



# Motor temperature monitoring unit SD241-B (Contrac)

## Operating Instructions

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Rev. B

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## 1 Safety

Read these operating instructions carefully prior to installing and commissioning the device.

These instructions are intended as an overview and do not contain detailed information on all designs for this product or every possible aspect of installation, operation and maintenance.

For additional information or in case specific problems occur that are not discussed adequately in these instructions, contact the manufacturer. In addition, we declare that the contents of these instructions are not part of any prior or existing agreements, commitments or legal relationships or are intended to amend these.

All obligations of ABB Automation Products GmbH are created by the relevant sales agreement, which contains the complete and solely binding warranty regulations. These contractual warranty provisions are neither extended nor limited by compliance with this manual.

### 1.1 General Safety Information

The "Safety" chapter provides an overview of the safety aspects to be observed for the operation of the device.

The device is built based on state-of-the-art technology and is operationally safe. It was tested and left the factory in a proper state. The requirements in the manual as well as the documentation and certificates must be observed and followed in order to maintain this state for the period of operation.

The general safety requirements must be complied with completely during operation of the device. In addition to the general information, the individual chapters of the manual contain descriptions about processes or procedural instructions with specific safety information.

Only the observance of all safety information enables the optimal protection of personnel as well as the environment from hazards and the safe and trouble-free operation of the device.

### 1.2 Proper use

The motor temperature monitoring unit SD241-B (Contrac) is used to ensure proper operation of Contrac actuators in potentially explosive areas. When a motor temperature specified according to explosion protection class is reached due to a failure in the motor, the unit interrupts the power supply to the Contrac power electronic unit. The motor and power electronic unit are disconnected from the mains supply. The integrated brake locks the actuator in its current position.

Repairs, alterations and enhancements or the installation of replacement parts is only permissible as far as described in the manual. Further actions must be verified with ABB Automation Products GmbH. Excluded from this are repairs performed by ABB-authorized specialist shops.

### 1.3 Technical limits

The device is designed for use exclusively within the stated values on the name plate and in the technical specifications (see "Technical Specifications" chapter and data sheet). These must be complied with accordingly, e.g.:

- The maximum operating temperature may not be exceeded.
- The permitted operating temperature may not be exceeded.
- The housing protection system must be observed.

**1.4 Warranty provision**

A use contrary to the device’s stipulated use, disregarding of this manual, the use of under-qualified personnel as well as unauthorized alterations excludes the manufacturer of liability from any resulting damages. The manufacturer’s warranty expires.

**1.5 Labels and symbols**

**1.5.1 Symbols and warnings**



**Danger – <Serious damage to health / risk to life>**

One of these symbols in conjunction with the “Danger” warning indicates an imminent danger. If it is not avoided, death or serious injury will result.



**Warning – <Bodily injury>**

The symbol in conjunction with the “Warning” message indicates a possibly dangerous situation. If it is not avoided, death or serious injury could result.



**Caution – <Slight injuries>**

The symbol in conjunction with the “Caution” message indicates a possibly dangerous situation. If it is not avoided, slight or minor injury can result. May also be used for property damage warnings.



**Notice – <Property damage>!**

The symbol indicates a possibly damaging situation. If it is not avoided, the product or something in its area can be damaged.



**Important**

The symbol indicates operator tips or especially useful information. This is not a message for a dangerous or damaging situation.

### 1.5.2 Name plate

The name plate is located on the side of the motor temperature monitoring unit.

