## Overview


SIRIUS 3RN1 thermistor motor protection

Thermistor motor protection devices are used for direct monitoring of the motor winding temperature. For this purpose, the motors are equipped with temperature-dependent resistors (PTC) that are directly installed in the motor winding and abruptly change their resistance at their limit temperature.

### *Order No. scheme*

| Digit of the Order No. | 1st - 5th | 6th | 7th | | 8th | 9th | 10th | 11th | 12th |
|---|---|---|---|---|---|---|---|---|---|
| | □□□□□ | □ | □ | – | □ | □ | □ | □ | □ |
| **Thermistor motor protection** | **3 R N 1 0** | | | | | | | | |
| **Number and version of the sensor circuits** | | □ | | | | | | | |
| **RESET response** | | | □ | | | | | | |
| **Connection type** | | | | | □ | | | | |
| **Type and number of outputs** | | | | | | □ | | | |
| **Control supply voltage** | | | | | | | □ | | |
| **Protective separation** | | | | | | | | □ | |
| **Behavior in the event of voltage failure** | | | | | | | | | □ |
| **Example** | **3 R N 1 0** | **0** | **0** | **–** | **1** | **A** | **B** | **0** | **0** |

*Note:*

*The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.*

*For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.*

## Benefits

- Thanks to direct motor protection, overdimensioning of the motors is not necessary
- No settings on the device are necessary
- Solid-state compatible output thanks to versions with hard gold-plated contacts
- Rapid error diagnosis thanks to versions that indicate open- and short-circuit in the sensor circuit
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-type terminals

## Application

Direct motor protection through temperature monitoring of the motor winding offers 100 % motor protection even under the most difficult ambient conditions, without the need to make adjustments on the device. Versions with hard gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control.

Direct motor protection

- At increased ambient temperatures
- For high switching frequency
- For long start-up and braking procedures
- Used together with frequency converters (low speeds)

### *ATEX approval for operation in areas subject to explosion hazard*

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and GD for gases and dust see www.siemens.com/industrial-controls/atex

## For PTC sensors

### *Motor protection using current- and temperature-dependent protective devices*

EN 60204 and IEC 60204 stipulate that motors must be protected from overheating at a rating of 0.5 kW and higher. The protection can take the form of overload protection, overtemperature protection or current limiting.

For motors with frequent starting and braking and in environments where cooling may be impaired (e.g. by dust), it is recommended to use the overtemperature protection option in the form of a protective device coordinated with this mode of operation. A good choice in this case is the use of 3RN1 thermistor motor protection devices.

On rotor-critical motors, overtemperature detection in the stator windings can lead to delayed and hence inadequate protection. In this case the standards stipulate additional protection, e.g. by means of an overload relay.

This combination of thermistor motor protection and an overload relay is recommended for full motor protection in case of frequent starting and braking of motors, irregular intermittent duty or excessive switching frequency. To prevent premature tripping of the overload relay in such operating conditions, a higher setting than that normally required for the operational current is chosen. The overload relay then performs the stall protection, and the 3RN1 thermistor motor protection device monitors the temperature of the motor windings.

| Application | Motor protection | | |
|---|---|---|---|
| | Only current-dependent, e.g. with overload relay | Only temperature-dependent, e.g. with thermistor motor protection relay | Current- and temperature-dependent |
| Motor protection in case of | | | |
| Overloading in uninterrupted duty | ✓ | ✓ | ✓ |
| Long start-up and braking operations | ❍ | ✓ | ✓ |
| Irregular intermittent duty | ❍ | ✓ | ✓ |
| Excessively high switching frequency | ❍ | ✓ | ✓ |
| Single-phase operation and current unbalance | ✓ | ✓ | ✓ |
| Voltage and frequency fluctuations | ✓ | ✓ | ✓ |
| Stalling of the rotor | ✓ | ✓ | ✓ |
| Switching on a stalled rotor of a stator-critical motor | ✓ | ✓ | ✓ |
| Switching on a stalled rotor of a rotor-critical motor | ✓ | ❍ | ✓ |
| Elevated ambient temperature | -- | ✓ | ✓ |
| Impeded cooling | -- | ✓ | ✓ |

✓ Full protection
❍ Conditional protection
-- No protection

8

## Technical specifications

The 3RN1 tripping units are suitable for use in any climate and finger-safe according to EN 50274.

