screw</li> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> AWG	M3 (for standard screwdriver, size 2 and Pozidriv 2) 1 x (0.5 ... 4)/2 x (0.5 ... 2.5) 1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5) 2 x (20 ... 14)						
<b>Connection type</b>		 <b>Spring-type terminals</b>						
<ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded, with end sleeves acc. to DIN 46228</li> <li>Finely stranded</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> AWG	2 x (0.25 ... 1.5) 2 x (0.25 ... 1.5) 2 x (0.25 ... 1.5) 2 x (24 ... 16)						
<b>Sensor circuit</b>								
Measuring circuit load at $R_F \leq 1.5 \text{ m}\Omega$	mW	$\leq 5$						
Voltage in sensor circuit at $R_F \leq 1.5 \text{ m}\Omega$	V	$\leq 2$						
Response temperature (depends on sensor)	°C	60 ... 180						
Coupling time (depends on sensor)	s	About 5						
Summation PTC resistance $R_F$ (per sensor loop)	k $\Omega$	$\leq 1.5$ ; response value 3.4 ... 3.8; return value 1.5 ... 1.65						
Response tolerance	°C	$\pm 6$						
<b>Control circuit</b>								
Rated control supply voltage $U_s$	see page 10/179 and 10/180							
<b>Operating range</b>		<ul style="list-style-type: none"> <li>0.85 ... 1.1 x <math>U_s</math></li> <li>0.85 ... 1.1 x <math>U_s</math></li> <li>0.85 ... 1.2 x <math>U_s</math> for DC operation, 0.85 ... 1.1 x <math>U_s</math> for AC operation</li> </ul>						
Rated power AC/DC	W	$< 2$						
<b>Auxiliary circuit</b>								
Conventional thermal current $I_{th}$	A	5						
<b>Rated operational current <math>I_e</math></b>		<ul style="list-style-type: none"> <li>AC-15/24 ... 250 V</li> <li>DC-13 at <ul style="list-style-type: none"> <li>- 24 V</li> <li>- 125 V</li> <li>- 240 V</li> </ul> </li> </ul>						
	A	3						
	A	1						
	A	0.2						
	A	0.1						
DIAZED fuse protection	A	6 <sup>1)</sup>						
<b>CSA and UL rated data, control circuit</b>								
<b>Rated control voltage 50/60 Hz</b>		<ul style="list-style-type: none"> <li>AC</li> <li>DC</li> </ul>						
	V	300						
	V	300						
<b>Switching capacity</b>		R 300/B 300						
<b>Protective separation up to 300 V</b> acc. to IEC 60947-1		--				✓ 3RN1013-1BW10, 3RN1013-1GW10	--	

- ✓ Function available  
 -- Function not available

<sup>1)</sup>  $I_n > 1 \text{ kA}$  weld-free according to IEC 60947-5-1.

# Relays

## SIRIUS 3RN1 Thermistor Motor Protection

**For PTC sensors**

### Circuit diagrams

**Illustrated with control voltage applied**

**Illustrated with control voltage not applied**

**Illustrated with control voltage applied**

**Illustrated with control voltage not applied**

#### General legend

- A1, A2, A3 Terminals of the control voltage
- N Amplifier
- T/R TEST/RESET button
- Y1, Y2 Terminals for Remote RESET (jumpered = Auto RESET)
- ↑ The double arrow indicates an operating state of the contact according to EN 60617-7 which deviates from the norm (here: Position of the contacts when control voltage is applied to terminals A1 and A2)
- H1 LED "READY"
- H2 LED "TRIPPED"
- K Output relay
- T1, T2 Connections of the sensor loop

#### Legend for 3RN1022

- H1 LED "READY"
- H2 LED "TRIPPED"
- H3 LED "ALARM"
- K1 Output relay for warning threshold (LED "ALARM")
- K2 Output relay for disconnect (LED "TRIPPED")
- 1T1 and 2T1 Terminals of the 1st sensor loop
- 2T2 and T2 Terminals of the sensor loop

#### △ Important!

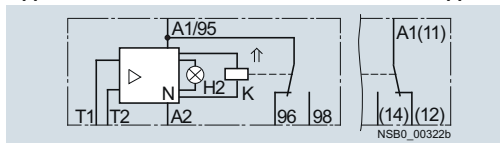
Close unconnected sensor circuits.