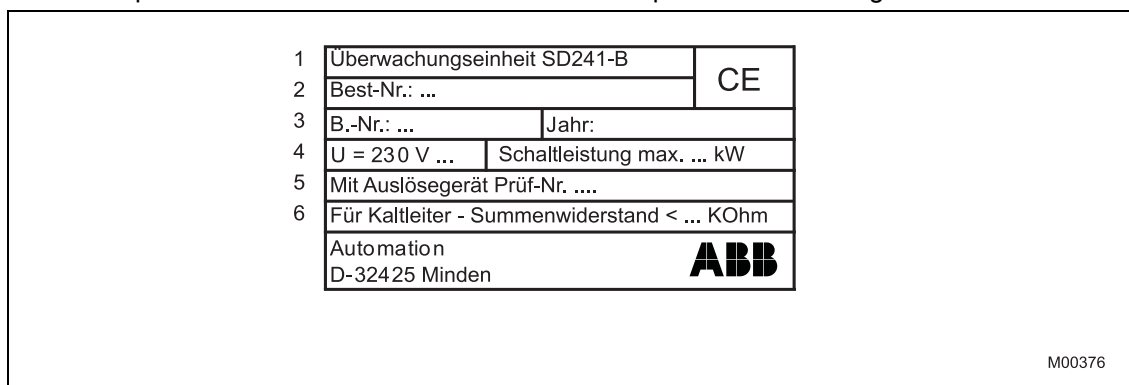


Fig. 1

- |   |               |   |                            |
|---|---------------|---|----------------------------|
| 1 | Type          | 4 | Voltage/switching capacity |
| 2 | Order number  | 5 | Inspection no.             |
| 3 | Serial number | 6 | Cumulative resistance      |

### 1.6 Operator liability

The operators must strictly observe the applicable national regulations in their countries with regards to installation, function tests, repairs, and maintenance of electrical devices.

### 1.7 Personnel qualification

The installation, commissioning and maintenance of the device may only be carried out through trained specialist personell authorized by the plant operator. The specialist personnel must have read and understood the manual and comply with its instructions.

## 1.8 Returning devices

Use the original packaging or a suitably secure packaging for returning the device for repair or for recalibration. Include the properly filled out return form (see attachment) with the device.

According to EC guidelines for hazardous materials, the owner of hazardous waste is responsible for its disposal or must observe the following regulations for its shipping:

All delivered devices to ABB Automation Products GmbH must be free from any hazardous materials (acids, alkali, solvents, etc.).

## 1.9 Disposal

ABB Automation Products GmbH actively promotes environmental consciousness and has an operational management system in accordance with DIN EN ISO 9001:2000, EN ISO 14001:2004 and OHSAS 18001. Our products and solutions should have minimum impact on the environment and persons during manufacture, storage, transport, use and disposal.

This includes the environmentally friendly use of natural resources. Through its publications ABB conducts an open dialog with the public.

This product/solution is manufactured from materials that can be reused by specialized recycling companies.

### 1.9.1 Information on WEEE directive 2002/96/EC (Waste Electrical and Electronic Equipment)

This product/solution is not subject to the WEEE directive 2002/96/EC and relevant national laws (e.g., ElektroG in Germany).

Dispose of the product/solution directly in a specialized recycling facility and do not use the municipal garbage. Only privately used products may be disposed of in the municipal garbage according to the WEEE directive 2002/96/EC. Proper disposal prevents negative effects on people and the environment, and supports the reuse of valuable raw materials.

If it is not possible to dispose of old equipment properly, ABB Service can accept and dispose of returns for a fee.

## 1.10 Transport safety information

Check the devices for possible damage that may have occurred from improper transport. Damages in transit must be recorded on the transport documents. All claims for damages must be claimed without delay against the shipper and before the installation.

### 1.11 Storage conditions

Storage SD241-B (Contrac) under moist and aggressive conditions is not allowable.

The units must be stored in dry and dust-free conditions.

The storage temperature must be between -25 ... 70 °C (-13 ... 158 °F).

The storage time is basically indefinite, however, the warranty conditions stipulated in the order confirmation of the supplier are valid.

### 1.12 Installation safety information

- Only qualified specialists who have been trained for these tasks are authorized to mount the motor temperature monitoring unit and to make the electrical connection.
- When working on the actuator, electronics or motor temperature monitoring unit always observe the locally valid accident prevention regulations and the regulations concerning the construction of technical installations.
- Switch off the supply voltage and protect against unintentional startup.

### 1.13 Electrical installation safety information

The electrical connection may only be performed by authorized specialist personnel according to the electrical plans.

Comply with electrical connection information in the manual. Otherwise, the electrical protection class can be affected.

The secure separation of contact-dangerous electrical circuits is only guaranteed when the connected devices fulfill the requirements of the DIN EN 61140 (VDE 0140 Part 1) (basic requirements for secure separation).

For secure separation, run the supply lines separated from contact-dangerous electrical circuits or additionally insulate them.