They comply with:

- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility of I&C equipment in industrial process engineering"
- EN 60947-8

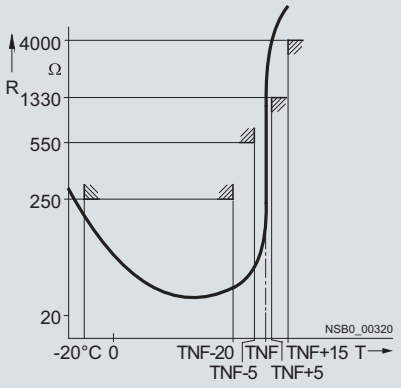
The terminals of the auxiliary contacts are designated in accordance with EN 50005.

The 3RN1 tripping units are suitable for snap-on mounting onto TH 35 standard mounting rails according to EN 60715 or for screw mounting using an adapter (Accessories).

Any mounting position is possible.

For devices with the "Manual RESET" function, the test function can be activated and a trip simulated by pressing the blue Test/RESET button for > 2 seconds.

If a Type A temperature sensor is connected to a Type A tripping unit, compliance with the operating temperatures is assured (on pick-up and reset) according to IEC 60034-11-2 (EN 60947-8).




Characteristic curve of the 3RN1 release

The characteristic curves of the Type A temperature sensors are described in EN 60947-8, DIN 44081 and DIN 44082.

### *Use in areas subject to explosion hazard for gases*

All devices are approved for Equipment Group II, Category (2) in Area "G" (areas that contain explosive gases, vapor, spray and air mixtures).

With PTB 01 ATEX 3218 ex II (2) G, compliance with directive 94/9 EC Appendix II is confirmed. The safety devices must be selected with suitable settings for the safe operation of motors of the "Increased safety" (EEx e) and "Flameproof enclosure" (EEx d) degrees of protection and are used outside the area subject to explosion hazard.

PTB 01 ATEX 3218 ex II (2) G

The increased danger in areas subject to explosion hazard demands careful analysis of the operator's guide, the safety and commissioning instructions and the standard (EN 60079-14 / VDE 0165) for electronic equipment in areas subject to gas explosion hazards.

A risk analysis must be performed for the complete plant or machine. If this risk analysis results in a minimal potential for danger (Safety Category 1), all 3RN1 TMS releases can be implemented taking into account the safety notes. In the case of plants or machines with a high potential risk, versions with integrated short-circuit detection in the sensor circuit are necessary.

### *Use in areas subject to explosion hazard for dust*

PTB 01 ATEX 3218 ex II (2) GD

3RN10 11-.B/-.G, 3RN10 12-.B/-.G and 3RN10 13-...0 tripping units can be used as protective devices for motors in areas subject to gas explosion hazard for protection against impermissible overheating due to overload. If the ATEX marking has the extension "D:=Dust", these units can also be used as protective devices for motors in areas subject to dust explosion hazard (EN 50281-1-1).

Additional information is provided in the EC prototype test certificate which can be obtained from the Internet. The units comply with the requirements of the following classes:

| Device | Class |
|---|---|
| 3RN10 00, 3RN10 10, 3RN10 11-.C, 3RN10 12-.C, 3RN10 22, 3RN10 62 | EN 954-1: Category 1 |
| 3RN10 11-.B, 3RN10 11-.G, 3RN10 12-.B, 3RN10 12-.G, 3RN10 13 | EN 954-1: Category 2 |

The measuring circuit leads must be routed as separate control cables. It is not permitted to use cores from the supply line of the motor or any other main supply cables. If extreme inductive or capacitive interference is expected as a result of power lines routed in parallel, shielded control cables must be used.

### *Cable routing*

Maximum cable length for sensor circuit cables

| Conductor cross section | Cable length for releases | |
|---|---|---|
| | Without short-circuit detection 3RN10 00, 3RN10 10, 3RN10 11-.C, 3RN10 12-.C, 3RN10 22, 3RN10 62 | With short-circuit detection[1] 3RN10 11-.B/-.G, 3RN10 12-.B/-.G, 3RN10 13 |
| $mm^2$ | m | m |
| 2.5 | 2 x 2800 | 2 x 250 |
| 1.5 | 2 x 1500 | 2 x 150 |
| 0.5 | 2 x 500 | 2 x 50 |

[1] A short-circuit in the sensor circuit will be detected up to this maximum cable length.