#### Legend for 3RN1062

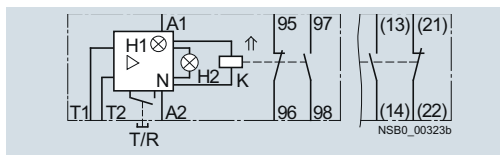
- H1 to H6 LED of the tripped sensor loop
- H7 LED "READY"
- H8 LED "TRIPPED"
- K Output relay
- 1T1, 1T2 Terminals of the 1st sensor loop
- 6T1, 6T2 Terminals of the 6th sensor loop

#### △ Important!

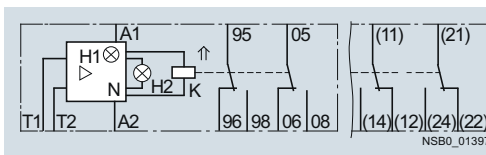
Close unconnected sensor circuits.



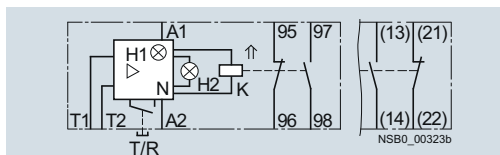
3RN1000, 1 CO



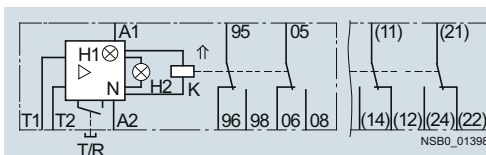
3RN1010, 1 NO + 1 NC



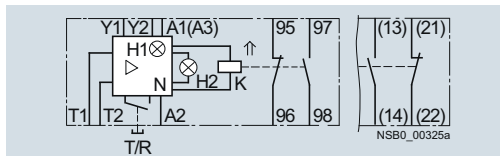
3RN1010, 2 CO



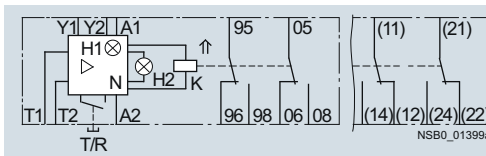
3RN1011<sup>1)</sup>, 1 NO + 1 NC



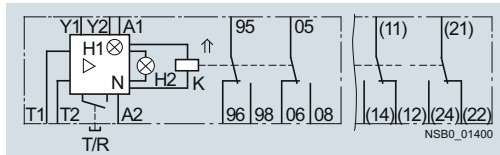
3RN1011, 2 CO



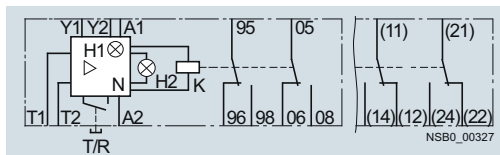
3RN1012<sup>1)</sup>, 1 NO + 1 NC



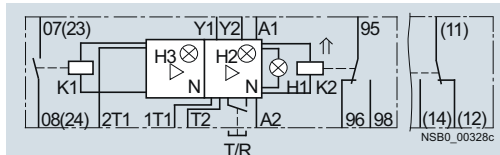
3RN1012, 2 CO



3RN1013-...0 (monostable)



3RN1013-...1 (bistable)



3RN1022



3RN1062

<sup>1)</sup> For units with combination voltages 230/110 V AC (3RN1011-CK00 and 3RN1012-CK00) A1 and A2 apply: 230 V AC, A3 and A2: 110 V AC.

## Selection and ordering data

- For monitoring the motor winding temperature using temperature-dependent resistors (PTCs, type A) that are directly installed in the motor winding by the manufacturer
- Monostable versions with closed-circuit principle, i.e. relays respond in the event of control supply voltage failure
- 3RN1013-.BW01: Bistable version, does not trigger in the event of control supply voltage failure
- All devices have PTB01 ATEX approval for dust or gas
- All devices except for 24 V AC/DC feature electrical separation
- Versions with safe isolation up to 300 V according to IEC 60947-1
- Non-volatile versions
- Versions with short-circuit and open-circuit detection in sensor circuit
- Versions with solid-state compatible, hard gold-plated contacts
- Versions for up to 6 sensor circuits
- Versions with Manual RESET, Remote RESET, Auto RESET and test button
- Terminal labeling according to EN 60947-1
- All terminals are removable
- Width 22.5 mm (45 mm on version for several sensor circuits)