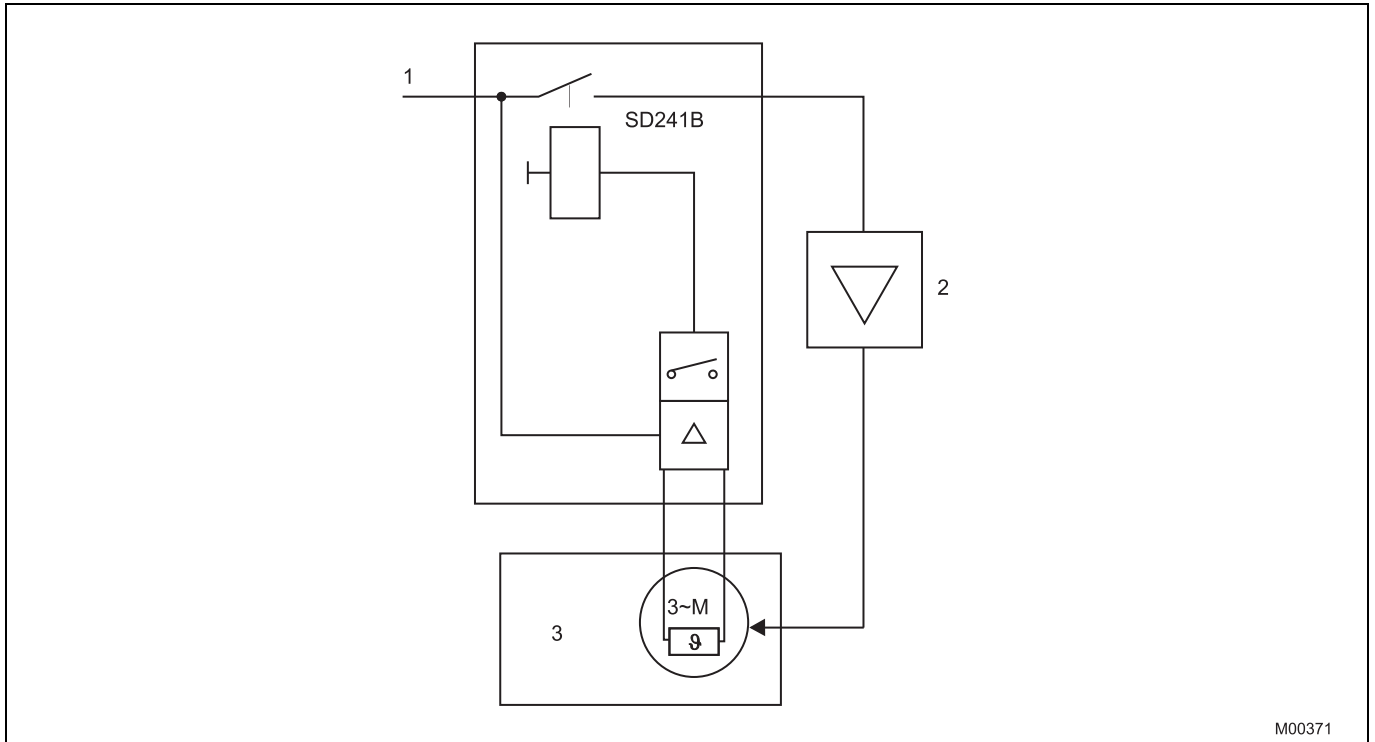
### 1.14 Operating safety information

Before switching on, ensure that the specified environmental conditions in the “Technical Specifications” chapter or data sheet are complied with and that the power supply voltage corresponds with the voltage of the motor temperature monitoring unit.

When there is a chance that safe operation is no longer possible, put the device out of operation and secure against unintended operation.

When mounting the motor temperature monitoring unit in areas which may be accessed by unauthorized persons, take the required protective measures.

**2 Design and function**



M00371

Fig. 2: Switching concept

- 1 Mains
- 2 Contrac electronic unit
- 3 Contrac Ex actuator

The PTCs integrated in the winding are calibrated to the max. permissible temperature limit of the motor. Once the rated operating temperature is reached, the PTCs suddenly increase their resistance.

The trigger circuit in the tripping unit responds to the new resistance and switches off the contactor activated during operation. The power electronic unit and the motor are disconnected from the mains.

The monitoring unit SD241-B (Contrac) operates according to closed circuit principle. It monitors itself, the PTC and the connecting cable for wire breaks. The button (Open) in the housing cover can check the tripping unit for proper operation. In addition, a resistance equivalent to the response threshold of the tripping unit can be set in the measuring line in order to simulate the operating temperature.