*Note:*

*Tripping of the thermistor motor protection relay even in combination with a converter must directly result in disconnection. This must be implemented with circuitry.*

*Mounting and installation must only be performed by qualified personnel who observe the applicable regulations! For mounting, use the mounting instructions Order No.: 3ZX1012-0RN10-1AA1.*

*The 3RN10 is not intended for installation in hazardous areas. For installation in areas subject to explosion hazards, the 3RN10 must be enclosed in a flameproof casing.*

*For tripping units with a 24 V AC/DC control voltage, electrical separation must be secured with a battery network or a safety transformer to EN 61558.*

*When releases with Auto-RESET function are used, a reset is performed automatically after the cooling time has expired. It must be ensured by means of an external interlock (latching with a separate ON and OFF button) that the machine to be monitored does not start up again spontaneously.*

*Units with the "Auto-RESET" function must not be used in applications in which the unexpected restart can lead to personal injury or property damage.*

*In the case of releases without short-circuit detection, during commissioning or after modifications or maintenance work (assembly, disassembly) on the equipment, the sensor resistance must be measured using a suitable measuring device. For resistances of < 50 Ω the sensor circuit must be checked for a short-circuit.*

*If 3RN10 00 units are used to protect EEx e motors, separate monitoring of the control voltage is recommended because there is no Ready LED to indicate connection to the supply voltage.*

*If 3RN10 13-.BW01 unit are used to protect EEx e motors, separate monitoring of the control voltage is recommended because the switching state of the auxiliary contacts does not change if the control voltage fails (use of a bistable relay is recommended).*

*Before commissioning, the effectiveness of the protection function must be checked.*

## For PTC sensors

### *Principle of operation*

The 3RN1 releases operate in accordance with the closed-circuit principle and therefore monitor themselves for open circuit (except: warning output in the case of 3RN10 22). A momentary voltage failure of less than 50 ms does not change the status of the auxiliary contacts. The 3RN10 11, 3RN10 12 and 3RN10 13 units with 2 changeover contacts are also equipped with short-circuit detection in the sensor circuit. The unit will trip in the event of a short-circuit in the sensor circuit (resistance in sensor circuit < 20 Ω).

All tripping units (except for 24 V AC/DC) feature electrical separation between the control circuit and the sensor circuit.

### *3RN10 00 compact releases*

The compact release is equipped with a red LED (TRIPPED) for the tripped indicator and a changeover contact.

After the unit has tripped, it is automatically reset once the thermistors have cooled down. The root of the changeover contact is connected to the control voltage (95 is connected to terminal A1).

This unit is particularly suitable in circuits in which the control circuit and signaling circuit have the same potential, e.g. in local control cabinets.

### *3RN10 10, 3RN10 11, 3RN10 12, 3RN10 13 standard releases*

The standard devices are equipped with two LEDs (READY and TRIPPED) for an operating and tripped display and are available with either 1 NO + 1 NC or with 2 CO contacts. They are available depending on the version with Auto-RESET (3RN10 10), Manual/Remote-RESET (3RN10 11) or Manual/Auto and Remote-RESET (3RN10 12 and 3RN10 13). Remote-RESET can be achieved by connecting an external pushbutton with a normally-open function to terminals Y1 and Y2. If terminals Y1 and Y2 are bridged, tripping will be followed by an Auto-RESET.

The 3RN10 11, 3RN10 12 and 3RN10 13 units with 2 COs also have short-circuit monitoring in the sensor circuit.

The 3RN10 12 and the 3RN10 13 are non-volatile. This means that even if the control supply voltage fails, a trip preceding it will be latched.

In the case of the 3RN10 13 release, tripping due to a short-circuit in the sensor circuit will be indicated by a flashing red LED. The monostable version also indicates open circuit in the sensor circuit by flashing of the red LED.

### *3RN10 22 "Warning and disconnection" releases*

Two sensor circuits can be connected to one 3RN10 22 release that acts on one output relay with 1 NO contact for warning and 1 CO for disconnection. Temperature sensors with different rated response temperatures TNF are used to implement the "Warning" and "Disconnection" functions. When the "Warning" sensor circuit responds, a yellow LED is lit and when the "Disconnection" circuit responds, a red LED is lit.

The sensor circuits have a different reset response and operating behavior:

- "Warning" (terminals 2T1, T2) only features Auto-RESET and uses the open-circuit principle.
- "Disconnection" (terminals 1T1, T2) can be changed from Manual RESET to Auto-RESET by linking terminals Y1 and Y2. Remote-RESET is implemented by connecting an external pushbutton with a normally-open function.

### *3RN10 62 releases for multiple motor protection*

Up to 6 sensor circuits can be connected to the 3RN10 62 release, all of which act on one output relay. The simultaneous protection of several motors (up to 6) is an advantage for multi-motor drives (e.g. if one motor is overloaded, all the other motors of the drive will be shut down). Apart from the red LED "TRIPPED", which signals the switching state of the release, a LED is assigned to each sensor circuit which indicates the sensor circuit that has responded. Unused sensor circuits must be short-circuited.

The reset response of the 3RN10 62 releases can be changed from Manual RESET to Auto-RESET by linking terminals Y1 and Y2. Remote-RESET is implemented by connecting an external pushbutton with a normally-open function.