PU (UNIT, SET, M) = 1

PS\* = 1 unit

PG = 41H

RESET	Contacts	Rated control supply voltage $U_s$ 50/60 Hz	DT	Screw terminals	DT	Spring-type terminals			
V				Article No.	Price per PU	Article No.	Price per PU		
<b>Compact signal evaluation units, width 22.5 mm, 1 LED</b>									
Terminal A1 is jumpered with the root of the changeover contact									
Auto	1 CO	24 AC/DC 110 AC 230 AC	▶ A ▶	<b>3RN1000-1AB00</b> <b>3RN1000-1AG00</b> <b>3RN1000-1AM00</b>	A A A	<b>3RN1000-2AB00</b> <b>3RN1000-2AG00</b> <b>3RN1000-2AM00</b>			
<b>Standard evaluation units, width 22.5 mm, 2 LEDs</b>									
Auto	1 NO + 1 NC	24 AC/DC	▶	<b>3RN1010-1CB00</b>	▶	<b>3RN1010-2CB00</b>			
		110 AC		<b>3RN1010-1CG00</b>	A	<b>3RN1010-2CG00</b>			
		230 AC		<b>3RN1010-1CM00</b>	A	<b>3RN1010-2CM00</b>			
2 CO	24 AC/DC 110 AC 230 AC	24 ... 240 AC/DC	▶	<b>3RN1010-1CW00</b>	A	<b>3RN1010-2CW00</b>			
		24 AC/DC	A	<b>3RN1010-1BB00</b>	A	<b>3RN1010-2BB00</b>			
		110 AC	A	<b>3RN1010-1BG00</b>	C	<b>3RN1010-2BG00</b>			
2 CO, hard gold-plated	24 AC/DC 110 AC 230 AC	24 AC/DC	A	<b>3RN1010-1BM00</b>	A	<b>3RN1010-2BM00</b>			
		24 AC/DC	A	<b>3RN1010-1GB00</b>	C	<b>3RN1010-2GB00</b>			
		1 NO + 1 NC	▶	<b>3RN1011-1CB00</b>	A	<b>3RN1011-2CB00</b>			
Manual/ Remote <sup>1)</sup>	1 NO + 1 NC	24 AC/DC	▶	<b>3RN1011-1CK00</b>	A	<b>3RN1011-2CK00</b>			
		110/230 AC							
		Short-circuit detection for sensor circuit							
Manual/ Remote <sup>1)</sup>	2 CO	24 AC/DC	A	<b>3RN1011-1BB00</b>	A	<b>3RN1011-2BB00</b>			
		110 AC	A	<b>3RN1011-1BG00</b>	C	<b>3RN1011-2BG00</b>			
		230 AC	A	<b>3RN1011-1BM00</b>	A	<b>3RN1011-2BM00</b>			
2 CO, hard gold-plated	24 AC/DC	24 AC/DC	A	<b>3RN1011-1GB00</b>	A	<b>3RN1011-2GB00</b>			
		Non-volatile <sup>2)</sup>							
		Manual/ Auto/ Remote	1 NO + 1 NC	24 AC/DC	▶	<b>3RN1012-1CB00</b>	A	<b>3RN1012-2CB00</b>	
110/230 AC	▶			<b>3RN1012-1CK00</b>	A	<b>3RN1012-2CK00</b>			
Non-volatile <sup>2)</sup> , short-circuit detection in sensor circuit									
Manual/ Auto/ Remote	2 CO	24 AC/DC	A	<b>3RN1012-1BB00</b>	C	<b>3RN1012-2BB00</b>			
		110 AC	A	<b>3RN1012-1BG00</b>	C	<b>3RN1012-2BG00</b>			
		230 AC	A	<b>3RN1012-1BM00</b>	C	<b>3RN1012-2BM00</b>			
2 CO, hard gold-plated	24 AC/DC	24 AC/DC	A	<b>3RN1012-1GB00</b>	C	<b>3RN1012-2GB00</b>			
		Non-volatile <sup>2)</sup> , short-circuit and open-circuit detection and display in sensor circuit; wide voltage range versions with screw terminal with safe isolation							
		Manual/ Auto/ Remote	2 CO	24 AC/DC	▶	<b>3RN1013-1BB00</b>	A	<b>3RN1013-2BB00</b>	
24 ... 240 AC/DC	▶			<b>3RN1013-1BW10</b>	A	<b>3RN1013-2BW00</b>			
24 ... 240 AC/DC	A			<b>3RN1013-1GW10</b>	C	<b>3RN1013-2GW00</b>			
2 CO, hard gold-plated	24 ... 240 AC/DC	24 ... 240 AC/DC	A	<b>3RN1013-1GW10</b>	C	<b>3RN1013-2GW00</b>			
		For bimetal sensors, without short-circuit detection							
		Manual/ Remote	2 CO	230 V AC	C	<b>3RN1014-1BM00</b>		--	
<b>Bistable evaluation units, width 22.5 mm</b>									
Test/RESET button, non-volatile <sup>2)</sup> , short-circuit and open-circuit detection and display in sensor circuit									
Manual/ Auto/ Remote	2 CO	24 ... 240 AC/DC	▶	<b>3RN1013-1BW01</b>	A	<b>3RN1013-2BW01</b>			

<sup>1)</sup> The unit can be reset with the RESET button or by disconnecting the control supply voltage.

<sup>2)</sup> Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.