After tripping, the unit is reset using the internal blue Reset pushbutton.

2.1 Modules

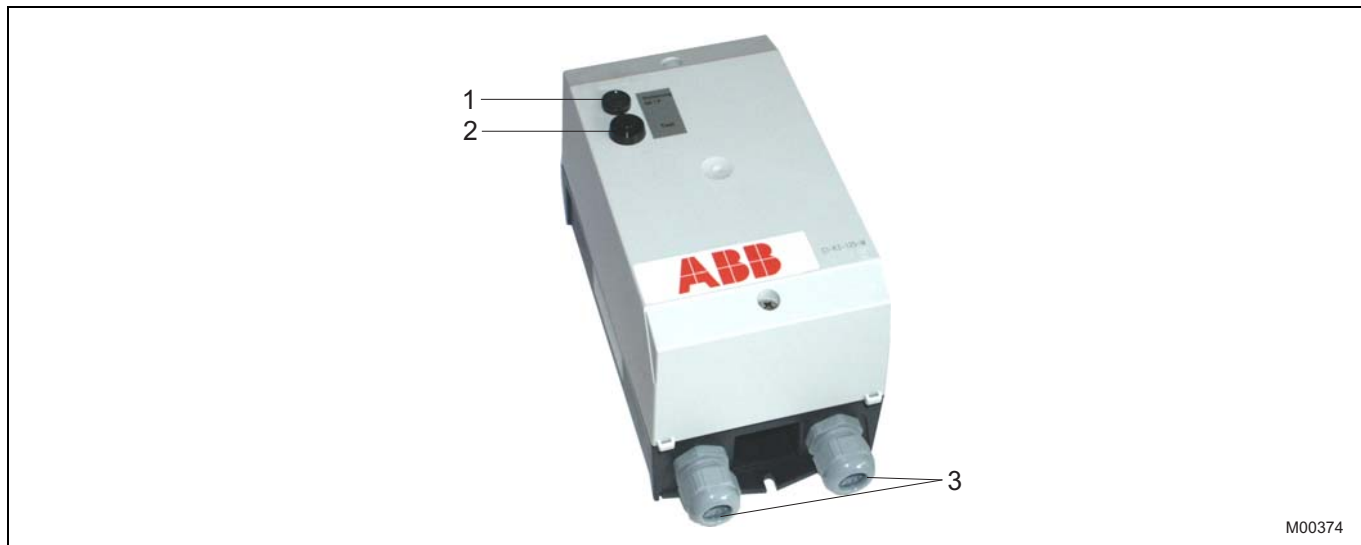


Fig. 3

- 1 Fuse
- 2 Test switch
- 3 Cable entry

### 3 Installation

#### 3.1 Delivery scope

- Check the delivery for completeness, signs of damage, model and scope immediately upon arrival.
- Check whether the delivery is in accordance with your order.