### *Response of the releases in the event of control voltage failure*

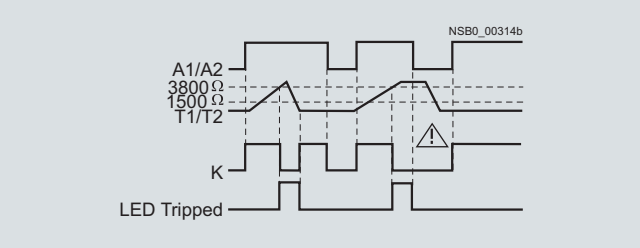
| Behavior | Monostable<br><br>3RN10 00,<br>3RN10 10,<br>3RN10 11 | Non-volatile, monostable<br><br>3RN10 12,<br>3RN10 13-....0,<br>3RN10 22,<br>3RN10 62 | Bistable<br><br>3RN10 13-...01 |
|---|---|---|---|
| In case of failure of the control voltage | Device trips | Device trips | No change in switching state of the auxiliary contacts |
| In case of return of the control voltage without a preceding tripping operation | Device resets | Device resets | No change in switching state of the auxiliary contacts |
| In case of return of the control voltage after a preceding tripping operation | Device resets | The device remains tripped | No change in switching state of the auxiliary contacts |

### *Protective separation*

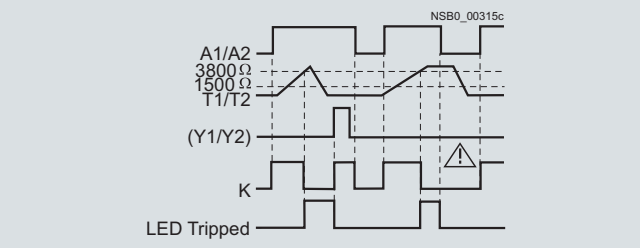
All circuits (outputs, control circuits, sensor and RESET circuits) of the multifunction tripping units 3RN10 13-1BW10 and 3RN10 13-1GW10 (wide voltage range, monostable output relay and screw connection) are safely isolated from each other up to a rated voltage of 300 V according to DIN VDE 0100 Part 410 (IEC 60364-4-41 modified) and EN 60947-1.

## Function diagrams

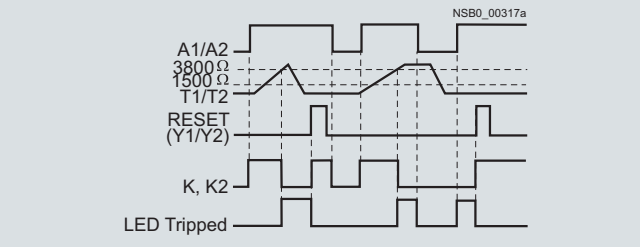
3RN10 00, 3RN10 10 (Auto-RESET)



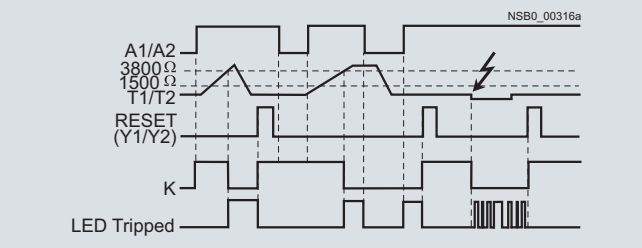

3RN10 11[1)]



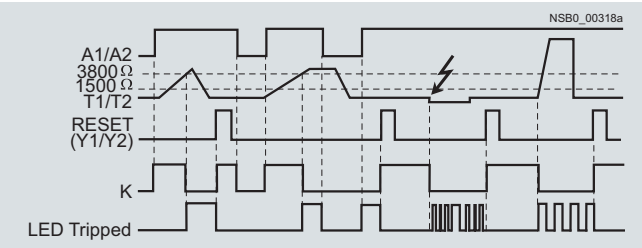

3RN10 12/3RN10 22/3RN10 62[1)]



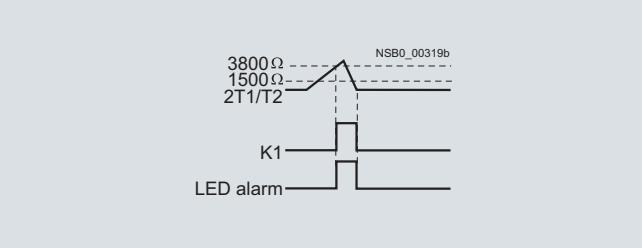

3RN10 13-.BW01




3RN10 13-...00




3RN10 22 only




[1)] For versions with 2 CO and short-circuit detection in the sensor circuit see function diagram 3RN10 13.

| Type | | Compact units | Standard devices | | | Multi-function units | Warning + tripping | Multiple motor protection |
|---|---|---|---|---|---|---|---|---|
| | | 3RN10 00 | 3RN10 10 | 3RN10 11 | 3RN10 12 | 3RN10 13 | 3RN10 22 | 3RN10 62 |
| Dimensions (W x H x D) | | | | | | | | |
| • For 2 terminal blocks | | | | | | | | |
| - Screw terminals | mm | 22.5 x 83 x 91 | | | | | | 45 x 83 x 91 |
| - Spring-type terminals | mm | 22.5 x 84 x 91 | | | | | | 45 x 84 x 91 |
| • For 3 terminal blocks | | | | | | | | |
| - Screw terminals | mm | 22.5 x 92 x 91 | | | | | | -- |
| - Spring-type terminals | mm | 22.5 x 94 x 91 | | | | | | -- |
| • For 4 terminal blocks | | | | | | | | |
| - Screw terminals | mm | 22.5 x 102 x 91 | | | | | | 45 x 106 x 91 |
| - Spring-type terminals | mm | 22.5 x 103 x 91 | | | | | | 45 x 108 x 91 |
| **General data** | | | | | | | | |
| **Number of connectable sensor circuits** | | 1 | | | | | 2 | 6 |
| **Response in the event of control voltage failure** | | See page 8/106 | | | | | | |
| **Manual RESET** | | -- | | ✓ | | | | |
| **Auto-RESET** | | ✓ | | -- | ✓ | | | |
| **Remote-RESET** | | -- | | ✓[1)] | ✓ | | | |
| **TEST pushbutton** | | -- | | ✓ | | | | |
| **Short-circuit detection for sensor circuit** | | -- | | ✓ (for 2 CO units) | | ✓ | -- | |
| **Short-circuit and open-circuit indication** | | -- | | | | ✓[2)] | -- | |
| **Warning and disconnection in one unit** | | -- | | | | | ✓ | -- |
| **Permissible ambient temperature** | | | | | | | | |
| • During operation | °C | -25 ... +60 | | | | | | |

✓ Function is available
-- Function is not available

[1)] Remote-RESET possible by disconnecting control voltage.

[2)] Open circuits are only indicated by monostable versions (3RN10 13-....0).

## For PTC sensors

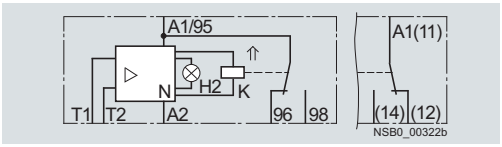
| Type | | Compact units | Standard devices | | | Multi-function units | Warning + tripping | Multiple motor protection |
|---|---|---|---|---|---|---|---|---|
| | | 3RN10 00 | 3RN10 10 | 3RN10 11 | 3RN10 12 | 3RN10 13 | 3RN10 22 | 3RN10 62 |
| **Releases** | | | | | | | | |
| **Rated insulation voltage $U_i$ (pollution degree 3)** | V | 300 | | | | | | |
| **Connection type** | | **Screw terminals** | | | | | | |
| • Terminal screw | | M3 (for standard screwdriver, size 2 and Pozidriv 2) | | | | | | |
| • Solid | $mm^2$ | 1 x (0.5 ... 4)/2 x (0.5 ... 2.5) | | | | | | |
| • Finely stranded with end sleeve | $mm^2$ | 1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5) | | | | | | |
| • AWG cables, solid or stranded | AWG | 2 x (20 ... 14) | | | | | | |
| • Tightening torque | Nm | 0.8 … 1.2 | | | | | | |
| **Connection type** | | **Spring-type terminals** | | | | | | |
| • Solid | $mm^2$ | 2 x (0.25 ... 1.5) | | | | | | |
| • Finely stranded, with end sleeves according to DIN 46228 | $mm^2$ | 2 x (0.25 ... 1.5) | | | | | | |
| • Finely stranded | $mm^2$ | 2 x (0.25 ... 1.5) | | | | | | |
| • AWG cables, solid or stranded | AWG | 2 x (24 ... 16) | | | | | | |
| **Sensor circuit** | | | | | | | | |
| **Measuring circuit load at $R_F \leq 1.5$ mW** | | ≤ 5 | | | | | | |
| **Voltage in sensor circuit at $R_F \leq 1.5$ mW** | V | ≤ 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)** | kΩ | ≤ 1.5; response value 3.4 ... 3.8; return value 1.5 ... 1.65 | | | | | | |
| **Response tolerance** | °C | ±6 | | | | | | |
| **Control circuit** | | | | | | | | |
| **Rated control supply voltage $U_s$** | | See page 8/110 | | | | | | |
| **Operating range** | | | | | | | | |
| • 110/230 V AC | | 0,85 ... 1.1 x $U_s$ | | | | | | |
| • 24 ... 240 V AC/DC | | 0,85 ... 1.1 x $U_s$ | | | | | | |
| • 24 V AC/DC | | 0.85 ... 1.2 x $U_s$ for DC operation, 0.85 ... 1.1 x $U_s$ for AC operation | | | | | | |
| **Rated power** AC/DC | W | < 2 | | | | | | |
| **Auxiliary circuit** | | | | | | | | |
| **Conventional thermal current $I_{th}$** | A | 5 | | | | | | |
| **Rated operational current $I_e$** | | | | | | | | |
| • AC-15/240 V | A | 3 | | | | | | |
| • DC-13/24 V | A | 1 | | | | | | |
| **DIAZED fuse** | A | 6[1)] | | | | | | |
| **CSA and UL rated data, control circuit** | | | | | | | | |
| **Rated control voltage** 50/60 Hz | | | | | | | | |
| • AC | V | 300 | | | | | | |
| • DC | V | 300 | | | | | | |
| **Switching capacity** | | R 300/B 300 | | | | | | |
| **Protective separation up to 300 V** according to DIN 60947-1 | | -- | | | | 3RN10 13-1BW10, 3RN10 13-1GW10 | -- | |