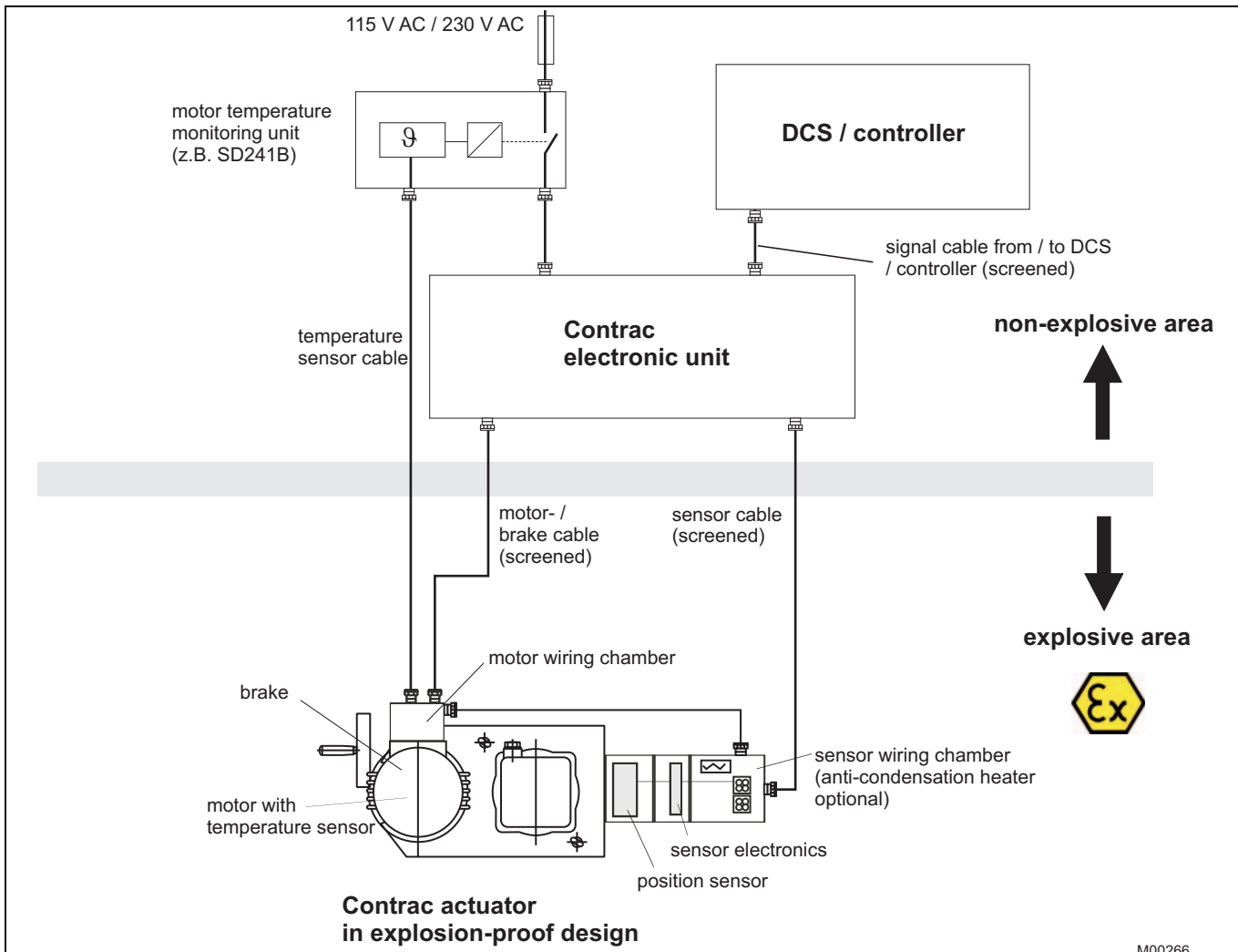


Fig. 4: Ex design

#### 3.2 Installation instructions

- The motor temperature monitoring unit is designed to be mounted on a vertical wall ( $\pm 22^\circ$  from vertical).
- The ambient temperature may not exceed  $60^\circ\text{C}$  ( $140^\circ\text{F}$ ). If necessary, use an appropriate roof to avoid heat radiation.
- Avoid direct exposure to rain, snow and other environmental influences.
- When mounting the actuator close to heat sources use an insulating layer or shielding.