[1)] $I_n$ > 1 kA weld-free according to EN 60947-5-1.

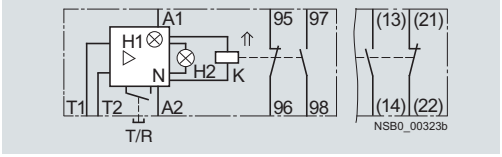
## Circuit diagrams

**Illustrated with control voltage applied** | **Illustrated with control voltage not applied**

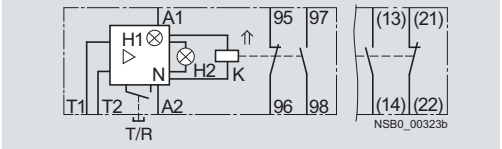
3RN10 00, 1 CO



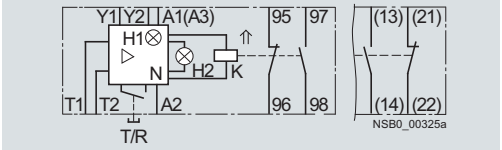

3RN10 10, 1 NO + 1 NC



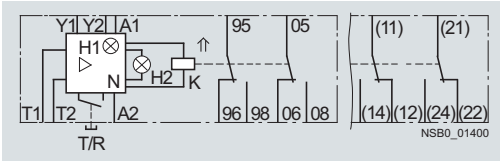

3RN10 11[1], 1 NO + 1 NC



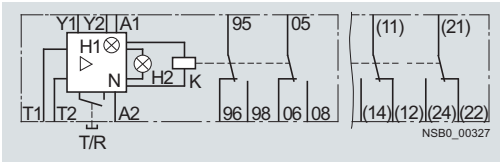

3RN10 12[1], 1 NO + 1 NC



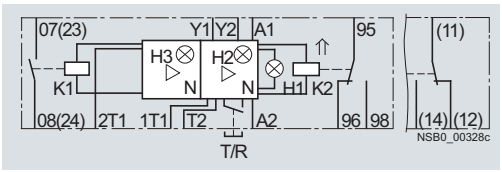

3RN10 13-...0 (monostable)



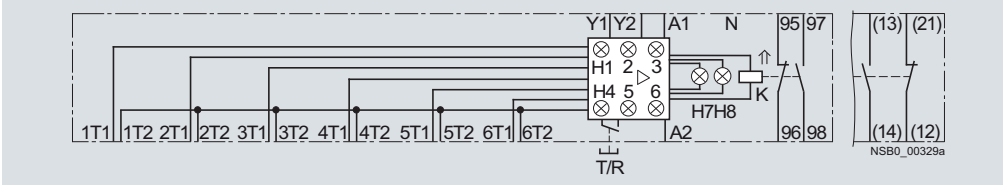

3RN10 13-...1 (bistable)




3RN10 22

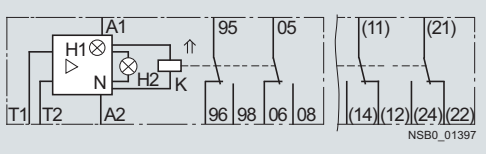



3RN10 62

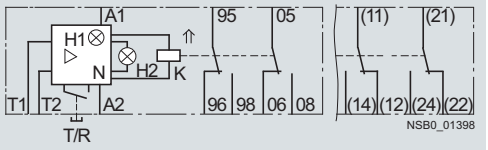



**Illustrated with control voltage applied** | **Illustrated with control voltage not applied**

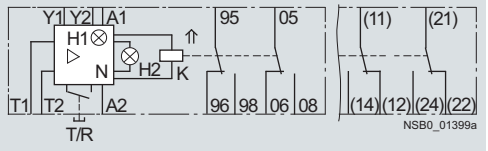
3RN10 10, 2 COs




3RN10 11, 2 COs




3RN10 12, 2 COs




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 DIN 40900, Part 7 which deviates from the norm (here: Position of the contacts when control voltage is applied to terminals A1 and A2) |

Legend for 3RN10

| | |
|---|---|
| H1 | LED "READY" |
| H2 | LED "TRIPPED" |
| K | Output relay |
| T1, T2 | Terminals of the sensor loop |

Legend for 3RN10 22

| | |
|---|---|
| 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 T2<br>2T1 and T2 | Terminals of the sensor loop |

⚠ *Important!*

*Close unconnected sensor circuits.*

Legend for 3RN10 62

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

⚠ *Important!*

*Close unconnected sensor circuits.*

[1] For units with combination voltages 230/110 V AC (3RN10 11-.CK00 and 3RN10 12-.CK00) A1 and A2 apply: 230 V AC, A3 and A2: 110 V AC.

## For PTC sensors

### 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
- 3RN10 13-.BW01: Bistable version, does not trigger in the event of control supply voltage failure
- All devices with PTB01 ATEX approval for dust or gas see www.siemens.com/industrial-controls/atex
- All devices except for 24 V AC/DC feature electrical separation
- Versions with safe isolation up to 300 V according to EN 61140
- Non-volatile versions
- Versions with short-circuit and open-circuit detection in sensor circuit
- Versions with solid-state compatible contacts with hard gold-plating
- Versions for up to 6 sensor circuits
- Versions with Manual-RESET, Remote-RESET, Auto-RESET and test button
- Terminal labeling according to DIN 50005
- 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 = 101