### 4 Electrical connection

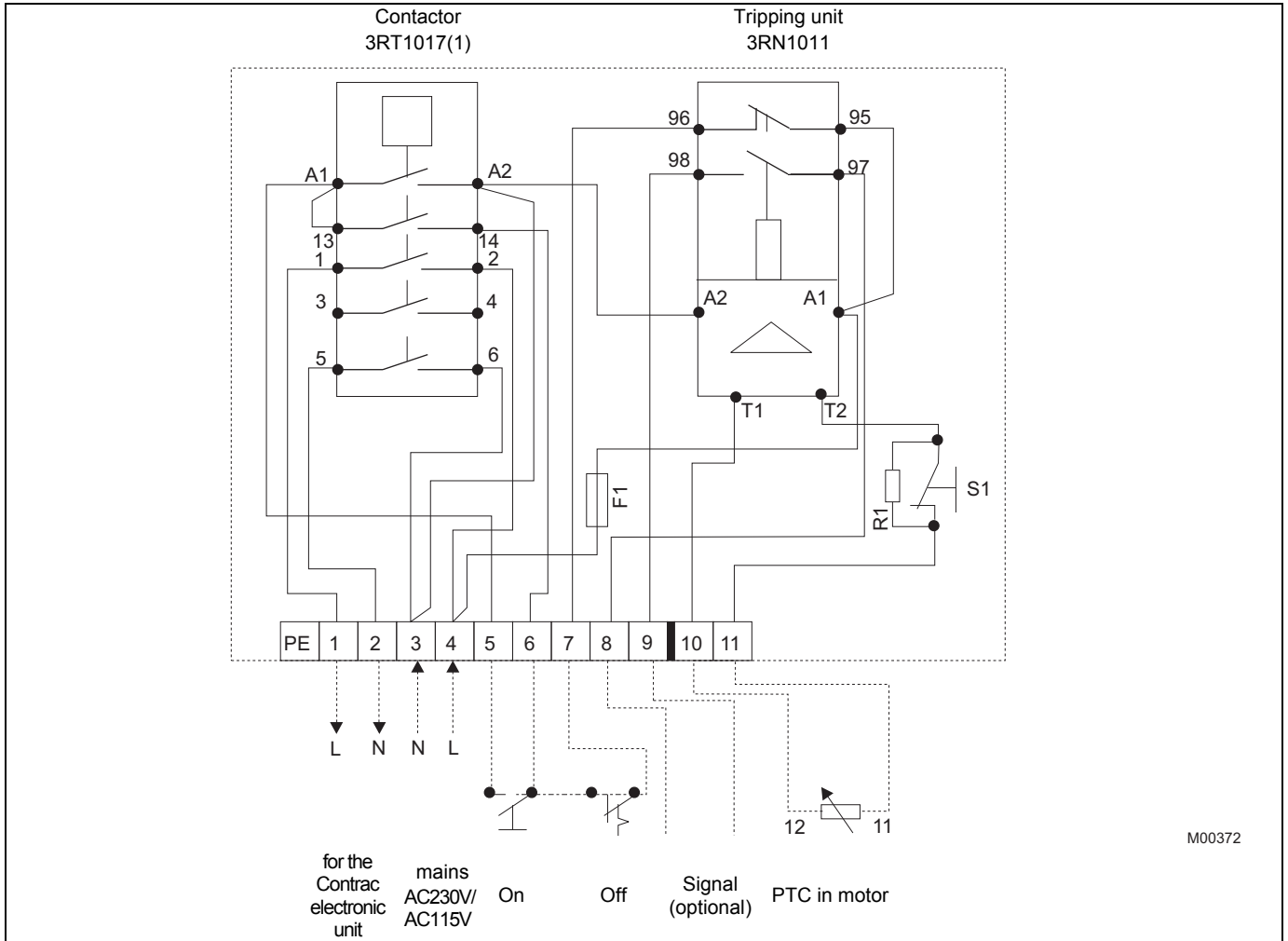


Fig. 5



**Important**

- The line for temperature monitoring may not be routed through the supply line of the motor.
- If extreme inductive or capacitive interference is expected, use shielded signal lines.
- Prior to commissioning, test the sensor resistance with a suitable meter.
- The cumulative cold resistance may not exceed 1.5 kΩ.
- For resistances < 50 Ω check for a short in the sensor circuit.
- Seal unused cable entries with appropriate plugs.

#### 4.1 Line lengths in sensor circuit

cross-section	
2,5 mm <sup>2</sup> (14 AWG)	2 x 2800 m (9185 ft)
1,5 mm <sup>2</sup> (16 AWG)	2 x 1500 m (4920 ft)
0,5 mm <sup>2</sup> (20 AWG)	2 x 500 m (1640 ft)