| RESET | Contacts | Rated control supply voltage $U_s$ 50/60 Hz V | DT | Screw terminals Order No. | Price per PU | DT | Spring-type terminals Order No. | Price per PU |
|---|---|---|---|---|---|---|---|---|
| **Compact signal evaluation units, width 22.5 mm, 1 LED** | | | | | | | | |
| Terminal A1 is jumpered with the root of the CO contact | | | | | | | | |
| Auto | 1 CO | 24 AC/DC | ▶ | **3RN10 00-1AB00** | | A | **3RN10 00-2AB00** | |
| | | 110 AC | A | **3RN10 00-1AG00** | | B | **3RN10 00-2AG00** | |
| | | 230 AC | ▶ | **3RN10 00-1AM00** | | B | **3RN10 00-2AM00** | |
| **Standard evaluation units, width 22.5 mm, 2 LEDs** | | | | | | | | |
|  3RN10 11-1BB00 | | | | | | | | |
| Auto | 1 NO + 1 NC | 24 AC/DC | ▶ | **3RN10 10-1CB00** | | ▶ | **3RN10 10-2CB00** | |
| | | 110 AC | ▶ | **3RN10 10-1CG00** | | A | **3RN10 10-2CG00** | |
| | | 230 AC | ▶ | **3RN10 10-1CM00** | | A | **3RN10 10-2CM00** | |
| | | 24 … 240 AC/DC | ▶ | **3RN10 10-1CW00** | | A | **3RN10 10-2CW00** | |
| | 2 CO | 24 AC/DC | A | **3RN10 10-1BB00** | | A | **3RN10 10-2BB00** | |
| | | 110 AC | A | **3RN10 10-1BG00** | | C | **3RN10 10-2BG00** | |
| | | 230 AC | A | **3RN10 10-1BM00** | | A | **3RN10 10-2BM00** | |
| | 2 CO, hard gold-plated | 24 AC/DC | A | **3RN10 10-1GB00** | | C | **3RN10 10-2GB00** | |
| Manual/Remote[1] | 1 NO + 1 NC | 24 AC/DC | ▶ | **3RN10 11-1CB00** | | A | **3RN10 11-2CB00** | |
| | | 110/230 AC | ▶ | **3RN10 11-1CK00** | | A | **3RN10 11-2CK00** | |
| Short-circuit detection for sensor circuit | | | | | | | | |
| Manual/Remote[1] | 2 CO | 24 AC/DC | A | **3RN10 11-1BB00** | | A | **3RN10 11-2BB00** | |
| | | 110 AC | A | **3RN10 11-1BG00** | | C | **3RN10 11-2BG00** | |
| | | 230 AC | A | **3RN10 11-1BM00** | | A | **3RN10 11-2BM00** | |
| | 2 CO, hard gold-plated | 24 AC/DC | A | **3RN10 11-1GB00** | | A | **3RN10 11-2GB00** | |
|  3RN10 13-1BB00 | | | | | | | | |
| Non-volatile[2] Manual/Auto/ Remote | 1 NO + 1 NC | 24 AC/DC | ▶ | **3RN10 12-1CB00** | | A | **3RN10 12-2CB00** | |
| | | 110/230 AC | ▶ | **3RN10 12-1CK00** | | A | **3RN10 12-2CK00** | |
| Non-volatile[2], short-circuit detection in sensor circuit | | | | | | | | |
| Manual/Auto/ Remote | 2 CO | 24 AC/DC | A | **3RN10 12-1BB00** | | C | **3RN10 12-2BB00** | |
| | | 110 AC | A | **3RN10 12-1BG00** | | C | **3RN10 12-2BG00** | |
| | | 230 AC | A | **3RN10 12-1BM00** | | C | **3RN10 12-2BM00** | |
| | 2 CO, hard gold-plated | 24 AC/DC | A | **3RN10 12-1GB00** | | C | **3RN10 12-2GB00** | |
|  3RN10 12-2CK00 | | | | | | | | |
| Non-volatile[2], short-circuit and open-circuit detection and indication in sensor circuit; wide-range voltage with screw terminal with safe isolation | | | | | | | | |
| Manual/Auto/ Remote | 2 CO | 24 AC/DC | ▶ | **3RN10 13-1BB00** | | A | **3RN10 13-2BB00** | |
| | | 24 … 240 AC/DC | ▶ | **3RN10 13-1BW10** | | A | **3RN10 13-2BW00** | |
| | 2 CO, hard gold-plated | 24 … 240 AC/DC | A | **3RN10 13-1GW10** | | C | **3RN10 13-2GW00** | |
| **Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs** | | | | | | | | |
| Test/RESET button, non-volatile[2] Manual/Auto/ Remote | 1 NO + 1 CO | 24 … 240 AC/DC | ▶ | **3RN10 22-1DW00** | | A | **3RN10 22-2DW00** | |
| **Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs** | | | | | | | | |
| Test/RESET button, non-volatile[2] Manual/Auto/ Remote | 1 NO + 1 NC | 24 … 240 AC/DC | ▶ | **3RN10 62-1CW00** | | A | **3RN10 62-2CW00** | |
| **Bistable evaluation units, width 22.5 mm** | | | | | | | | |
| Test / RESET button, non-volatile[2], short-circuit and open-circuit detection and indication in sensor circuit Manual/Auto/ Remote | 2 CO | 24 … 240 AC/DC | ▶ | **3RN10 13-1BW01** | | A | **3RN10 13-2BW01** | |

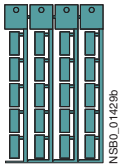
[1] The unit can be reset with the RESET button or by disconnecting the control supply voltage.

[2] For protection against voltage failure see note on Technical Information on page 8/1.



*** You can order this quantity or a multiple thereof.**
**Illustrations are approximate**

## Accessories

| Use | Version | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS* | PG |
|---|---|---|---|---|---|---|---|
| **Blank labels** | | | | | | | |
|  3RT19 00-1SB20 | For 3RN1 | **Unit labeling plates** For SIRIUS devices | | | | | |
| | | 20 mm x 7 mm, pastel turquoise[1] | D | **3RT19 00-1SB20** | | 100 | 340 units | 101 |
| | For 3RN1 | **Inscription labels for sticking** For SIRIUS devices | | | | | |
| | | 19 mm x 6 mm, pastel turquoise | C | **3RT19 00-1SB60** | | 100 | 3060 units | 101 |
| | | 19 mm x 6 mm, zinc yellow | C | **3RT19 00-1SD60** | | 100 | 3060 units | 101 |
| **Push-in lugs** | | | | | | | |
|  3RP19 03 | For 3RN1 | **Push-in lugs** For screw fixing, 2 units are required for each device | ► | **3RP19 03** | | 1 | 10 units | 101 |
| **Tools for opening spring-type terminals by hand** | | | | | | | |
|  3RA29 08-1A | For auxiliary circuit connections | **Screwdrivers** For all SIRIUS devices with spring-type terminals | | **Spring-type terminals** | | | | |
| | | 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated | A | **3RA29 08-1A** | | 1 | 1 unit | 101 |

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.de

8

*** You can order this quantity or a multiple thereof.**
**Illustrations are approximate**