## 5 Operation

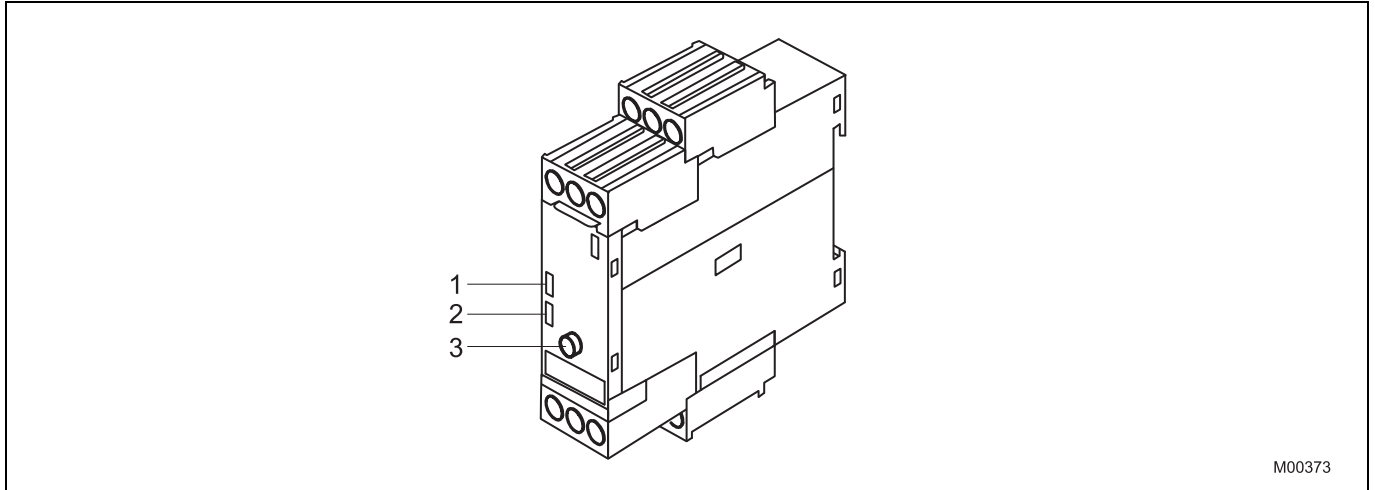


Fig. 6

- 1 Green "Ready" LED
- 2 Red "Tripped" LED
- 3 Blue "Test/Reset" pushbutton

After opening the housing cover, the internal displays and controls of the tripping unit 3RN1011 become visible. The green "Ready" LED indicates operational readiness after the 115 or 230 V supply voltage has been applied (see rating plate).

The red „Tripped“ LED indicates the tripped condition.

The blue "Test/Reset" pushbutton is used for testing and/or resetting.

For testing, keep the blue pushbutton pressed for about 3 to 4 seconds. The unit trips and this is signaled by the red LED. Terminals 8 and 9 are permanently conductive.

Pushing the blue Test/Reset pushbutton briefly one more time resets the unit.

The red LED extinguishes and terminals 8 and 9 are permanently open.

### 6 Technical data

**Line voltage / control voltage**

AC 230 V (196 ... 253 V)

AC 115 V (94 ... 121 V)

depending on design; see order information/ model plate

**Frequency**

50/60 Hz

**Backup fuse**

16A; time-lag

**Fuse**

4A; fast-acting

**Operating temperature**

-25 ... 60 °C (-13 ... 140 °F)

**Transport and storage temperature**

-25 ... 70 °C (-13 ... 158 °F)

**Relative humidity**

75% annual average


95% of 30 days; condensation not permitted

**Protection Class**

IP 54

**7 Appendix**

**7.1 Permits and certifications**

	<b>Symbol</b>	<b>Description</b>
CE mark		<p>The CE mark indicates that the device complies with the following directives and their basic safety requirements:</p> <ul style="list-style-type: none"> <li>• CE mark on the nameplate of actuator.               <ul style="list-style-type: none"> <li>– Conforms with EMC directive 89/336/EEC.</li> <li>– Conforms with the machinery directive 2006/42/EC.</li> </ul> </li> </ul> <p>By placing the CE mark on its devices, ABB Automation Products GmbH declares its conformance with these directives.</p>



**Important**

All documentation, declarations of conformity and certificates are available in the download area of ABB Automation Products GmbH.

[www.abb.com/instrumentation](http://www.abb.com/instrumentation)

## Statement about the contamination of devices and components

The repair and/or maintenance of devices and components will only be performed when a completely filled out explanation is present.

Otherwise, the shipment can be rejected. This explanation may only be filled out and signed by authorized specialist personnel of the operator.

### Customer details:

Company:

Address:

Contact person:

Telephone:

Fax:

E-Mail:

### Device details:

Type:

Serial no.:

Reason for the return/description of the defect:

### Was this device used for working with substances which pose a threat or health risk?

Yes  No

If yes, which type of contamination (please place an X next to the applicable items)

biological	<input type="checkbox"/>	corrosive/irritating	<input type="checkbox"/>	combustible (highly/extremely combustible)	<input type="checkbox"/>
toxic	<input type="checkbox"/>	explosive	<input type="checkbox"/>	other harmful substances	<input type="checkbox"/>
radioactive	<input type="checkbox"/>				

Which substances have had contact with the device?

1.

2.

3.

We hereby certify that the devices/parts shipped were cleaned and are free from any dangerous or poisonous materials.

City, Date

Signature and company stamp



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